

The Global Direct Air Carbon Capture and Storage (DACCS) Market 2024-2045

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Abstracts

Direct Air Carbon Capture and Storage (DACCS) is an emerging carbon dioxide removal strategy that uses advanced, mainly proprietary technology to capture and store or utilize carbon dioxide directly from the ambient air. As DACCS technologies continue to advance and scale up, they offer substantial opportunities for businesses, investors, and policymakers. Captured CO₂ can be permanently stored in deep geological formations and depleted aquifers. Novel technologies can trap CO₂ in rocks, via mineralization. Captured CO₂ can also be used in a range of applications. The ability to sell or convert CO₂ into useful products provides a commercialization pathway for DACCS, with products including:

Fuels

Chemicals, plastics, and polymers

Construction materials

Biological yield-boosting

Food and feed production

Enhanced oil recovery (EOR)

This market report provides a comprehensive analysis of the latest trends, innovations, and growth opportunities in the DACCS industry, focusing on key aspects such as CO₂ capture mechanisms, technologies, markets, and key players. The report discusses the

advantages of DACCS as a CO₂ removal strategy, including its scalability, flexibility in siting, and potential for integration with renewable energy sources. It also explores the current state of DACCS deployment and the factors driving its growth, such as increasing public and private sector investment, supportive policies, and the growing demand for carbon removal solutions.

CO₂ Capture Mechanisms and Technologies The report delves into the various CO₂ capture and separation mechanisms employed in DACCS, including sorbent-based and solvent-based systems. It also examines the different technologies used in DACCS, such as solid sorbents, liquid sorbents, and passive direct air capture (PDAC). The report provides a detailed comparison of these technologies, highlighting their advantages, limitations, and potential for future development. While the market is in its infancy, with a relatively small amount of DACCS plants in operation (mainly in Europe, USA, Canada and Japan), the potential of these technologies will play a growing role in the carbon capture market. Companies are being incentivized to develop the technology with the US government offering >\$3.5 billion in grants.

Report contents include:

Analysis of the overall market for Carbon Capture, Utilization and Storage (CCUS).

Costs for DACCS, current and targeted.

Pros and cons of DACCS.

In-depth DACCS technology analysis.

Comparative analysis of DAC to other carbon capture tech.

Commercialization and plants including production capacities.

Markets for CO₂ captured by DACCS. For each sector, the report identifies key market drivers, trends, and opportunities. It also provides market size estimates and forecasts from 2024 to 2045, segmented by technology and application.

Markets covered include:

Fuels

Chemicals, plastics, and polymers

Construction materials

Biological yield-boosting

Food and feed production

Enhanced oil recovery (EOR)

Market challenges. The report analyzes the costs associated with DACCS, including capital expenditures (CAPEX) and operating expenditures (OPEX). It breaks down the cost contributions of various components in DACCS systems and provides a comparison of cost estimates for different technologies. The report also identifies the main challenges facing the DACCS industry, such as high energy requirements, the need for cost reductions, and the development of supportive policies and infrastructure.

Profiles of 66 companies involved in DACCS. Companies profiled include Airhive, AspiraDAC, Carbofex Oy, CarbonCapture Inc., Charm Industrial, Climeworks, Holocene, 44.01, Mission Zero Technologies, Noya, Occidental Petroleum Corp., and Removr. Company profiles cover technology offerings, key projects, partnerships, and competitive strengths.

Contents

1 ABBREVIATIONS

2 RESEARCH METHODOLOGY

- 2.1 Definition
- 2.2 Technology Readiness Level (TRL)
- 2.3 Key market barriers for CCUS

3 INTRODUCTION

- 3.1 Purpose of carbon dioxide removal
- 3.2 What is CCUS?
 - 3.2.1 Carbon Capture
 - 3.2.1.1 Source Characterization
 - 3.2.1.2 Purification
 - 3.2.1.3 CO₂ capture technologies
 - 3.2.2 Carbon Utilization
 - 3.2.2.1 CO₂ utilization pathways
 - 3.2.3 Carbon storage
 - 3.2.3.1 Passive storage
 - 3.2.3.2 Enhanced oil recovery
- 3.3 Direct Air Capture and Storage (DACCS) Market
- 3.4 What is Carbon Dioxide Removal (CDR)?
 - 3.4.1 Nature-based CDR Solutions
 - 3.4.2 Technological CDR Solutions
 - 3.4.3 Technology Readiness Level (TRL): Carbon Dioxide Removal Methods
 - 3.4.4 Carbon Credits
 - 3.4.4.1 Market Demand and Prices
 - 3.4.5 DACCS advantages
- 3.5 Market map
- 3.6 Commercial CCUS facilities and projects
 - 3.6.1 Facilities
 - 3.6.1.1 Operational
 - 3.6.1.2 Under development/construction
- 3.7 CCUS Value Chain
- 3.8 Transporting CO₂
 - 3.8.1 Methods of CO₂ transport

- 3.8.1.1 Pipeline
- 3.8.1.2 Ship
- 3.8.1.3 Road
- 3.8.1.4 Rail
- 3.8.2 Safety
- 3.9 Costs
 - 3.9.1 Cost of CO₂ transport
- 3.10 Carbon credits

4 CARBON CAPTURE

- 4.1 CO₂ capture from point sources
 - 4.1.1 Transportation
 - 4.1.2 Global point source CO₂ capture capacities
 - 4.1.3 By source
 - 4.1.4 By endpoint
- 4.2 Main carbon capture processes
 - 4.2.1 Materials
 - 4.2.2 Post-combustion
 - 4.2.3 Oxy-fuel combustion
 - 4.2.4 Liquid or supercritical CO₂: Allam-Fetvedt Cycle
 - 4.2.5 Pre-combustion

5 DIRECT AIR CAPTURE AND STORAGE (DACCS)

- 5.1 Technology description
 - 5.1.1 Sorbent-based CO₂ Capture
 - 5.1.2 Solvent-based CO₂ Capture
 - 5.1.3 DAC Solid Sorbent Swing Adsorption Processes
 - 5.1.4 Electro-Swing Adsorption (ESA) of CO₂ for DAC
 - 5.1.5 Solid and liquid DAC
- 5.2 Advantages of DAC
- 5.3 Deployment
- 5.4 Point source carbon capture versus Direct Air Capture
- 5.5 Technologies
 - 5.5.1 Solid sorbents
 - 5.5.2 Liquid sorbents
 - 5.5.3 Liquid solvents
 - 5.5.4 Airflow equipment integration

- 5.5.5 Passive Direct Air Capture (PDAC)
- 5.5.6 Direct conversion
- 5.5.7 Co-product generation
- 5.5.8 Low Temperature DAC
- 5.5.9 Regeneration methods
- 5.6 Electricity and Heat Sources
- 5.7 Commercialization and plants
- 5.8 Metal-organic frameworks (MOFs) in DAC
- 5.9 DAC plants and projects-current and planned
- 5.10 Capacity forecasts
- 5.11 Costs
- 5.12 Market challenges for DAC
- 5.13 Market prospects for direct air capture
- 5.14 Players and production
- 5.15 Co₂ utilization pathways
- 5.16 Markets for Direct Air Capture and Storage (DACCS)
 - 5.16.1 Fuels
 - 5.16.1.1 Overview
 - 5.16.1.2 Production routes
 - 5.16.1.3 Methanol
 - 5.16.1.4 Algae based biofuels
 - 5.16.1.5 CO₂-fuels from solar
 - 5.16.1.6 Companies
 - 5.16.1.7 Challenges
 - 5.16.2 Chemicals, plastics and polymers
 - 5.16.2.1 Overview
 - 5.16.2.2 Scalability
 - 5.16.2.3 Plastics and polymers
 - 5.16.2.4 Urea production
 - 5.16.2.5 Inert gas in semiconductor manufacturing
 - 5.16.2.6 Carbon nanotubes
 - 5.16.2.7 Companies
 - 5.16.3 Construction materials
 - 5.16.3.1 Overview
 - 5.16.3.2 CCUS technologies
 - 5.16.3.3 Carbonated aggregates
 - 5.16.3.4 Additives during mixing
 - 5.16.3.5 Concrete curing
 - 5.16.3.6 Costs

- 5.16.3.7 Companies
- 5.16.3.8 Challenges
- 5.16.4 CO₂ Utilization in Biological Yield-Boosting
 - 5.16.4.1 Overview
 - 5.16.4.2 Applications
 - 5.16.4.3 Companies
- 5.16.5 Food and feed production
- 5.16.6 CO₂ Utilization in Enhanced Oil Recovery
 - 5.16.6.1 Overview
 - 5.16.6.2 CO₂-EOR facilities and projects
- 5.17 Storage
 - 5.17.1 CO₂ storage sites
 - 5.17.1.1 Storage types for geologic CO₂ storage
 - 5.17.1.2 Oil and gas fields
 - 5.17.1.3 Saline formations
 - 5.17.2 Global CO₂ storage capacity
 - 5.17.3 Costs

6 COMPANY PROFILES 156 (66 COMPANY PROFILES)

7 REFERENCES

12. LIST OF TABLES

- Table 1. Abbreviations.
- Table 2. Technology Readiness Level (TRL) Examples.
- Table 3. Key market barriers for CCUS.
- Table 4. CO₂ utilization and removal pathways
- Table 5. Approaches for capturing carbon dioxide (CO₂) from point sources.
- Table 6. CO₂ capture technologies.
- Table 7. Advantages and challenges of carbon capture technologies.
- Table 8. Overview of commercial materials and processes utilized in carbon capture.
- Table 9. Benchmarking comparison of various CDR technologies based on key parameters.
- Table 10. Global commercial CCUS facilities-in operation.
- Table 11. Global commercial CCUS facilities-under development/construction.
- Table 12. Methods of CO₂ transport.
- Table 13. Carbon capture, transport, and storage cost per unit of CO₂
- Table 14. Estimated capital costs for commercial-scale carbon capture.

- Table 15. DACCS carbon credit revenue forecast (million US\$), 2024-2045.
- Table 16. Point source examples.
- Table 17. Assessment of carbon capture materials
- Table 18. Chemical solvents used in post-combustion.
- Table 19. Commercially available physical solvents for pre-combustion carbon capture.
- Table 20. DAC technologies.
- Table 21. Advantages and disadvantages of DAC.
- Table 22. Advantages of DAC as a CO₂ removal strategy.
- Table 23. Companies developing airflow equipment integration with DAC.
- Table 24. Companies developing Passive Direct Air Capture (PDAC) technologies.
- Table 25. Companies developing regeneration methods for DAC technologies.
- Table 26. DAC companies and technologies.
- Table 27. DAC technology developers and production.
- Table 28. DAC projects in development.
- Table 29. DACCS carbon removal capacity forecast (million metric tons of CO₂ per year), 2024-2045, base case.
- Table 30. DACCS carbon removal capacity forecast (million metric tons of CO₂ per year), 2030-2045, optimistic case.
- Table 31. Costs summary for DAC.
- Table 32. Typical cost contributions of the main components of a DACCS system.
- Table 33. Cost estimates of DAC.
- Table 34. Challenges for DAC technology.
- Table 35. DAC companies and technologies.
- Table 36. Example CO₂ utilization pathways.
- Table 37. Markets for Direct Air Capture and Storage (DACCS).
- Table 38. Market overview for CO₂ derived fuels.
- Table 39. Microalgae products and prices.
- Table 40. Main Solar-Driven CO₂ Conversion Approaches.
- Table 41. Companies in CO₂-derived fuel products.
- Table 42. Commodity chemicals and fuels manufactured from CO₂.
- Table 43. CO₂ utilization products developed by chemical and plastic producers.
- Table 44. Companies in CO₂-derived chemicals products.
- Table 45. Carbon capture technologies and projects in the cement sector
- Table 46. Companies in CO₂ derived building materials.
- Table 47. Market challenges for CO₂ utilization in construction materials.
- Table 48. Companies in CO₂ Utilization in Biological Yield-Boosting.
- Table 49. CO₂ sequestering technologies and their use in food.
- Table 50. Applications of CCS in oil and gas production.
- Table 51. Storage and utilization of CO₂.

- Table 52. Global depleted reservoir storage projects.
Table 53. Global CO₂ ECBM storage projects.
Table 54. CO₂ EOR/storage projects.
Table 55. Global storage sites-saline aquifer projects.
Table 56. Global storage capacity estimates, by region.

12. LIST OF FIGURES

- Figure 1. Schematic of CCUS process.
Figure 2. Pathways for CO₂ utilization and removal.
Figure 3. A pre-combustion capture system.
Figure 4. Carbon dioxide utilization and removal cycle.
Figure 5. Various pathways for CO₂ utilization.
Figure 6. Example of underground carbon dioxide storage.
Figure 7. Carbon Capture, Utilization, & Storage (CCUS) Market Map.
Figure 8. CCS deployment projects, historical and to 2035.
Figure 9. Existing and planned CCS projects.
Figure 10. CCUS Value Chain.
Figure 11. Transport of CCS technologies.
Figure 12. Railroad car for liquid CO₂ transport
Figure 13. Estimated costs of capture of one metric ton of carbon dioxide (Co₂) by sector.
Figure 14. Cost of CO₂ transported at different flowrates
Figure 15. Cost estimates for long-distance CO₂ transport.
Figure 16. CO₂ capture and separation technology.
Figure 17. Global capacity of point-source carbon capture and storage facilities.
Figure 18. Global carbon capture capacity by CO₂ source, 2021.
Figure 19. Global carbon capture capacity by CO₂ source, 2030.
Figure 20. Global carbon capture capacity by CO₂ endpoint, 2021 and 2030.
Figure 21. Post-combustion carbon capture process.
Figure 22. Postcombustion CO₂ Capture in a Coal-Fired Power Plant.
Figure 23. Oxy-combustion carbon capture process.
Figure 24. Liquid or supercritical CO₂ carbon capture process.
Figure 25. Pre-combustion carbon capture process.
Figure 26. CO₂ captured from air using liquid and solid sorbent DAC plants, storage, and reuse.
Figure 27. Global CO₂ capture from biomass and DAC in the Net Zero Scenario.
Figure 28. Potential for DAC removal versus other carbon removal methods.
Figure 29. DAC technologies.

- Figure 30. Schematic of Climeworks DAC system.
- Figure 31. Climeworks' first commercial direct air capture (DAC) plant, based in Hinwil, Switzerland.
- Figure 32. Flow diagram for solid sorbent DAC.
- Figure 33. Direct air capture based on high temperature liquid sorbent by Carbon Engineering.
- Figure 34. Global capacity of direct air capture facilities.
- Figure 35. Global map of DAC and CCS plants.
- Figure 36. Schematic of costs of DAC technologies.
- Figure 37. DAC cost breakdown and comparison.
- Figure 38. Operating costs of generic liquid and solid-based DAC systems.
- Figure 39. Co₂ utilization pathways and products.
- Figure 40. Conversion route for CO₂-derived fuels and chemical intermediates.
- Figure 41. Conversion pathways for CO₂-derived methane, methanol and diesel.
- Figure 42. CO₂ feedstock for the production of e-methanol.
- Figure 43. Schematic illustration of (a) biophotosynthetic, (b) photothermal, (c) microbial-photoelectrochemical, (d) photosynthetic and photocatalytic (PS/PC), (e) photoelectrochemical (PEC), and (f) photovoltaic plus electrochemical (PV+EC) approaches for CO₂ c
- Figure 44. Audi synthetic fuels.
- Figure 45. Conversion of CO₂ into chemicals and fuels via different pathways.
- Figure 46. Conversion pathways for CO₂-derived polymeric materials
- Figure 47. Conversion pathway for CO₂-derived building materials.
- Figure 48. Schematic of CCUS in cement sector.
- Figure 49. Carbon8 Systems' ACT process.
- Figure 50. CO₂ utilization in the Carbon Cure process.
- Figure 51. Algal cultivation in the desert.
- Figure 52. Example pathways for products from cyanobacteria.
- Figure 53. Typical Flow Diagram for CO₂ EOR.
- Figure 54. Large CO₂-EOR projects in different project stages by industry.
- Figure 55. CO₂ Storage Overview - Site Options
- Figure 56. CO₂ injection into a saline formation while producing brine for beneficial use.
- Figure 57. Subsurface storage cost estimation.
- Figure 58. Schematic of carbon capture solar project.
- Figure 59. Carbonminer DAC technology.
- Figure 60. Carbon Blade system.
- Figure 61. Direct Air Capture Process.
- Figure 62. Orca facility.
- Figure 63. Holy Grail DAC system.

- Figure 64. Infnitree swing method.
- Figure 65. Audi/Krajete DAC unit.
- Figure 66. Neustark modular plant.
- Figure 67. 3D model of 100,000 tpa DAC plant
- Figure 68. RepAir technology.
- Figure 69. Skytree pilot DAC unit.
- Figure 70. Soletair Power unit.

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