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Global Direct Air Capture (DAC or DACCS) Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Direct Air Capture (DAC or DACCS) market size is expected to reach $ million by 2032, rising at a market growth of %CAGR during the forecast period (2026-2032).

The global Direct Air Capture (DAC or DACCS) market is entering a phase of accelerated industrialization and capital deployment. Global installed capture capacity is projected to expand from 47.08 K MT in 2025 to 940 million MT by 2050, representing a CAGR of 36.16% during 2026–2050.

At present, the cost of Direct Air Capture (DAC) remains relatively high, typically ranging between USD 400–1000 per ton of CO? captured, depending on technology pathway, energy pricing, plant scale, and financing structure. Industry participants are actively pursuing cost-reduction strategies through technological optimization, sorbent material improvements, modular manufacturing, process integration, and renewable energy coupling. As commercial deployment expands and large-scale facilities move from pilot to industrial scale, learning curve effects and supply chain standardization are expected to drive significant efficiency gains. The long-term industry objective is to reduce DAC capture costs to approximately USD 150 per ton by 2050. Achieving this target would materially enhance project bankability, accelerate large-scale carbon removal deployment, and position DAC as a structurally competitive solution within global net-zero transition pathways.

Direct Air Capture (DAC or DACCS, Direct Air Carbon Capture and Storage) refers to an engineered process and integrated equipment system designed to extract carbon dioxide (CO?) directly from ambient atmospheric air. DAC systems draw large volumes of air through chemical or physical capture media, including liquid solvents or solid

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sorbents, which selectively bind CO? molecules. The captured CO? is then released in a concentrated stream through regeneration processes, enabling subsequent compression, transport, and either permanent geological sequestration or industrial utilization. As a negative emissions technology, DAC plays a critical role in carbon removal strategies by reducing existing atmospheric CO? concentrations and supporting net-zero and carbon neutrality objectives.

Upstream, DAC relies on suppliers of sorbent materials, chemical reagents, fans, heat exchangers, compressors, and control systems. Midstream, equipment manufacturers integrate capture modules, air contactors, regeneration units, and purification systems into modular or fixed installations. Downstream, the captured CO? is sent to geological storage (DAC+CCS) or converted for use in fuels, chemicals, building materials, or food and beverage applications, making DAC a key technology in long-term carbon removal and climate mitigation strategies.

From a product technology perspective, the market is primarily structured around Physical Absorption in Liquid Media and Adsorption on Solid Media. In 2025, Adsorption on Solid Media dominates the global landscape, accounting for approximately 98% of total installed capacity. This dominance is driven by the modular architecture, scalability, lower water dependency, and faster deployment cycles associated with solid sorbent systems, which have been widely adopted by early commercial DAC operators. However, the technology balance is expected to shift significantly in 2026. Occidental Petroleum (Oxy), through Carbon Engineering, is preparing to commission a 500,000-ton-per-year Physical Absorption in Liquid Media facility, a deployment scale that materially alters the capacity distribution across technologies. As a result, liquid-based systems are projected to gain technological leadership by capacity market share in 2026, marking a structural inflection point in the global DAC market.

From an application perspective, DAC deployment is concentrated across Food and Beverage, Greenhouse, and Energy, Fuel, etc. segments. Among these, Energy, Fuel, etc. is the dominant demand driver, accounting for approximately 80% of global DAC carbon capture capacity in 2025. This segment includes synthetic fuels, carbon-neutral hydrocarbons, geological sequestration, and industrial carbon utilization pathways, all of which require large-scale, durable carbon removal volumes. Food and Beverage and Greenhouse applications represent smaller but commercially stable niches, primarily utilizing high-purity CO? for carbonation and controlled-environment agriculture. The strong weighting toward Energy, Fuel, etc. underscores the alignment of DAC with energy transition strategies rather than solely specialty CO? supply markets.

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The competitive landscape remains highly concentrated and capital intensive. Leading global participants include Climeworks, Global Thermostat, Heirloom, Octavia Carbon, Avnos, Mission Zero Technologies, and Carbon Engineering. The top five companies collectively account for approximately 98% of total global capacity in 2025. This concentration reflects high technological barriers, significant capital expenditure requirements, long development cycles, and the early-stage clustering of commercial projects among a limited number of technology developers.

Market driving forces are rooted in tightening climate policy frameworks, the rapid expansion of voluntary and compliance carbon markets, and increasing corporate net-zero commitments that require durable carbon removal solutions beyond emission avoidance. Technological learning curves, engineering standardization, and modular manufacturing are progressively reducing unit capture costs, thereby improving project bankability. Government incentive programs, including tax credits, grants, and carbon contracts for difference, are further enhancing investment visibility. Additionally, growing integration between DAC facilities and renewable energy infrastructure supports long-term decarbonized energy ecosystems, reinforcing the strategic relevance of DAC equipment within future carbon management systems.

Market restraints remain material despite strong growth expectations. DAC systems are capital intensive, with high upfront investment requirements and long payback periods that depend heavily on carbon pricing mechanisms and policy certainty. Energy consumption intensity remains a critical cost variable, particularly in regions with volatile electricity prices. Water usage considerations for certain technology pathways may constrain deployment in arid geographies. Infrastructure readiness for CO? transport and permanent storage is uneven across regions, creating bottlenecks in full value chain development. Furthermore, the highly concentrated competitive structure and limited number of bankable large-scale projects increase investment risk during the early commercialization phase.

This report studies the global Direct Air Capture (DAC or DACCS) production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Direct Air Capture (DAC or DACCS) and provides market size (US$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of Direct Air Capture (DAC or DACCS) that contribute to its increasing demand across many markets.

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Highlights and key features of the study

Global Direct Air Capture (DAC or DACCS) total production and demand, 2021-2032, (K MT)

Global Direct Air Capture (DAC or DACCS) total production value, 2021-2032, (USD Million)

Global Direct Air Capture (DAC or DACCS) production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (K MT), (based on production site)

Global Direct Air Capture (DAC or DACCS) consumption by region & country, CAGR, 2021-2032 & (K MT)

U.S. VS China: Direct Air Capture (DAC or DACCS) domestic production, consumption, key domestic manufacturers and share

Global Direct Air Capture (DAC or DACCS) production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (K MT)

Global Direct Air Capture (DAC or DACCS) production by Type, production, value, CAGR, 2021-2032, (USD Million) & (K MT)

Global Direct Air Capture (DAC or DACCS) production by Application, production, value, CAGR, 2021-2032, (USD Million) & (K MT)

This report profiles key players in the global Direct Air Capture (DAC or DACCS) market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Oxy (Carbon Engineering), ClimeWorks, Zero Carbon Systems (Global Thermostat), Mission Zero Technologies, Heirloom, Avnos, Kawasaki Heavy Industries, Octavia Carbon, Spiritus, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World Direct Air Capture (DAC or DACCS) market

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Detailed Segmentation:

Each section contains quantitative market data including market by value (US$ Millions), volume (production, consumption) & (K MT) and average price (US$/MT) by manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global Direct Air Capture (DAC or DACCS) Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Direct Air Capture (DAC or DACCS) Market, Segmentation by Type:

Physical Absorption in Liquid Media

Adsorption on Solid Media

Global Direct Air Capture (DAC or DACCS) Market, Segmentation by Business Model:

Carbon Utilization

Carbon Storage

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Global Direct Air Capture (DAC or DACCS) Market, Segmentation by Energy Input Perspective:

- High-Temperature Regeneration
- Low-Temperature Heat and Vacuum Regeneration (TVSA and VSA)

Global Direct Air Capture (DAC or DACCS) Market, Segmentation by Application:

- Food and Beverage
- Greenhouse
- Energy, Fuel, etc.

Companies Profiled:

- Oxy (Carbon Engineering)
- ClimeWorks
- Zero Carbon Systems (Global Thermostat)
- Mission Zero Technologies
- Heirloom
- Avnos
- Kawasaki Heavy Industries
- Octavia Carbon
- Spiritus

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Key Questions Answered:

1. How big is the global Direct Air Capture (DAC or DACCS) market?
2. What is the demand of the global Direct Air Capture (DAC or DACCS) market?
3. What is the year over year growth of the global Direct Air Capture (DAC or DACCS) market?
4. What is the production and production value of the global Direct Air Capture (DAC or DACCS) market?
5. Who are the key producers in the global Direct Air Capture (DAC or DACCS) market?
6. What are the growth factors driving the market demand?

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Contents

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4 UNITED STATES VS CHINA VS REST OF THE WORLD

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5 MARKET ANALYSIS BY TYPE

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9 COMPANY PROFILES

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List Of Tables

LIST OF TABLES

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List Of Figures

LIST OF FIGURES

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