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Biomass Energy Market Forecasts to 2034– Global Analysis By Product (Bioelectricity, Biogas, Biofuels and Heat Energy), Feedstock, Conversion Technology, Application, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Biomass Energy Market is accounted for $134.93 billion in 2026 and is expected to reach $242.44 billion by 2034 growing at a CAGR of 7.6% during the forecast period. Biomass energy is a form of renewable energy derived from organic materials, including agricultural residues, forestry waste, animal manure, and dedicated energy crops. Through processes such as combustion, gasification, anaerobic digestion, and fermentation, biomass is converted into electricity, heat, or biofuels for sustainable energy production. It offers a carbon-neutral alternative to fossil fuels by recycling carbon dioxide through natural growth cycles. Biomass energy supports energy security, reduces greenhouse gas emissions, and promotes waste-to-energy solutions, making it a vital component of modern sustainable energy strategies and circular economy initiatives.

Market Dynamics:

Driver:

Rising demand for renewable energy

The growing global emphasis on sustainability and carbon reduction is driving significant demand for renewable energy sources, including biomass energy. Governments, industries, and consumers are increasingly prioritizing low-carbon alternatives to fossil fuels to meet climate targets. Biomass energy, leveraging abundant organic residues and waste materials, is positioned as a reliable and scalable solution.

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Its role in decentralized energy generation and contribution to energy security further reinforces adoption, creating a robust growth environment for the global biomass energy market.

Restraint:

High initial investment

The high capital expenditure associated with biomass energy infrastructure presents a significant market restraint. Establishing biomass plants requires substantial investment in feedstock collection, storage, processing equipment, and energy conversion technologies. Small- and medium-scale enterprises often face financial barriers to entry, while project financing can be complex and time-intensive. These cost considerations, coupled with uncertainties in feedstock availability and market fluctuations, limit rapid adoption, particularly in developing regions, constraining short-term growth of global biomass energy.

Opportunity:

Technological advancements

Technological innovations in biomass conversion, such as gasification, anaerobic digestion, and bio-refining, present significant growth opportunities. Advanced systems enhance efficiency, reduce emissions, and expand the range of usable feedstock. Integration with smart grids and combined heat-and-power solutions further increases economic viability. Ongoing research in enzyme development, microbial fermentation, and biofuel optimization promises to unlock higher energy yields from waste materials. Such advancements strengthen the market’s long-term potential, making biomass energy a more sustainable and competitive renewable option.

Threat:

Technological complexity

The technological complexity of modern biomass energy systems poses a market threat, limiting widespread adoption. Processes like gasification, anaerobic digestion, and biofuel production require specialized knowledge, skilled labor, and continuous operational monitoring. Maintenance and troubleshooting challenges can lead to downtime and higher operational costs. Additionally, smaller enterprises or regions with

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limited technical expertise may struggle to implement these systems effectively. These factors can slow market penetration, hinder scalability, and create uncertainties for investors.

Covid-19 Impact:

The COVID-19 pandemic disrupted biomass energy supply chains and project timelines, affecting feedstock availability, labor deployment, and plant operations. Lockdowns and logistical constraints delayed construction and maintenance activities, temporarily slowing market growth. However, post-pandemic recovery, coupled with increased government support for green energy initiatives, has revitalized the sector. Renewed focus on renewable energy infrastructure and sustainable recovery strategies is driving market resilience, positioning biomass energy for stronger adoption as economies prioritize decarbonization and sustainable energy transition in the post-pandemic era.

The gasification segment is expected to be the largest during the forecast period

The gasification segment is expected to account for the largest market share during the forecast period, due to its efficiency and versatility. Gasification converts a wide range of organic materials into syngas, enabling production of electricity, heat, and biofuels with lower emissions. Its adaptability to different feedstock types, scalability for industrial applications, and compatibility with combined heat-and-power systems make it a preferred technology. Continuous technological improvements and government support further reinforce its market leadership, solidifying its position as the largest segment globally.

The animal waste segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the animal waste segment is predicted to witness the highest growth rate, due to rising focus on waste-to-energy solutions. Anaerobic digestion of manure and other animal residues produces biogas efficiently, offering a sustainable alternative for rural and industrial energy needs. Growing environmental awareness, regulatory support, and demand for clean energy in agriculture further boost adoption. This segment’s rapid growth reflects the market’s shift toward resource-efficient energy generation and circular economy practices using livestock-derived biomass.

Region with largest share:

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During the forecast period, the Europe region is expected to hold the largest market share, due to ambitious decarbonization targets. Countries are investing heavily in biomass infrastructure, leveraging abundant forestry and agricultural residues. Policies promoting bioenergy, subsidies, and integration into national energy grids have accelerated adoption. High environmental awareness, government incentives, and technological expertise strengthen Europe's dominance, positioning it as a global leader in biomass energy production, utilization, and innovation across industrial, commercial, and residential sectors.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, owing to increasing energy demand. Governments are actively promoting biomass energy to reduce fossil fuel dependency and mitigate environmental pollution. Abundant agricultural and animal waste feedstock, coupled with technological adoption and investment in renewable infrastructure, fuels market expansion. Rising focus on rural electrification and sustainable energy access further accelerates growth, making Asia Pacific a key emerging region with strong momentum in the global biomass energy market.

Key players in the market

Some of the key players in Biomass Energy Market include Drax Group, ENGIE, Enviva, Renewable Energy Group, Ameresco, RWE, EnviTec Biogas, Borregaard, UPM Biofuels, Neste, Verbio, POET, LanzaTech, Cargill and Wilmar International.

Key Developments:

In October 2025, Mars and Cargill are expanding their renewable energy collaboration by signing five virtual power purchase agreements in Poland to develop over 224?MWac of new solar capacity. This joint effort aims to cut emissions across the food sector and support shared climate goals by bringing clean energy to one of Europe's most carbon?intensive grids, setting a scalable example for climate action in supply chains.

In July 2025, PepsiCo and Cargill have struck a bold alliance to uplift farmers and champion regenerative agriculture across their shared corn supply chain, with plans to implement sustainable practices on tens of thousands of acres, boosting soil health and

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long?term resilience.

Products Covered:

- Bioelectricity
- Biogas
- Biofuels
- Heat Energy

Feedstocks Covered:

- Wood & Woody Biomass
- Agricultural Residues
- Animal Waste
- Municipal Solid Waste
- Industrial Waste
- Energy Crops

Conversion Technologies Covered:

- Combustion
- Gasification
- Anaerobic Digestion
- Pyrolysis
- Fermentation

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Transesterification

Applications Covered:

Power Generation

Heating

Transportation Fuels

Industrial Processes

End Users Covered:

Residential

Commercial

Industrial

Utilities

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

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- Germany
- France
- Italy
- Spain
- Netherlands
- Belgium
- Sweden
- Switzerland
- Poland
- Rest of Europe

Asia Pacific

- China
- Japan
- India
- South Korea
- Australia
- Indonesia
- Thailand
- Malaysia

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- 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

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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)

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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 (RoW) are also represented in the same manner as above.

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