

Carbon Mineralization Systems

ANMD-MRS14-139 · Carbon Management & Climate Technologies

A Global Sustainability Due Diligence & Market Research Study

History 2020–2024 · Base Year 2025 · Forecast 2025–2032 · Outlooks 2035 / 2040 / 2050 · Currency US\$

WHY THIS REPORT

Carbon mineralization systems lock CO₂ permanently into stable carbonate minerals — the most durable form of carbon removal, storing carbon for geologic timescales. The technology spans enhanced rock weathering, in-situ and ex-situ mineralization, mineral carbonation in building materials and ocean-alkalinity enhancement. This decision-grade study sizes the global market three ways — value, capture capacity and units — across mineralization route, deployment, application and end-user, across seven regions and four scenarios to 2032, with outlooks to 2050.

SUSTAINABILITY & SDG IMPACT — THE ANMD LENS

Sustainability is this report's backbone — permanence is mineralization's defining strength. It offers the most durable storage among removal pathways, while MRV rigour and ecological caution (especially for ocean approaches) remain essential to a credible claim.

Mapped Sustainable Development Goals:

SDG 13 Climate Action	SDG 9 Industry & Innovation	SDG 12 Responsible Consumption	SDG 7 Affordable Clean Energy	SDG 17 Partnerships for Goals
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Measurable sustainability outcomes assessed:

- Permanent, leak-proof, geologic-timescale CO₂ storage
- Premium removal credits and materials / soil co-benefits
- Enhanced-weathering agricultural co-benefits
- MRV and quantification integrity and ecological impact as material risks

Framework alignment: Double materiality mapped to GRI, SASB, ISSB, TCFD, TNFD, CSRD and the EU Taxonomy, with greenwashing and SDG-washing screens applied throughout.

WHAT'S INSIDE AT A GLANCE

53 Chapters	9 Report Parts	7 Regions Covered	40+ Country Markets
2025–32 Forecast Horizon	4 Forward Scenarios	25+ Companies Profiled	5 SDGs Mapped

REPORT COVERAGE

Geographic scope: North America, Europe, Asia Pacific, Latin America, Africa, Middle East and Rest of World — with named country intelligence. North America is the enhanced-weathering leader (United States) on agricultural deployments and MRV; Europe and Iceland drive in-situ basalt mineralization; the Middle East scales on Oman's peridotite geology; other regions assessed on their own merits.

MARKET OVERVIEW

From research to verified removal projects — where storage goes permanent.

Carbon mineralization is moving from research to verified removal projects, prized for permanence. Demand is driven by durable-removal appetite, premium credits and materials-sector decarbonisation, against MRV complexity, slow reaction timelines and scale-up cost. The market is read three ways — value, capture capacity and units — and forecast under four scenarios, each region reported separately.

- **North America leads enhanced weathering** — agricultural enhanced-rock-weathering deployments, MRV innovation and removal buyers
- **Europe and Iceland drive in-situ** — Iceland's basalt mineralization and European materials-carbonation projects
- **Middle East scales on geology** — Oman's peridotite mineralization potential and sovereign removal investment
- **Permanence is the differentiator** — geologic-timescale storage gives mineralization the highest durability rating among removal pathways

REGIONAL OUTLOOK

Across seven reporting regions, the report separates deployment leaders from high-growth and emerging markets — each profiled in full rather than aggregated into Rest of World.

Region	Stage	Lead Country Markets & Drivers
North America	Weathering leader	United States, Canada — enhanced weathering, MRV, removal buyers
Europe	In-situ leader	Iceland, United Kingdom — basalt in-situ, materials carbonation
Middle East	Geology-driven	Oman, UAE — peridotite mineralization, sovereign investment
Asia Pacific	Developing	India, Australia — weathering and materials potential
Latin America	Emerging	Brazil — agricultural weathering potential
Africa	Frontier	Kenya, South Africa — mineral resources, removal potential

KEY MARKET DRIVERS & RESTRAINTS

Drivers	Restraints
• Durable-removal demand & premium credits • Permanent, leak-proof storage • Materials-sector carbonation co-benefits • Enhanced-weathering agricultural co-benefits • Abundant mineral & basalt resources	• MRV & quantification complexity • Slow reaction & verification timelines • Energy & rock-grinding requirements • Ocean-alkalinity ecological uncertainty • Cost & scale-up challenges

SEGMENTATION SNAPSHOT

By Mineralization Route	Enhanced rock weathering · in-situ mineralization · ex-situ / industrial · mineral-carbonation in materials · ocean-alkalinity enhancement
By Deployment	Agricultural / land · geologic injection · industrial / materials · marine
By Application	Power · industrial · atmospheric / removal
By End User	Industrial emitters · corporates · project developers · governments
By Business Model	Equipment sales · EPC · Capture-as-a-Service
By Scale	Pilot · demonstration · commercial / megatonne-scale

TABLE OF CONTENTS — PARTS & CHAPTERS

The full report is organised into nine parts across 53 chapters, listed below. Detailed sub-headings, country tables and directories are provided in the full report.

Part I — Report Foundation, Discovery and Strategic Intelligence

- › Chapter 1. Scope, Methodology and Report Architecture
- › Chapter 2. Industry Discovery Summary — Carbon Mineralization Systems
- › Chapter 3. Executive Intelligence and Decision Dashboard
- › Chapter 4. Strategic Findings, Materiality and Investment Verdict Preview

Part II — Market Intelligence, Sizing, Forecasting and Segmentation

- › Chapter 5. Industry Overview and Market Evolution
- › Chapter 6. Market Dynamics
- › Chapter 7. Global Market Size and Forecast, 2020–2032
- › Chapter 8. Market Segmentation Analysis
- › Chapter 9. End-User and Demand-Side Intelligence
- › Chapter 10. Pricing, Cost and Commercial Model Intelligence

Part III — Regional and Country Intelligence

- › Chapter 11. Global Regional Intelligence Framework
- › Chapter 12. North America Market Intelligence
- › Chapter 13. Europe Market Intelligence
- › Chapter 14. Asia Pacific Market Intelligence
- › Chapter 15. Latin America Market Intelligence
- › Chapter 16. Africa Market Intelligence
- › Chapter 17. Middle East Market Intelligence
- › Chapter 18. Rest of World Market Intelligence

Part IV — Technology, Innovation and Category-Specific Intelligence

- › Chapter 19. Technology Landscape and Architecture
- › Chapter 20. Emerging and Next-Generation Technology Intelligence
- › Chapter 21. Category-Specific Intelligence Module
- › Chapter 22. Research, Innovation and Funding Landscape

Part V — Company, Competition, Patent and Project Intelligence

- › Chapter 23. Competitive Landscape
- › Chapter 24. Company Profiles
- › Chapter 25. Mergers, Acquisitions, Partnerships and Ecosystem Intelligence
- › Chapter 26. Patent Landscape and Intellectual Property Intelligence
- › Chapter 27. Project, Deployment and Case-Study Intelligence

Part VI — Sustainability, ESG, SDG, Climate and Natural-Capital Intelligence

- › Chapter 28. Sustainability Intelligence Suite
- › Chapter 29. ESG Intelligence and Double Materiality
- › Chapter 30. ESG and Sustainability Framework Alignment
- › Chapter 31. SDG Intelligence
- › Chapter 32. Carbon, Net-Zero and Climate-Mitigation Intelligence
- › Chapter 33. Water, Biodiversity and Natural-Capital Intelligence
- › Chapter 34. Circular Economy and Resource-Security Intelligence
- › Chapter 35. Social Impact, Human Capital and Community Intelligence
- › Chapter 36. Climate Risk, Adaptation and Resilience Intelligence

Part VII — Supply Chain, Policy, Legal, Economics and Finance

- › Chapter 37. Value Chain, Supply Chain and Geopolitical Intelligence
- › Chapter 38. Policy, Regulation and Incentive Intelligence
- › Chapter 39. Legal, Contracting and Risk-Allocation Intelligence
- › Chapter 40. Unit Economics, CAPEX, OPEX and Return Analysis
- › Chapter 41. Investment, Sustainable Finance and Bankability Intelligence

Part VIII — Scenario, Future Intelligence and Final Due Diligence Verdict

- › Chapter 42. Scenario Analysis and Future Intelligence
- › Chapter 43. Sustainability Due Diligence Framework and Data-Room Index
- › Chapter 44. Risk Register, RAG Rating and Anti-Greenwashing Screen
- › Chapter 45. Bottom-Line Verdict and Strategic Recommendations
- › Chapter 46. Implementation Roadmap and Stakeholder Playbooks

Part IX — Annexes, Directories and Reference Material

- › Chapter 47. Methodology Annex
- › Chapter 48. Corporate Directory and Company Intelligence Annex
- › Chapter 49. Patent Directory and Patent Intelligence Annex
- › Chapter 50. Project Intelligence Annex
- › Chapter 51. Forecast Annex
- › Chapter 52. Sustainability KPI Annex
- › Chapter 53. Reference Annexes

COMPETITIVE & INVESTMENT SNAPSHOT

The competitive field spans in-situ mineralization pioneers, enhanced-weathering specialists, and materials-carbonation innovators. Deal activity — M&A, technology acquisition and platform expansion — signals a market consolidating around scalable, bankable, deployment-ready solutions.

Representative players profiled in the full report:

Carbfix hf. · Heirloom Carbon Technologies, Inc. · Lithos Carbon, Inc. · 44.01 Limited · Eion Corp. · and further profiled removal and MRV innovators

Investment intelligence: venture, infrastructure, development, climate and blended finance, green bonds and sustainability-linked loans — culminating in a bankability assessment and a clear investment verdict.

KEY QUESTIONS THIS REPORT ANSWERS

- ? How large is the global carbon mineralization market, and how fast will it grow to 2032?
- ? Which regions, routes and geologies offer the strongest risk-adjusted opportunity?
- ? How do MRV rigour, reaction rate and permanence change the removal case?
- ? Who leads, and where is the competitive and patent white space?
- ? Is the investment case bankable — and under what conditions?
- ? How does the category align with the SDGs, removal-integrity and disclosure regulation?

WHY ANMD — THE DIFFERENCE

Most market studies stop at tonnes and revenue. This report is built as a sustainability due diligence instrument — fusing market sizing with ESG, SDG, climate, carbon-integrity and natural-capital intelligence and a decision-ready bankability verdict in a single architecture.

- **Triangulated sizing** — every market read three ways (value (US\$), capture/abatement capacity (MtCO₂/yr) and units) so value, capacity and volume views reconcile rather than conflict.
- **Region-honest forecasting** — Latin America, Africa and the Middle East reported in full, never hidden inside Rest of World, every forecast resolved to the 2025 base year.
- **Integrated evidence base** — company, patent and project databases linked to the analysis, with published-filing patents and FTO treated as an indicator, not a legal conclusion.
- **No-fabrication discipline** — every estimate carries a data-confidence rating and disclosed sources; gaps are flagged for further diligence, never filled with invented numbers.
- **Anti-greenwashing rigour** — SDG-washing and greenwashing screens plus claim-substantiation checks built into the ESG and project analysis.
- **Decision-first structure** — 9 Parts and 53 Chapters culminating in stakeholder playbooks and a clear, conditions-based investment verdict.

WHO SHOULD BUY THIS REPORT

Investors and infrastructure / PE funds, corporate removal buyers, mineralization and enhanced-weathering developers, materials and construction firms, MRV providers, project developers, policymakers, lenders and ESG teams, plus strategic corporate planners and decision-makers.

Access the Full Report

The complete report delivers all 53 chapters in full, with every sub-heading, country table, company and patent directory, forecast model and due diligence checklist.

Purchase at www.anewmarketdynamics.com · Standard & Premium licences · Single-Site (SSL) and Global-Site (GSL) options at checkout.

Want the Complete Detailed Table of Contents?

This prospectus lists the nine parts and 53 chapters. The complete detailed table of contents — every sub-heading, country table, exhibit, company and patent directory and annex — is available on request to registered users. To receive it, register with your official company email at www.anewmarketdynamics.com. The full detailed table of contents will be sent directly to your registered company email address.