



Harnessing Innovations in Aquatic Food Systems for Nourishing Nations

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Presentation Outline

Food and Nutrition Security: Global Perspective

- Impacts of COVID-19 on Food and Nutrition Security
- Pathways for Food Systems Transformation

Aquatic Foods and Aquatic Food Systems

Aquatic Foods for Nourishing People

- Micronutrients and Essential Fatty Acids

Innovations in Aquatic Food Systems for Nourishing Nations

- UN Nutrition Discussion Paper
- Aquatic Foods in Policies and Investments
- Nutritious and Safe Aquatic Foods-based Products
- Diversification of Aquatic Food Production Systems
- Innovations for Resilient Aquatic Foods Supply Chain
- Knowledge and Data on Aquatic Foods

Key Messages



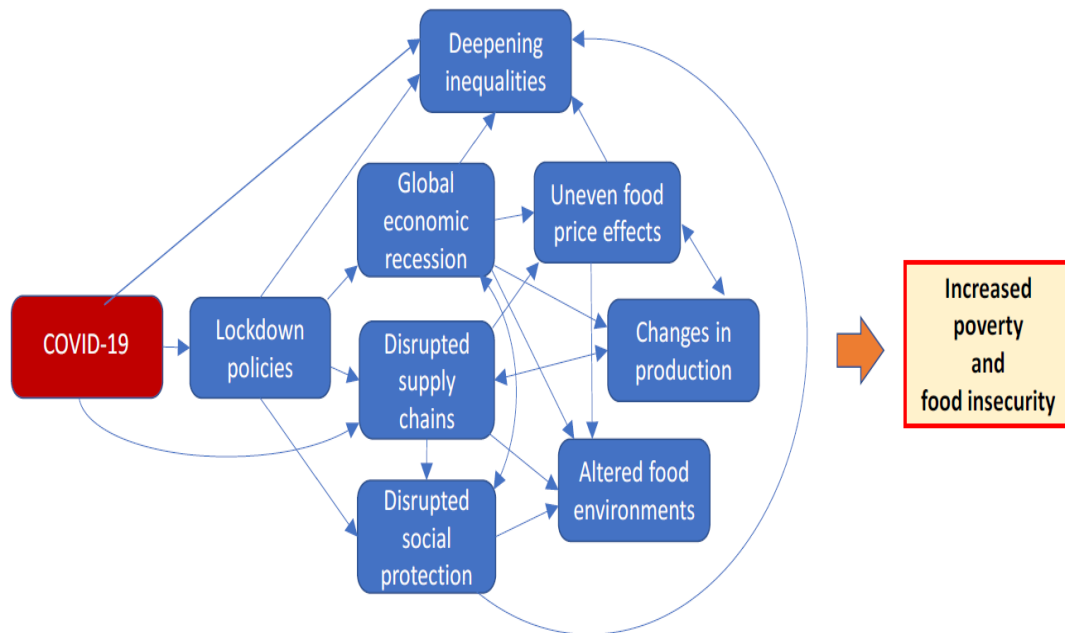
Food and Nutrition Security: Global Perspective

- 720 - 811 million people globally faced hunger in 2020
- 2.4 billion people did not have access to adequate food – increase of 320 million people from 2019
- 12% of the global population severely food-insecure
- Gender gap in the prevalence of food insecurity increased – 10% higher among women than men in 2020; 6% in 2019
- Major numbers of undernourished people in regions: Asia (418 million), Africa (282 million), Latin America and the Caribbean (60 million)

- Malnutrition in children < 5 years of age:
 - 22% stunted
 - 6.7% wasted
 - 5.7% overweight

Impacts of COVID-19 on Food and Nutrition Security

- Up to 132 million more people were hungry due to COVID-19 in 2020
- Up to 124 million people were pushed into extreme poverty
- 114 million people lost jobs, higher in women (5%) than in men; higher in youth (9%) than in older workers
- Children < 5 years of age (first 12 months of COVID-19)
 - 6.7 million more children wasted
 - 80% of whom live in sub-Saharan Africa and South Asia
 - 10,000 more child deaths / month



CFS HLPE on Food Security and Nutrition, 2020

Pathways for Food Systems Transformation

- SOFI 2021 Report – six pathways identified to guide food systems transformation:
 - Integrating humanitarian, development and peace building policies in conflict-affected areas
 - Scaling up climate resilience across food systems
 - Strengthening resilience of the most vulnerable to economic adversity
 - Intervening along food supply chains to lower the cost of nutritious foods
 - Tackling poverty and structural inequalities, ensuring interventions are pro-poor and inclusive
 - Strengthening food environments and changing consumer behaviour to promote dietary patterns with positive impacts on human health and the environment
- Systems approaches to build coherent portfolios of policies, investments and legislation to enable win-win solutions while managing trade-offs

What are Aquatic Foods?

Animals, plants and microorganisms that are farmed in and harvested from water, as well as cell- and plant-based foods emerging from new technologies (WorldFish, 2020)

Previous terminologies:

Fish – Finfish, crustaceans, mollusks, and other aquatic animals, excluding aquatic mammals, reptiles, seaweed and other aquatic plants (FAO, 2020)

Seafood – Edible marine fish and shellfish (Merriam-Webster)



Finfish

Fish as normally understood (e.g. tilapia), which are called finfish to distinguish them from shellfish, which technically are not classed as fish.



Shellfish

Any aquatic animal whose external covering consists of a shell, either crustacea (e.g. shrimps) or molluscs (e.g. oysters).



Aquatic Plants

Includes aquatic plants (e.g. watercress) as well as algae (e.g. seaweed) which are typically not classified as plants.



Aquatic Feeds

Any of the above categories and other single-celled organisms (e.g. yeasts) used as animal feed.



Other Aquatic Foods

Certain niche categories, notably echinoderms (e.g. sea cucumbers) or amphibians (e.g. frogs).



Synthetic Substitutes

Whole or component substitutes for any of the above, produced in environments outside their normal biological context (e.g. surimi or plant- or cell-based alternative aquatic food protein).

Aquatic Food Systems

An aquatic food system is a complex web made of elements, activities and the outcomes of these activities.

An aquatic food system is sustainable when it ensures food and nutrition security for all in such a way that does not compromise the economic, social and environmental bases to generate food and nutrition security for future generations.



Elements refer to the environment, people, inputs, processes, infrastructures, institutions, etc.



Activities relate to the production (from wild fisheries, aquaculture and synthetic substitutes), processing, distribution, preparation, consumption and disposal of aquatic foods.



Outcomes are the results of these activities, such as nutrition, health and food security, but also socioeconomic and environmental outcomes.

Aquatic Foods for Nourishing Nations

- Recognizing the importance and diversity of aquatic foods
 - A wide range of other animals and plants – not just fish
 - Various aquatic systems – oceans; inland water bodies (rivers, lakes, floodplains, rice fields); lab-based
 - Provide multiple micronutrients and essential fatty acids – not just protein
- Aquatic foods included in 78 out of 94 national Food-based Dietary Guidelines (FBDG)
- Varying recommendations on quantity, species across regions and countries
 - 1-2 servings of 100 g of fish per week for adults (FAO and WHO, 2011)
 - 28 g fish per day for adults (EAT-Lancet, 2019)

Micronutrients and Essential Fatty Acids in Diverse Aquatic Foods

Minerals

Fe Iron
essential for brain development in children and increases maternal survival rates.

I Iodine
essential for brain development in fetus and young children and helps prevent stillbirth.

Zn Zinc
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.

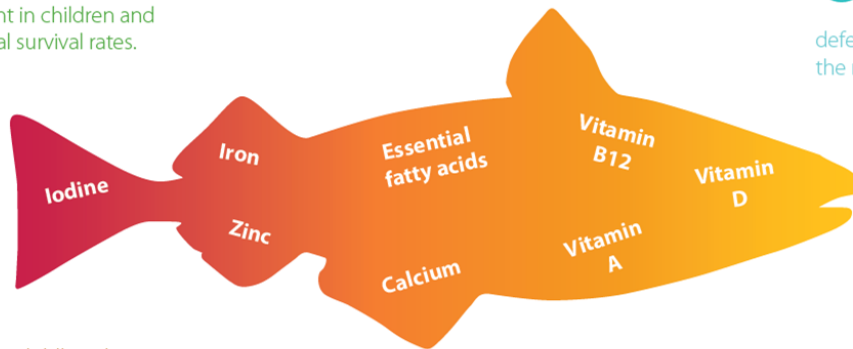
Vitamins

B12 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.

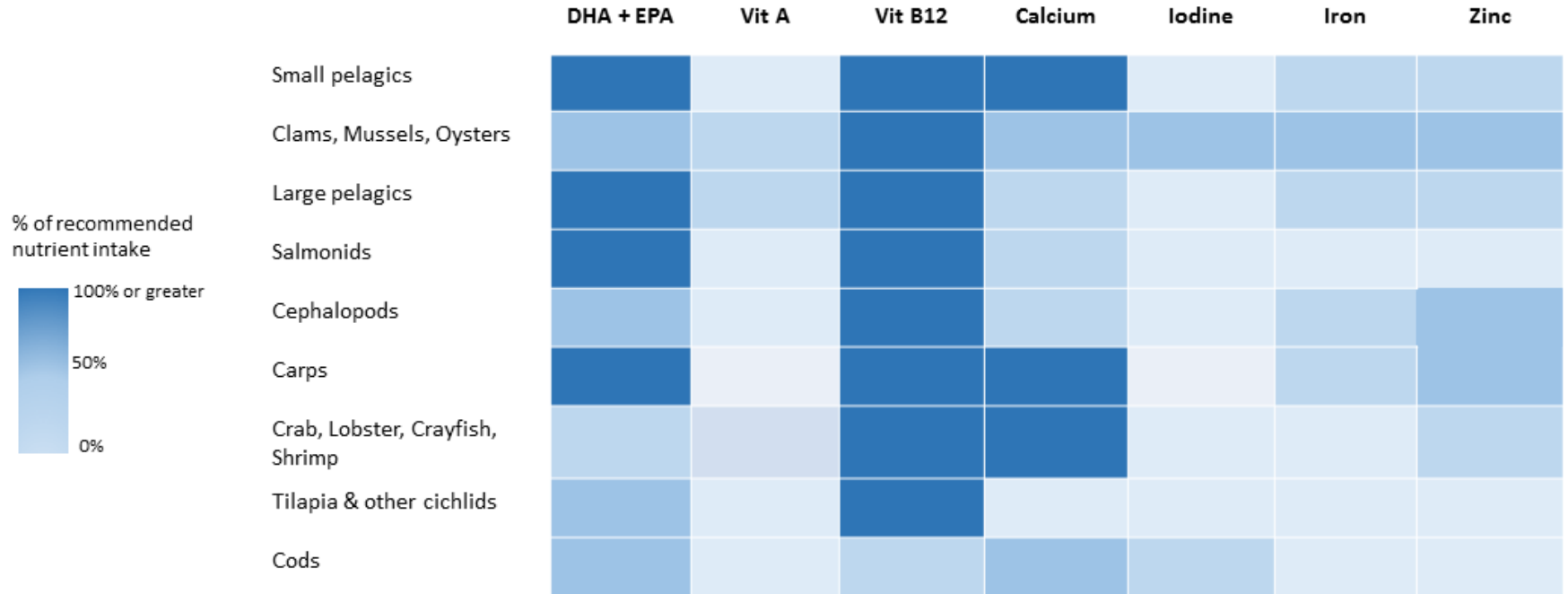
D Vitamin D
essential for the development of strong, healthy bones, teeth and muscles in children and helps prevent preeclampsia, preterm delivery and low birth weight.

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

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



Micronutrients and Essential Fatty Acids in Diverse Aquatic Foods



Golden et al, forthcoming

UN Nutrition Discussion Paper on Aquatic Foods

Background

- Global narrative on nutrition
- Need to promote diets that are socially, economically and environmentally sustainable
- Present food systems fail to recognize the diversity of aquatic foods and their potential for sustainable healthy diets – providing essential micronutrients and fatty acids, not just protein

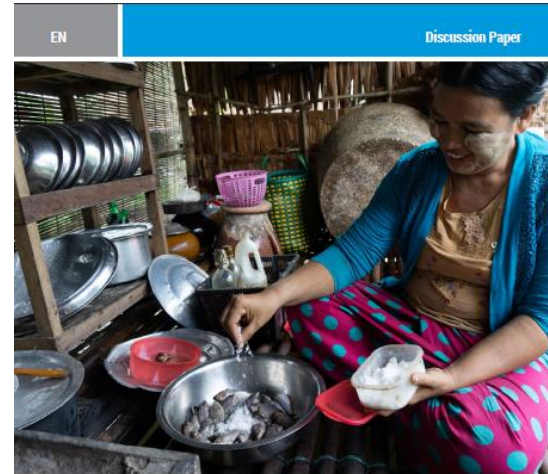
Objectives

- To build consensus on the role of aquatic foods in sustainable healthy diets

Presenting the breadth of evidence available to inform and steer policy, investments and research

- To make full use of the vast potential of aquatic foods in delivering sustainable healthy diets

Meeting the SDGs



The role of aquatic foods in sustainable healthy diets

**UN
Nutrition**

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Aquatic Foods on the Plate

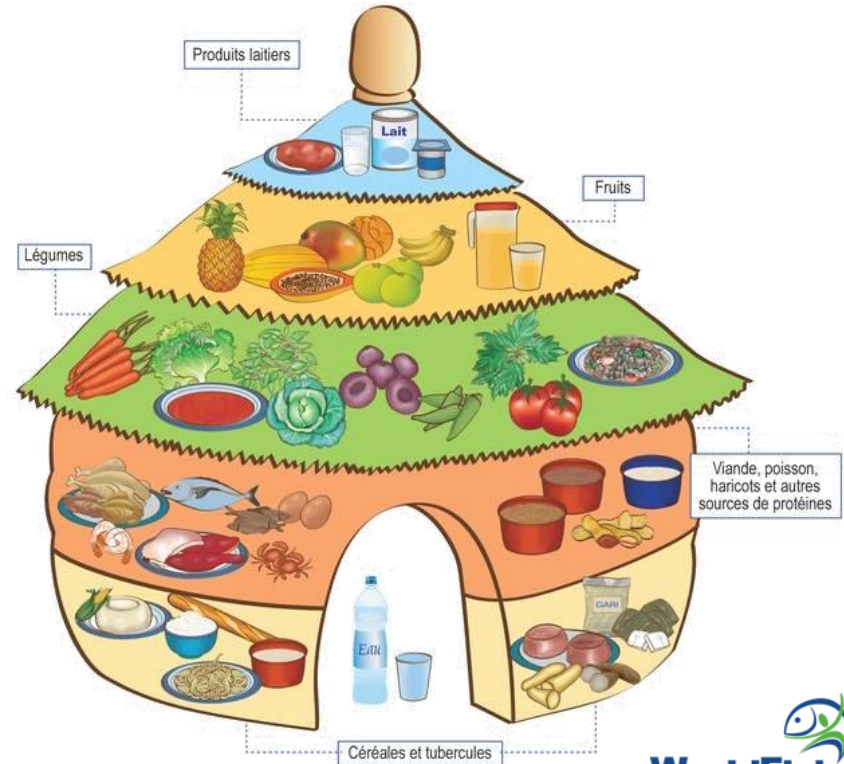
Multiple benefits of aquatic foods on the plate

- All nutrients in aquatic foods are highly bioavailable
- Aquatic foods enhance micronutrient bioavailability from plant-source foods, when consumed together
- Aquatic foods bring greater dietary diversity through meal preparation and consumption



Aquatic Foods in Policies and Investments

- Inclusion of aquatic foods in national food-based dietary guidelines (FBDG)
- Aquatic foods in public procurement and food and nutrition programmes:
 - Social safety net
 - School meals
 - Mother and child
- Public procurement must use aquatic foods and aquatic food products sourced from local producers



Nutritious and Safe Aquatic Food-based Products

- Accessible in small quantities
- Long shelf life
- Ease of transport
- Extend consumption period (lean production period)

Aquatic foods – huge potential to be processed as nutritious, safe and accessible food products



Small fish powder



Small fish chutney

Using Aquatic Foods for Nourishing Odisha, India

- Fish in the meals of children – 50 Anganwadis (child care centers)
- Hot Cooked Meals (HCM) – 1200 children
- Take Home Rations (THR) – 800 pregnant and nursing women, and adolescent girls
 - Dried fish
 - Fish powder
- Plans for scaling throughout the State of Odisha



Diversification of Aquatic Food Production Systems

- Diversification of aquatic food production systems – nutrition-sensitive aquatic foods system
- Pond polyculture
 - Homestead pond polyculture – large and micronutrient-rich small fish
 - Enhanced stocking of large and small fish in seasonal wetlands water bodies
- Integrated agriculture-aquatic food systems
 - Rice-fish production systems
 - Nutrient-rich vegetables on pond dykes and in homestead gardens
- Community Fish Refuge (CFR) system



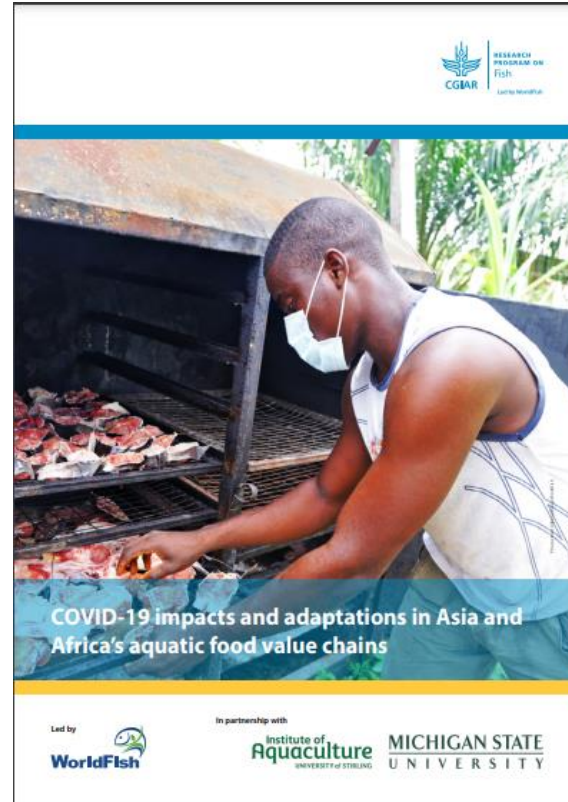
Innovations for Resilient Aquatic Foods Supply Chain

- Build capacity and resilience of supply chain actors – small-scale fishers, fish workers, processors, distributors:
 - Innovative technologies – solar dryers
 - Social behaviour change communication
 - Nutrition education
- Adopt guidelines and frameworks:
 - Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication
 - Voluntary Guidelines on Food Systems and Nutrition
 - Framework for Action for Food Security and Nutrition in Protracted Crises
- Right to Food



Knowledge and Data on Aquatic Foods

- Push for democratization and access to knowledge and data on aquatic foods:
 - Nutritional composition, food safety and contaminants
 - Loss and waste
 - Consumer patterns and demands
 - Market access, processing and distribution
 - Disaggregated data – social groups, sex, age
- Build partnerships for shared knowledge and developing solutions
 - Public –private – communities
 - Research institutes – civil societies



Key Messages

- Include aquatic foods in national and regional **comprehensive policies and investments** for solutions to improve food and nutrition security
- Include diverse aquatic foods in **national and state food-based dietary guidelines (FBDG)**
- Ensure programmes adhere to the **right to food**, leaving no one behind – especially the poor, vulnerable and marginalized
- **Diversify aquatic food systems** for multiple impacts on food and nutrition security, livelihoods and income, and build resilience against climate shocks and disruptions
- Conduct context-specific and regionally-appropriate **research on the multiple benefits** of aquatic foods
- Improve **quality of data** on aquatic foods: nutrient composition, food safety, loss and waste, consumption patterns and demands – disaggregated by social group, sex and age



Thank You