

Marine Carbon Dioxide Removal: What Is It and Why Should You Care?



THE STATE OF
**Carbon
Dioxide
Removal**

A global,
independent
scientific
assessment
of Carbon
Dioxide
Removal

2nd EDITION | 2024

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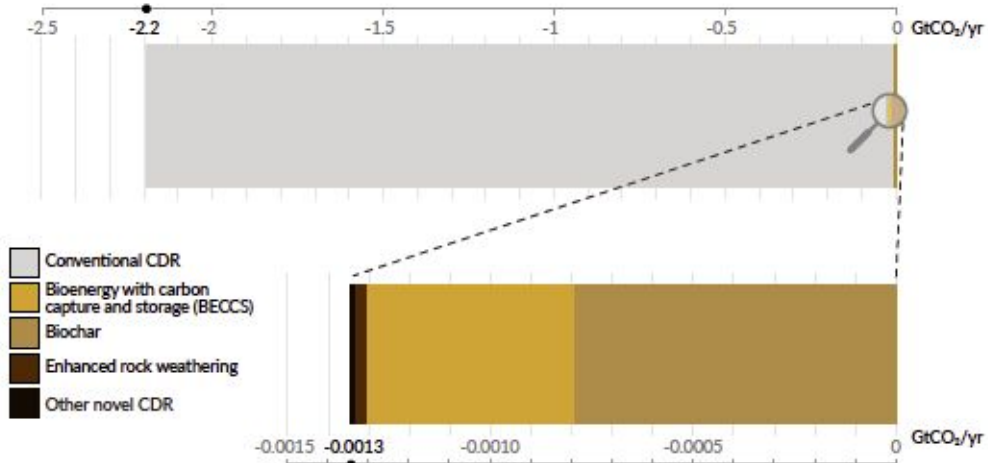
Carbon Dioxide Removal (CDR)

Limiting warming to 1.5-2°C will
require carbon dioxide removal to
scale up to 7-9 billion tons by 2050
and more thereafter.

CDR Today and the CDR Gap

Only a tiny fraction of all carbon dioxide removal results from **novel methods**

Total amount of carbon dioxide removal, split into **conventional** and **novel** methods (GtCO₂/yr)

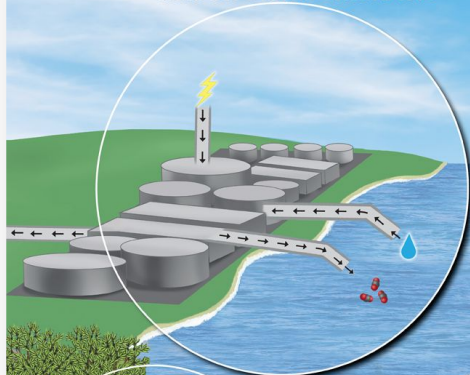


Amount of carbon dioxide removal (CDR) is the sum of conventional CDR (2013-2022) and novel CDR (2023)

- Current CDR: ~2.1 billion tons of CO₂ per year
- >99% is "conventional"
- Novel, highly durable CDR is ~1.3 million tons CO₂ per year currently

OCEAN-BASED CARBON DIOXIDE REMOVAL

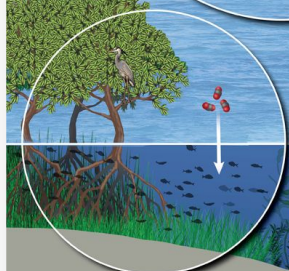
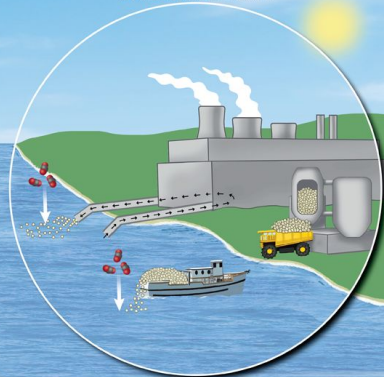
ELECTROCHEMICAL OCEAN CARBON DIOXIDE REMOVAL



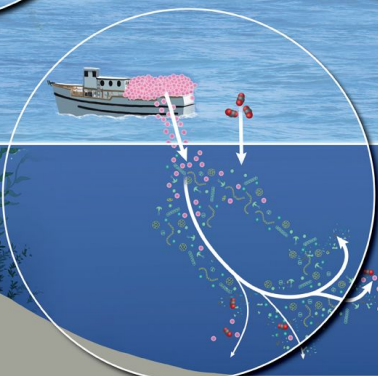
DEEP SEA STORAGE



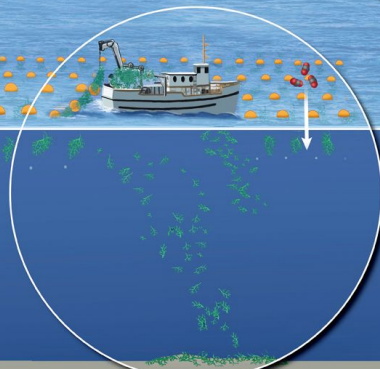
OCEAN ALKALINITY ENHANCEMENT



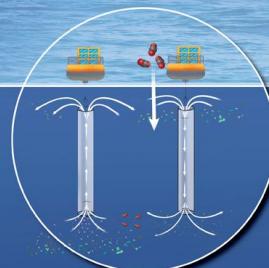
RESTORING LIVING BLUE CARBON



MICROALGAE CULTIVATION



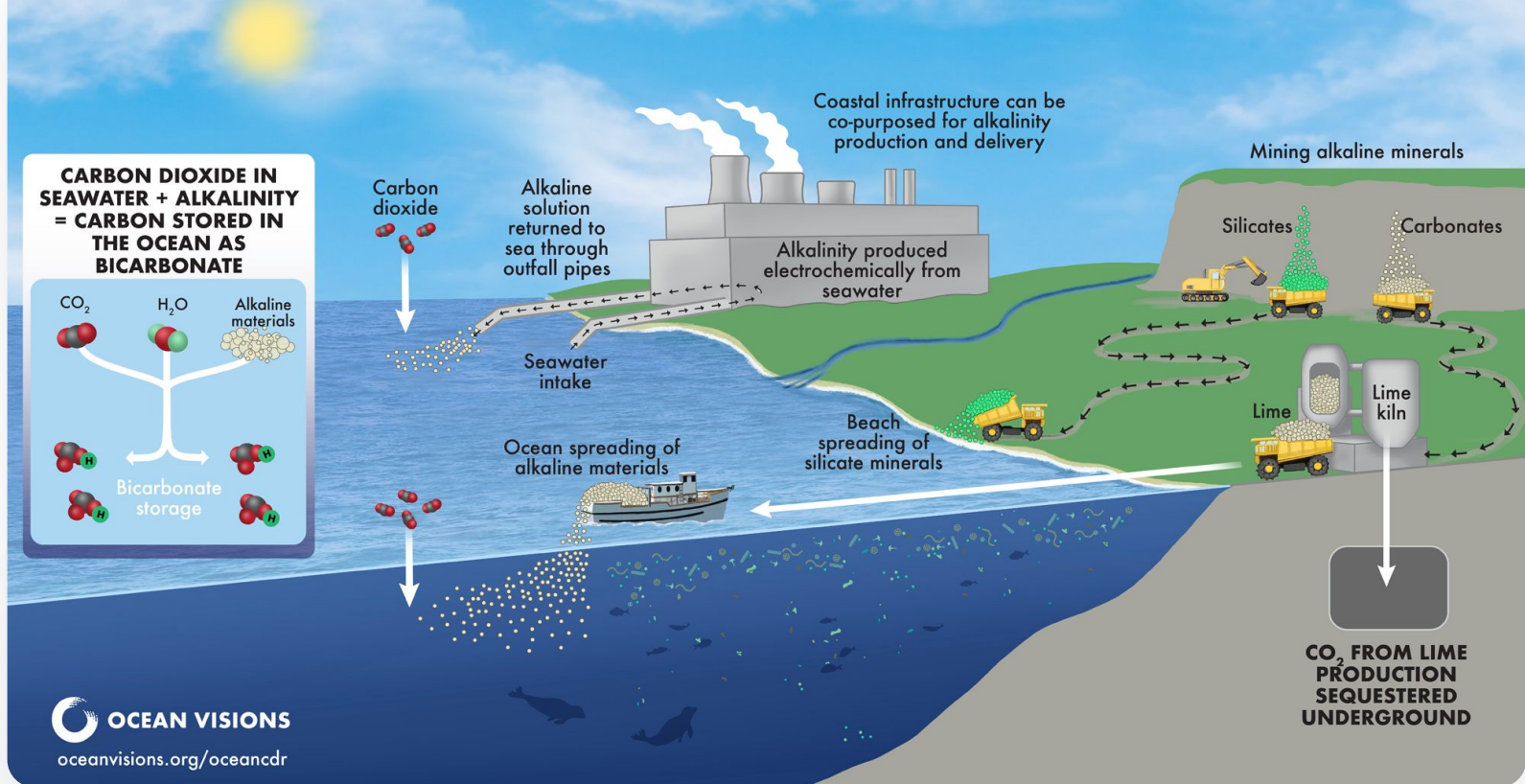
MACROALGAE CULTIVATION AND CARBON SEQUESTRATION



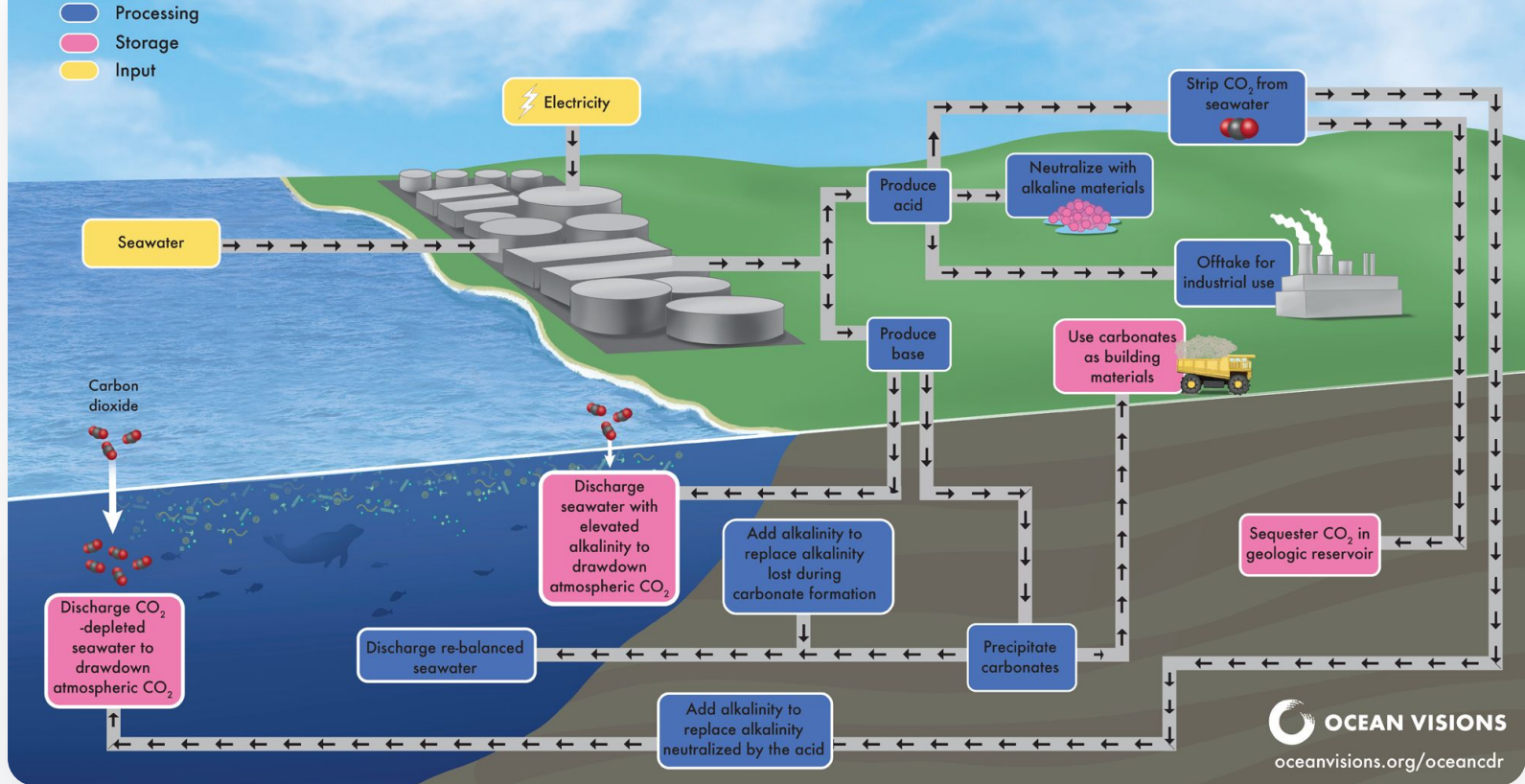
ARTIFICIAL UPWELLING AND DOWNWELLING

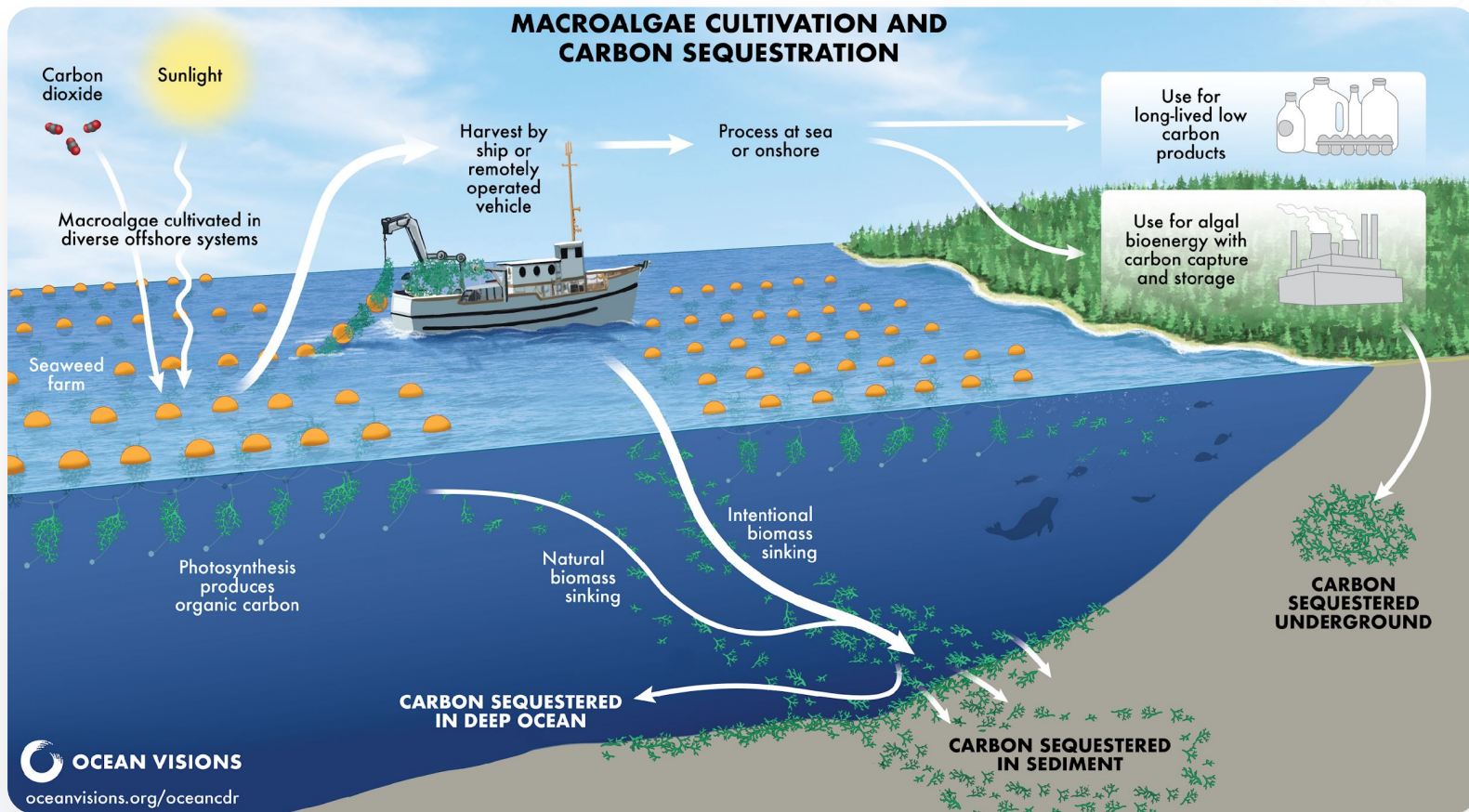
MARINE CARBON DIOXIDE REMOVAL IS ACCELERATING

OCEAN ALKALINITY ENHANCEMENT

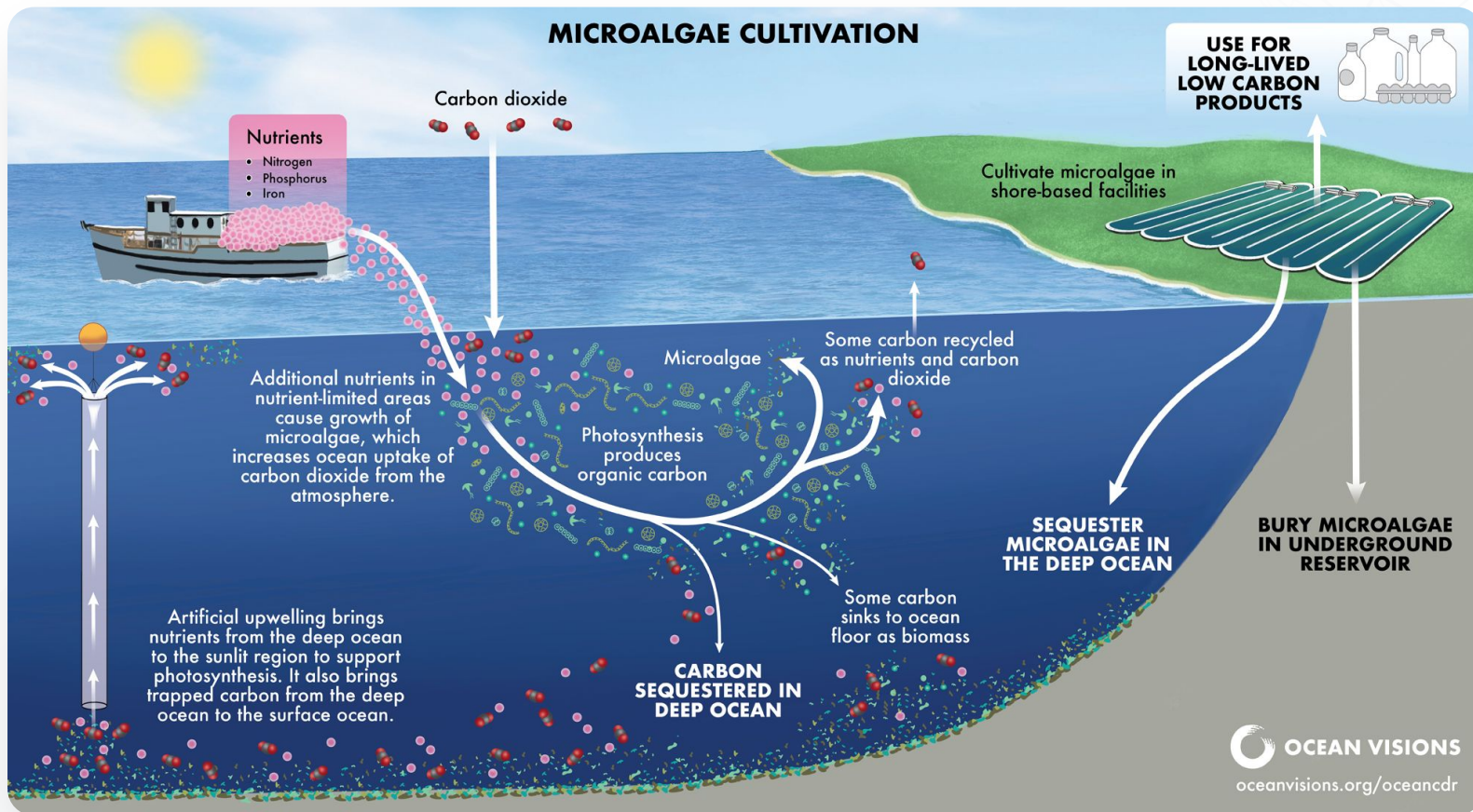


ELECTROCHEMICAL OCEAN CARBON DIOXIDE REMOVAL





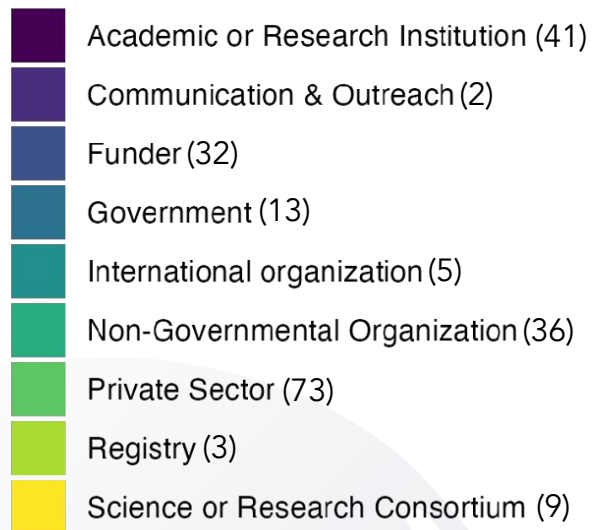
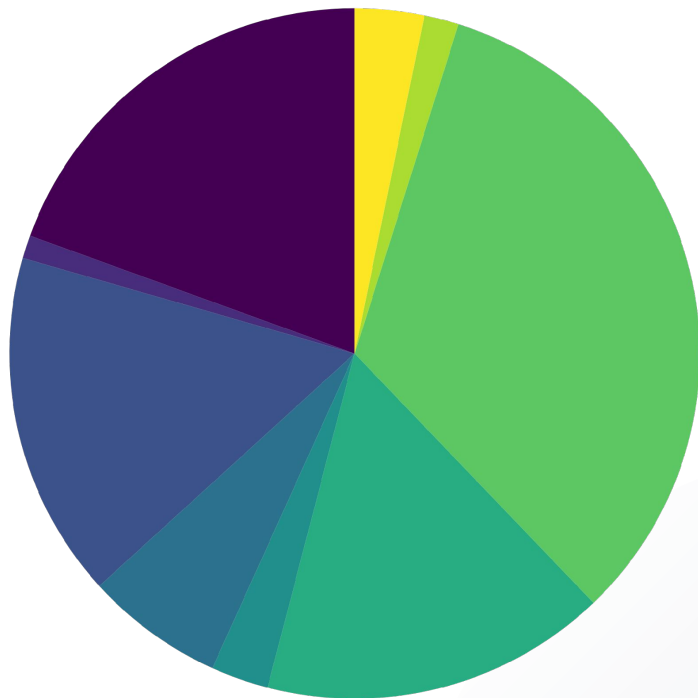
All mCDR illustrations available for public download and use at oceanvisions.org/mcdr-illustrations



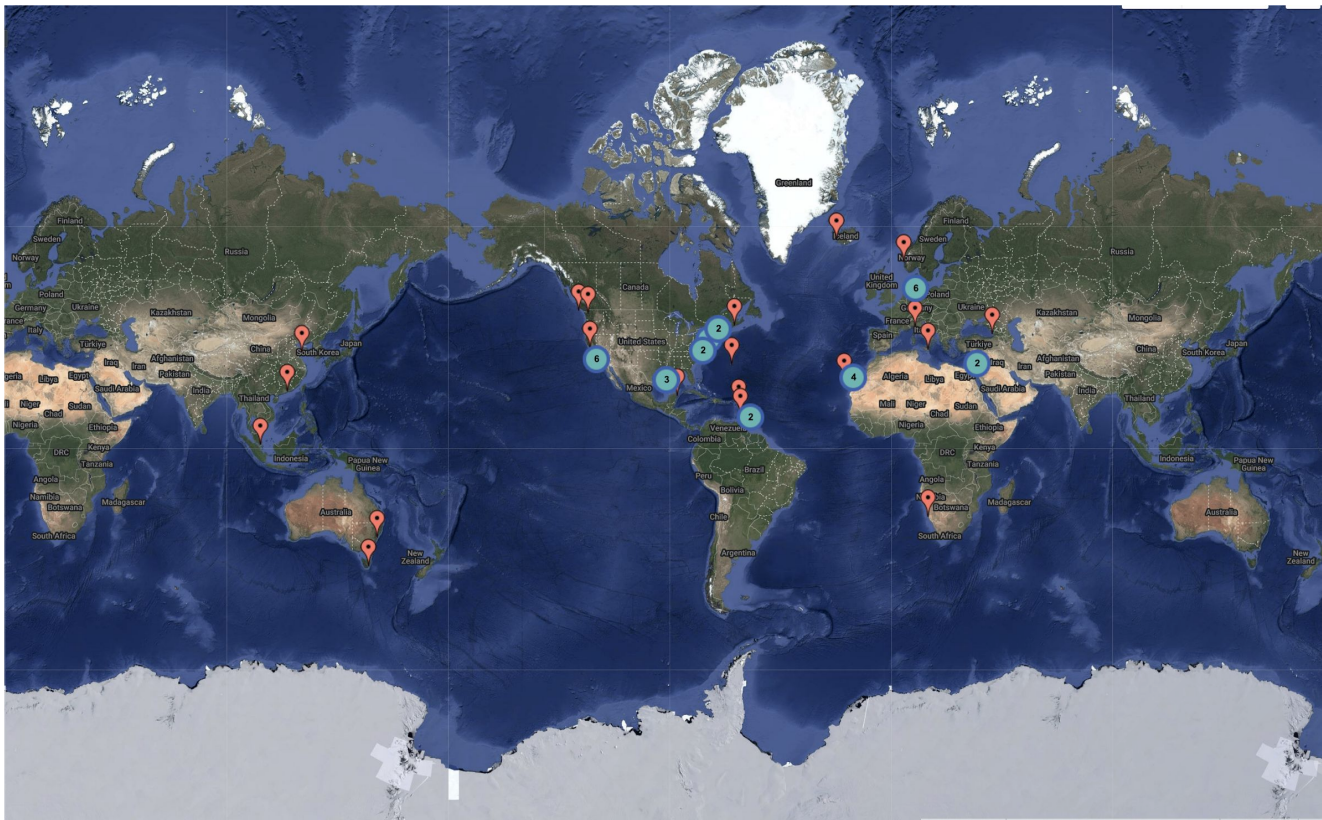
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Rapid Growth of mCDR Actors and Activities

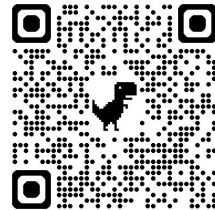
Over 200 identified organizations working in mCDR



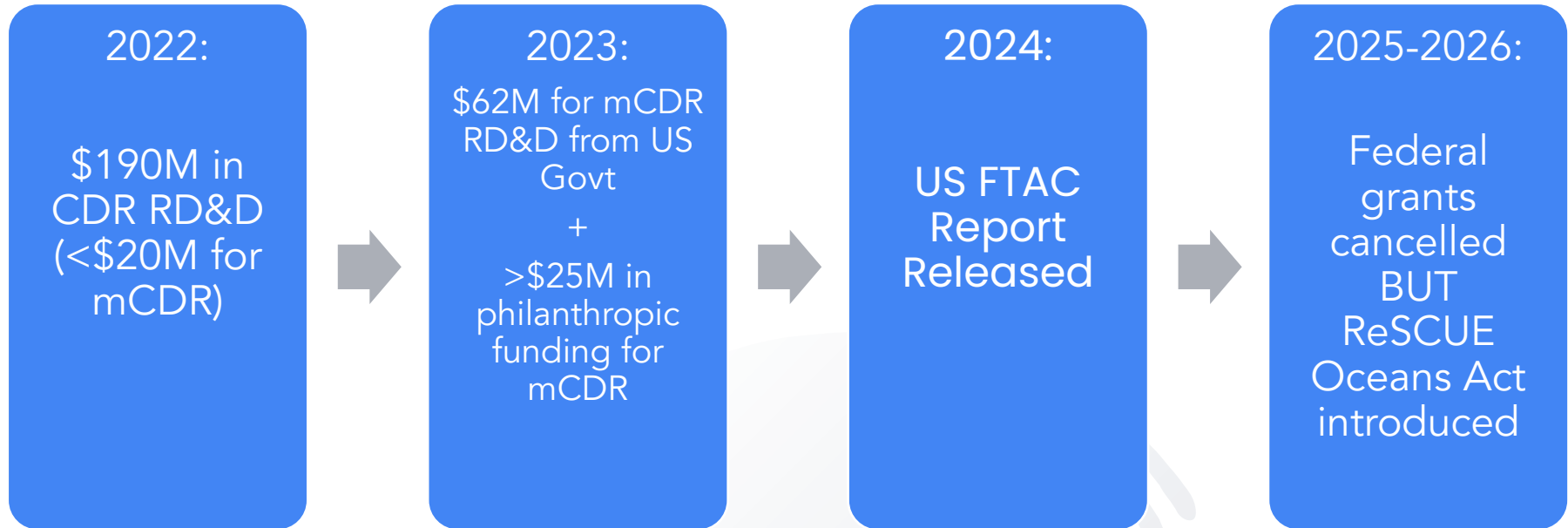
Growth in mCDR Research and Development



Nearly 50 mCDR field trials around the world in operation or concluded, including in CA

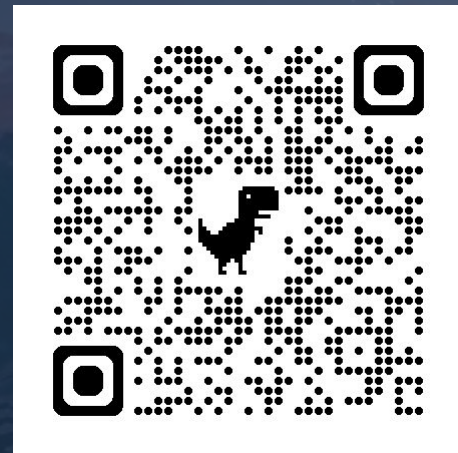


Federal mCDR ~~is~~ Was Increasing: An Opportunity for California Leadership





Learn more
about mCDR



Questions? david@oceanvisions.org