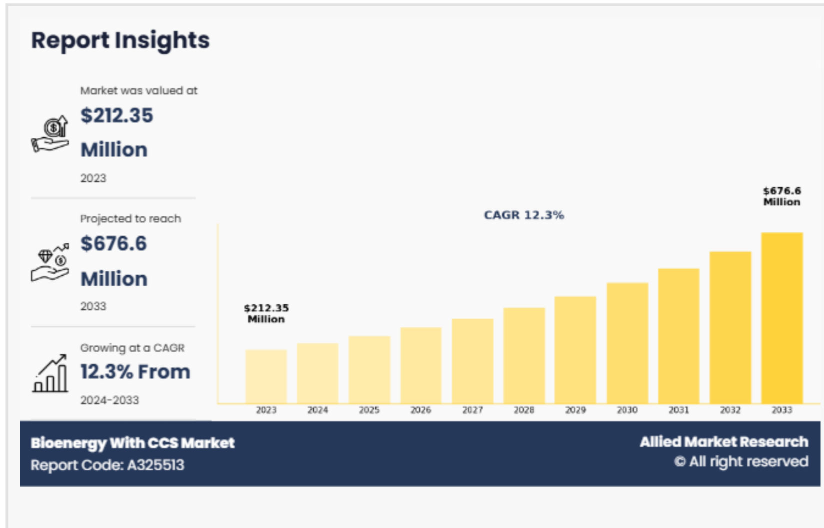
Bioenergy with CCS Market Statistics to Exceed $676.6 Million by 2033, Growing at 12.3% CAGR

Global BECCS Market Expands as Industries Adopt Negative Emission Technologies



WILMINGTON, DE, UNITED STATES, November 6, 2025 /EINPresswire.com/ -- The bioenergy with CCS market size was valued at $212.35 million in 2023 and is projected to reach $676.6 million by 2033, growing at a strong CAGR of 12.3% from 2024 to 2033, according to Allied Market Research. This growth is fueled by the rising adoption of Carbon Capture and Storage (CCS) infrastructure, supportive government policies, and the urgent need for carbon-negative technologies to achieve net-zero emissions.

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> “
> Bioenergy with CCS market to grow from $212.4M in 2023 to $676.6M by 2033, driven by carbon reduction policies and rising demand for negative emissions.”
>
> *Allied Market Research*

Key Market Insights

By Technology: Oxy-combustion led the market in 2023, holding over one-third market share.

By Application: Biomass conversion was the most lucrative, expanding at a 14.4% CAGR.

By Region: North America dominated in 2023, while Asia-Pacific recorded the fastest growth at 12.9% CAGR.

Introduction

Bioenergy with Carbon Capture and Storage (BECCS) is a pioneering technology that combines biomass energy production with [CO_2 capture and storage](). Organic materials such as agricultural residues, wood, and energy crops are used to generate bioenergy, while the resulting CO_2 emissions are captured and stored underground. This creates a carbon-negative energy cycle, effectively removing CO_2 from the atmosphere.

By turning natural biomass into electricity or biofuels and storing emissions, BECCS plays a crucial role in climate change mitigation, helping industries reduce their carbon footprint while supporting global sustainability goals.

Market Dynamics

Growth Drivers

Expansion of CCS Infrastructure: The International Energy Agency (IEA) reported that global CO_2 storage capacity announced for 2030 rose 70% in one year, reaching 615 million tons annually. This expansion provides critical pathways for scaling BECCS projects.

Government Incentives: Policies such as the U.S. Inflation Reduction Act (2022), which provides $85 per metric ton tax credits, and the EPA's 2025 approval for state-level carbon project oversight are accelerating BECCS adoption.

Climate Goals & Net-Zero Commitments: With rising pressure to reduce greenhouse gases, BECCS is gaining attention as a carbon-negative solution that complements renewable energy sources.

Market Restraints

Despite its promise, BECCS faces competition from solar, wind, hydro, and geothermal, which are often more cost-efficient and technologically mature. In addition, BECCS projects require significant investment in biomass supply chains and CCS facilities, making them less attractive to cost-sensitive markets.

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Segments Overview

The bioenergy with CCS market is segmented into technology, application, and region:

By Technology:

Post-combustion is the fastest-growing segment, expanding at a CAGR of 12.6%. It uses solvent-based absorption and membrane systems to capture CO_2 from flue gases before underground storage.

By Application:

Biomass conversion is growing at 12.4% CAGR, as CCS integration allows for negative emissions by capturing and storing CO_2 released during energy production.

By Region:

Asia-Pacific leads with the fastest growth at 12.9% CAGR, driven by China's investments in carbon capture, commitment to peak carbon by 2030, and carbon neutrality by 2060.

Regional Analysis

North America dominated the market in 2023, holding one-third of the share, supported by strong CCS incentives and large-scale pilot projects.

Europe continues to invest in BECCS to meet its climate neutrality targets by 2050.

Asia-Pacific shows the highest growth potential, with China, Japan, and South Korea integrating BECCS into national decarbonization strategies.

LAMEA is emerging, with projects exploring BECCS applications in biofuel production and industrial sectors.

Competitive Landscape

Key companies in the bioenergy with CCS market include: Chevron Corporation, Drax Group, Ørsted A/S, Saudi Aramco, Sekab, Clean Energy Systems, Climeworks, LanzaTech, Aker Solutions, and Babcock & Wilcox Enterprises.

In December 2024, environmental groups raised concerns about the UK's reliance on BECCS using imported biomass, sparking debates about its long-term carbon accounting and sustainability.

Companies are focusing on technological innovation, strategic partnerships, and pilot projects to scale BECCS globally.

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Conclusion

The bioenergy with CCS market is set for rapid growth as governments, industries, and energy companies accelerate their pursuit of carbon-negative solutions. While competition from traditional renewables poses challenges, the expansion of CCS infrastructure, tax incentives, and climate commitments ensures BECCS will remain a crucial part of the global decarbonization roadmap.

With its unique ability to deliver negative emissions, BECCS is emerging as a powerful tool to achieve net-zero targets, shaping the future of sustainable energy.

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Pawan Kumar, the CEO of Allied Market Research, is leading the organization toward providing high-quality data and insights. We are in professional corporate relations with various companies and this helps us in digging out market data that helps us generate accurate research data tables and confirms utmost accuracy in our market forecasting. Each and every data presented in the reports published by us is extracted through primary interviews with top officials from leading companies of domain concerned. Our secondary data procurement methodology includes deep online and offline research and discussion with knowledgeable professionals and analysts in the industry.

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