Blue Food Opportunities for a Low-Carbon Future

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4 Leverage Points for Decarbonizing Food Systems

1. Dietary Shifts

2. Optimizing Environmental Performance

3. Blue Carbon Solutions

4. Green-Blue Interactions

Spencer & Tigchelaar, 2023
Blue foods have a lower carbon footprint than other animal-source foods – shift from beef to blue foods.

**CO\textsubscript{2} e Emissions of Protein Sources**

![Graph showing CO\textsubscript{2} e emissions per gram protein for different food sources. Beef has the highest emission at 238, followed by mutton at 200, cheese at 84, pork at 65, poultry at 43, wild fisheries at 39.5, eggs at 38, milk at 27, and aquaculture at 24.]
1. Dietary Shifts

Policy relevance of dietary shifts

Reducing environmental footprints

Based on: Crona et al., 2023
1. Dietary Shifts

Large diversity within blue food species – shift from high- to low-emission blue foods

Based on: Gephart et al., 2021
Fisheries interventions

1. Improve fisheries management
2. Switch to low-fuel gears
3. Transition to low-emission technologies
2. Optimizing Environmental Performance

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Aquaculture interventions

1. Change feed composition
2. Climate-smart breeding
3. Adopt circular economies
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Reduce food loss & waste
3. Blue Carbon Solutions

Spencer & Tigchelaar, 2023

Diagram:
- **Blue Carbon Ecosystems**: Carbon storage and sequestration
- **Blue Foods**: Dietary shifts and improving environmental performance
- **Climate**: A stable climate supports healthy ecosystems and blue food populations
- **Nursery habitats for fish and increased biodiversity and coastal protection**
4. Green-Blue Interactions

Manage and utilize blue-green interactions in feeds and ecosystems

Cottrell et al., 2017
Climate change threatens the ability of blue foods to contribute to low-carbon food systems

Based on: Tigchelaar et al., 2021
(Blue) foods in international climate arena

- Within formal climate negotiations (formerly Koronivia, now Sharm-el-Sheikh Joint Work) progress is slow and highly politicized; reluctance to talk about mitigation.

- Within advocacy space, alliance between conservation and nutrition organizations; overrepresentation of alternative protein and high-tech solutions.

- COP28 Presidency initiative on food offers opportunities for science-policy engagement; perceived as distraction from reducing fossil fuel reliance and heavily influenced by agri-business.
Thank you!

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