



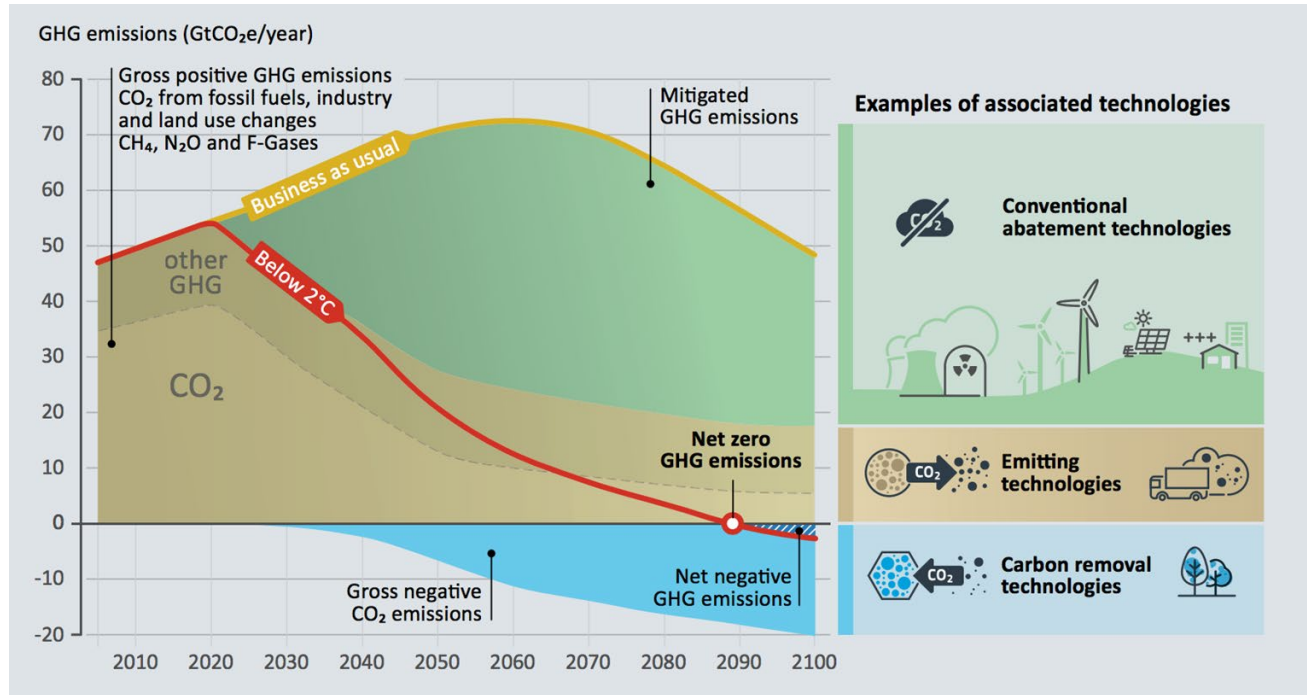
NOAA's Carbon Dioxide Removal Research Interest

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CDR Motivation

According to the IPCC, a key pathway to stabilizing climate change at 1.5 °C - 2 °C is removing CO₂ from the atmosphere through Negative Emissions Technologies (NETs).



To make up for “stubborn” emissions, estimates suggest that we will need to extract 10 Gt CO₂ / yr out of the atmosphere by 2050, increasing to 20 Gt CO₂ / yr by 2100.

Types of CDR

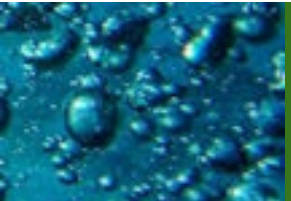
Marine Carbon Dioxide Removal (mCDR) is a subset of NETs that focuses on manual enhancement of the ocean's role as a sink for anthropogenic carbon. Current research on all of these methods is largely theoretical, but early results are promising.



Ocean Alkalinity
Enhancement



Biotic Cultivation and
Sequestration



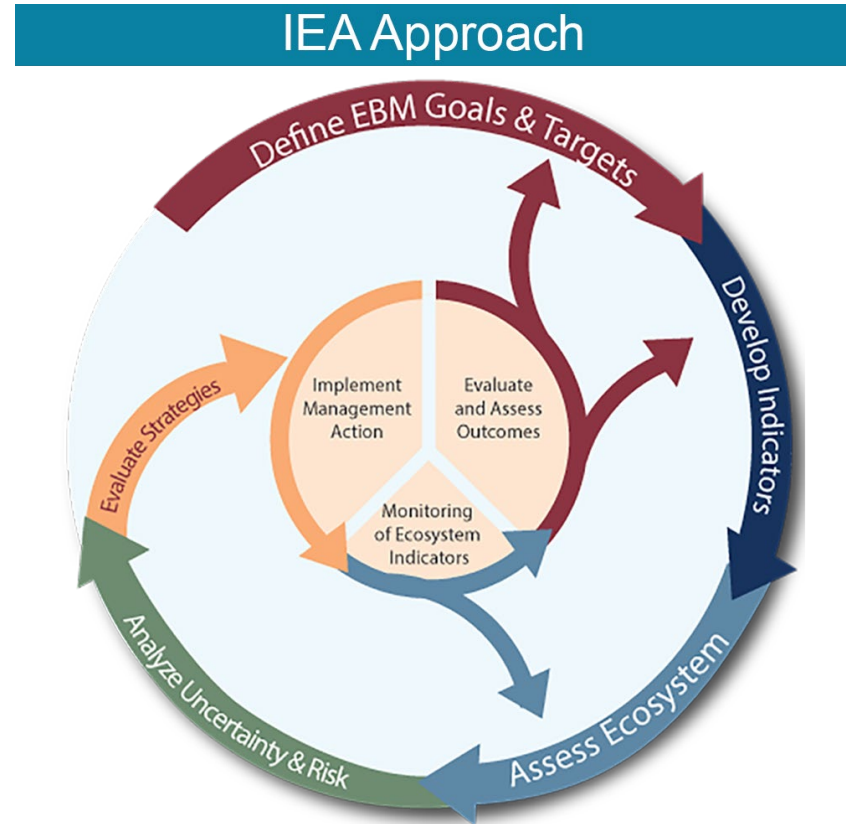
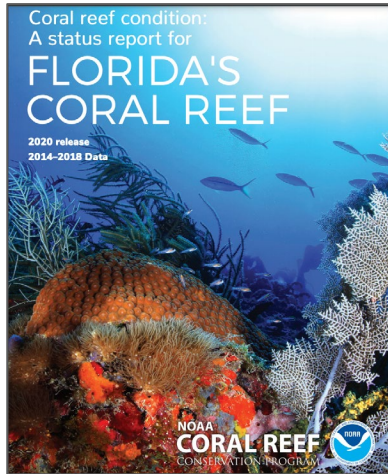
Electrochemical
CO₂ stripping

Ocean Storage of
CO₂ by enhancing
natural carbon
pumps

Removal of Ocean
CO₂ and discrete
storage

Monitoring ecosystem CDR impacts

NOAA regularly conducts research, monitoring, modeling and forecasting from an **ecosystem assessment** perspective that is critical for understanding potential impacts of CDR techniques.



Marine Spatial Planning

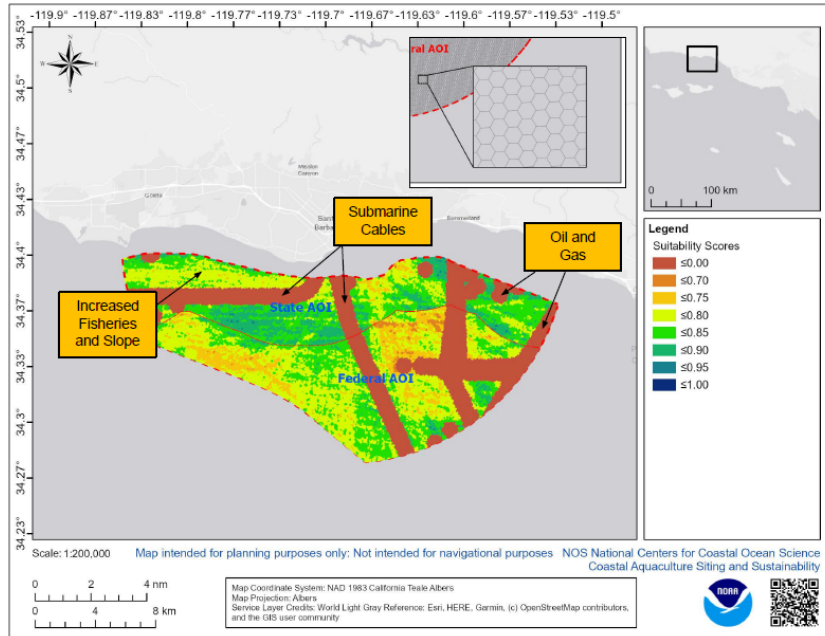
Coastal Aquaculture Planning Portal (CAPP)

A Toolbox for Sustainable Aquaculture Coastal Planning and Siting



Evidence-based spatial tools help decision makers explore how to best protect environmental resources and public health, preserve valued habitats, and improve the way communities interact with coastal ecosystems.

- Habitat mapping
- Aquaculture Siting and Sustainability
- Risk Assessment
- Restoration



Conclusions

- The IPCC and Infrastructure Investment and Jobs Act outline 3 key facts:
 - CDR is necessary
 - CDR supports jobs and markets
 - CDR must be deployed at scale
- There are multiple forms of CDR that may be relevant for Alaska
- NOAA supports tracking of the global carbon budget and large-scale ecosystem assessments
- Tracking small local projects will be critical at the beginning of this field.
- NOAA's spatial tools could help identify the right places to deploy coastal CDR projects