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Impacts of climate change on fisheries and adaptation options: not a zero-sum game

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- 821 million people are **undernourished**
- Over 50 million children under five are affected by **wasting**
- More than one in eight adults is **obese**
- One in three women of reproductive age is **anaemic**

- Fish products provide 3 billion people with almost 20 percent of their **average per capita intake of animal protein**
- Of the 30 top **fish consuming nations**, 22 are Low Income and Food Deficient countries (LIFDCs)
- **Aquaculture** has been the fastest growing food production system in the world for the last 5 decades, contributing 50% of the fish we eat.
- In a world rapidly approaching 9 billion people, where agriculture already uses 40% of the Earth's land surface, increased utilization of ocean and seas as human food provider seems inevitable.

2 ZERO HUNGER

FISH IS CRUCIAL TO ATTAIN ZERO HUNGER

ZERO HUNGER CANNOT BE ACHIEVED WITHOUT TACKLING CLIMATE CHANGE

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PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

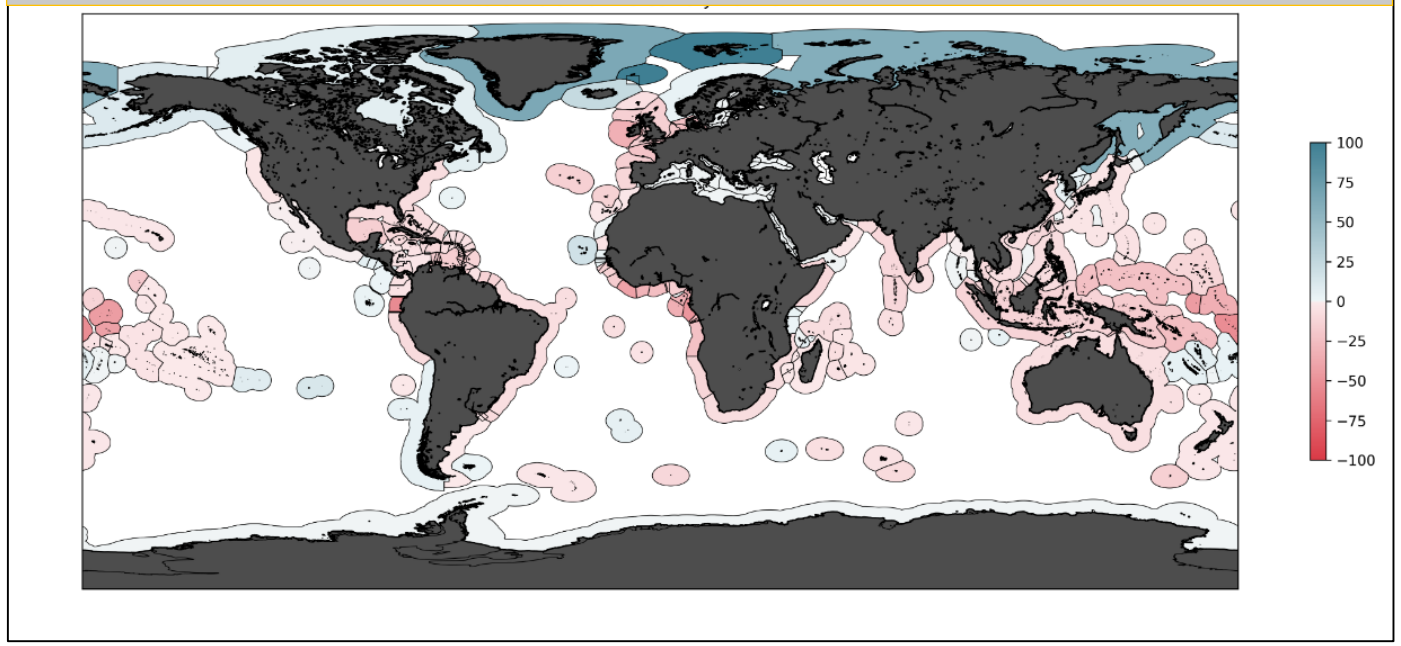
⊙**2015 Paris Agreement** includes a long-term adaptation goal, ***in a manner that does not threaten food production***, alongside mitigation goals

⊙**87 Nationally Determined Contributions (NDCs)** already address fisheries and aquaculture, and need to be updated by 2020 with detailed activities matching ambition

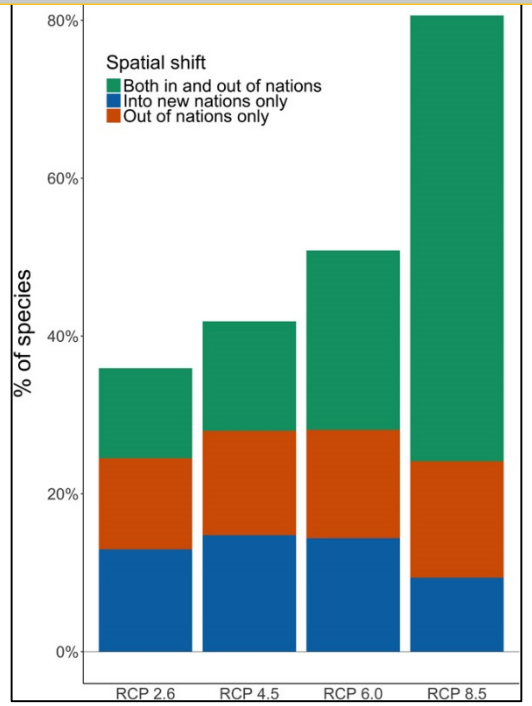
⊙This report was produced to provides up-to-date information on the disaggregated impacts of climate change in the sector, **to facilitate NDC implementation by countries and the development of National Adaptation Plans**

Marine Capture Fisheries

Change of Catch Potential by 2050 (RCP2.6 emissions) (%)



Percentage of species that move into, out of, or both, of one or more countries' EEZs by 2100



- Impacts on global fish catch potential = (-) 2.8-5.3% (Low emission) or (-) 7.0-12.1 (High emission) by 2050
- Management response crucial to minimize threats and maximize opportunities
- The role of bilateral and Regional management arrangements is likely to increase

Inland Capture Fisheries

- Freshwater ecosystems have relatively **low buffering capacity** and thus are more sensitive to climate-related shocks.
- Climatic factors and water regulation means **allocation of water** for inland fisheries will become challenged.
- 149 countries assessed on the **likely impact of climate-induced changes** (temperature, precipitation) in combination with other stressors.
- Of the major producers
  - ***China*** and ***India***, are likely to face considerable added stressors.
  - ***Pakistan, Morocco, Turkey*** – Stressors will move from High to Very High in future
  - ***Turkmenistan, Mexico, Malawi, Iran, Kazakhstan*** – Stressors will move from Medium to High

Aquaculture

- Countries **considering aquaculture in their Nationally Determined Contributions** are mostly located in the developing countries, especially in Africa – They require the most support
- **Unfavorable impacts** predominate in developing countries, but adaptation measures are available.
- Vulnerability is directly **associated with governance**, from national to farm level.
- Vulnerability reduction depends on **broader adaptation measures** beyond the aquaculture sector.
- **Higher risk countries:**
  - Viet Nam, Bangladesh, Lao PDR, China (Freshwater);
  - Viet Nam, Ecuador, Egypt, Thailand (Brackish);
  - Norway, Chile (Marine)

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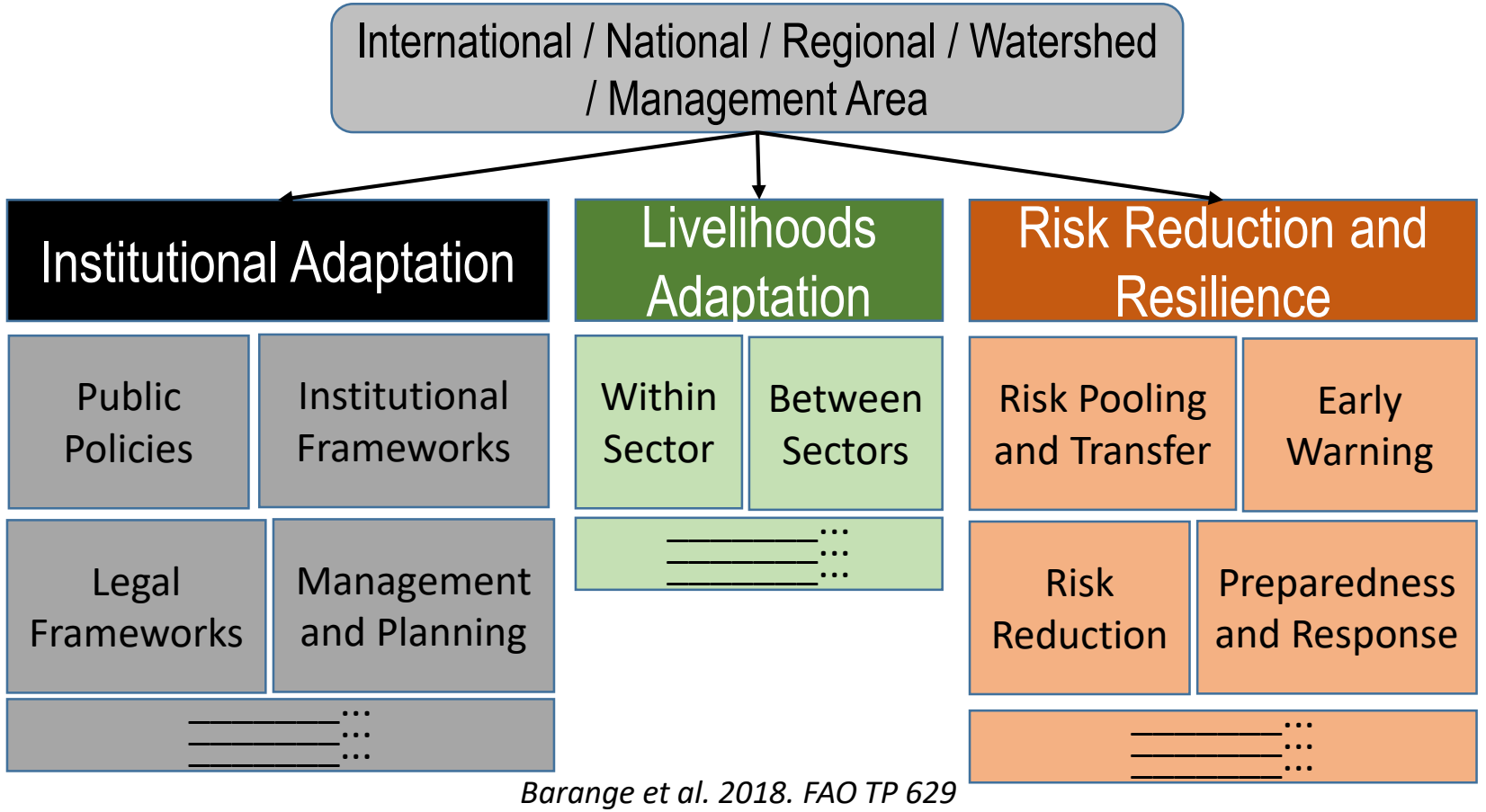
Adapting for Success – *not for weathering storms*



Barange et al. 2018. FAO TP 629

- Adaptation is placed and context based
- Should be viewed as an on-going and iterative process
- We adapt to the possible rather than the probable – our predictive capability for most fisheries is in its infancy
- Effective and timely Adaptation can have very positive results - Maladaptation can lead to terrible outcomes

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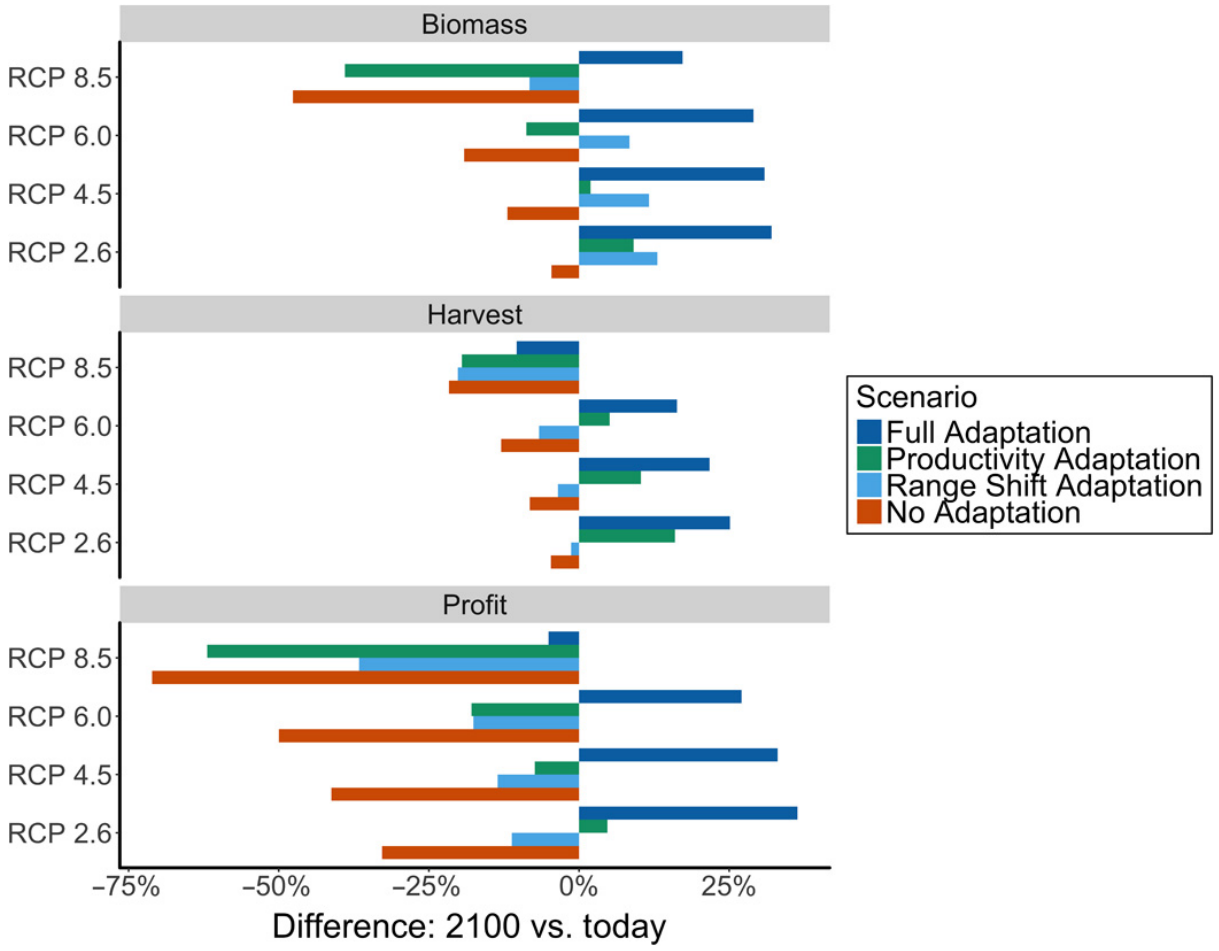
But can we achieve more than a zero-sum?



- Adapting to **Production and Distributional** changes can result in Biomass, Harvest and Profit growth
- Effective and timely Adaptation can have very positive results **- Maladaptation** can lead to terrible outcomes
- For food production sectors that rely on natural biodiversity and natural production cycles there has never been a stronger call for **serious sustainability management** than climate change

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Take home messages

- In a world rapidly approaching 9 billion people, where agriculture already uses 40% of the Earth's land surface, increased utilization of the ocean as a human food provider seems inevitable
- How to do so is less evident, when over 30% of fish stocks are exploited above sustainable levels, and when climate change is expected to have significant consequences for marine ecosystems
- But this effort does not have to be a zero-sum game, or a fight to maintain status quo. Solutions are available – but they need political commitment, technological innovation and behavioural change. Simple "protection" will not be a solution
- Effective and coordinated adaptation will be key
- For food production sectors that rely on natural biodiversity and natural production cycles there has never been a stronger call for serious sustainability management than climate change
- For a zero-hunger world, this must happen

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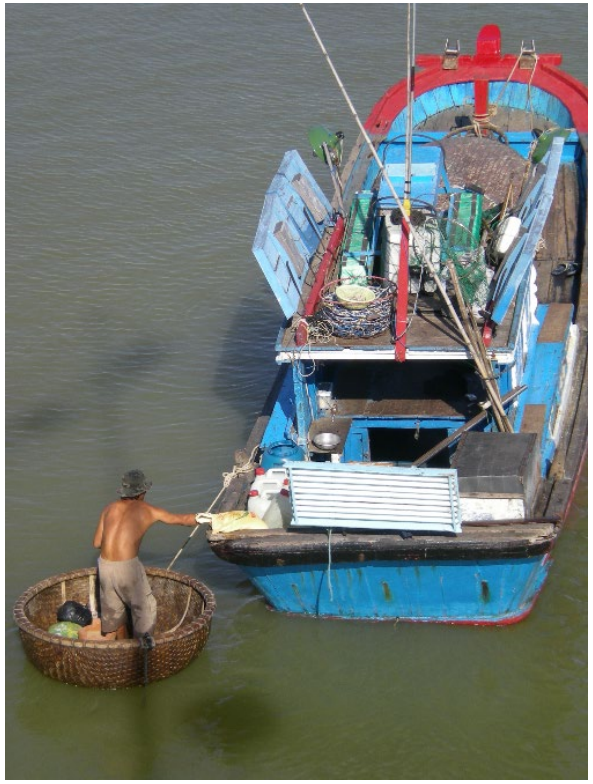

International Symposium on Fisheries Sustainability

FAO Headquarters, Rome, 18–21 November 2019

STRENGTHENING THE SCIENCE-POLICY NEXUS

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#SustainableFisheries