

Direct Air Capture Market by Technology (Solid-DAC (S-DAC), Liquid-DAC (L-DAC), Electrochemical-DAC (E-DAC)), Source, Application (Carbon Capture and Storage (CCS), Carbon Capture, Utilization, and Storage) Region - Global Forecast to 2030

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Abstracts

The global direct air capture market is estimated to grow from USD 62 Million in 2023 to USD 1,727 Million by 2030; it is expected to record a CAGR of 60.9% during the forecast period. The Growing global awareness of the urgent need to mitigate climate change, supportive government policies and incentives drives the direct air capture market.

“Liquid-DAC: The largest segment of the direct air capture market, by technology “

Based on technology, the direct air capture market has been segmented into Solid-DAC (S-DAC), Liquid-DAC(L-DAC), Electrochemical-DAC (E-DAC), and others. The Liquid-DAC segment is expected to be the largest segment during the forecast period. The liquid solvents utilized in liquid-DAC have a higher CO₂ capture capacity per unit of volume. Liquid-DAC is also a less energy-intensive technology compared to other technologies like Solid-DAC (S-DAC).

“Carbon Capture, Utilization, and Storage (CCUS) is expected to be the largest segment during the forecast period based on application.”

By application, the direct air capture market has been split into two types: carbon capture, and storage (CCS) and carbon capture, utilization, and storage. The carbon capture, and storage (CCS) segment is expected to hold the largest market share during the forecast period. Carbon mineralization involves the enduring removal of

carbon dioxide by converting it into a solid mineral form, typically a carbonate, through a chemical reaction with specific rocks. A notable advantage of carbon mineralization lies in its capacity to securely sequester carbon, effectively preventing its re-release into the atmosphere.

“By source , electricity segment is expected to be the fastest growing segment during the forecast period.”

Based on the Source, the direct air capture market is segmented into electricity, and heat. The electricity segment is expected to be the fastest growing segment of the direct air capture market during the forecast period. Wind and solar rank as the second and the third largest power technologies. In 2022, electricity generated from solar PV has witnessed a 21% increase compared to the year 2021. Likewise, power generation from wind is forecasted to double its capacity by 2030 as compared to the year 2022.

With the increase in wind and solar based power generation capacity, the electricity segment is expected to grow.

“North America is expected to be the largest region in the direct air capture market.”

North America is expected to be the largest region in the direct air capture market during the forecast period. Growth is attributed to the supportive policies energy in the region. For example, Department of Energy (DOE) has allocated USD 3.5 billion for the establishment of four large-scale Direct Air Capture (DAC) hubs. Furthermore, The United States leads the world in generation of geothermal electricity. As of 2022, geothermal power plants were operational in seven states across the country, contributing approximately 0.4% (17 billion kilowatthours) to the total electricity generated at the U.S. utility scale.

Breakdown of Primaries:

In-depth interviews have been conducted with various key industry participants, subject-matter experts, C-level executives of key market players, and industry consultants, among other experts, to obtain and verify critical qualitative and quantitative information and assess future market prospects. The distribution of primary interviews is as follows:

By Designation: C-Level- 35%, Director Level- 20%, and Others- 45%

By Region: North America- 45%, Europe- 40%, and RoW – 15%,

Direct Air Capture Market by Technology (Solid-DAC (S-DAC), Liquid-DAC (L-DAC), Electrochemical-DAC (E-DAC)),...

Note: Others include sales managers, engineers, and regional managers.

The direct air capture market is dominated by a few major players that have a wide regional presence. The leading players in the direct air capture market are Climeworks (Switzerland), Carbon Engineering ULC. (Canada), Global Thermostat (US), Hierloom Carbon Technologies (US), and Skytree (Netherlands). The major strategy adopted by the players includes new product launches, partnerships, collaboration, merger, and investments & expansions.

Research Coverage:

The report defines, describes, and forecasts the global direct air capture market by technology, source, application and region. It also offers a detailed qualitative and quantitative analysis of the market. The report comprehensively reviews the major market drivers, restraints, opportunities, and challenges. It also covers various important aspects of the market. These include an analysis of the competitive landscape, market dynamics, market estimates in terms of value, and future trends in the direct air capture market.

Key Benefits of Buying the Report

Increasing emphasis on net zero emission and supportive government policies are few of the key factors driving the direct air capture market. Factors such as energy intensity of direct air capture systems restrain the growth of the market. The growing energy transition towards reducing carbon emission is expected to present lucrative opportunities for the players operating in the direct air capture market. The limited infrastructure poses a major challenge for the players, especially for emerging players operating in the direct air capture market.

Product Development/ Innovation: The direct air capture market is witnessing significant product development and innovation, driven by the growing demand for environmentally friendly, safe and sustainable products. Companies are investing in developing advanced direct air capture technologies such as membrane-based technology.

Market Development: Carbon Engineering and Air Canada, airline of Canada signed Memorandum of Understanding (MOU) to investigate commercial prospects related to sustainable aviation fuel, carbon removal, and

decarbonization technology.

Market Diversification: Skytree launched the Skytree Cumulus, the company's inaugural Direct Air Capture (DAC) modular unit. Skytree Cumulus collects CO₂ from the surrounding atmosphere, providing indoor farmers and greenhouse cultivators access to it for food, algae, vaccine, and flower production.

Competitive Assessment: In-depth assessment of market shares, growth strategies, and service offerings of leading players, like include Climeworks (Switzerland), Carbon Engineering ULC. (Canada), Global Thermostat (US), Hierloom Carbon Technologies (US), and Skytree (Netherlands), among others in the direct air capture market.

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