

85. BLUE TRANSFORMATION FOR RESILIENT COASTAL COMMUNITIES, RESILIENT AQUACULTURE & AQUATIC FOOD SYSTEMS

ACTION AREA	CLIMATE RESILIENT DEVELOPMENT PATHWAYS
SOLUTION CLUSTER	CLIMATE ADAPTATION, MITIGATION & RESILIENCE
THEMATIC AREA	SMALL ISLAND STATES AND COASTAL AREAS
SUBMITTED BY	FAO-NGOS

WHAT PROBLEM IS THE SOLUTION TRYING TO ADDRESS?

The potential contribution of fisheries and aquaculture to Agenda 2030 (SDGs 1, 2, 12 and 14) is yet under-tapped.

Small-pelagic fish (anchovies, sardines etc.) used as food by vulnerable communities but also by industries to produce fishmeal and fish oil, is a highly valuable common resource. Although progress has been reported in the past decade to improve its sustainable management, urgent action is still needed in view of the global threats, especially climate change driving global warming of oceans.

The solution proposes a blue transformation to support the resilience of coastal communities, wild stocks and aquatic food systems.

WHAT, IN BRIEF, IS THE SOLUTION?

1. Improve the governance of the common resource of the small fish used in the production of fishmeal and fish oil
 - Create incentives to improve fishery resilience and sustainable management.
 - Secure access to local resource users, small-scale fishers and Indigenous Peoples.
 - Encourage the direct consumption of fish over food processing.
2. Create incentives for aquatic food production not based on fishmeals and fish oils
 - unfed aquaculture such as mussels and filter-feeding molluscs;
 - seaweed aquaculture;
 - extensive fish production in water storage or integrated agriculture-aquaculture (e.g. innovative rice-fish farming).
3. Promote adoption of innovations that make aquaculture more feed-efficient and less dependent on fishmeal and fish oil
 - Support of adoption of aquaculture by small-scale rural farmers by promoting sustainable and profitable production technology based on optimized trophic food webs in ponds. In addition to being extremely efficient with regards to the feed use, this small-scale aquaculture increases the

resilience of small fish farmers, improves the nutrition of rural communities and can create other benefits such as better water management at the local water basin level.

- The pond contributes to a significant share of the fish diet, while creating a more stable and resilient pond system less prone to disease. It is possible to maximize this contribution by manipulating the feed composition, and the C:N:P ratio of feed by reducing the use of fish meal and replacing it by cheap plant based carbohydrates (corn starch, cassava ground).
- Promote resource use efficient technologies with minimum environmental impact such as recirculated aquaculture systems or aquaponics.
- Promote the adoption of new aquafeeds based on seaweeds, microalgae, insects etc. with due attention to micronutrients and poly-unsaturated fatty acids.

WHAT WAS/ WERE THE SOURCE(S) FROM WHICH THIS SOLUTION EMERGED?

Materials include:

Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication

FAO. 2019. Report of the Special Session on Advancing Integrated Agriculture Aquaculture through Agroecology, Montpellier, France, 25 August 2018. FAO Fisheries and Aquaculture Report No. 1286. Rome. <http://www.fao.org/3/ca7209en/CA7209EN.pdf>

A guide to recirculating aquaculture : <http://www.fao.org/publications/card/en/c/7516ab04-7632-482a-99f7-7c853a0e0d6d/>

Small-scale aquaponic food production. Integrated fish and plant farming. FAO Fisheries and Aquaculture Technical Paper No. 589

FAO. 2019. Report of the FAO Regional Training Workshop on Innovative Integrated Agro-Aquaculture for Blue Growth in AsiaPacific. Kunming, China, 12–17 June 2017. FAO Fisheries and Aquaculture Report. No. 1292. Rome <http://www.fao.org/3/ca7038en/ca7038en.pdf>

FAO-SHOU. 2020. Report of the FAO – SHOU International Promotion Programme Workshop on Social Impact of Rice-Fish Farming. Shanghai, China, 4-8 December 2018. FAO Fisheries and Aquaculture Report No. 1317, Rome. <https://doi.org/10.4060/ca9907en>

Shah, M.R., Lutz, G.A., Alam, A. et al. Microalgae in aquafeeds for a sustainable aquaculture industry. *J Appl Phycol* 30, 197–213 (2018). <https://doi.org/10.1007/s10811-017-1234-z>

Joffre, O.M., Verdegem, M. (2019) Feeding both pond and fish: A pathway to ecological intensification of aquaculture systems <https://hdl.handle.net/20.500.12348/3847>

Kolding, J., van Zwieten, P., Marttin, F., Funge-Smith, S., & Poulain, F. 2019. Freshwater small pelagic fish and fisheries in major African lakes & reservoirs in relation to food security & nutrition. FAO Fisheries and Aquaculture Technical Paper No. 642. Rome, FAO. 124 pp. FAO. Licence: CC BY-NC-SA 3.0 IGO.

WHY IS ADDRESSING THAT PROBLEM IMPORTANT FOR ACHIEVING THE GOAL OF YOUR WORKING GROUP?

The small fish resource used for producing fishmeal and fish oil is a common good at the center of a conflict of uses between local communities and a growing global demand for fishmeal and fish oils.

To address this competition and possible conflicts over small pelagic fish resources, will permit to ensure livelihoods security, address needs of fish farmers, and local users – and improve their food security, nutrition and overall resilience of aquatic food systems –while sustaining the resilience of the aquatic food

HOW CAN THIS SOLUTION ADDRESS THAT PROBLEM?

The problem will be addressed through a Blue Transformation, which is "A new narrative that recognizes fish unique benefits for food and nutrition security, livelihoods & trade, as well as cultural and social values to gel societies together. A narrative that acknowledges successes while facing head on sustainability challenges".

The problem is an issue resilience and food security/nutrition at both local and global level and must thus be tackled holistically.

The theory is thus relatively simple: the local challenges will be tackled by implementing a better governance of the resources with the stakeholders, whereas the global challenges will be tackled by promoting aquaculture technologies that have the potential to supply the global demand for aquatic food by both small-scale and large scale producers in the most efficient way with regards to fishmeal use.

WHAT IS THE CURRENT AND/OR LIKELY POLITICAL SUPPORT FOR THIS IDEA

COFI Declaration
HLPE Ocean

ARE THERE CERTAIN CONTEXTS FOR WHICH THIS SOLUTION IS PARTICULARLY WELL SUITED, OR, CONVERSELY, CONTEXTS FOR WHICH IT IS NOT WELL-SUITED AT ALL.

Global application with a focus on the main fish meal production areas (e.g. Peru, Senegal, freshwater African lakes) and areas with a strong aquaculture development potential (such as Africa, South East and South Asia).

WHAT DO YOU THINK ARE THE KEY ACTIONS REQUIRED TO ADDRESS THIS SOLUTION?

This solution will require the involvement of Civil society, small producers organizations, the private sector and government to enable change.

Key players in the fish feed industry, international and local needs must be included in the initiative in order to create sufficient momentum and reach a "critical mass". Already, several international feed producers are funding similar research, sometime in partnership with public research.

Innovation platform (multi-stakeholder platform) approach will enable dialogue between researchers, private sector, fish farmers and users to co-create context specific solutions.