



2021-2030 United Nations Decade
of Ocean Science
for Sustainable Development

UNITED NATIONS DECADE OF
ACTION ON NUTRITION
2016-2025



ONE
OCEAN
EXPEDITION
2021 - 2023
SETTING SAIL FOR THE FUTURE

Safe and Healthy Aquatic food and Climate change National and Global Implications



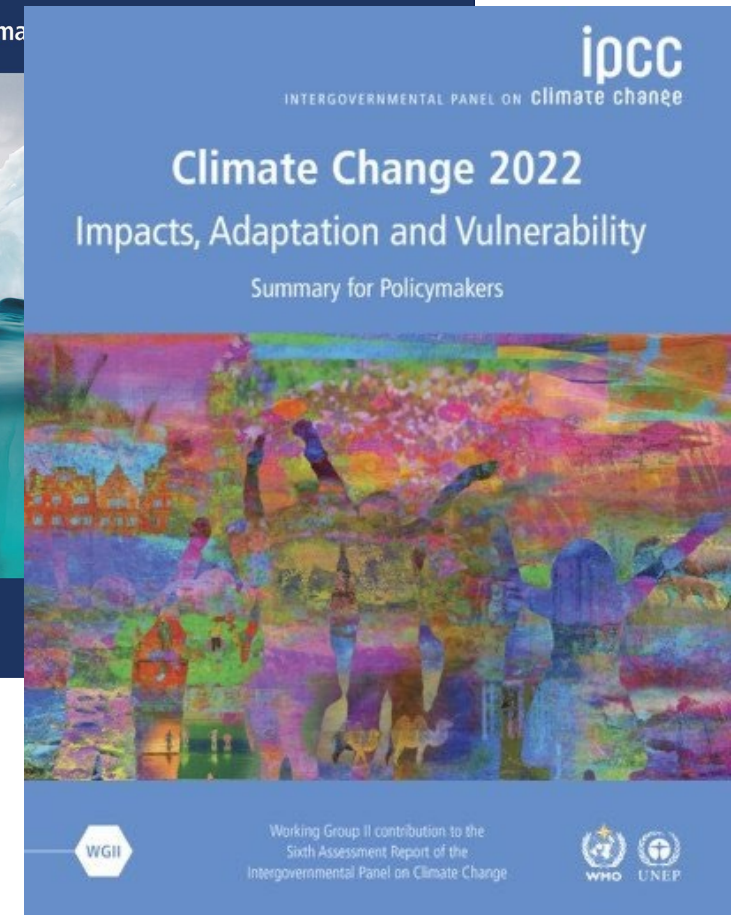
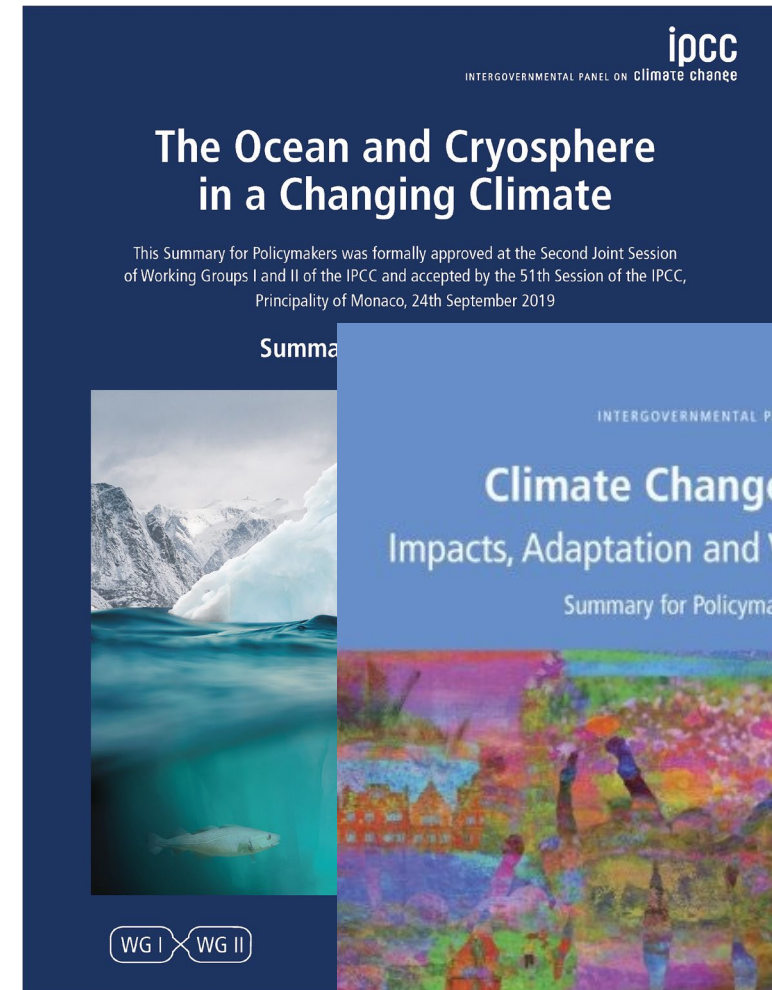
Monica Sanden

Senior scientist / PhD / Head of research

Contaminants and Biohazards, Institute of Marine Research, Norway

IPCC reports

- Carbon emissions from human activities are causing ocean warming, acidification and oxygen loss
- Nutrient cycling and primary production is affected
- Fish species move further north



Global and regional impacts on food production

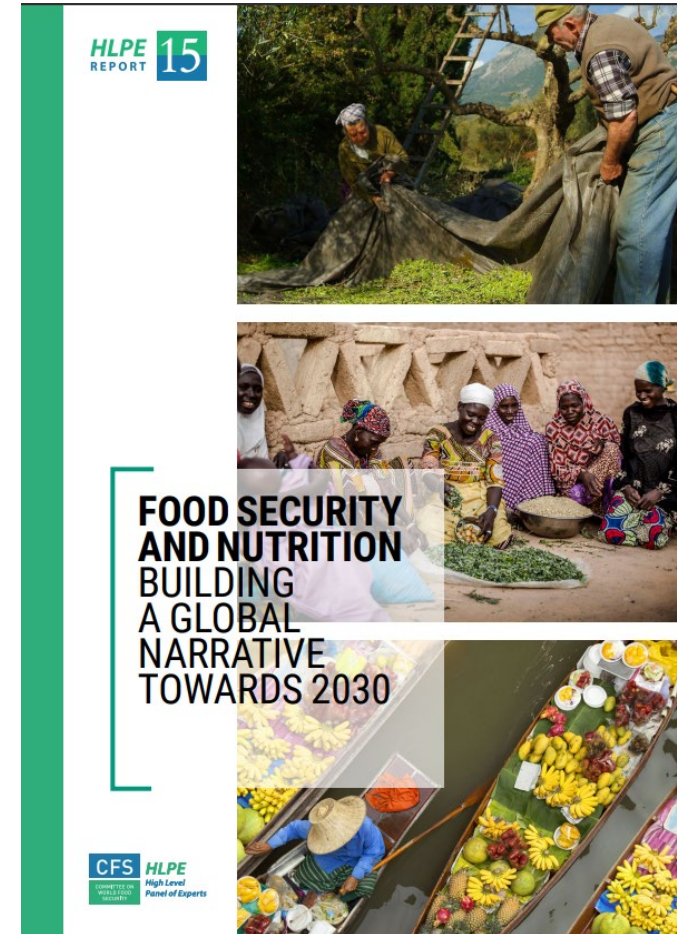
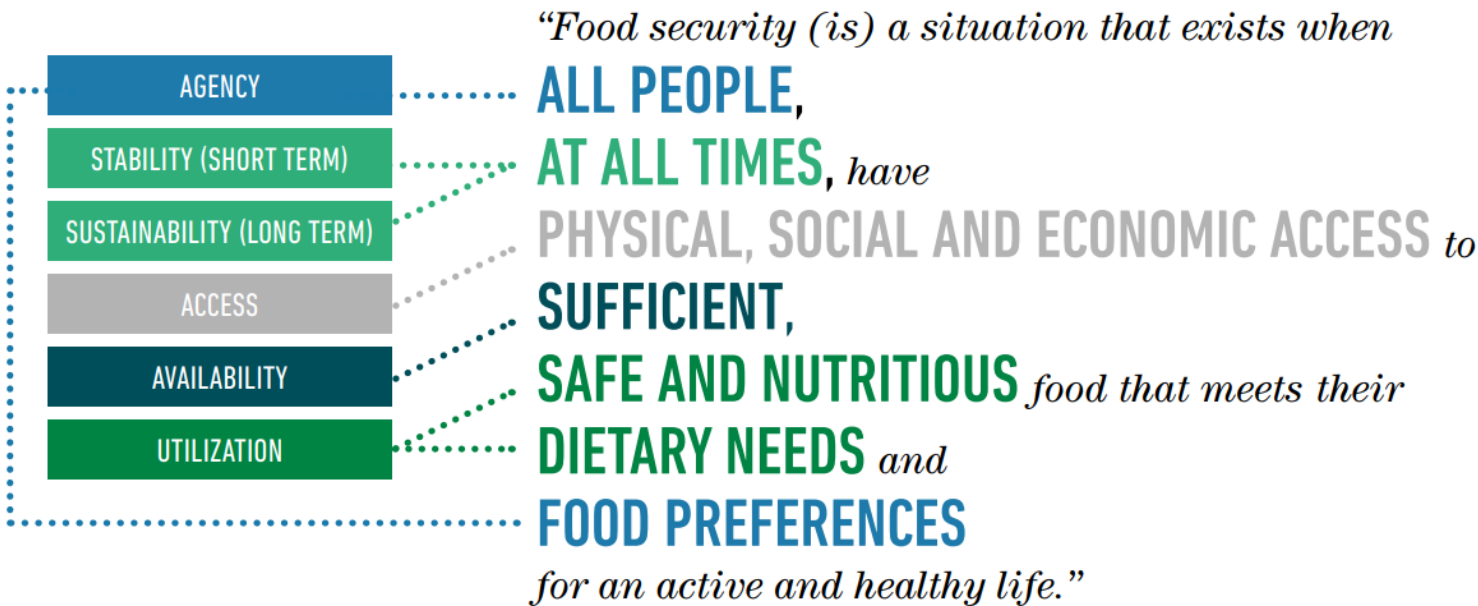
Impacts on water scarcity and food production

Human systems	Impacts on water scarcity and food production			
	Water scarcity	Agriculture/crop production	Animal and livestock health and productivity	Fisheries yields and aquaculture production
Global	±	-	○	-
Africa	-	-	-	-
Asia	±	±	-	-
Australasia	±	-	±	-
Central and South America	±	-	±	-
Europe	±	±	-	±
North America	±	±	-	±
Small Islands	-	-	-	-
Arctic	±	±	-	-
Cities by the sea	○	○	○	-
Mediterranean region	-	-	-	-
Mountain regions	±	±	-	○

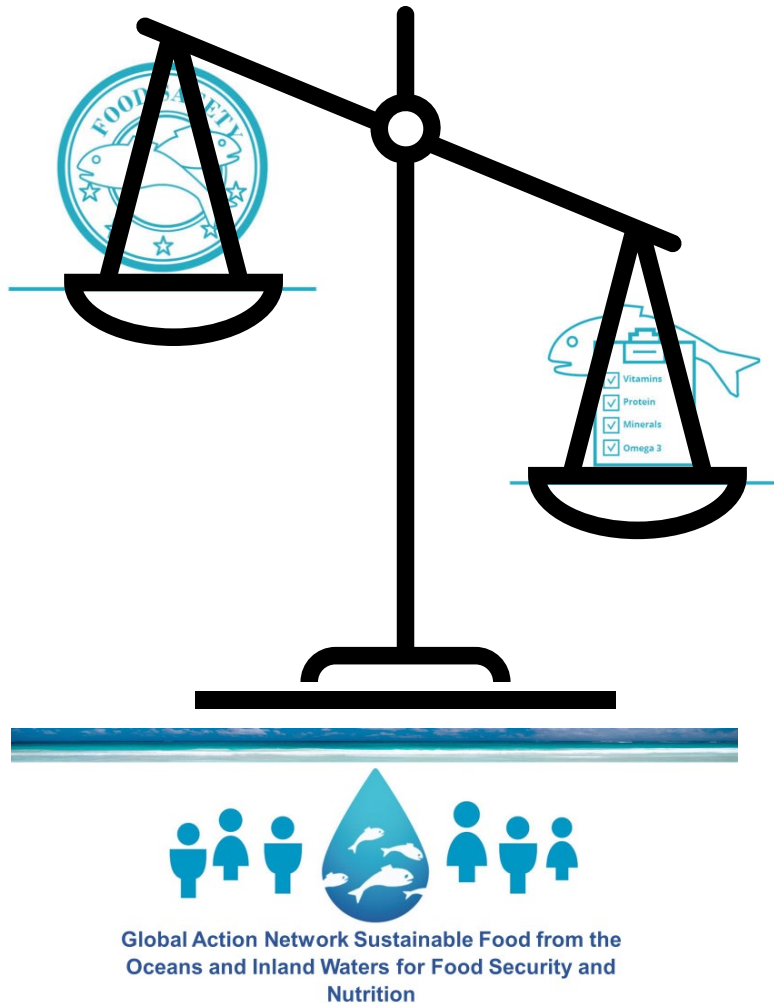
- High latitude regions experience large scale redistribution of fish stocks, but with **increased catch potential** (Bindoff et al 2019, IPCC)
- South will experience overall **decreased catch potential** (Bindoff et al 2019, IPCC)

Aquatic foods are important for Food Security

FIGURE 1
IDENTIFYING SIX DIMENSIONS OF FOOD SECURITY
IN ITS CURRENT DEFINITION



Knowledge and solutions related to the key elements of food security



- Seafood provides protein, fatty acids, vitamins and other micronutrients such as iodine and selenium
- Can also contain unwanted substances such as POPs, mercury, pesticides, parasites and pathogenic bacteria





Sustainable Oceans
(Healthy Waters
– Prevent pollutants, micro plastics, fight and adapt climate change etc.)

Sustainable fishery/aquaculture
(increased sustainable production, ecosystem based management, prevent overfishing, IUU, discard, improve technology etc.).

Sustainable handling from harvest to people
(keep quality, food safety, monitor, reduce loss/waste, HACCP, traceability, logistics, cooling systems etc.)

Sustainable aquatic foods
(Healthy People – Healthy Planet: increased seafood consumption, availability, affordability, preferences, safety, nutritious, quality, taste, origin, ethics, knowledge: healthy eating habits, food preparation etc.)



Sustainable fishery
Harvesting

Healthy Waters
Fish available

Sustainable aquaculture
Harvesting
Feed, medication, gear

Catch on board
Port landing

Food available

Transport Storage Processing Packaging Market Consumer

Transparent science-based advise systems for management, policy and business

Each link influence availability, safety, quality, nutrients, ethics, taste etc.

Healthy People

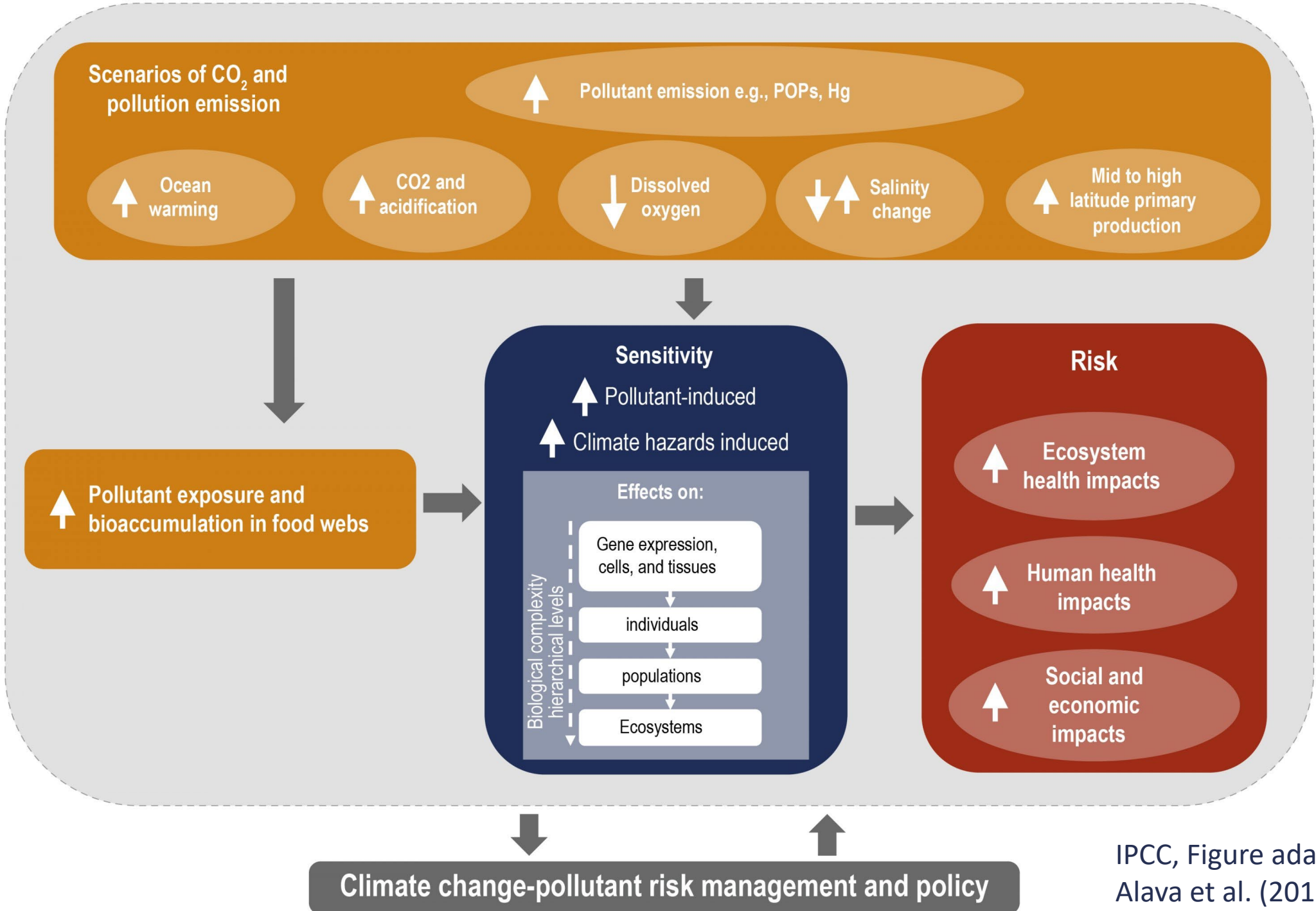
Sustainable aquatic foods

Food security:

- access
- sufficient
- safe
- nutritious
- dietary needs
- food preferences

Aquatic food must come from healthy waters and make it all the way to the healthy people

Sustainable Food from the oceans and inland waters for food security



IPCC, Figure adapted from Alava et al. (2017).



The Research Council of Norway



UNIVERSITY OF MIAMI



GEOLOGICAL SURVEY OF NORWAY - NGU -

Climate change and impact on critical contaminants and lipids in Arctic Seafood



NIST National Institute of Standards and Technology U.S. Department of Commerce



Leiden University Medical Center

- Develop new marine mechanistic ecosystems models
- “What if” scenarios
- Future seafood

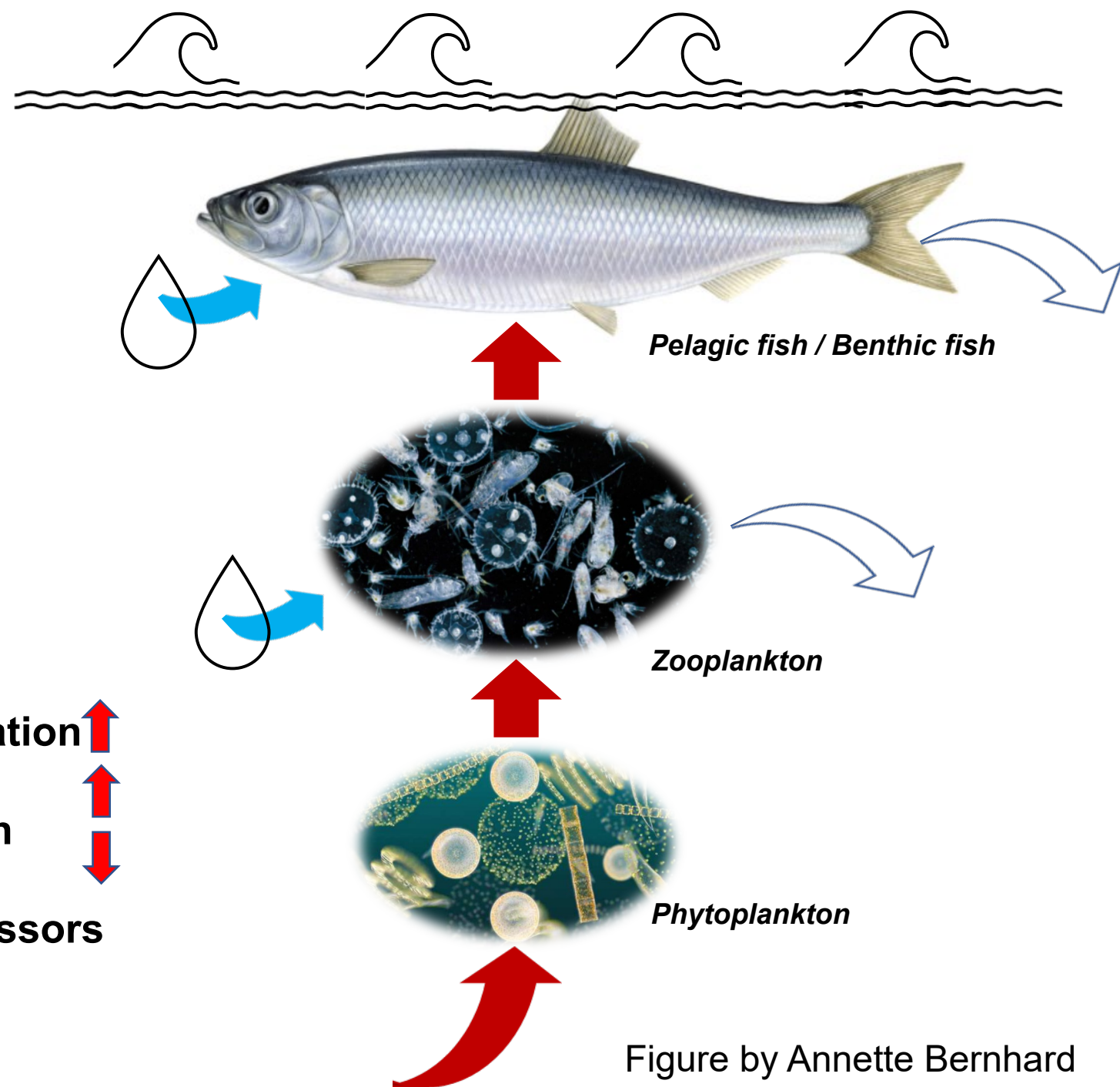
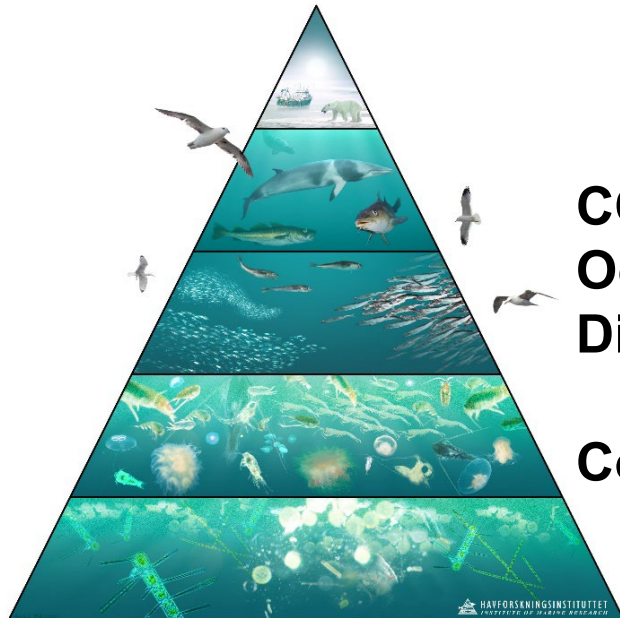


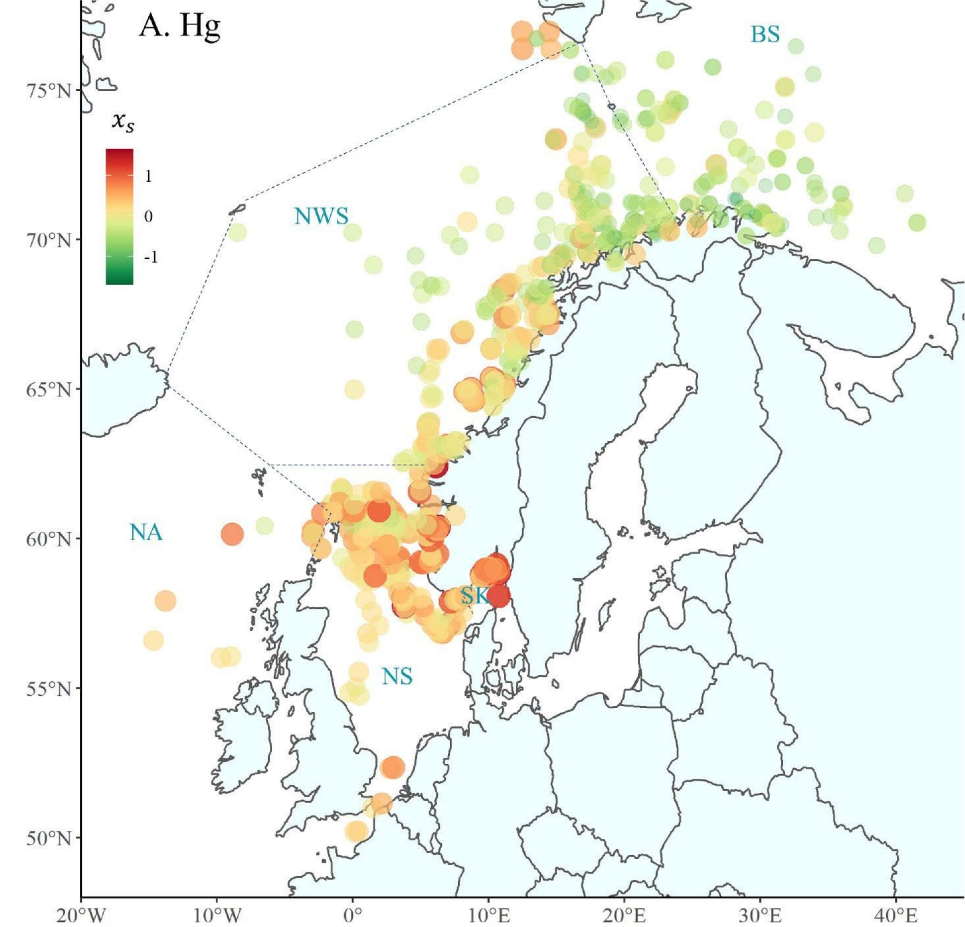
Figure by Annette Bernhard

Surveillance of Norwegian Wild Capture Fisheries

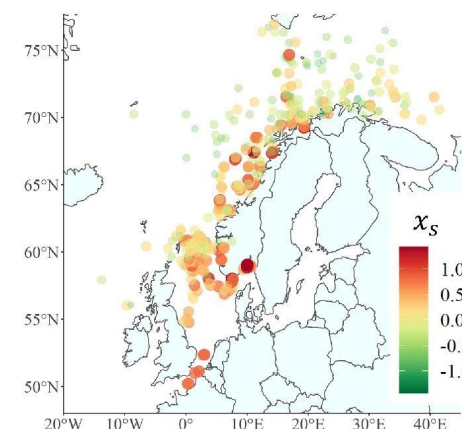
- One of the world's largest seafood datasets
- Assessed the co-occurrence of elements and POPs
- Evaluated potential risks to human consumers.



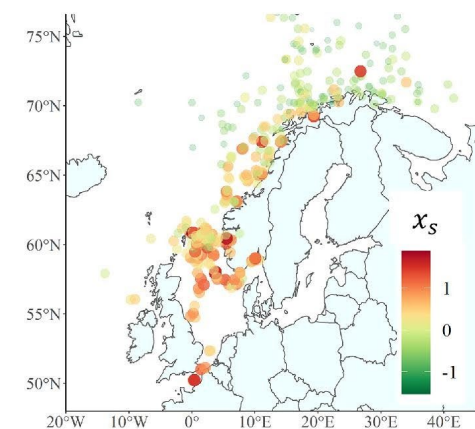
Quang, Bank et al 2021. Environ Int



B. PCB6



C. PBDE7



Global Food Safety and Quality Assurance Systems



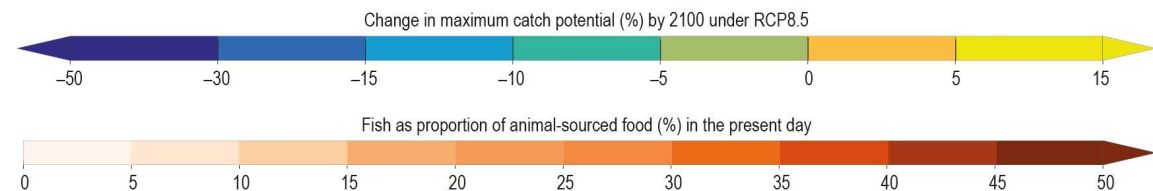
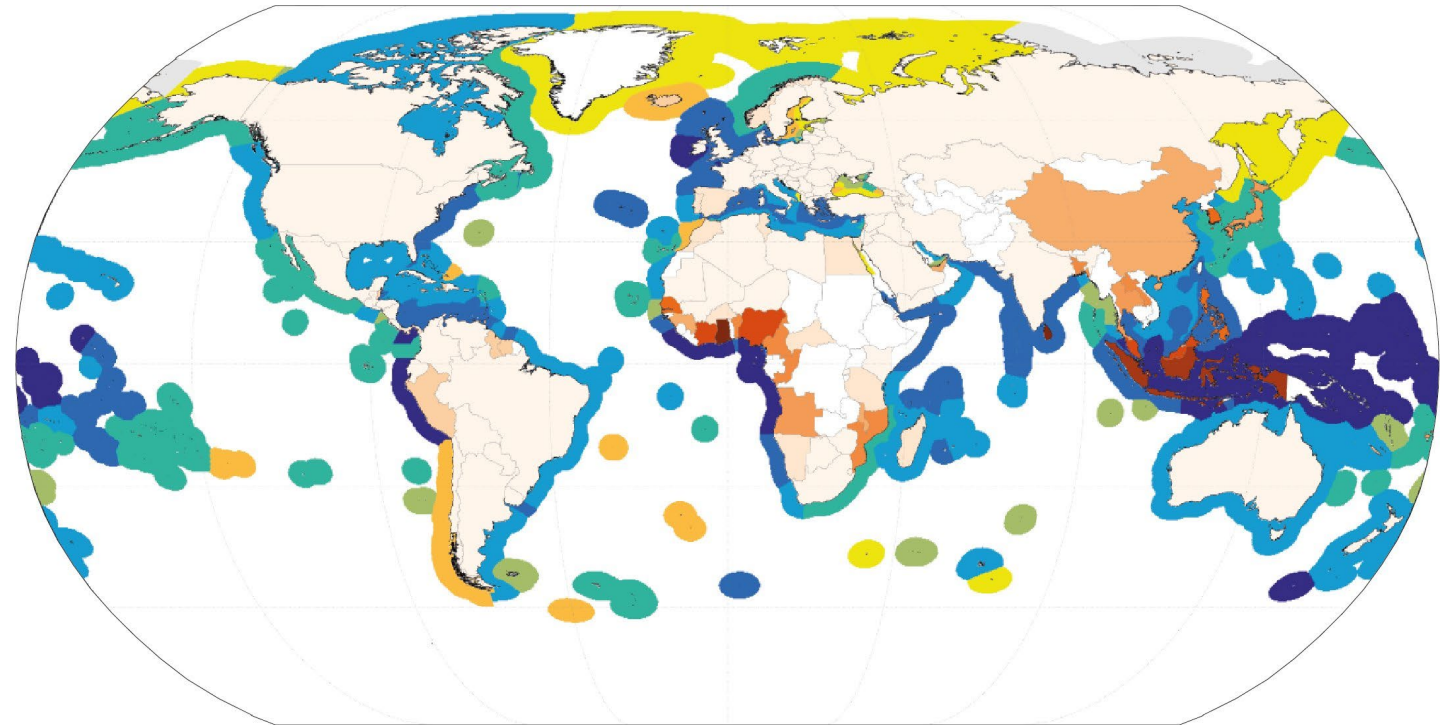
Photo: Samaki-project, Zanzibar



Food safety in small scale fisheries is a prerequisite to achieving several of the SDGs (GarridoGamarro et al submitted 2022)

Climate change will have different regional implications

- Maximum catch potential
- Safe and healthy seafood





- The **connection** between environmental pollution; food production and human health
- **How** contaminants and pollutants end up in the food (value) chain
- Comprehensive **surveillance programs**
- **Sharing** of data and sharing of knowledge



Thank you for listening!



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2022