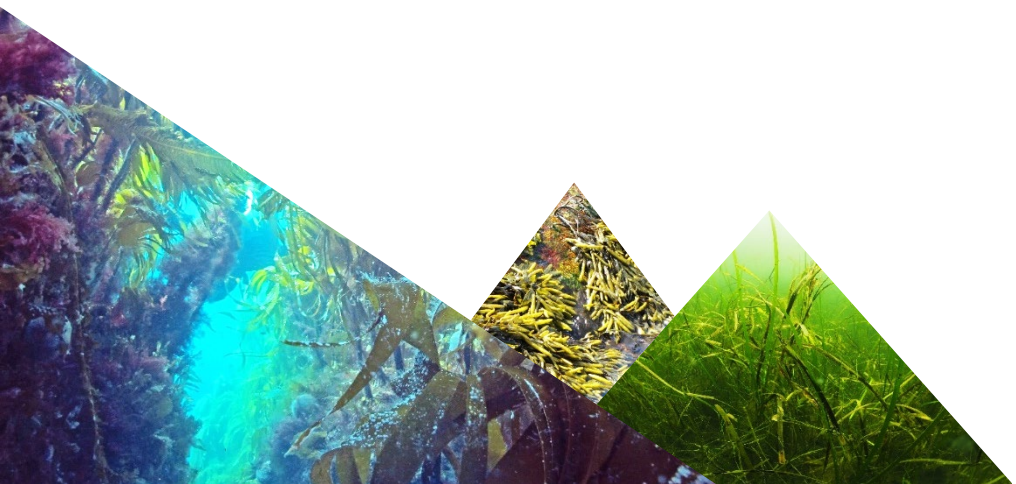
Norwegian Blue Forests Network

North Atlantic Seafood Forum 2022 Conference

How can we ensure that Ocean Health and Ocean Wealth go hand in hand?

A blue forests perspective

By Cecilie Wathne
Leader of the Norwegian Blue Forests Network



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"Restoring and maintaining the ocean's health represents the best way to generate ocean-based wealth and make the most of the ocean's unique resources"

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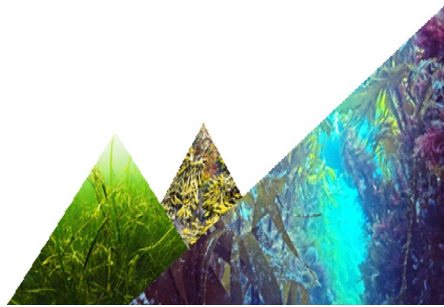
1. **Blue Forests**: What are they and why are they important?
2. **Aquaculture**: Opportunities and challenges
3. **The way forward**



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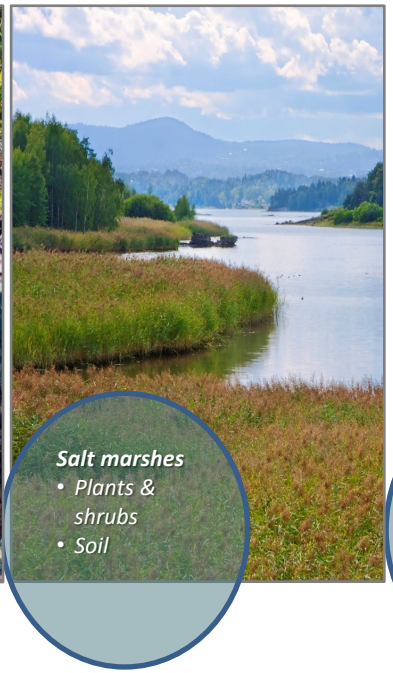
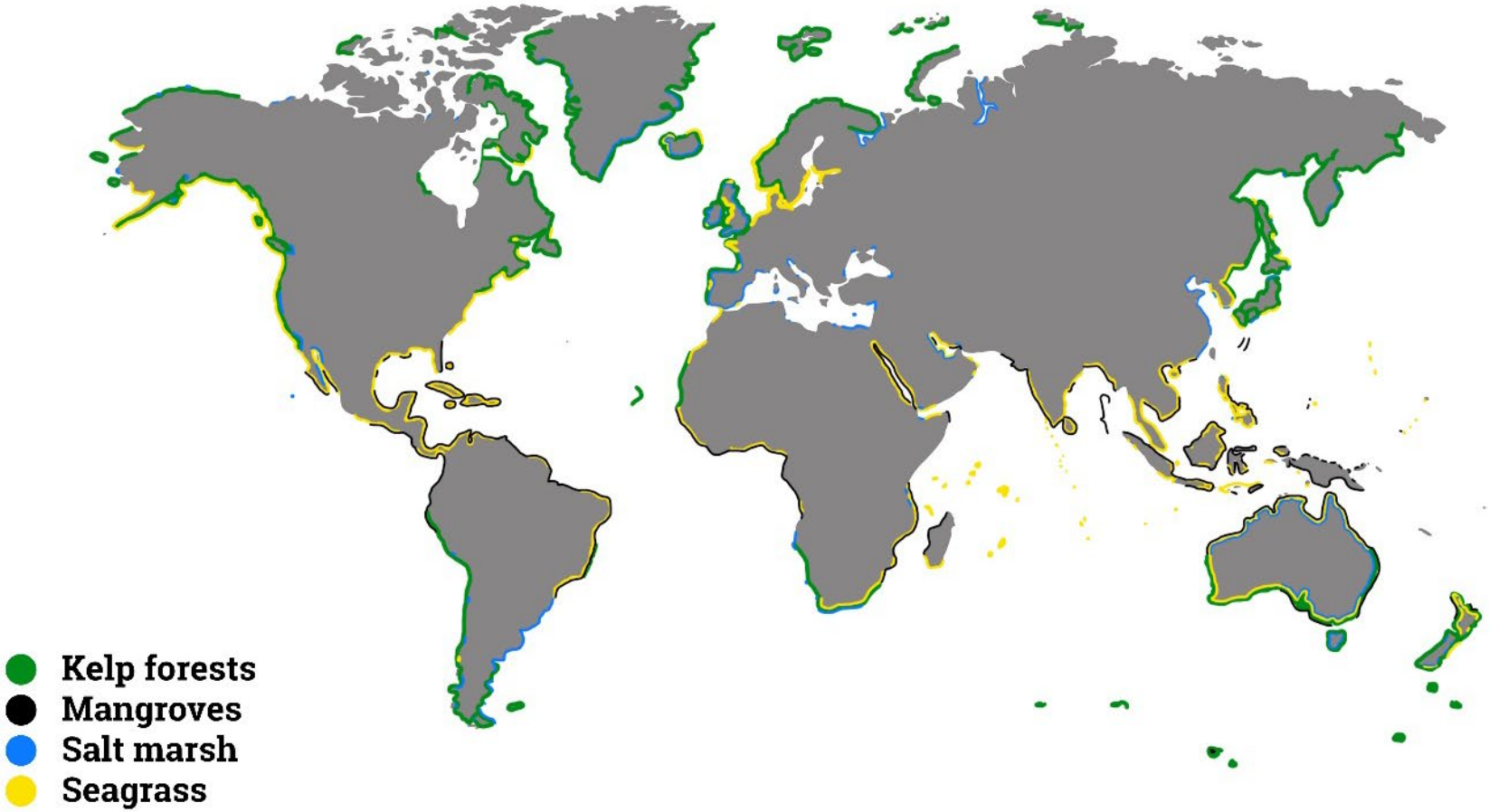


Image provided by NIVA
Norsk institutt for vannforskning

Blue forests grow along most of the world's coastlines



Source: Lærke Rosenberg / ScienceNordic. Kelp distribution from Filbee-Dexter and Wernberg, 2018. Mangroves, salt marsh, and seagrass distributions from The Blue Carbon Initiative

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Photo by Janne K. Gitmark, NIVA

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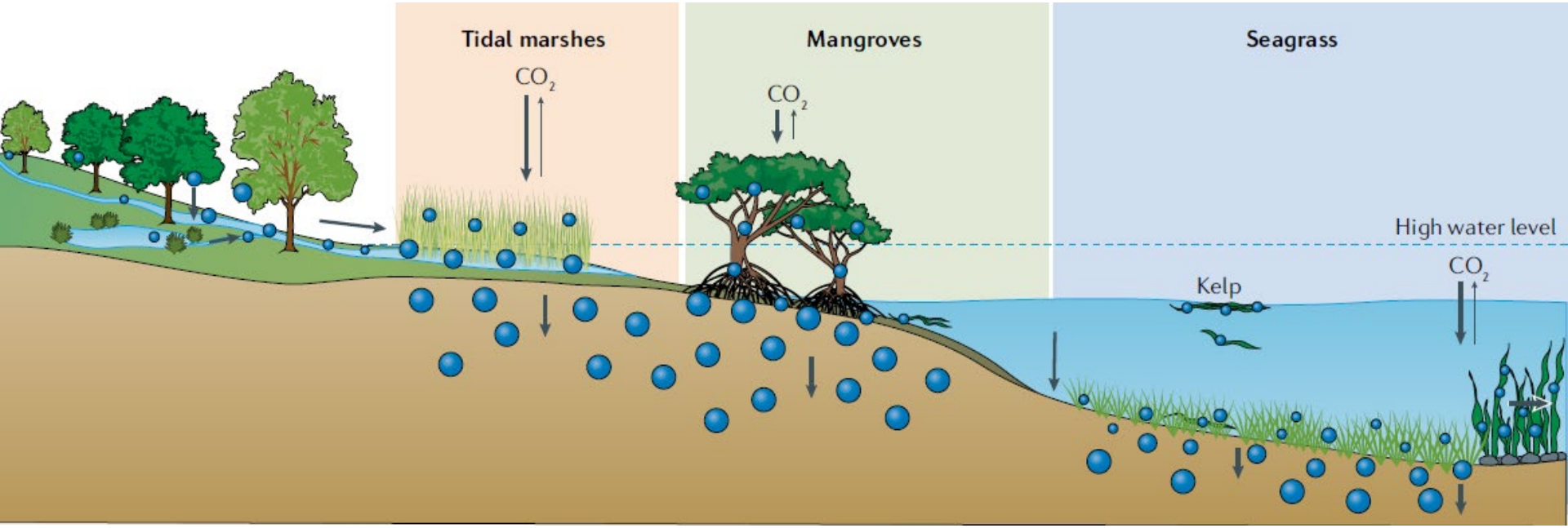
Contribute to a range of SDGs, including…

Store Carbon, Counter Ocean Acidification & Produce Oxygen



- ~ 9–33 gigaton carbon stored in blue forests
- Capture an additional ~ 0.1–1 gigaton carbon each year

Image by Macreadie et al. (2021)

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Clean Water

Blue forests trap sediments and remove excess nutrients

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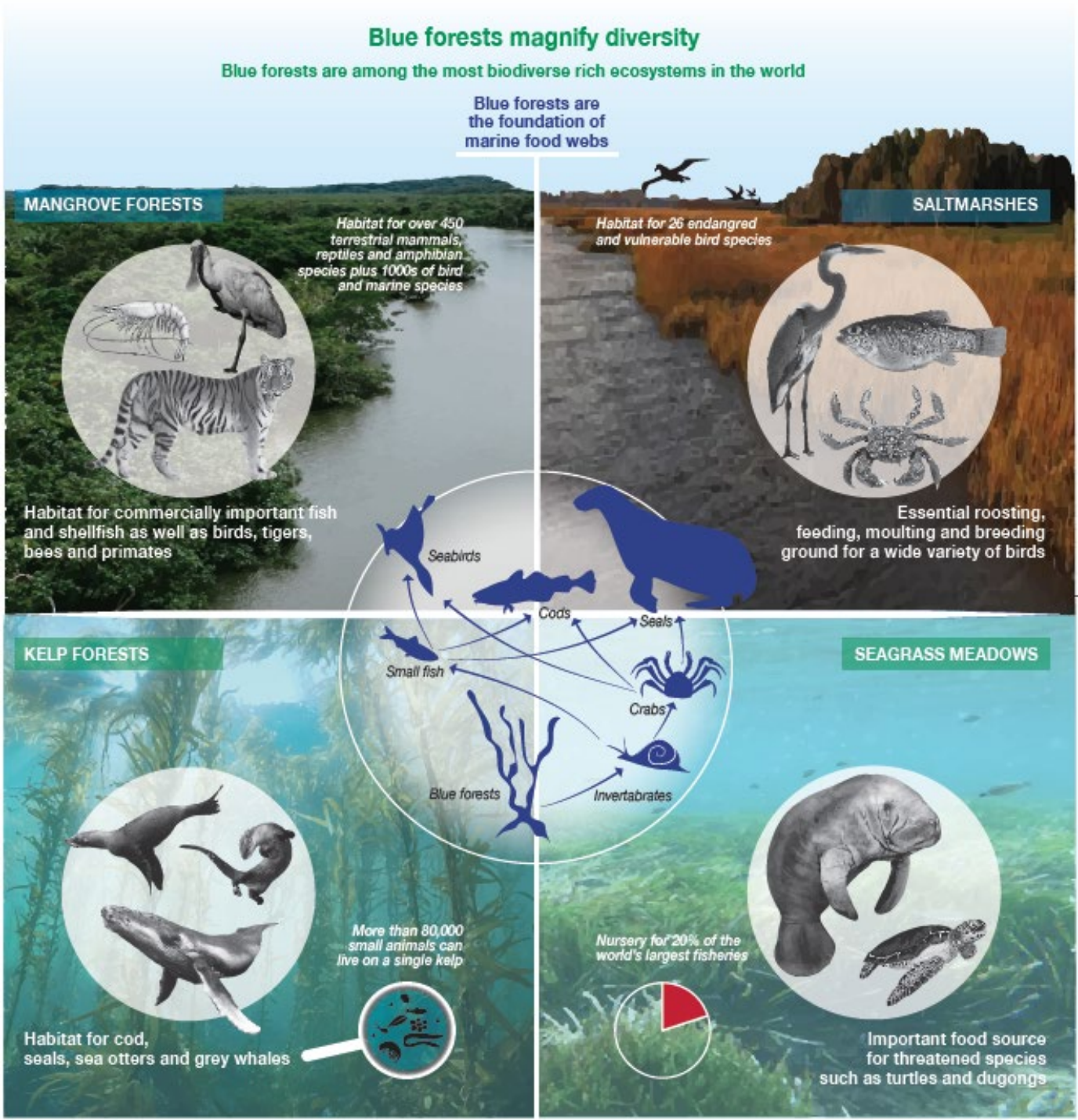
Feed, shelter and protect 1000s of ecologically and economically important species



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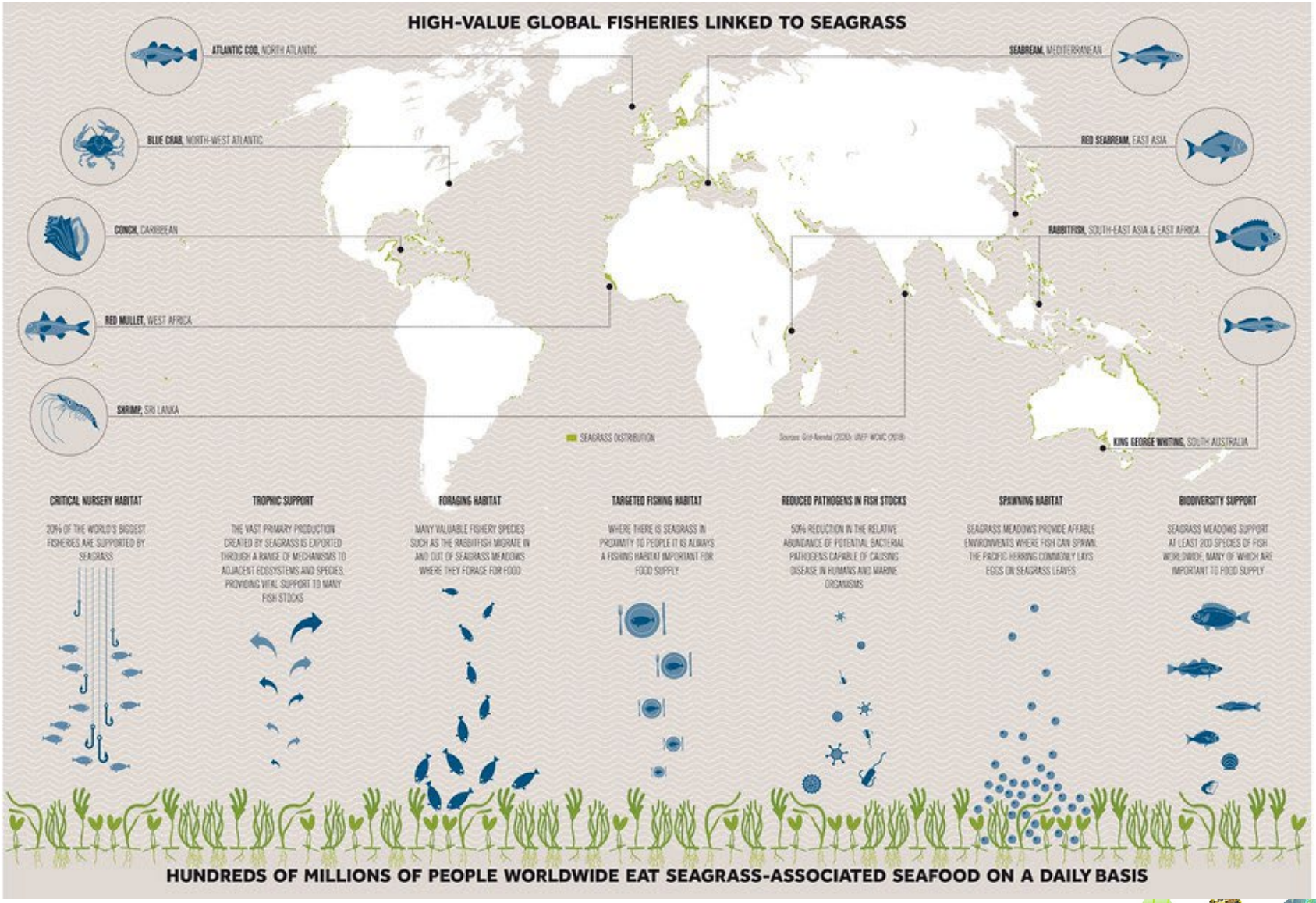
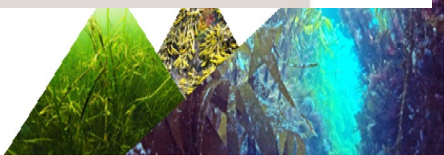


Image by Hisham Ashkar, GRID-Arendal



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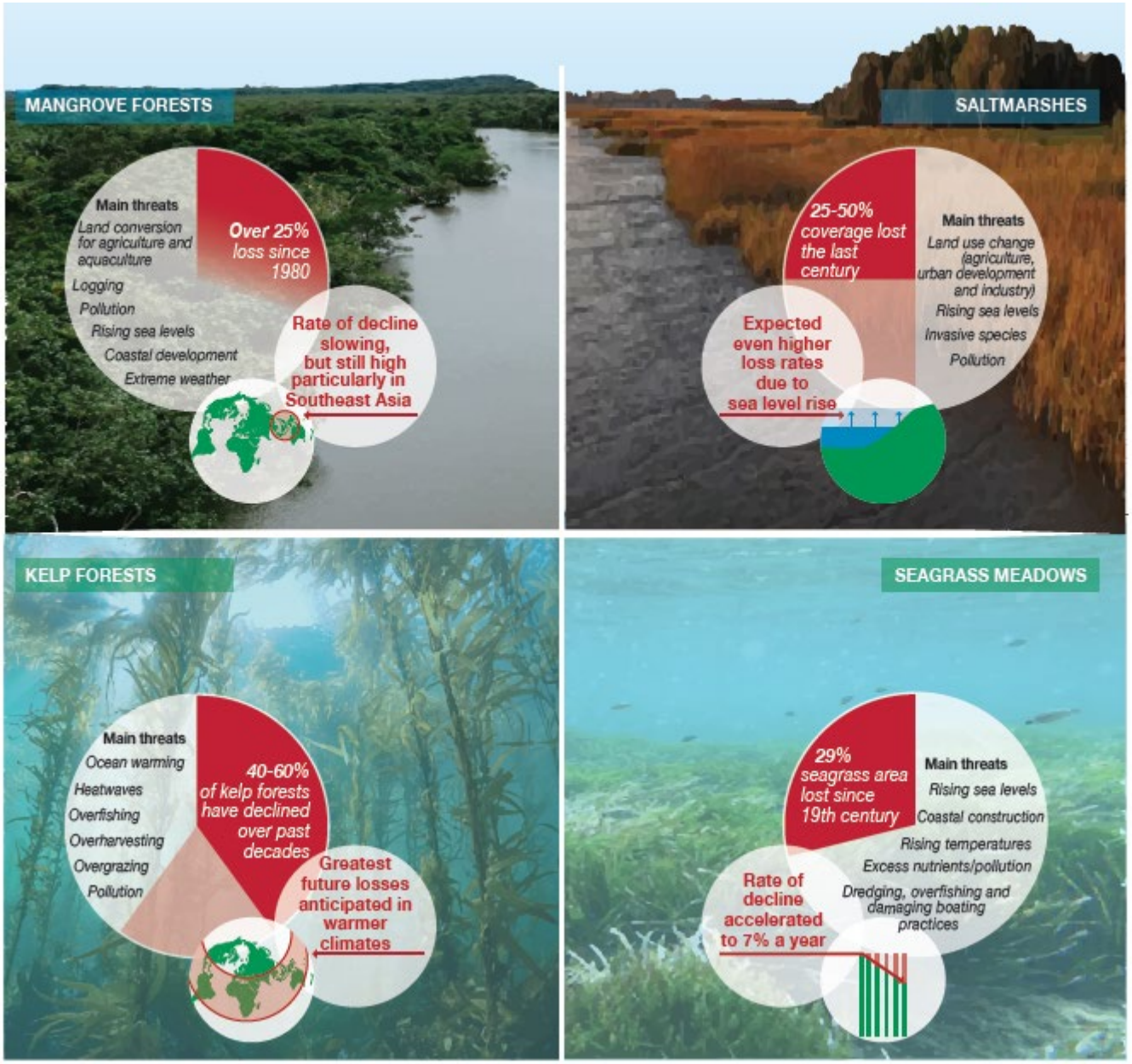
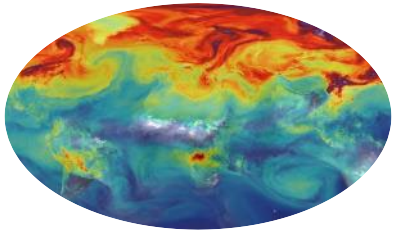
Blue forests across the globe are in decline



Main threats to blue forests globally

Climate change



Area change for land use and aquaculture

Pollution

Logging and harvesting

Agriculture

Fishery

Coastal development

Image by Hege Gundersen (NIVA) and NBFN

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Photo by Reidun Marie Bjelland

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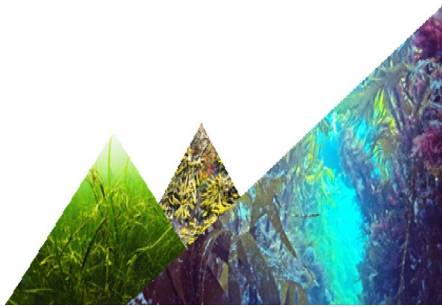
Aquaculture: A significant source of food and jobs

- The ocean food sector provides millions of jobs
- More than 3 billion people rely on food from the sea for protein and other key nutrients
- World population projected to reach 9.8 billion in 2050
- Aquaculture: a possible solution to ensure future food security



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Finfish mariculture: Environmental Risks

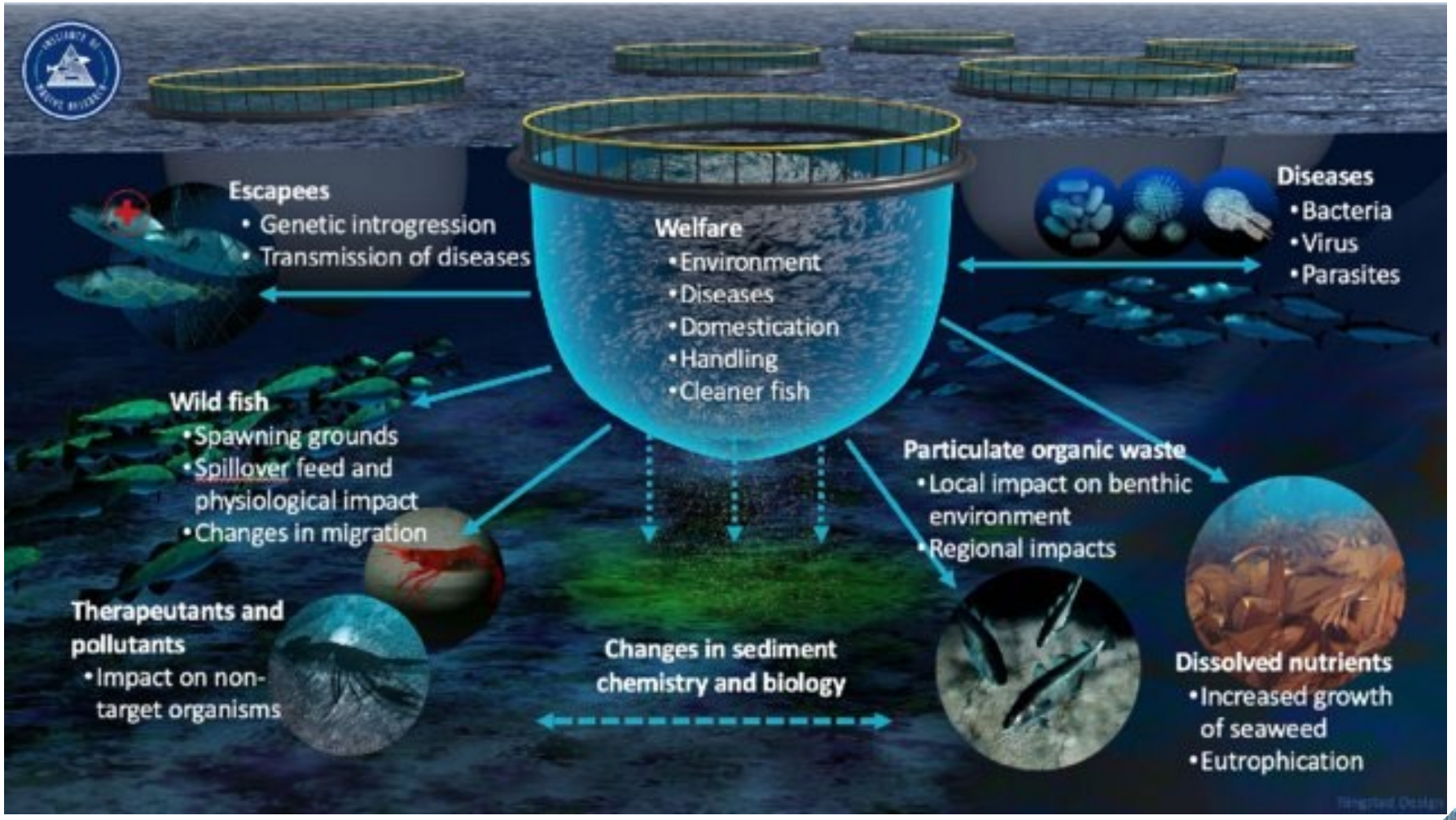

Image by Grefsrud, IMR / Ringstad Design

Eutrophication (excess nutrients)

Images by Frithjof Moy, IMR

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Direct and Indirect Shading

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Unsustainable reduction in wrasse stock

Photo by E. Svendsen

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Photo by Kongsberg Maritime

Photo by AKVA group

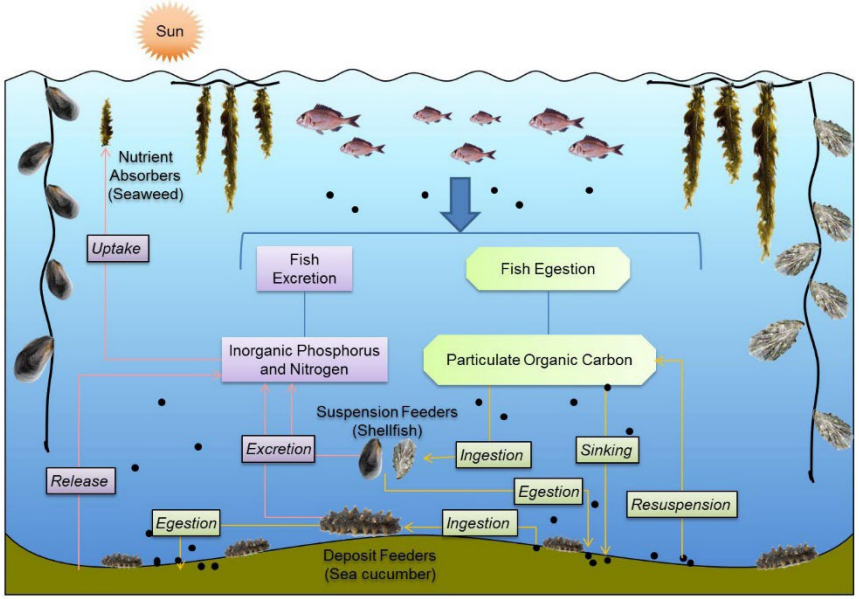

Image by Zhang et al (2019)

Seaweed cultivation

Photo by NIVA

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Source: popsci.com

Source: AKUA

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Environmental Impact of Seaweed Cultivation

- No need for:
  - Fresh water
  - Pesticides
  - Fertilisers / Feed

- Absorbs excess nutrients
- Produces oxygen
- Sequesters carbon
- A temporary home and food source for fish and other animals

- Environmental risks relatively low at current scale in Europe
- Biggest risk: Spreading species and genes

Environmental Impact of Seaweed Cultivation

- Environmental impact dependent upon size and placement of cultivation site (e.g. whether sufficient water currents)
- More research needed – especially as industry grows

Sangou Bay, China. Photo by Max Troell; published in Buschmann et al. (2017)

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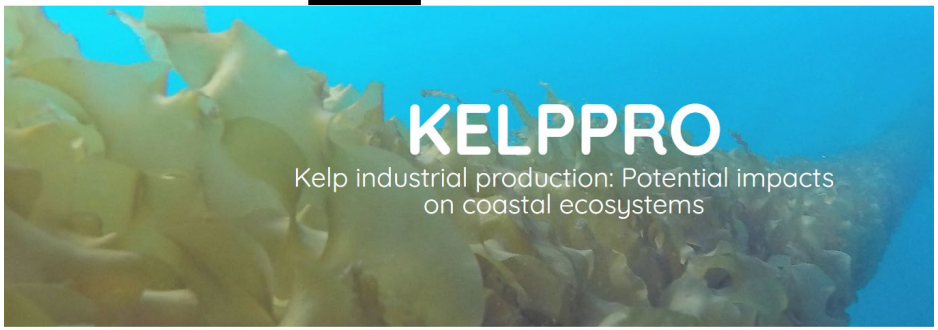


What next?

1. The ocean is more at risk than we have acknowledged

2. There is increasing pressure to produce more from the ocean

→ Prioritise win-win solutions

Photo by Garrett Sears

The Ocean Panel's 3 Ps

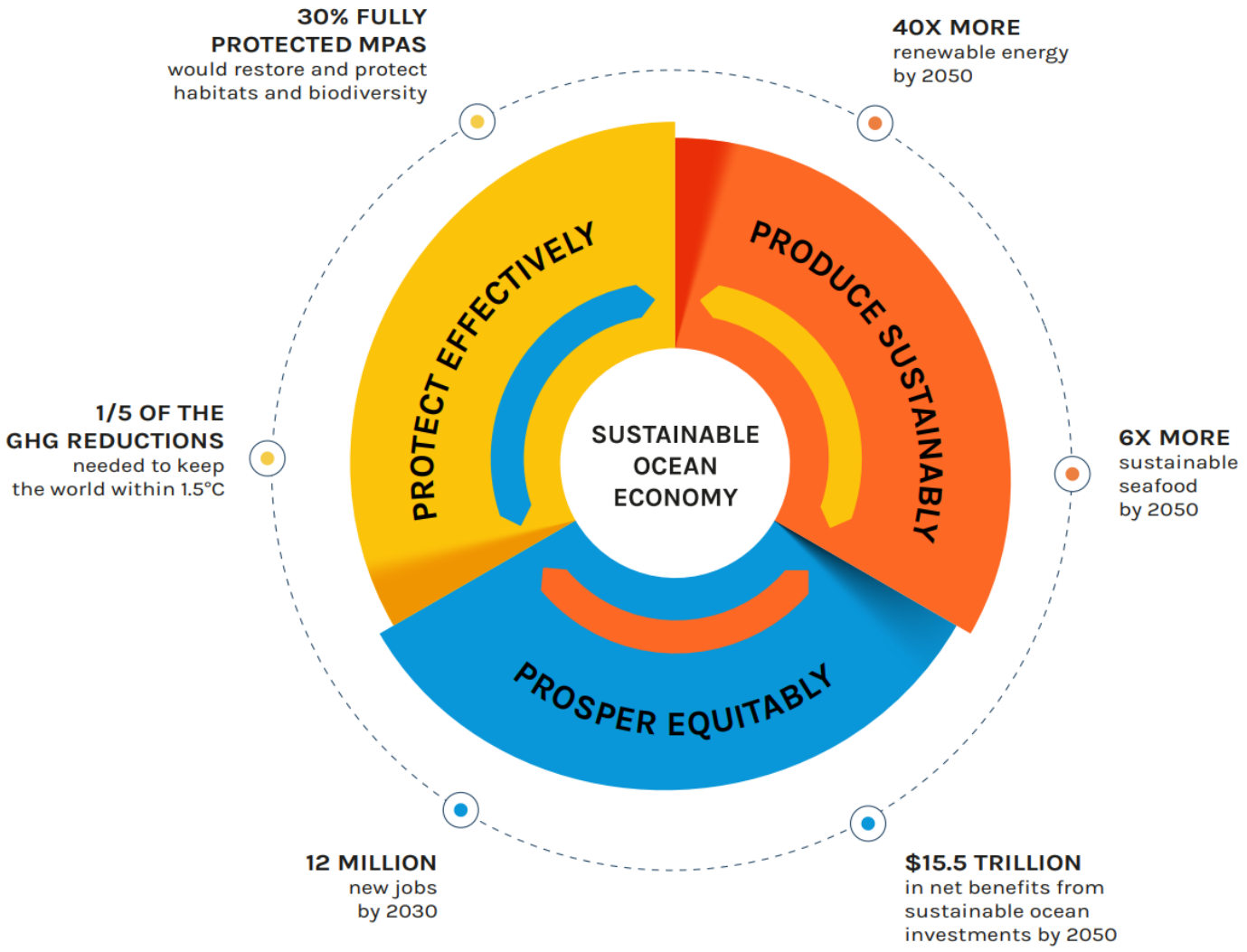
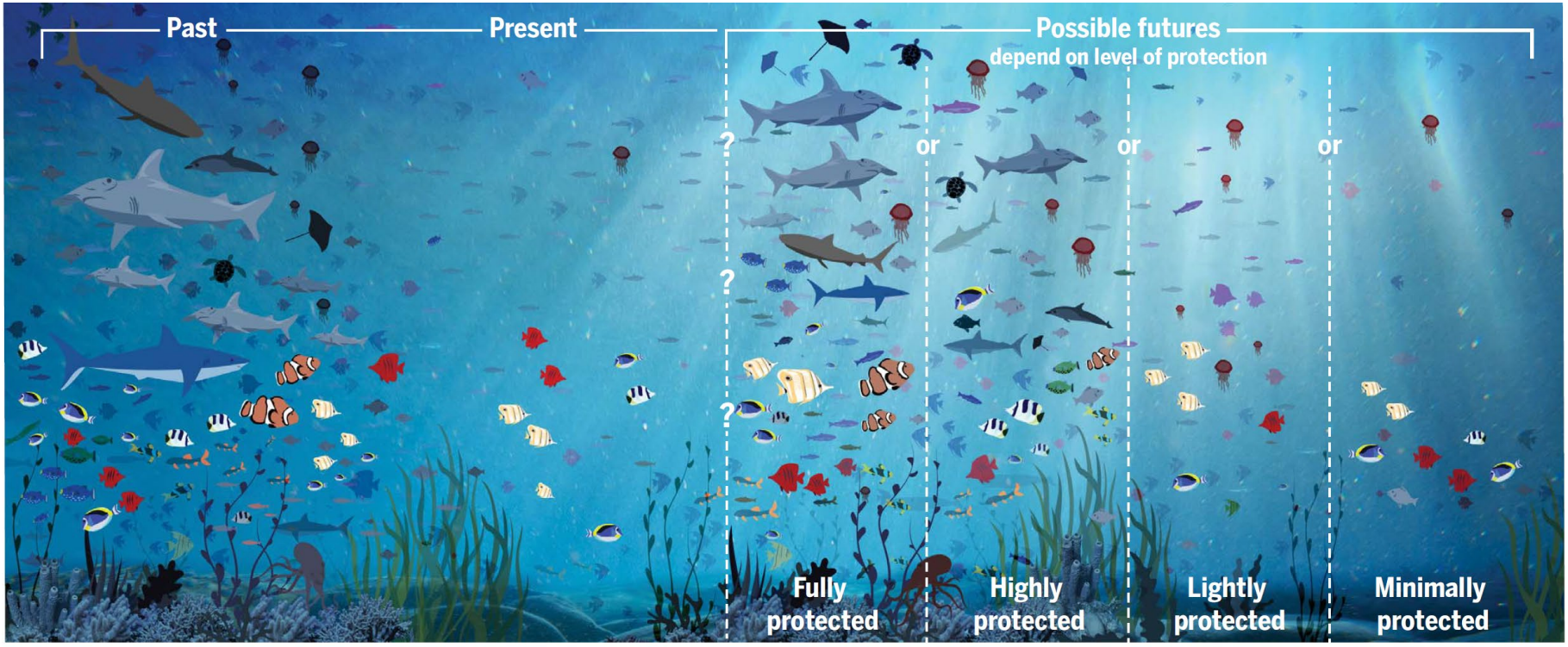


Image by the Ocean Project

- 14.4% of national waters and 5.7% of the global ocean are protected
- Only 2.5% of the ocean is fully protected

The effectiveness of MPAs depend on a range of factors, including size, location, duration, regulations, and connectivity



The level of protection, and therefore the effectiveness of MPAs, will greatly influence the future state of the ocean. Past ocean ecosystems were abundant and diverse in species and habitats. Over time, expanded and intensified human activities depleted and disrupted ocean ecosystems and reduced their services. MPAs, in conjunction with climate mitigation strategies and more sustainable uses of the ocean, can conserve and restore biodiversity and the resilient ecosystems needed for human well-being. Different levels of protection will result in different outcomes, if enabling conditions are satisfied.

Grorud-Colvert et al. (2021)

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Grorud-Colvert et al. (2021), based on Regulations-Based Classification System for MPAs (Horta et al. 2016) and IUCNs 2018 guidelines.

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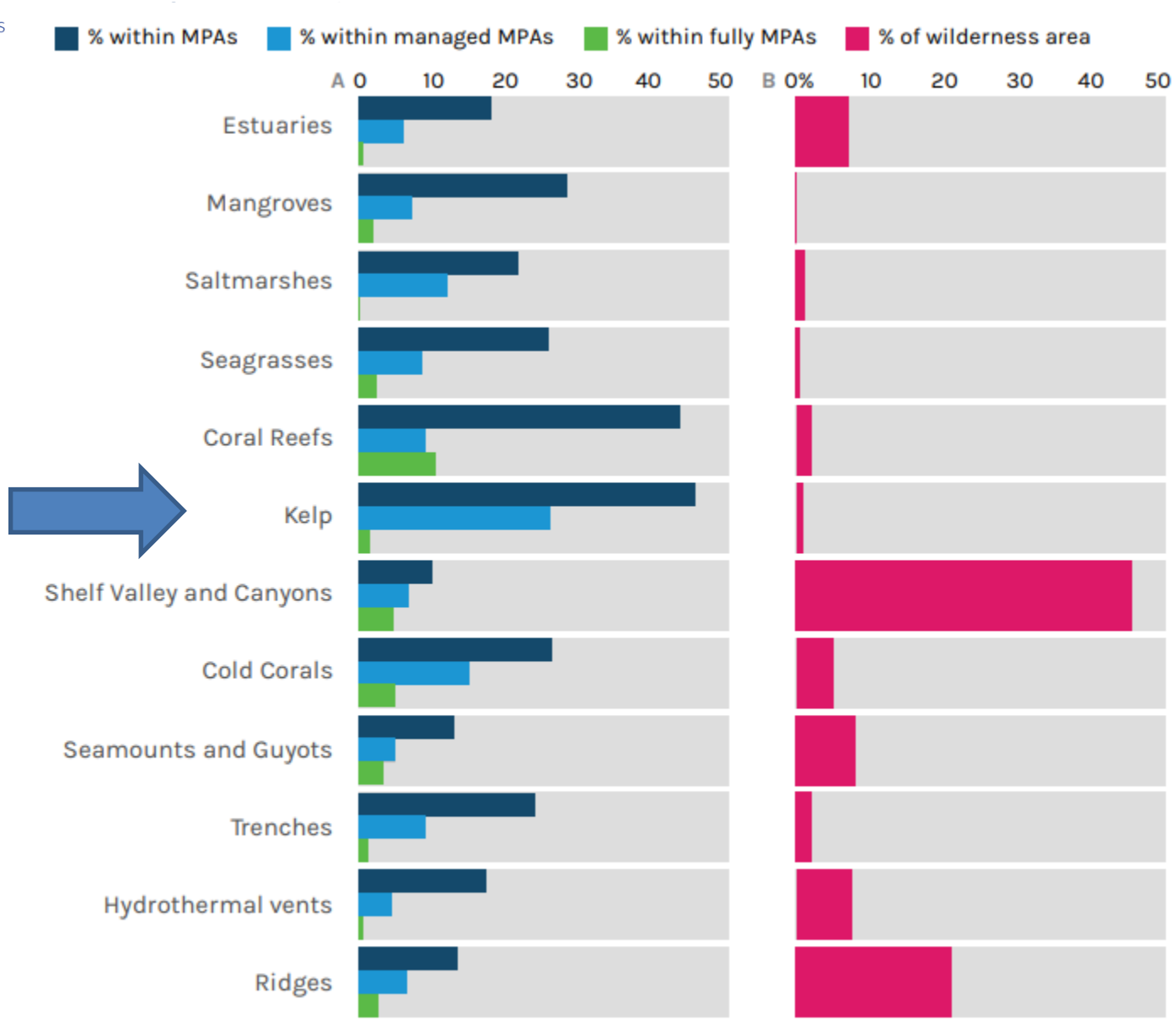
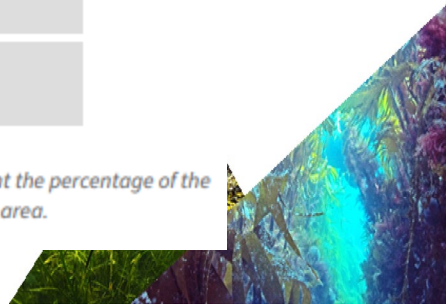


Notes: Habitats on the x-axis are ordered according to their distance to the coast, as a proxy for their average depth. (A) The bars represent the percentage of the habitat within MPAs, within MPAs with a management plan, and fully protected MPAs. (B) The percentage of wilderness inside the habitat area.

Rogers & Alburto-Oropeza (2020) Ocean Panel



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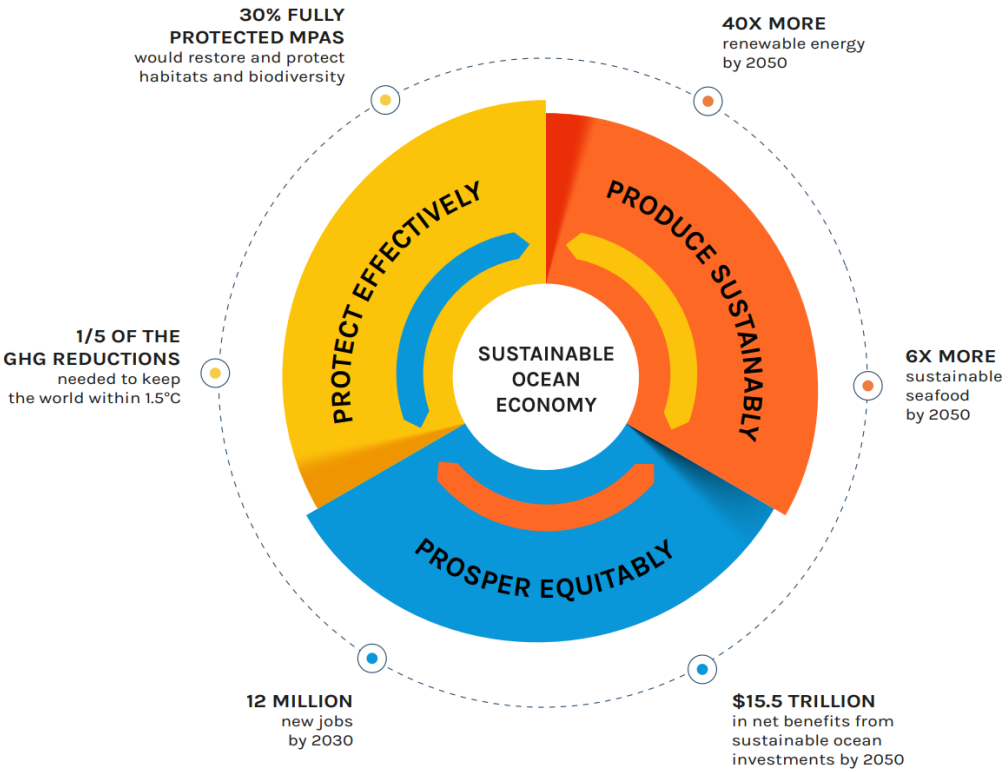
The Ocean Panel's second P: Produce Sustainably



1. Explore opportunities for co-existence and complementarities

2. Proactively learn from past experiences before scaling up seaweed cultivation

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Thank you!