+357 96 030922
info@marketpublishers.com

Carbon Dioxide Based Chemicals and Polymers Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Type (Polycarbonate, Polyurethane, Polyethylene Carbonate, Others), By Application (Packaging, Coating, Adhesive & Sealant, Others), By Region & Competition, 2021-2031F

https://marketpublishers.com/r/C349FC70F6E1EN.html
Date: January 2026
Pages: 185
Price: US$ 4,500.00 (Single User License)
ID: C349FC70F6E1EN

Abstracts

The Global Carbon Dioxide Based Chemicals and Polymers Market is projected to grow from USD 3.11 Billion in 2025 to USD 5.68 Billion by 2031, registering a compound annual growth rate of 10.56%. This industrial sector utilizes captured carbon dioxide as a primary renewable feedstock to synthesize value-added products such as methanol, urea, polycarbonates, and polyurethanes. The market's expansion is fundamentally driven by the urgent global mandate for decarbonization to reduce industrial greenhouse gas emissions, alongside a strategic shift toward circular economy models that valorize waste carbon. Additionally, the critical need for feedstock diversification to decrease reliance on volatile fossil fuel markets serves as a powerful catalyst for long-term industry adoption.

According to the Renewable Carbon Initiative, the global production capacity for CO2-based products surpassed 1.3 million tonnes in 2024, signaling the sector's transition from pilot phases to tangible industrial scale. Despite this progress, the market faces a significant challenge regarding economic viability, primarily due to the high energy intensity and associated costs required to capture and convert carbon dioxide compared to established fossil-based production routes. This cost disparity remains a substantial impediment to widespread commercial competitiveness and rapid market expansion.

+357 96 030922
info@marketpublishers.com

Market Driver

The accelerating adoption of Carbon Capture and Utilization (CCU) technologies is fundamentally reshaping the market by securing necessary renewable feedstocks for industrial scale-up. As these technologies mature from pilot projects to operational facilities, they alleviate feedstock availability bottlenecks, allowing manufacturers to synthesize methanol, fuels, and polymers directly from industrial emissions. This transition is supported by a robust expansion in global infrastructure for capturing and managing carbon oxides; according to the International Energy Agency's 'CCUS Projects Database update' in May 2025, global operational capacity for carbon capture and storage has reached just over 50 million tonnes. Highlighting the sector's commercial viability, LanzaTech reported a full-year 2024 revenue of $49.6 million from its carbon recycling operations in 2025, validating the growing demand for waste carbon derivatives.

Simultaneously, the rising corporate focus on circular economy and sustainability goals is driving significant investment into CO2-based product portfolios. Major chemical conglomerates are aggressively integrating circular principles to reduce Scope 3 emissions, viewing carbon dioxide as a valuable alternative to fossil-based raw materials rather than waste. This strategic pivot is evident in the reallocation of R&D budgets towards sustainable innovations; for instance, BASF?s 'Report 2024' in March 2025 noted that the company generated approximately ?11 billion in sales from products launched in the last five years, with nearly 45% of its new patents focusing on sustainability. This commitment ensures that CO2-based chemicals are economically prioritized within long-term growth strategies.

Market Challenge

The fundamental impediment to the growth of the Global Carbon Dioxide Based Chemicals and Polymers Market is the substantial cost disparity between CO2-based production and established fossil-fuel pathways. Synthesizing chemicals from carbon dioxide requires significant energy inputs to break stable carbon-oxygen bonds, necessitating the use of expensive renewable hydrogen and advanced catalysts, which results in high operational and capital expenditures. Consequently, manufacturers face difficult profit margins because the final market prices for commodities like methanol and polymers are typically dictated by cheaper, mass-produced petrochemical alternatives. This "green premium" creates hesitation among investors, stalling the transition of technology from pilot phases to mass commercialization.

+357 96 030922
info@marketpublishers.com

This lack of economic competitiveness directly hampers the realization of planned projects, causing a disconnect between industry interest and actual deployment. According to the Global CCS Institute, the total capacity of carbon capture and storage facilities in the development pipeline increased by 60% in 2024 compared to the previous year. Despite this surge in developmental activity and project announcements, the conversion of this pipeline into operational industrial capacity remains slow. The financial burden of capture and conversion technologies prevents many of these proposed facilities from reaching Final Investment Decision (FID), thereby restricting the overall market expansion rate.

Market Trends

The scaling of CO2-derived methanol production capacities represents a pivotal trend in the market, driven by the shipping industry's aggressive shift towards low-carbon fuels and the chemical sector's demand for sustainable feedstock. Producers are moving beyond pilot demonstrations to large-scale industrial deployments, leveraging Power-to-Liquid technologies to synthesize e-methanol from captured biogenic carbon dioxide and renewable hydrogen. This surge in infrastructure is directly aimed at meeting regulatory mandates for green maritime fuels and reducing the carbon footprint of downstream plastics; according to the Methanol Institute's May 2025 update, the sector now tracks 220 renewable methanol projects worldwide with a total anticipated production capacity of 37.1 million tonnes by 2030.

Simultaneously, the rapid commercialization of CO2-based polycarbonates is altering the material landscape as major chemical companies integrate captured carbon into high-performance engineering plastics. This trend is characterized by substantial investments in manufacturing capabilities to produce polycarbonates that maintain the durability and optical properties of virgin materials while significantly lowering lifecycle emissions. Manufacturers are strategically expanding these product lines to serve the automotive and electronics sectors, which are increasingly specifying low-carbon materials for circularity compliance; for example, Covestro AG announced in January 2025 an investment in the low triple-digit million Euro range to expand its polycarbonate production capabilities in Ohio to meet this growing demand.

Key Market Players

Asahei Kasei Advanced Corporation

+357 96 030922
info@marketpublishers.com

Covestro AG

Saudi Arabian Oil Company

SK Innovation Co. Ltd

Lanzatech Global Inc

Empower Materials Inc

Cardia Bioplastics

Econic Technologies Ltd

China National Offshore Oil Corporation International Ltd

Avantium N.V.

Report Scope

In this report, the Global Carbon Dioxide Based Chemicals and Polymers Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Carbon Dioxide Based Chemicals and Polymers Market, By Type

Polycarbonate

Polyurethane

Polyethylene Carbonate

Others

Carbon Dioxide Based Chemicals and Polymers Market, By Application

Packaging

+357 96 030922
info@marketpublishers.com

Coating

Adhesive & Sealant

Others

Carbon Dioxide Based Chemicals and Polymers Market, By Region

North America

United States

Canada

Mexico

Europe

France

United Kingdom

Italy

Germany

Spain

Asia Pacific

China

India

Japan

Australia

South Korea

+357 96 030922
info@marketpublishers.com

South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Carbon Dioxide Based Chemicals and Polymers Market.

Available Customizations:

Global Carbon Dioxide Based Chemicals and Polymers Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

+357 96 030922
info@marketpublishers.com

Contents

+357 96 030922
info@marketpublishers.com

6. NORTH AMERICA CARBON DIOXIDE BASED CHEMICALS AND POLYMERS MARKET OUTLOOK

7. EUROPE CARBON DIOXIDE BASED CHEMICALS AND POLYMERS MARKET OUTLOOK

+357 96 030922
info@marketpublishers.com

8. ASIA PACIFIC CARBON DIOXIDE BASED CHEMICALS AND POLYMERS MARKET OUTLOOK

+357 96 030922
info@marketpublishers.com

9. MIDDLE EAST & AFRICA CARBON DIOXIDE BASED CHEMICALS AND POLYMERS MARKET OUTLOOK

+357 96 030922
info@marketpublishers.com

10. SOUTH AMERICA CARBON DIOXIDE BASED CHEMICALS AND POLYMERS MARKET OUTLOOK

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

15. COMPETITIVE LANDSCAPE

16. STRATEGIC RECOMMENDATIONS

17. ABOUT US & DISCLAIMER

+357 96 030922
info@marketpublishers.com

I would like to order

Product name: Carbon Dioxide Based Chemicals and Polymers Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Type (Polycarbonate, Polyurethane, Polyethylene Carbonate, Others), By Application (Packaging, Coating, Adhesive & Sealant, Others), By Region & Competition, 2021-2031F

Product link: https://marketpublishers.com/r/C349FC70F6E1EN.html

Price: US$ 4,500.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/C349FC70F6E1EN.html