

## **Biochar Market Size, Share and Growth Analysis Report - Forecast Trends and Outlook (2025-2034)**

Market Report | 2025-08-13 | 170 pages | EMR Inc.

### **AVAILABLE LICENSES:**

- Single User License \$3599.00
- Five User License \$4249.00
- Corporate License \$5099.00

### **Report description:**

The biochar market attained a value of USD 702.00 Million in 2024 . The industry is expected to grow at a CAGR of 15.30% during the forecast period of 2025-2034. By 2034, the market is expected to reach USD 2914.94 Million .

The rising assistance in reducing greenhouse gas emissions is one of the key biochar market trends due to its ability to lower atmospheric CO<sub>2</sub> levels and support climate change mitigation goals. Governments and corporations increasingly invest in biochar projects to meet carbon neutrality targets and participate in carbon credit markets. In February 2025, the University of Valladolid collaborated with the Branosera Town Hall and the Santa Maria la Real Foundation to launch the Reactiva Branosera project in Spain to improve soil properties and enhance carbon sequestration. This makes biochar a powerful tool in climate strategies worldwide, driving demand in sectors focused on environmental responsibility and carbon offsetting.

Integration of biochar production with renewable energy sources is increasing sustainability and reducing operational costs. Coupling biochar technology with bioenergy plants maximizes biomass utilization, improving economic and environmental outcomes. In January 2023, Clean Energy Technologies partnered with Synergy Bioproducts to build a commercial-scale plant in Vermont to simultaneously generate renewable electricity and produce 1,500t of biochar annually from forestry biomass. This synergy is encouraging adoption in regions prioritizing clean energy and sustainable development.

Product diversification is favoring the biochar market revenue by expanding applications in agriculture, livestock, water treatment, and construction. Companies are developing tailored biochar products to serve as soil blends, animal feed additives, and carbon-negative building materials. In June 2025, ICL introduced BIOZ Jet, a liquid biochar extract using EVOIA's FYR technology to enhance early crop growth and resilience. This versatility attracts varied industries and supports broader adoption of sustainable carbon solutions globally.

Key Trends and Recent Developments

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: [support@scotts-international.com](mailto:support@scotts-international.com)

[www.scotts-international.com](http://www.scotts-international.com)

March 2025

Supercritical and Exomad Green expanded their collaboration with a multi-year agreement securing 130,000 tonnes of biochar carbon removal for 2025. Through this, Supercritical distributed these spot-market credits for simplifying procurement for businesses and demonstrating growing trust in high-quality and durable biochar carbon removal.

January 2025

Google partnered with India's Varaha and the United States-based startup Charm Industrial to purchase a combined 200,000 tonnes of biochar-based carbon removal credits by 2030. These agreements marked Google's largest investments in biochar, reinforcing its net zero strategy and validating biochar's role in scalable, verified carbon sequestration.

December 2024

ofi (Olam Food Ingredients), in partnership with LOTTE, Fuji Oil Co., and MC Agri Alliance, launched its first cocoa biochar pilot in Dankwa County, Ghana during the 2024/25 crop season. The initiative converted discarded cocoa pod husks into biochar by sequestering carbon and improving soil fertility while reducing farming emissions.

October 2024

India's Varaha and global registry Puro.Earth collaborated to launch India's first industrial biochar-based carbon credits, generated in Telangana from corn waste via gasification. The credits validated via robust MRV systems sequester CO<sub>2</sub> long term whilst improving soil fertility. This positioned Varaha as a regional leader in verified climate solutions.

#### Growing Demand for Sustainable Agriculture

Rising importance in sustainable agriculture to enhance soil fertility, moisture retention, and nutrient availability is shaping the biochar market forecast. Farmers increasingly adopt biochar to boost crop yields organically, reduce chemical fertilizer use, and improve soil health. In June 2025, ADRA Cambodia launched the V BIOCHAR initiative that integrated biochar with vermicompost to boost climate-smart agriculture across 71 villages. This trend is propelled by rising awareness of environmental impacts linked to conventional farming and growing demand for organic food products globally.

#### Waste Management and Circular Economy

Biochar production offers an innovative solution for managing agricultural residues, forestry waste, and organic byproducts. Converting waste biomass into valuable biochar reduces landfill use and methane emissions. In January 2025, Green Carbon and Thailand's RAOT launched a major project to convert rubber tree waste into large-scale carbon credits using biochar. Such instances support circular economy principles by transforming waste into resource, reducing environmental footprint, and promoting resource efficiency. Industries are also increasingly adopting biochar technologies to meet regulatory requirements and sustainability commitments related to waste reduction.

#### Government Policies and Subsidies

Supportive government regulations, subsidies, and grants are driving the biochar industry value, in terms of production and usage. Many countries are integrating biochar into national climate action plans, agricultural improvement programs, and waste management policies. In August 2024, the Japanese government selected several climate and environment projects in Southeast

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: [support@scotts-international.com](mailto:support@scotts-international.com)

[www.scotts-international.com](http://www.scotts-international.com)

Asia for government funding, including initiatives promoting biochar development. These projects aim to support sustainable agriculture and carbon reduction efforts in the region. Government backing also accelerates market growth by fostering innovation, infrastructure development, and widespread implementation.

#### Focus of Sustainable Sourcing

As industries and governments intensify efforts to reduce environmental impacts, sourcing biomass feedstock sustainably has become essential. Biochar production utilizes agricultural residues, forestry waste, or invasive plants that would otherwise go unused or contribute to emissions through open burning. In November 2024, Cameroon introduced a biochar project for converting banana peels into eco-charcoal as a sustainable alternative to traditional wood charcoal. This sustainable sourcing aligns with circular economy goals, reducing raw material waste and promoting low-carbon practices.

#### Growing R&D Efforts

Ongoing research and development advances for understanding mechanisms, optimal production methods, and application benefits are complimenting the biochar demand forecast. Universities, research institutions, and private companies are collaborating on biochar innovations, testing new feedstocks and applications. In November 2024, IIT Dhanbad partnered with Sentra.world to research biochar's application in steelmaking to reduce emissions and utilize surplus biomass. These efforts enhance product quality, reduce costs, and open new market segments, sustaining long-term growth in the biochar industry.

#### Biochar Industry Segmentation

The EMR's report titled "Biochar Market Report and Forecast 2025-2034" offers a detailed analysis of the market based on the following segments:

##### Market Breakup by Technology

- Pyrolysis
- Gasification
- Others

**Key Insight:** Pyrolysis is a dominant technology in the biochar market, due to its high efficiency and versatility. This process yields biochar, syngas, and bio-oil, making it economically attractive. Slow pyrolysis is largely preferred for maximizing biochar yield, especially in agricultural applications where soil enhancement is the focus. Driven by these benefits, companies are using proprietary pyrolysis methods to create high-quality, carbon-rich biochar for use in agriculture, carbon credits, and industrial applications. For instance, in August 2023, ONNU revealed plans to build the first of 16 United Kingdom pyrolysis hubs in Wye Valley for turning biomass into biochar to support the net zero transition.

##### Market Breakup by Application

- Agriculture?
  - ??- Livestock Farming
  - ??- General Farming
  - ??- Organic Farming
- Household
- Others

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

**Key Insight:** In agriculture, the biochar market value is growing with wide usage in livestock, general, and organic farming due to its soil-enhancing and carbon-sequestering properties. In livestock farming, biochar is added to animal feed and bedding to improve digestion, reduce methane emissions, and control odour. In general farming, biochar improves soil structure, boosts nutrient retention, and enhances crop yields. In organic farming, biochar aligns with sustainable practices, enriching compost and reducing the need for synthetic inputs. For instance, in September 2024, Samunnati's Carbon Incubator "Biochar" was unveiled to support Farmer Producer Organizations by converting farm residues into carbon-rich soil enhancers and integrating farmers into carbon credit markets.

#### Market Breakup by Region

- North America
- Europe
- Asia Pacific
- Latin America
- Middle East and Africa

**Key Insight:** The biochar market share in North America is driven by extensive agricultural use, environmental policies, and strong research initiatives. The United States leads with projects integrating biochar for soil improvement, waste management, and carbon credits. In October 2024, Sitos Group partnered with Treehouse California Almonds to establish a USD 9 million biochar facility in Delano, California. Additionally, government incentives support biochar in carbon sequestration programs. The market is also boosted by technological advancements in pyrolysis and gasification, making North America a hub for innovation and commercialization.

#### Biochar Market Share

##### Gasification to Boost Biochar Production

Gasification holds a major biochar market share due to its benefit of energy generation and carbon-rich byproduct production. In this process, biomass is partially combusted at high temperatures with limited oxygen, producing syngas for energy and biochar as a byproduct, driving innovations. In June 2024, Finland's VTT Technical Research Centre unveiled a flexible fluidized-bed gasification process to efficiently produce high-grade syngas and biochar, scalable via rigs for aligning with advanced renewable energy goals. Moreover, gasification systems are favored in regions aiming to integrate renewable energy with carbon sequestration.

##### Surging Biochar Applications in Households

The household segment of the biochar market is steadily growing, particularly in developing regions where clean cooking and waste management are priorities. Biochar-producing cookstoves allow households to generate their own biochar while cooking with biomass. This reduces indoor air pollution and fuel costs. Additionally, in rural India and parts of sub-Saharan Africa, small-scale farmers use household kilns to convert agricultural waste into biochar for improving food security. For instance, in October 2024, atmosfair received the world's first carbon removal credits for biochar produced from efficient wood gasification stoves, integrating biochar production into household cooking solutions.

#### Biochar Market Regional Analysis

##### Europe & Asia Pacific to Drive Biochar Industry Expansion

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

Europe holds a significant value in the biochar market, focusing on sustainability and circular economy goals. Germany and the United Kingdom are investing in biochar projects to reduce agricultural emissions and improve soil health. The stringent environmental regulations of European Union and carbon trading schemes are further encouraging biochar adoption, especially in organic and general farming sectors, contributing to decarbonization and enhanced soil productivity.

The Asia Pacific biochar market is rapidly growing, driven by surging awareness of environmental benefits and the dominance of sustainable agriculture. The region witnesses high demand in agriculture, where biochar is used to improve soil quality and boost crop yields. Additionally, biochar is popular in carbon sequestration efforts, as it stores carbon for long periods. In May 2025, the Union Ministry of India encouraged farmers to adopt biochar and mechanization to enhance crop yields and reduce input costs. This strong government support and greater interest in renewable energy are driving the regional market's expansion.

### Competitive Landscape

Key players in the biochar market are adopting several strategic approaches to strengthen their market presence and drive growth. With technological innovation, companies are investing in advanced pyrolysis and gasification technologies to enhance biochar yield, quality, and carbon sequestration potential. Strategic partnerships and collaborations are allowing firms to expand geographically and access new feedstock sources or distribution networks. Collaborations between biochar producers and agricultural or energy companies are also helping to integrate biochar into regenerative farming and circular economy models.

Another key strategy is certification and carbon credit validation, with companies aligning with leading carbon registries to ensure transparency and monetize carbon removal efforts. This boosts credibility and attracts climate-conscious investors and buyers. Product diversification is also gaining traction, with firms offering biochar tailored for soil health, water filtration, construction, and animal feed. Additionally, market players are focused on scaling production through modular or decentralized units to meet rising global demand efficiently.

### National Carbon Technologies LLC

Founded in 2009 and headquartered in Oakdale, the United States, National Carbon Technologies (NCT) operates North America's largest biocarbon production facility in Marquette, Michigan. With over 100 patents and a proprietary pyrolysis platform, the firm converts hundreds of thousands of tons of biomass into tailored biochar, enhancing soil, energy, metal, and water applications.

### Airex Energy Inc.

Founded in 2008 in Quebec, Canada, Airex Energy developed its proprietary CarbonFX torrefaction technology. The firm's Carbonity plant in Port Cartier, North America's largest biochar facility, aims for 350,000 t/year by 2035, enabling biocoal, biocarbon, and biochar production from forestry residues.

### Phoenix Energy

Phoenix Energy, founded in 1996 and headquartered in the United Kingdom, specializes in modular pyrolysis systems transforming agricultural and forestry residues into high-quality biochar. The company focuses on decentralized, scalable production units and strategic partnerships, enabling local biochar usage for soil enhancement and carbon sequestration in the United States.

### Carbonis GmbH&?Co.?KG

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: [support@scotts-international.com](mailto:support@scotts-international.com)

[www.scotts-international.com](http://www.scotts-international.com)

Based in Garrel, Germany and founded in 2016, Carbonis GmbH & Co. KG manufactures biochar through sustainable pyrolysis of forestry and agricultural residues while its carbon-negative biochar supports soil health, water treatment, and industrial carbon removal. The firm is recognized for aligning with EU environmental standards and advancing circular economies.

Other players in the biochar market are Biochar Supreme, LLC, and Soil Reef LLC, among others.

#### Key Features of the Biochar Market Report

- Comprehensive quantitative analysis of global biochar market size and growth trends.
- Detailed segmentation by technology, application, and geography for precise market insights.
- In-depth competitive landscape highlighting key players and their strategies.
- Forecasts through 2025 with CAGR projections and emerging market opportunities.
- Analysis of regulatory frameworks impacting biochar adoption worldwide.
- Insights on technological advancements driving product innovation and market expansion.

#### Why Choose Expert Market Research?

- Trusted source delivering accurate and data-driven market intelligence reports.
- Expert analysts provide actionable insights tailored to your business needs.
- Comprehensive global coverage with localized market trends and forecasts.
- Timely updates ensuring you stay ahead of evolving biochar market trends.

#### Call to Action

Download your free sample report on biochar market trends 2025 to explore detailed quantitative data, key drivers, and emerging opportunities. Stay informed with expert analysis and forecasts to make strategic decisions and capitalize on the growing demand in the biochar industry. Don't miss out on the latest market insights for successful business planning.

#### Biochar Market?Report Snapshots

#### Biochar?Companies

#### **Table of Contents:**

- 1 Executive Summary
  - 1.1 Market Size 2024-2025
  - 1.2 Market Growth 2025(F)-2034(F)
  - 1.3 Key Demand Drivers
  - 1.4 Key Players and Competitive Structure
  - 1.5 Industry Best Practices
  - 1.6 Recent Trends and Developments
  - 1.7 Industry Outlook
- 2 Market Overview and Stakeholder Insights
  - 2.1 Market Trends
  - 2.2 Key Verticals
  - 2.3 Key Regions

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

- 2.4 Supplier Power
- 2.5 Buyer Power
- 2.6 Key Market Opportunities and Risks
- 2.7 Key Initiatives by Stakeholders
- 3 Economic Summary
  - 3.1 GDP Outlook
  - 3.2 GDP Per Capita Growth
  - 3.3 Inflation Trends
  - 3.4 Democracy Index
  - 3.5 Gross Public Debt Ratios
  - 3.6 Balance of Payment (BoP) Position
  - 3.7 Population Outlook
  - 3.8 Urbanisation Trends
- 4 Country Risk Profiles
  - 4.1 Country Risk
  - 4.2 Business Climate
- 5 Global Biochar Market Analysis
  - 5.1 Key Industry Highlights
  - 5.2 Global Biochar Historical Market (2018-2024)
  - 5.3 Global Biochar Market Forecast (2025-2034)
  - 5.4 Global Biochar Market by Technology
    - 5.4.1 Pyrolysis
      - 5.4.1.1 Historical Trend (2018-2024)
      - 5.4.1.2 Forecast Trend (2025-2034)
    - 5.4.2 Gasification
      - 5.4.2.1 Historical Trend (2018-2024)
      - 5.4.2.2 Forecast Trend (2025-2034)
    - 5.4.3 Others
  - 5.5 Global Biochar Market by Application
    - 5.5.1 Agriculture
      - 5.5.1.1 Historical Trend (2018-2024)
      - 5.5.1.2 Forecast Trend (2025-2034)
      - 5.5.1.3 Breakup by Type
        - 5.5.1.3.1 Livestock Farming
        - 5.5.1.3.2 General Farming
        - 5.5.1.3.3 Organic Farming
    - 5.5.2 Household
      - 5.5.2.1 Historical Trend (2018-2024)
      - 5.5.2.2 Forecast Trend (2025-2034)
    - 5.5.3 Others
  - 5.6 Global Biochar Market by Region
    - 5.6.1 North America
      - 5.6.1.1 Historical Trend (2018-2024)
      - 5.6.1.2 Forecast Trend (2025-2034)
    - 5.6.2 Europe
      - 5.6.2.1 Historical Trend (2018-2024)
      - 5.6.2.2 Forecast Trend (2025-2034)

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

- 5.6.3 Asia Pacific
  - 5.6.3.1 Historical Trend (2018-2024)
  - 5.6.3.2 Forecast Trend (2025-2034)
- 5.6.4 Latin America
  - 5.6.4.1 Historical Trend (2018-2024)
  - 5.6.4.2 Forecast Trend (2025-2034)
- 5.6.5 Middle East and Africa
  - 5.6.5.1 Historical Trend (2018-2024)
  - 5.6.5.2 Forecast Trend (2025-2034)
- 6 Market Dynamics
  - 6.1 SWOT Analysis
    - 6.1.1 Strengths
    - 6.1.2 Weaknesses
    - 6.1.3 Opportunities
    - 6.1.4 Threats
  - 6.2 Porter's Five Forces Analysis
    - 6.2.1 Supplier's Power
    - 6.2.2 Buyer's Power
    - 6.2.3 Threat of New Entrants
    - 6.2.4 Degree of Rivalry
    - 6.2.5 Threat of Substitutes
  - 6.3 Key Indicators for Demand
  - 6.4 Key Indicators for Price
- 7 Value Chain Analysis
- 8 Price Analysis
  - 8.1 North America Historical Price Trends (2018-2024) and Forecast (2025-2034)
  - 8.2 Europe Historical Price Trends (2018-2024) and Forecast (2025-2034)
  - 8.3 China Historical Price Trends (2018-2024) and Forecast (2025-2034)
  - 8.4 Australia Historical Price Trends (2018-2024) and Forecast (2025-2034)
  - 8.5 Rest of the World Historical Price Trends (2018-2024) and Forecast (2025-2034)
- 9 Competitive Landscape
  - 9.1 Supplier Selection
  - 9.2 Key Global Players
  - 9.3 Key Regional Players
  - 9.4 Key Player Strategies
  - 9.5 Company Profiles
    - 9.5.1 National Carbon Technologies LLC
      - 9.5.1.1 Company Overview
      - 9.5.1.2 Product Portfolio
      - 9.5.1.3 Demographic Reach and Achievements
      - 9.5.1.4 Certifications
    - 9.5.2 Airex Energy Inc.
      - 9.5.2.1 Company Overview
      - 9.5.2.2 Product Portfolio
      - 9.5.2.3 Demographic Reach and Achievements
      - 9.5.2.4 Certifications
    - 9.5.3 Phoenix Energy

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

[www.scotts-international.com](http://www.scotts-international.com)

- 9.5.3.1 Company Overview
- 9.5.3.2 Product Portfolio
- 9.5.3.3 Demographic Reach and Achievements
- 9.5.3.4 Certifications
- 9.5.4 Biochar Supreme, LLC
- 9.5.4.1 Company Overview
- 9.5.4.2 Product Portfolio
- 9.5.4.3 Demographic Reach and Achievements
- 9.5.4.4 Certifications
- 9.5.5 Carbonis GmbH & Co. KG
- 9.5.5.1 Company Overview
- 9.5.5.2 Product Portfolio
- 9.5.5.3 Demographic Reach and Achievements
- 9.5.5.4 Certifications
- 9.5.6 Soil Reef LLC
- 9.5.6.1 Company Overview
- 9.5.6.2 Product Portfolio
- 9.5.6.3 Demographic Reach and Achievements
- 9.5.6.4 Certifications
- 9.5.7 Others

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: [support@scotts-international.com](mailto:support@scotts-international.com)

[www.scotts-international.com](http://www.scotts-international.com)

**Biochar Market Size, Share and Growth Analysis Report - Forecast Trends and Outlook (2025-2034)**

Market Report | 2025-08-13 | 170 pages | EMR Inc.

To place an Order with Scotts International:

- Print this form
- Complete the relevant blank fields and sign
- Send as a scanned email to support@scotts-international.com

**ORDER FORM:**

| Select license | License             | Price     |
|----------------|---------------------|-----------|
|                | Single User License | \$3599.00 |
|                | Five User License   | \$4249.00 |
|                | Corporate License   | \$5099.00 |
|                |                     | VAT       |
|                |                     | Total     |

\*Please circle the relevant license option. For any questions please contact support@scotts-international.com or 0048 603 394 346.

\*\* VAT will be added at 23% for Polish based companies, individuals and EU based companies who are unable to provide a valid EU Vat Numbers.

|               |                      |                               |   |
|---------------|----------------------|-------------------------------|---|
| Email*        | <input type="text"/> | Phone*                        | <input type="text"/>                    |
| First Name*   | <input type="text"/> | Last Name*                    | <input type="text"/>                    |
| Job title*    | <input type="text"/> |                               |   |
| Company Name* | <input type="text"/> | EU Vat / Tax ID / NIP number* | <input type="text"/>                    |
| Address*      | <input type="text"/> | City*                         | <input type="text"/>                    |
| Zip Code*     | <input type="text"/> | Country*                      | <input type="text"/>                    |
|               |                      | Date                          | <input type="text" value="2026-03-06"/> |
|               |                      | Signature                     |   |

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

