

Global Biomass Gasification Market Size Study & Forecast, by Source (Agricultural, Forest, Animal, Municipal), by Gasifier Technology (Fixed-bed, Fluidized-bed, Entrained Flow) and Regional Forecasts 2025-2035

<https://marketpublishers.com/r/GA70FC70C23CEN.html>

Date: January 2026

Pages: 285

Price: US\$ 3,750.00 (Single User License)

ID: GA70FC70C23CEN

Abstracts

The Global Biomass Gasification Market is valued at approximately USD 0.02 billion in 2024 and is projected to expand at a compelling compound annual growth rate of 8.90% over the forecast period 2025-2035. Biomass gasification is a thermochemical conversion process that turns organic materials—ranging from agricultural residues to municipal waste—into syngas, a versatile fuel used across power generation, chemicals, and hydrogen production. Anchored by Historical Data from 2023 and 2024 and calibrated against 2024 as the Base Year for Estimation, the market narrative is being reshaped by the urgent need to decarbonize energy systems, improve waste-to-energy efficiencies, and diversify fuel supply chains amid tightening environmental regulations.

As governments and industries double down on circular economy principles, biomass gasification is increasingly being leaned into as a strategic bridge between renewable energy ambitions and practical energy security. Rising volumes of agricultural waste, forestry residues, and municipal solid waste are being reeled into gasification projects to cut landfill dependency while spinning up low-carbon energy outputs. Moreover, policy-backed incentives, renewable portfolio standards, and carbon reduction mandates are pushing utilities and industrial players to phase in biomass-based alternatives. That said, capital-intensive infrastructure requirements and feedstock supply variability continue to pose operational hurdles, even as technological advancements steadily iron out efficiency gaps across the forecast horizon of 2025-2035.

The detailed segments and sub-segments included in the report are:

Global Biomass Gasification Market Size Study & Forecast, by Source (Agricultural, Forest, Animal, Municipal),...

By Source:

Agricultural

Forest

Animal

Municipal

By Gasifier Technology:

Fixed-bed

Fluidized-bed

Entrained Flow

By Application:

Power

Chemicals

Hydrogen

Transportation

Ethanol

Biochar

By Region:

North America

U.S.

Canada

Europe

UK

Germany

France

Spain

Italy

Rest of Europe

Asia Pacific

China

India

Japan

Australia

South Korea

Rest of Asia Pacific

Latin America

Brazil

Mexico

Middle East & Africa

UAE

Saudi Arabia

South Africa

Rest of Middle East & Africa

From a source perspective, agricultural biomass is expected to dominate the global biomass gasification market over the forecast period. The abundance of crop residues, husks, and agricultural by-products—combined with lower procurement costs—positions this segment as the most accessible and scalable feedstock option. Countries with large agrarian economies are increasingly tapping into agricultural waste streams to power decentralized energy systems, reduce open-field burning, and strengthen rural energy access. While forest and municipal sources are gaining traction, agricultural biomass continues to anchor market volumes due to its year-round availability and favorable logistics.

In terms of application-based revenue contribution, power generation currently leads the market. Biomass gasification plants designed for electricity production are being rolled out across industrial parks, rural grids, and off-grid installations where reliability and sustainability converge. The ability to generate baseload renewable power while simultaneously managing waste streams makes power applications economically attractive. At the same time, hydrogen and chemicals applications are emerging as high-growth avenues, particularly as industries scout for green feedstocks, yet power generation remains the principal revenue driver shaping current market economics.

Regionally, Europe commands a significant share of the Global Biomass Gasification Market, underpinned by aggressive decarbonization targets, mature waste management frameworks, and strong governmental support for renewable energy technologies. North America follows closely, leveraging technological innovation and pilot-scale commercialization to scale adoption. Asia Pacific is anticipated to record the fastest growth during the forecast period, as rapid urbanization, mounting waste volumes, and

escalating energy demand in countries such as China and India accelerate investments in biomass gasification projects. Meanwhile, Latin America and the Middle East & Africa are gradually warming up to the technology, particularly in agrarian economies seeking sustainable waste-to-energy solutions.

Major market players included in this report are:

Siemens Energy AG

Mitsubishi Heavy Industries, Ltd.

General Electric Company

Air Products and Chemicals, Inc.

ANDRITZ AG

Royal Dutch Shell plc

Synthesis Energy Systems, Inc.

Valmet Oyj

ThyssenKrupp AG

KBR, Inc.

Linde plc

Hitachi Zosen Corporation

EQTEC plc

EnviTec Biogas AG

Sedin Technologies

Global Biomass Gasification Market Report Scope:

Global Biomass Gasification Market Size Study & Forecast, by Source (Agricultural, Forest, Animal, Municipal),...

Historical Data – 2023, 2024

Base Year for Estimation – 2024

Forecast period - 2025-2035

Report Coverage - Revenue forecast, Company Ranking, Competitive Landscape, Growth factors, and Trends

Regional Scope - North America; Europe; Asia Pacific; Latin America; Middle East & Africa

Customization Scope - Free report customization (equivalent to up to 8 analysts' working hours) with purchase. Addition or alteration to country, regional & segment scope*

The objective of the study is to define market sizes of different segments and countries in recent years and to forecast the values for the coming years. The report is structured to blend qualitative insights with quantitative rigor, offering a panoramic view of the industry's current standing and future direction. It delivers deep dives into growth catalysts, operational bottlenecks, and emerging technology shifts, while spotlighting high-potential micro-markets for strategic investment. In addition, the study dissects the competitive landscape, mapping out product portfolios, innovation pipelines, and strategic priorities of leading market participants.

Key Takeaways:

Market Estimates & Forecast for 10 years from 2025 to 2035.

Annualized revenues and regional-level analysis for each market segment.

Detailed analysis of the geographical landscape with country-level analysis of major regions.

Competitive landscape with information on major players in the market.

Analysis of key business strategies and recommendations on future market approach.

Analysis of the competitive structure of the market.

Demand side and supply side analysis of the market.

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