CDRmare Research Mission of the German Marine Research Alliance (DAM)
»Marine carbon sinks in decarbonisation pathways«

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Initial Situation

- A massive reduction of CO_2 emissions alone is no longer sufficient to achieve the Paris climate targets of limiting warming to 1.5 or even 2 degrees.
- 5 – 15 % of today's CO_2 emissions will not be avoidable by mid-century even with an ambitious climate protection policy. They must therefore be removed from the atmosphere and safely stored.
- So far, mainly land-based approaches for CO_2-removal (Carbon Dioxide Removal = CDR) have been discussed, which are often in competition with other land uses. Other options for CO_2-removal and -storage are provided by the ocean due to its extensive climate-regulating capabilities.

Aims

- To explore & evaluate marine methods of atmospheric CO_2-removal with respect to their potentials and ecological, economic, social and political impacts and risks in the context of a responsible and sustainable use of the ocean.
- Informing and advising policy-makers and society on options for marine CO_2-removal and -storage as well as monitoring and governance approaches.
- The long-term goal is to develop a marine carbon roadmap for Germany.

Who we are

- a large interdisciplinary research mission consisting of 6 research consortia
- 22 partners: universities, research institutes, authorities, economy, museum
- more than 200 participants
- 1st phase: 3 years duration
- start: 1st August 2021
- total budget: € 26 million

Ocean-based methods of CO_2-removal and -storage from the atmosphere

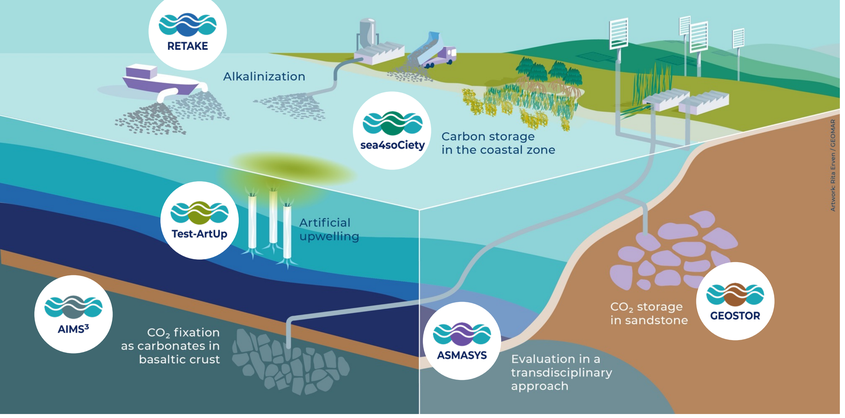

Fig. 1: CDRmare investigates different methods of marine CO_2 removal and storage (alkalinisation, blue carbon, artificial upwelling, CCS) in terms of their potential, risks and trade-offs and evaluates them in a transdisciplinary assessment framework.

Partners

GEOMAR · IOW · ZMT Leibniz Centre for Tropical Marine Research · Universität Bremen MARUM · AWI · CAU Kiel University · Fachhochschule Kiel · Fraunhofer IPM · hereon · IfW Kiel Institute for the World Economy · Max-Planck-Institut für Marine Mikrobiologie · PIK · SWP · Universität Hamburg · Leibniz Universität Hannover · Carl von Ossietzky Universität Oldenburg · BGR Bundesanstalt für Geowissenschaften und Rohstoffe · Deutsches Meeresmuseum Stralsund · FICHTNER · KUM · Sea & Sun Technology · TRUEOCEAN

Research Consortia

ASMASYS

Assessment framework for marine CO_2 removal and synthesis of current knowledge
Coordinator: **Gregor Rehder**
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RETAKE

CO_2 removal by alkalinity enhancement: potential, benefits and risks
Coordinator: **Andreas Oschlies**
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sea4soCiety

Searching for solutions for carbon-sequestration in coastal ecosystems
Coordinator: **Martin Zimmer**
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GEOSTOR

Submarine carbon dioxide storage in geological formations of the German North Sea
Coordinator: **Klaus Wallmann**
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Test-ArtUp

Ocean artificial upwelling
Coordinator: **Ulf Riebesell**
uriebesell@geomar.de

AIMS³

Alternate scenarios, Innovative technologies, and Monitoring approaches for Sub-Seabed Storage of carbon dioxide
Coordinator: **Achim Kopf**
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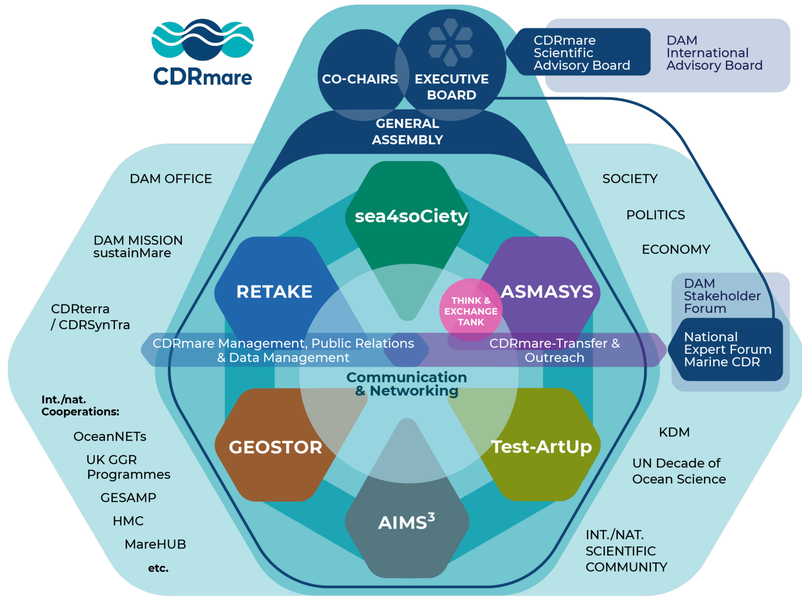

Fig. 2: The six research consortia CDRmare is composed of are being advised by a Scientific Advisory Board and are in exchange with a National Expert Forum. The Co-Chairs of CDRmare are Prof. Andreas Oschlies (GEOMAR) and Prof. Gregor Rehder (IOW).

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DAM GERMAN MARINE RESEARCH ALLIANCE
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