



Food and Agriculture Organization
of the United Nations

FISHERIES & FOOD SECURITY

Ocean and Climate Dialogue 2023

13 June 2023, Bonn, Germany



Dr Tarûb Bahri

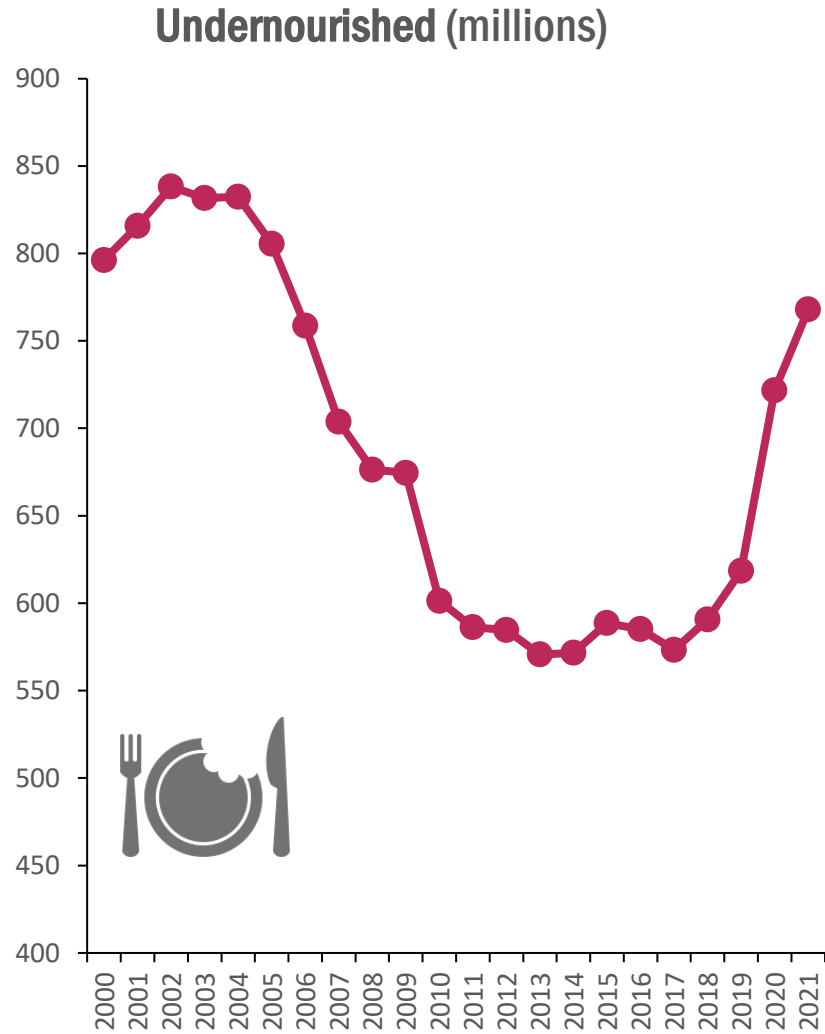
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THE GROWING CHALLENGE TO FEED THE WORLD



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Food Price Index



© FAO data

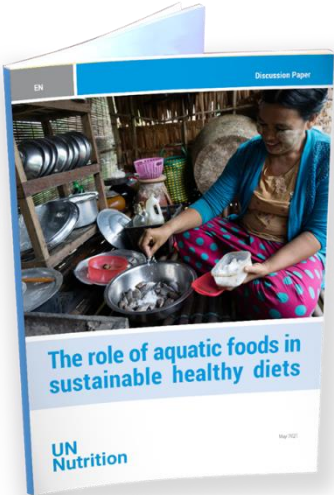


Jan-00 Jan-01 Jan-02 Jan-03 Jan-04 Jan-05 Jan-06 Jan-07 Jan-08 Jan-09 Jan-10 Jan-11 Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20 Jan-21 Jan-22

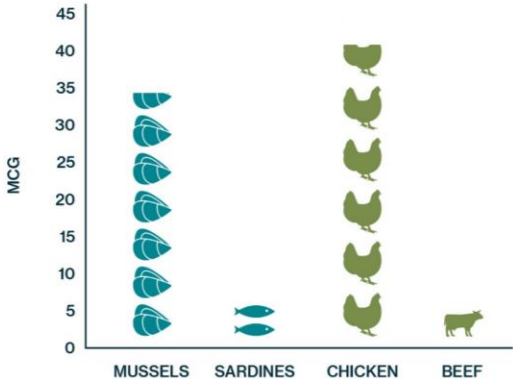
MICRONUTRIENT DEFFICIENCY: THE OTHER SIDE OF HUNGER



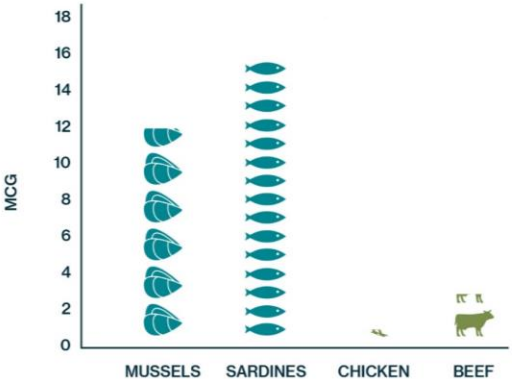
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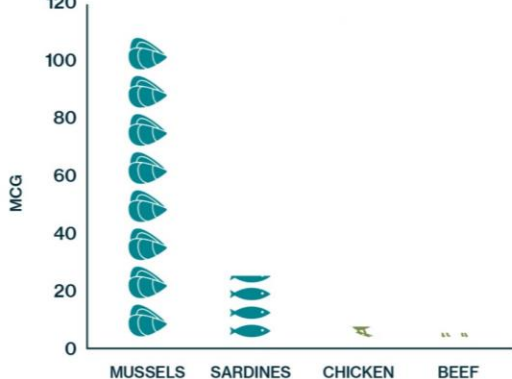
VITAMIN A (mcg per 100g serving)



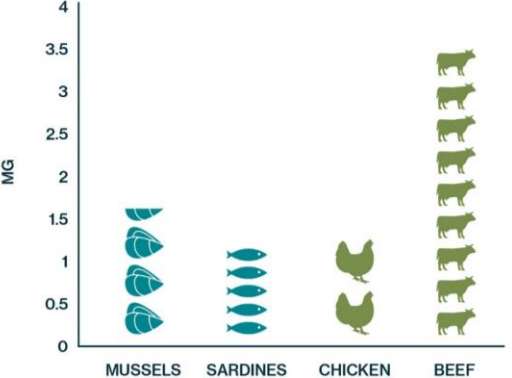
VITAMIN B12 (mcg per 100g serving)



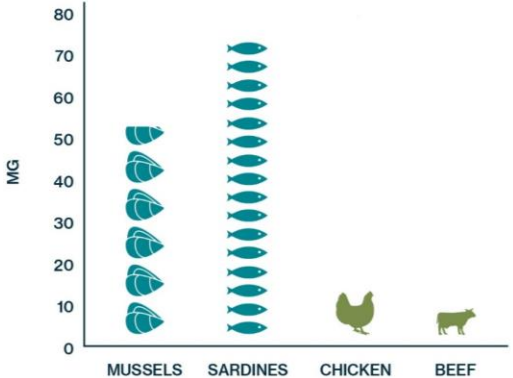
IODINE (mcg per 100g serving)



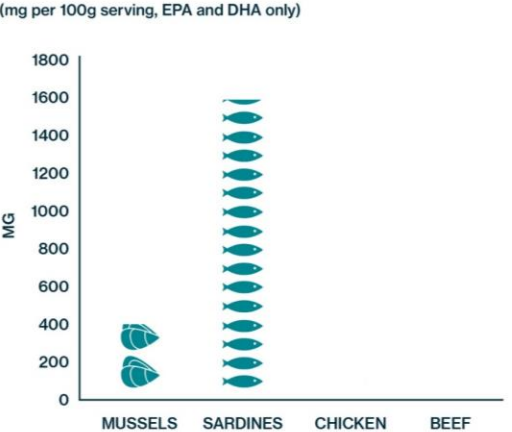
ZINC (mg per 100g serving)



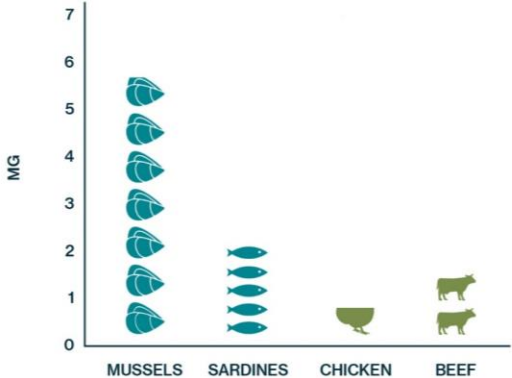
CALCIUM (mg per 100g serving)



OMEGA-3 FATTY ACIDS



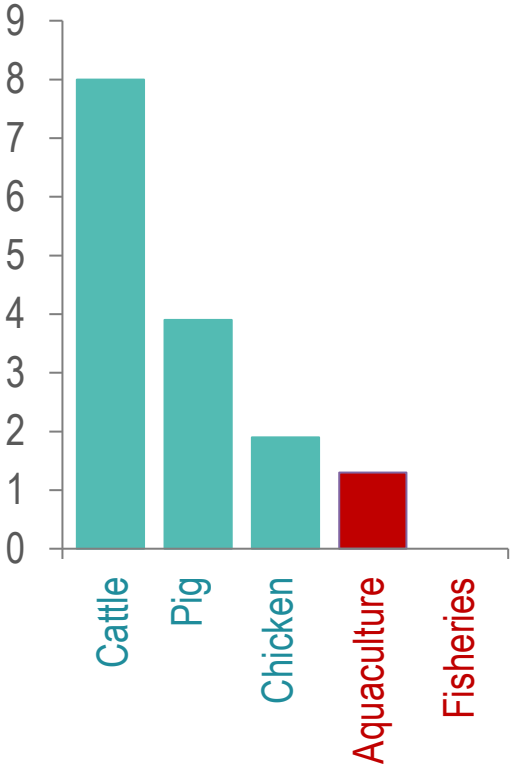
IRON (mg per 100g serving)



AQUATIC FOODS: LOW ENVIRONMENTAL FOOTPRINT

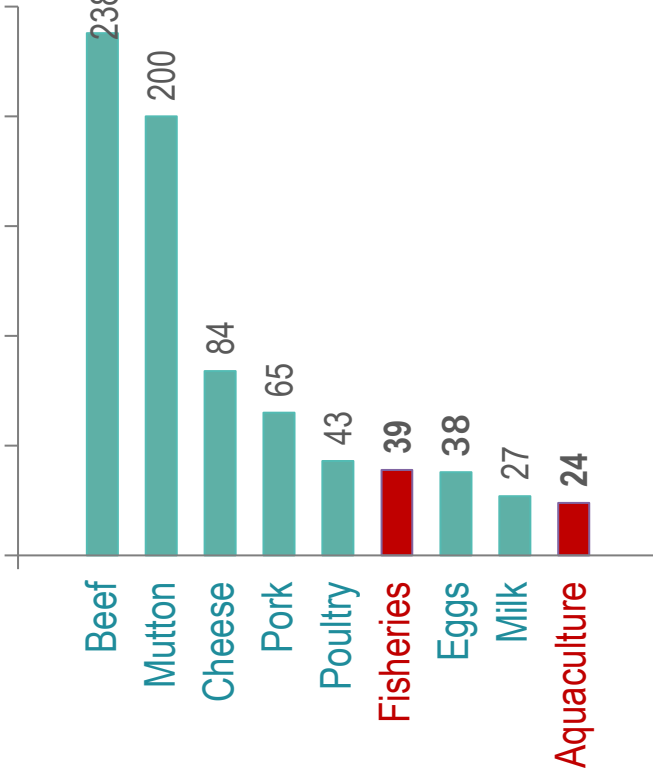


Conversion Efficiency
(kg feed/ Kg live weight)



© Fry et al. 2018

GHG Emissions Intensity
(g CO2 eq./g protein)



© Petsko 2021

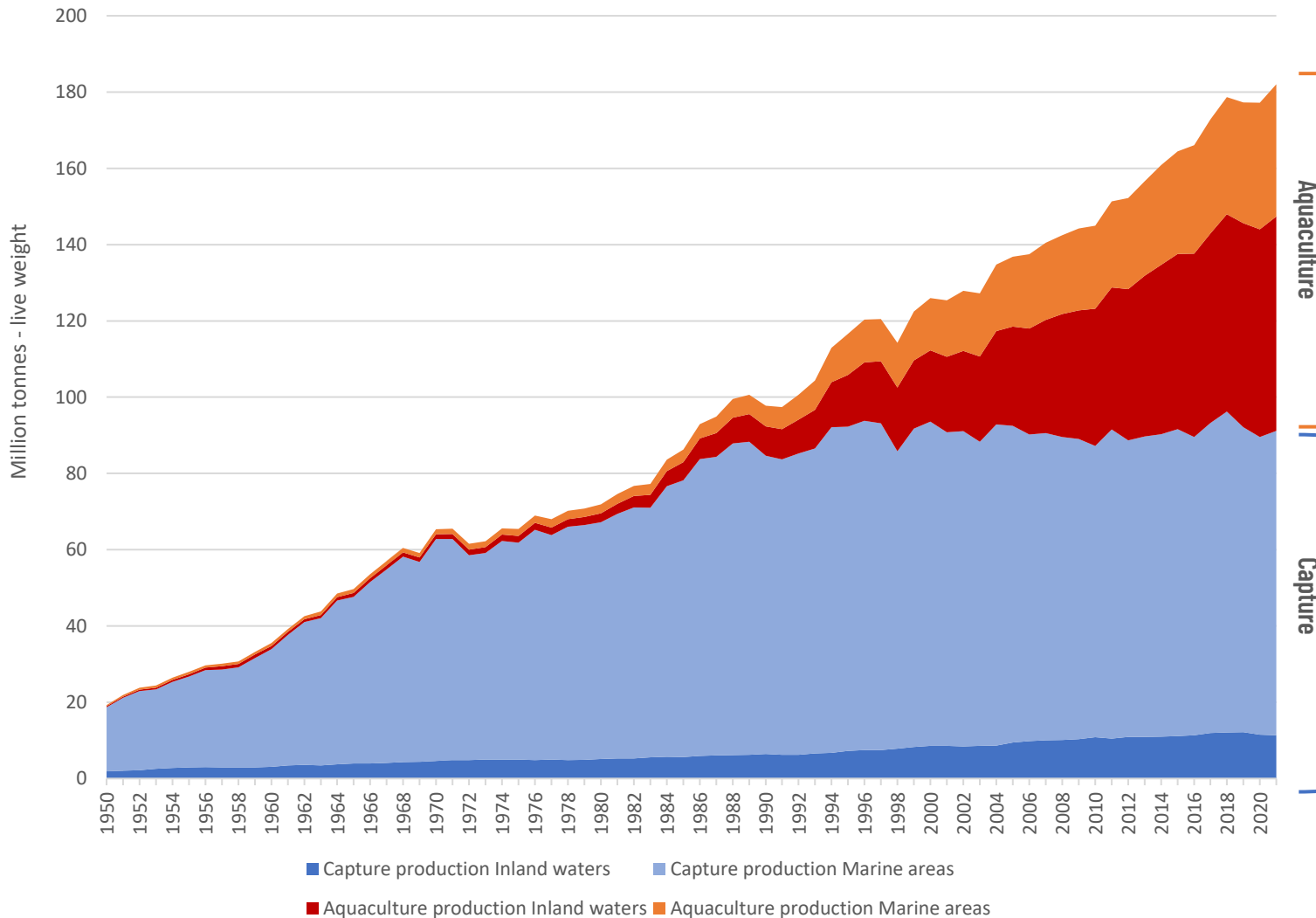


AQUATIC FOODS: INCREASING FOCUS



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TOTAL FISHERIES AND AQUACULTURE PRODUCTION 2021 = 218.4 Mt, A NEW RECORD



ANIMAL PRODUCTION = 182.1 Mt ↑ 2.7%

Capture fisheries = 91.2 Mt ↑ 1.8%
(12.5% Inland)

Aquaculture = 90.9 Mt ↑ 3.7%
(61.9% Inland)

ALGAE PRODUCTION = 36.3 Mt ↑ 0.2%

Biodiversity

2 981 capture fisheries species

652 aquaculture species



600 million

depend from the sector

50%

women when post-harvest is considered

CLIMATE CHANGE: IMPLICATIONS OF THE ULTIMATE DISRUPTOR



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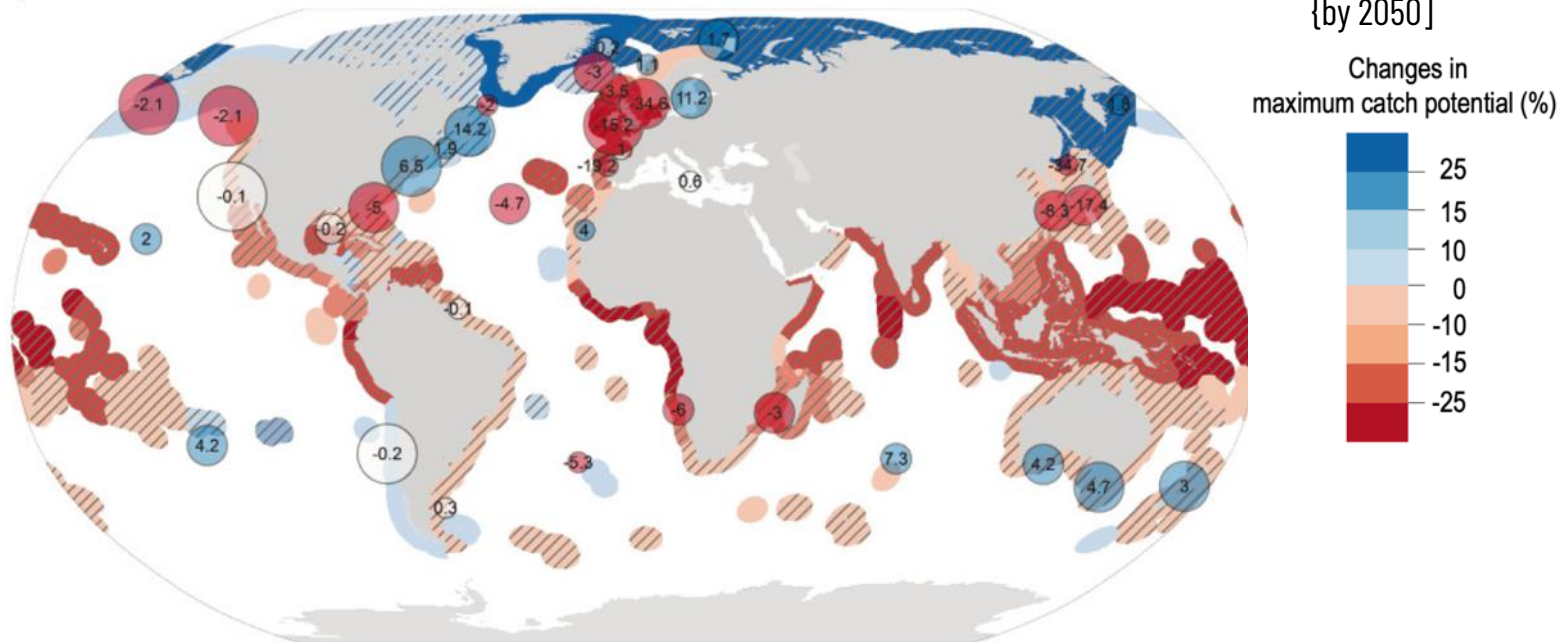
- ❖ Institutions
- ❖ Management systems
- ❖ Fishing & farming operations
- ❖ Offloading/ Processing
- ❖ Markets
- ❖ Consumer



PRODUCTIVITY CHANGES

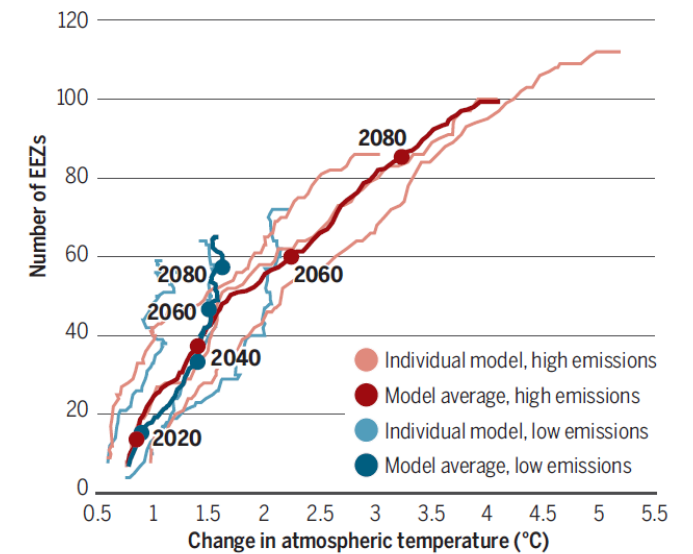
- Expected change in maximum catch potential is projected to decrease (-) 2.8-12% by 2050, but with very large geographical differences
- 45% of transboundary stocks will have shifted, and 81% of the world's EEZs will have experienced at least one shifting stock by 2100 (Palacios-Abrantes et al., 2022)

Impacts of future warming on marine fisheries production



© IPCC SROCC 2019

Number of EEZs with new transboundary stocks



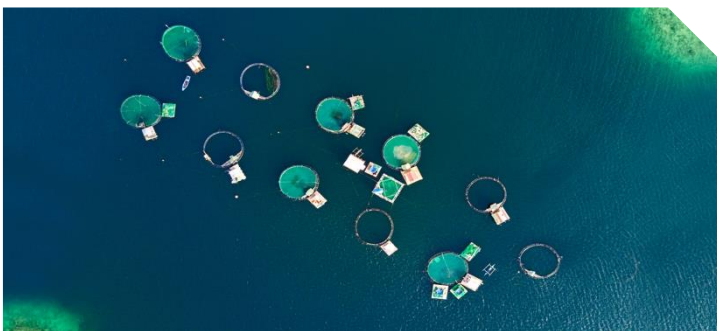
© Pinsky et al. 2018

An aerial photograph of a coastal village. The houses have colorful roofs in shades of red, blue, and white. The water is a deep greenish-blue, and several traditional outrigger canoes are visible. The land is covered in dense green trees. A white silhouette of a map of the Philippines is on the left side of the image.

BLUE TRANSFORMATION

**Harnessing the possibility
of tomorrow.**

AQUATIC SYSTEMS ARE A POWERFUL SOLUTION: THE NEED FOR A BLUE TRANSFORMATION



OBJECTIVE 1

Sustainable aquaculture intensification and expansion satisfies global demand for aquatic foods and distributes benefits equitably.



OBJECTIVE 2

Effective management of all fisheries delivers healthy stocks and secures equitable livelihoods.



OBJECTIVE 3

Upgraded value chains ensure the social, economic and environmental viability of aquatic food systems.

SUSTAINABLE AQUACULTURE



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SEAMOSS FARMING & AQUAPONICS



OBJECTIVE 1

Sustainable aquaculture intensification and expansion satisfies global demand for aquatic foods and distributes benefits equitably.



Adaptive livelihood options:

- **CO₂ and Nitrogen** absorption
- Increases **biodiversity**
- **Additional income** and livelihoods
- Increase **production**

SUSTAINABLE FISHERIES



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FAO ADAPTATION TOOLBOX



OBJECTIVE 2

Effective management of all fisheries delivers healthy stocks and secures equitable livelihoods.



An iterative adaptive management framework:

- Institutional adaptation
- Livelihoods adaptation
- Risk reduction and management for resilience

SUSTAINABLE VALUE CHAINS



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RENEWABLE ENERGY IN SSF VALUE CHAINS



OBJECTIVE 3

Upgraded value chains ensure the social, economic and environmental viability of aquatic food systems.



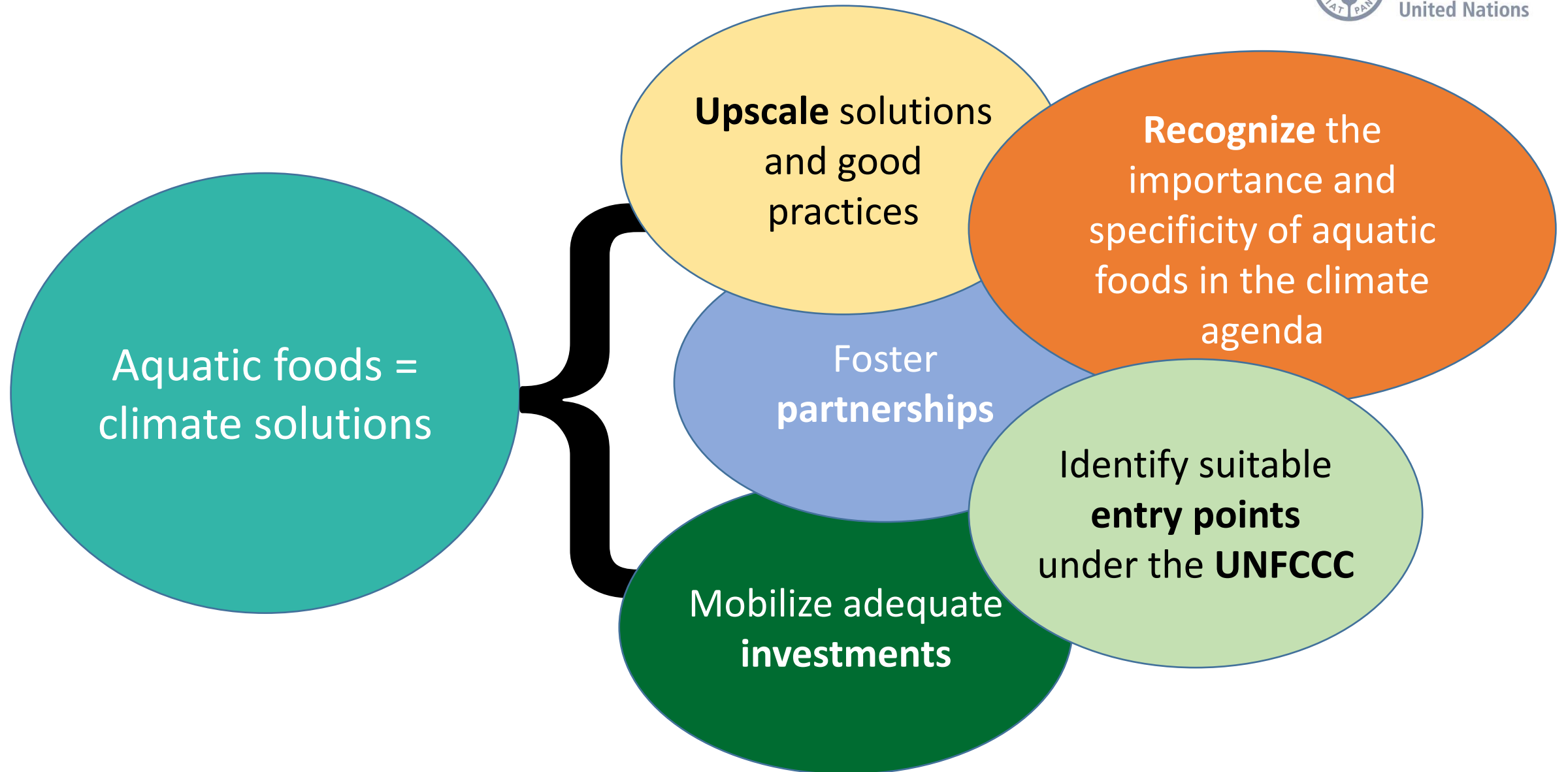
Novel technologies

- Carbon efficiency
- Low environmental impact
- Economic boost of small-scale fishers

WAY FORWARD



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FAO FISHERIES AND AQUACULTURE TECHNICAL PAPER

627

Impacts of climate change on fisheries and aquaculture

Synthesis of current knowledge, adaptation and mitigation options



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FAO FISHERIES AND AQUACULTURE TECHNICAL PAPER

650

Decision-making and economics of adaptation to climate change in the fisheries and aquaculture sector



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THE SMALL-SCALE FISHERIES AND ENERGY NEXUS

Opportunities for renewable energy interventions



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ADDRESSING FISHERIES AND AQUACULTURE IN NATIONAL ADAPTATION PLANS

[Supplement to the UNFCCC NAP Technical Guidelines]



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FAO FISHERIES AND AQUACULTURE TECHNICAL PAPER

626

Quantifying and mitigating greenhouse gas emissions from global aquaculture



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FAO FISHERIES AND AQUACULTURE TECHNICAL PAPER

667

Adaptive management of fisheries in response to climate change



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Building resilience to climate change and disaster risks for small-scale fisheries communities

A human-rights-based approach to the implementation of Chapter 9 of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication



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Thank you for your attention

