



Food and Agriculture
Organization of the
United Nations



EP Intergroup Climate Change,
Biodiversity & Sustainable Development

Climate Change Impacts on Aquatic Foods in the Context of Global Food Security Needs

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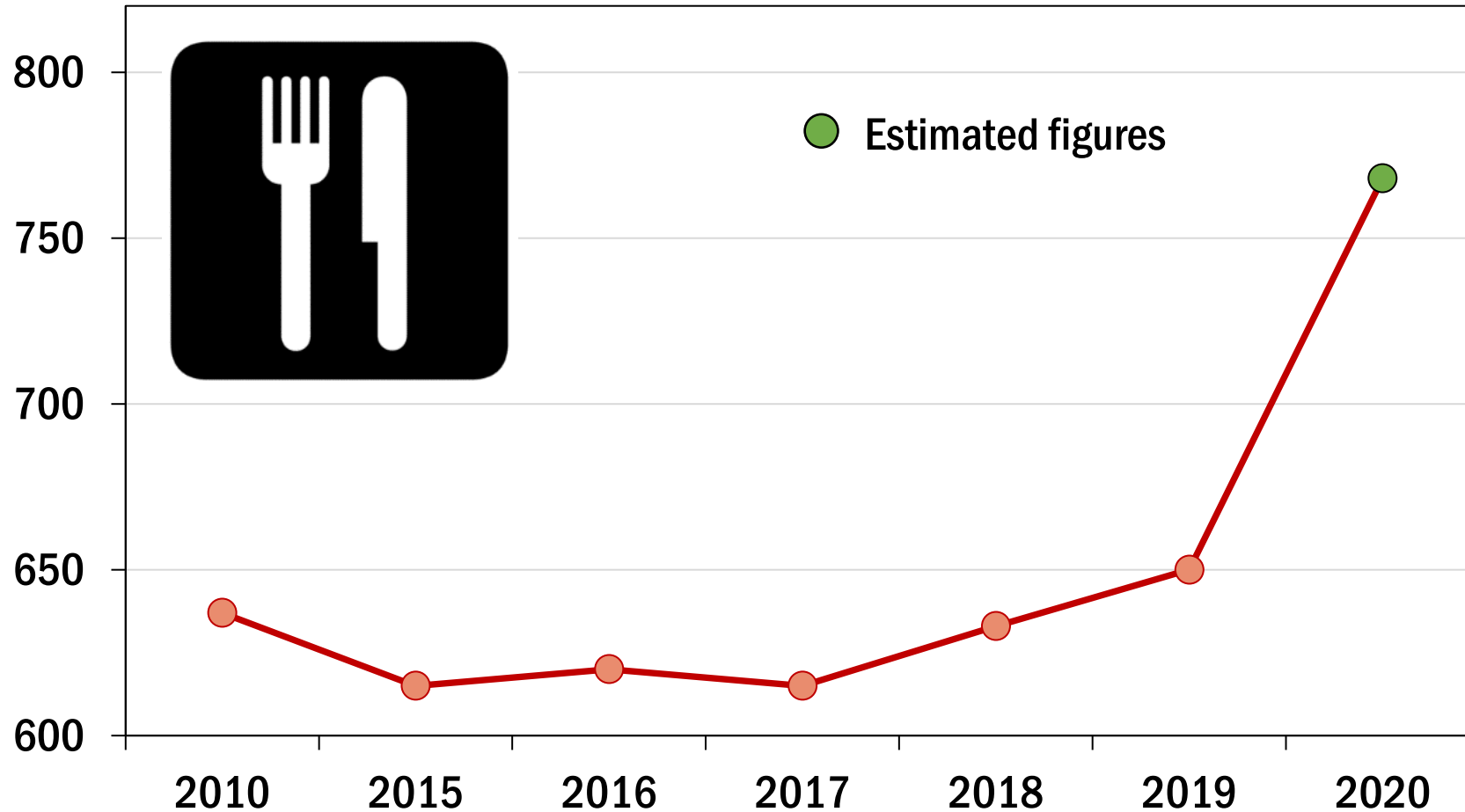
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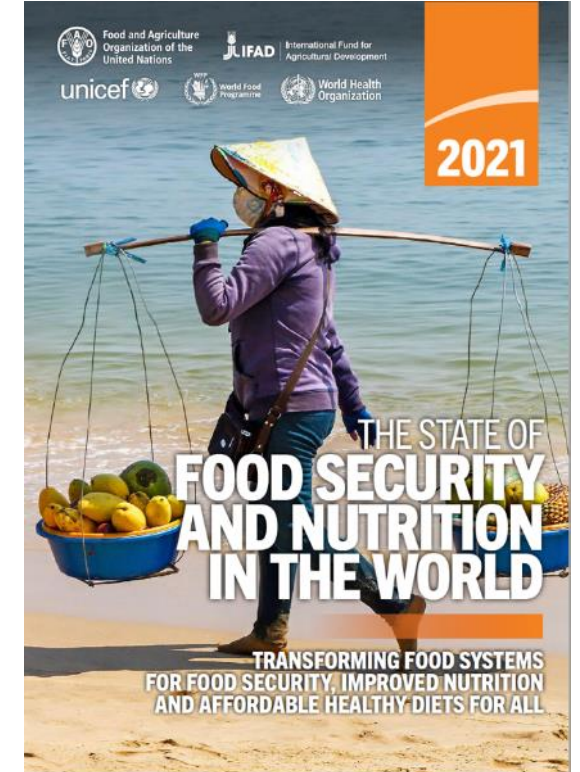
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Undernourished People (Millions)



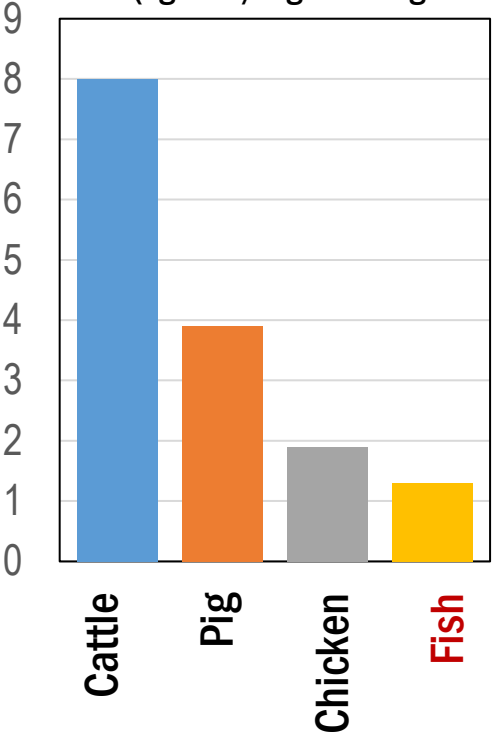
Changing trajectory is essential, and requires action



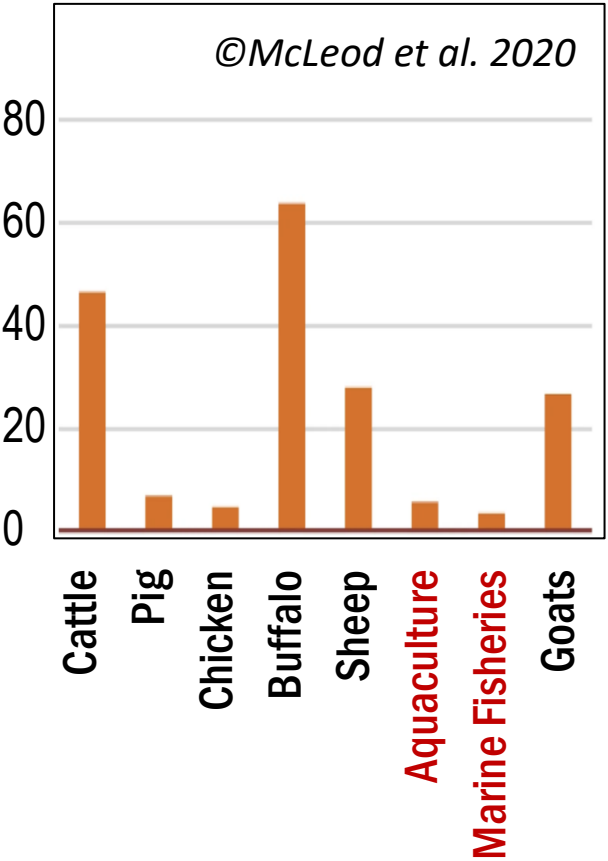


Why Aquatic Foods?

Conversion Efficiency
(kg feed/ Kg live weight)



GHG Emissions Intensity
(Kg CO2/kgCW)



Minerals

- Iron (Fe)**
essential for brain development in children and increases maternal survival rates.
- Iodine (I)**
essential for brain development in fetus and young children and helps prevent stillbirth.
- Zinc (Zn)**
crucial for childhood survival, reduces stunting in children and fights diarrhea.

Essential fatty acids

help prevent preeclampsia, preterm delivery, low birth weight, and support cognitive development and better vision in children.

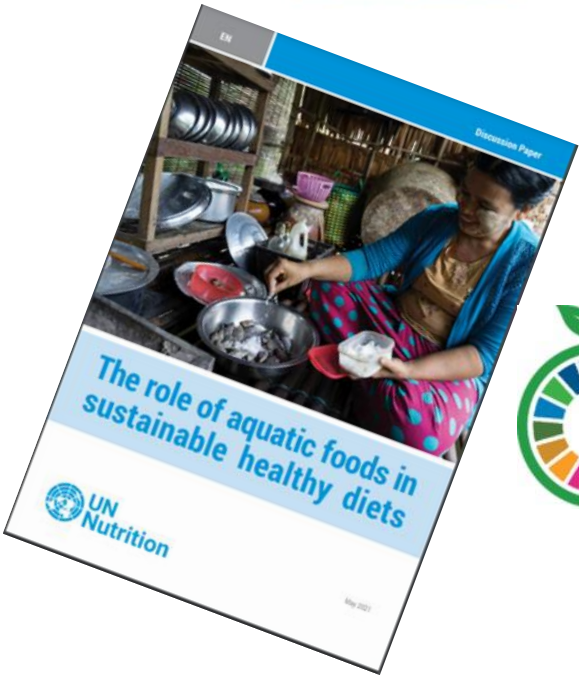
Vitamins

Vitamin B12
essential for a healthy pregnancy; helps prevent brain and spinal cord birth defects, and supports healthy maintenance of the nervous system and brain in children.

Vitamin D
essential for the development of strong, healthy bones, teeth and muscles in children and helps prevent preeclampsia, preterm delivery and low birth weight.

Vitamin A
essential for childhood survival, prevents blindness, helps fight infections and promotes healthy growth.

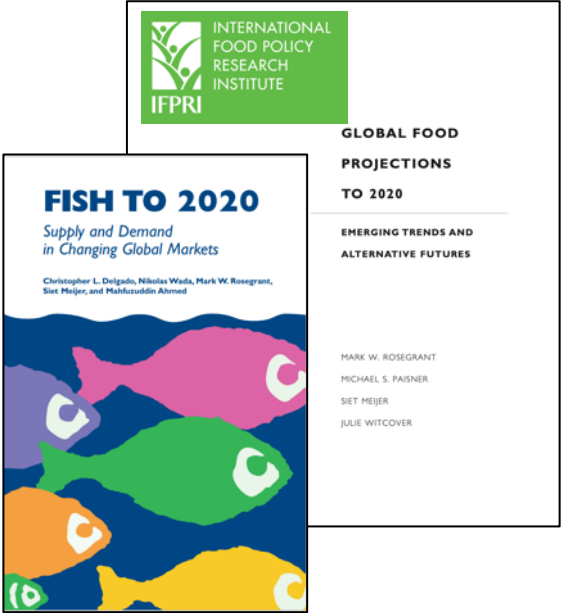
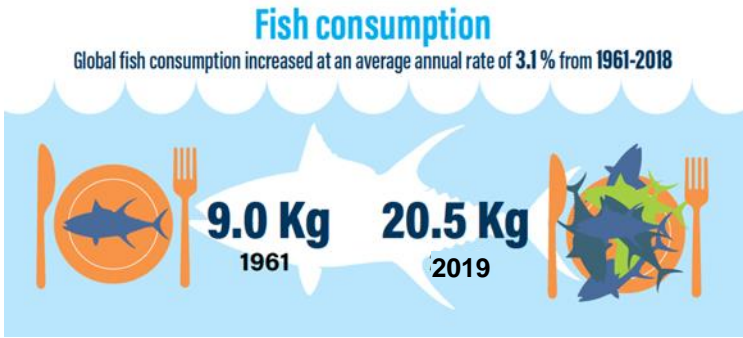
Calcium (Ca)
helps prevent preeclampsia and preterm delivery, and is essential for strong bones and teeth.



UNITED NATIONS
FOOD SYSTEMS
SUMMIT 2021



Aquatic Foods: **beating expectations**



	2020 Baseline Projection
Total Fish Food	130.1Mt
% Aquaculture	41%
Consumption	17.1kg/p/yr

Significant under-estimation of recent aquatic production due to:

- *Unanticipated new technologies*
- *Globalization and international trade*
- *Policy on aquaculture and fisheries*

**Can we replicate this as we move to 2050?
What is needed to do so?**





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Blue Transformation – A FAO Priority Programme

**Feeding the world through
aquaculture intensification and
expansion**

Target: Achieve 35-40% growth in global aquaculture by 2030, produced sustainably



**Transforming Fisheries through
better management**

Target: Ensure that 100% of aquatic systems are under effective and equitable management



**Improving Fish Value Chain
efficiency, viability and
inclusiveness**

Target: Upgraded value chains ensure less loss and waste, increased access to resources and markets, leading to growth in fish consumption



The Ocean and Cryosphere in a Changing Climate

This Summary for Policymakers was formally approved at the Second Joint Session of Working Groups I and II of the IPCC and accepted by the 51th Session of the IPCC, Principality of Monaco, 24th September 2019

Summary for Policymakers



Climate Change: **The ultimate disruptor**

Productivity – Distribution - Seasonality

sky news Watch Live

Atlantic bluefin tuna: One of world's most expensive fish may have returned to UK waters in part due to warming seas, scientists say

Fishermen in Cornwall have teamed up with scientists to study the species, which can grow up to 12ft in length and have returned to UK waters after more than 60 years.

A harbor scene with several fishing boats, including blue and red ones, docked at a pier. The water is calm, and the sky is blue with some clouds.

Clyde's fish stocks start to recover – with a different fish than before

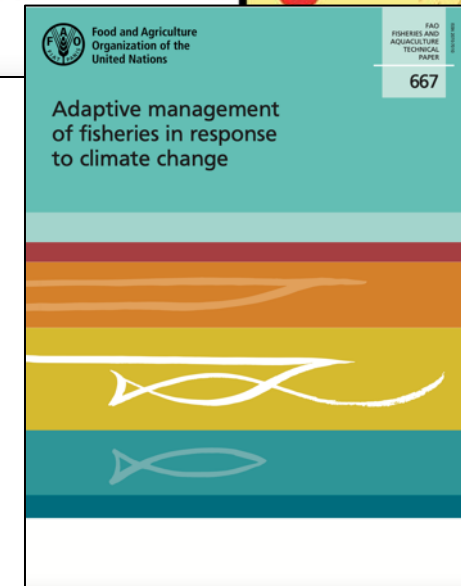
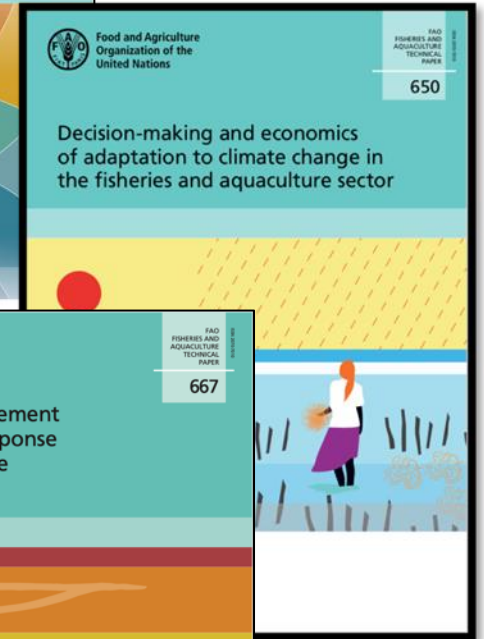
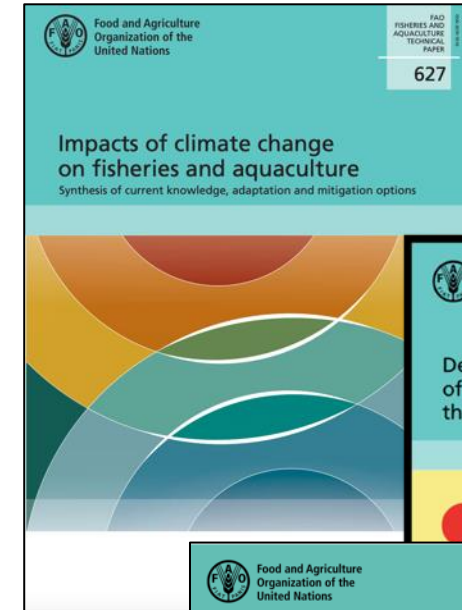
- ❖ Inadequate Institutions
- ❖ Inefficient Management Systems
- ❖ Fishing operations affected
- ❖ New Offloading/ Processing required
- ❖ Consumer Awareness essential



Solutions: *Blue Transformation* and climate change



Provide evidence at management scale





Solutions: *Blue Transformation* and climate change



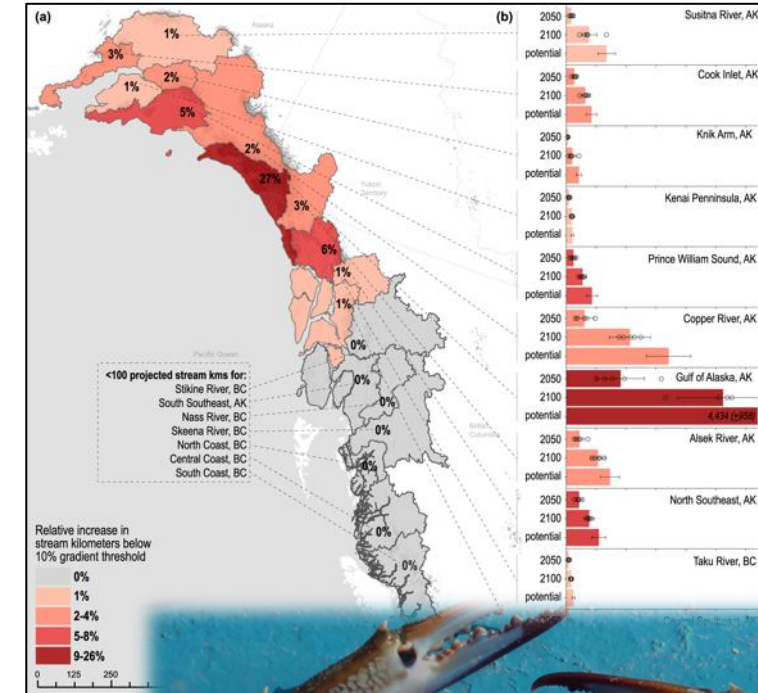
Provide evidence at management scale



Recognize wins and losses and act accordingly



Pitman et al. 2021. Nature. Glacier retreat creating new Pacific salmon habitat



From invasive species
to prized export

The evolution of blue crab fisheries and the
livelihoods of Tunisian fishers



Adaptation: the forgotten commitment of the Paris Agreement



Provide evidence at management scale



Recognize wins and losses and act accordingly



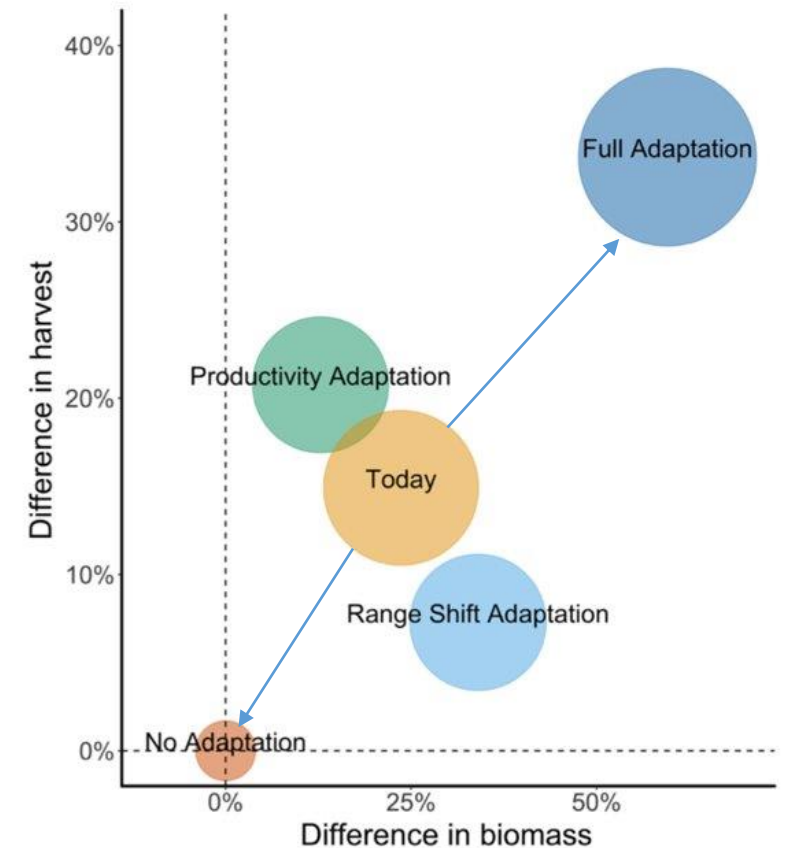
Adapt for success, not just to reduce impacts

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ECOLOGY

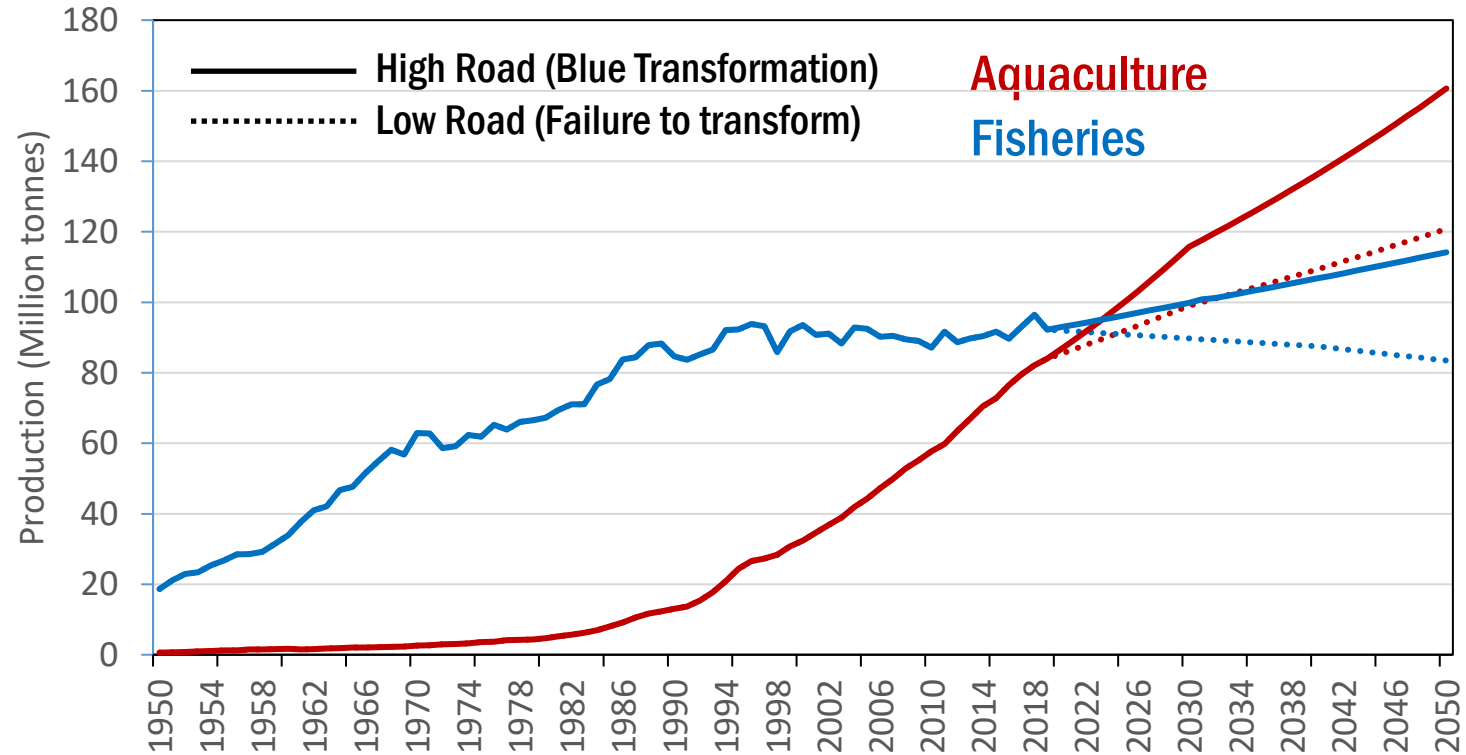
Improved fisheries management could offset many negative effects of climate change

Steven D. Gaines^{1*}, Christopher Costello¹, Brandon Owashi^{1†}, Tracey Mangin^{1†}, Jennifer Bone^{1†}, Jorge García Molinos^{2,3,4}, Merrick Burden⁵, Heather Dennis⁶, Benjamin S. Halpern^{1,7,8}, Carrie V. Kappel⁷, Kristin M. Kleisner⁵, Daniel Ovando¹





The consequences of **Blue Transformation** and Climate change **adaptation**



HR = 25.6 kg/person/yr by 2050

LR = 18.5 kg/person/yr by 2050

@ UN Nutrition Report 2021

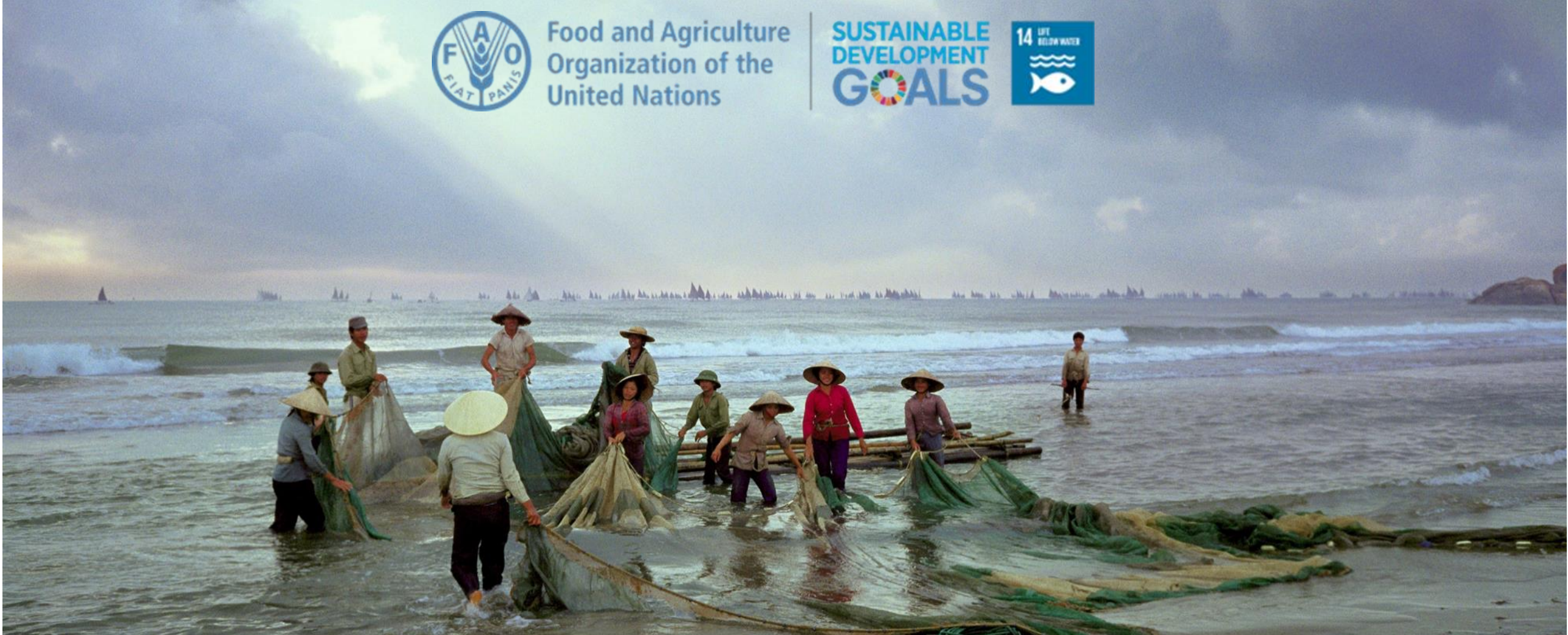
@ Golden et al. 2021, Nature





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SUSTAINABLE
DEVELOPMENT
GOALS



- All food production systems have impacts that require trade-offs
- When produced sustainably fish products are the ultimate nature-based solution
- Aquaculture is the present and future, but it must grow
- A world with hunger is a world without peace – so let's act