

Theme 5 - Capture fisheries, aquaculture and food security

Conference “Research & Policy: two peas in a pod? A dialogue for food security impact”

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Key statements

- Fish is in many ways the orphan of the food security broad sector. Despite its significant contribution to Food and Nutrition Security (FNS) and livelihoods of millions, the sub-sector is not given the same priority as other sectors in the agricultural landscape. What are the implications of this omission, and how can it be resolved? This is valid from both donor and developing countries’ perspectives.
- If the fishery sector is put back on the food security agenda, what should be the focus? Small-scale fishery or large-scale fishery? Capture or aquaculture?
- Shortage in capture fisheries has built the case for increased investments in aquaculture. Yet, improving the contribution of fish to the food security for the poor is not primarily a matter of increasing fish production. Other concerns such as access, inclusiveness of value chains, income distribution, post-harvest management need to be appropriately addressed.

Rationale

This session takes as point of departure the question of how to improve the contribution of capture fisheries (marine and inland) and aquaculture (marine and inland) to global and local food security. As such, it takes place in a policy context of the intersection of Sustainable Development Goal 2 and 14.

There is a growing recognition, both by the United Nation’s High-Level Panel of Experts on fish and food security and a range of recent high impact article from the scientific community, that fish should be put higher on the agenda to curb malnutrition especially in developing countries. There are at least three arguments that militate for that quest. First, fish is a *quick-win* solution for nutrition as a small portion of fish is rich in essential nutrients such as vitamin A, calcium, iron and zinc and approximately three out of every seven people globally rely on seafood as a primary source of animal protein¹. Second, the fishery sector provides, directly or indirectly, income for more than 660 million people in the world, the majority of them being from poor countries in Africa and Asia. Third, these two positive facts are under threat from a range of factors, including overfishing, pollution, marginalization of small-scale fishers and competing uses of coastal and marine space.

Given the current stagnation of the capture fisheries in many parts of the world, and the difficulties encountered in achieving better governance, the question of under what conditions fish can be sustainably produced through capture and farming is a topic of much heated debate. The question here in relation to our topic is how sustainable fisheries and aquaculture management would look like if food security concerns were taken as point of departure. This has led to a number of vital debates with a bearing on policy, of which we have selected two:

1. Inclusive value chains and supporting small-scale farmers

Food security is not only a matter of producing more (fish) food: it is eventually as much question of distribution and access and how fish moves through local and international value chains to reach consumers. Fish is globally the most traded food commodity but there are major challenges in ensuring that fish value chains benefit those who are most vulnerable, i.e. smallholders, women and low-income consumers. In particular the role of small-scale fisheries and aquaculture is widely acknowledged to be pertinent for ensuring a more equal sharing of the benefits from the sea’s ecosystem services, both in terms of food and livelihoods. This poses the question how marginal small-scale fisheries/fish farmers can be supported and how can the interests and benefits of smallholders be maintained and improved in the fishery value chains?

2. Aquaculture production systems

Capture fisheries have been globally stagnant and most of the fish production growth over the last few decades can be attributed to aquaculture. This does not mean that aquaculture is automatically the answer for all fish related food security concerns. While there are important exceptions, the significance of aquaculture for improving the food security for seafood reliant nutrition vulnerable nations has been questioned². Apart from environmental problems, the growth of high value aquaculture species produces for middle- and high-income consumers³, the nutritional value is often lower than that of relatively low-priced small pelagics⁴, and many aquaculture practices are

¹ Kittinger et al. 2017; Thilsted et al. 2016; Beveridge et al. 2013

² Hall et al. 2012; Golden et al. 2017

³ Beveridge et al. 2013 Golden 2017

⁴ e.g. Beveridge et al. 2013; Thilsted et al. 2016

dependent on fishmeal inputs produced from low-priced fish⁵. The question is therefore under what conditions can aquaculture make significant positive impact for the food security of the poor?

Key lessons, good practices and experiences from ARF and GCP projects

Please find additional information on the ARF and GCP projects in the [Annex](#).

- ARF-2 [Resilience inland fishers Benin](#) examines regulations among fishermen to share common water resources and evaluates if customary rules can cope with new challenges. Results indicate 1/3 of fishermen are food insecure and water resource management is not functioning.
- ARF-2 [Technology innovations towards sustainability in Indonesia's tuna supply chains](#) implements a technology platform on top of an existing paper-based traceability system in tuna fisheries. Fishers desire technology to predict issues at sea and ensure protection, while processors desired greater automation of logistics. Based on this, coordinated technological interventions are implemented.
- ARF-3 [Fish feeds for catfish breeding Benin \(ProfishBenin\)](#) aims at developing and promoting affordable, nutritive, and easy to use fish feeds based on locally available feed ingredients.
- GCP-1 [Nutritious system pond farming in Viet Nam](#). At present, aquaculture feeding systems are not considering the contribution of the pond's food web to animal's diets. Using shrimp aquaculture as a model, the project designs a "nutritious-system" concept that increases the contribution of natural feed produced in ponds to total production to make aquaculture less reliant on fish-oil and fishmeal.
- GCP-2 [Aquaponics Ethiopia: sustainable integrated fish vegetable production](#) proves the technical functioning of aquaponics, demonstrates increased production of fish and vegetables and supports entrepreneurs to start micro-enterprises, selling their produce locally. Main challenges remaining are knowledge dissemination (aquaponics requires high knowledge input) and business development.
- GCP-2 [Serious games for sustainable shrimp farming in Viet Nam](#). Shrimp aquaculture provides income to smallholders, but has environmental trade-offs. In Vietnam's Mekong Delta integrated mangrove-shrimp aquaculture is compulsory in the buffer zone, but adoption beyond this is limited due to short-term interests. The project develops an Agent Based Model (ABM) to support planning.
- GCP-2 [Governing aquaculture in Southeast Asia \(SUPERSEAS\)](#): Southeast Asia's aquaculture industry has strong links to the environment in which it's practiced. This has led to a range of production risks. To overcome these the project assessed the potential for market-led area-based management of aquaculture.
- GCP-3 [Sustainable aquaculture to support mangrove forest restoration in Indonesia \(PASMI\)](#) focuses on multi-trophic coastal aquaculture systems, which support the restoration of mangrove forests. In these systems, different organisms are produced in an integrated way, thereby supporting resilient livelihoods while also safeguarding the mangrove functions for coastal protection.
- GCP-3 [Fish for food security in city regions of India and Ghana \(FiSH4FOOD\)](#) aims to understand how low-price fish chains contribute to urban food security in India and Ghana and to identify policy and business interventions that have potential to improve them.

Purpose of the session

For the sector to continue fulfilling its role, there is a need to ensure effective support, rooted in the fishery/farmers communities' needs, from all stakeholders. These include the communities themselves, policymakers, researchers and private sector. This session aims at creating an effective knowledge sharing platform to discuss the three points presented above: sustainable fisheries management, aquaculture and distribution of benefits. The session aims to enhance uptake of research results by policymakers on fisheries and food security building on ARF and GCP projects. The ultimate objective is to identify key pathways that would improve the contribution of fisheries and aquaculture to FNS.

Outcomes of the session

- Increased mutual understanding between researchers and Dutch policy makers; who is working on what, where and how in the field of fisheries and food security.
- Increased understanding of the contributions of the fisheries and aquaculture sectors to food security, and how this could inform Dutch foreign and economic policy.
- Proposals how to better integrate the fishery sector in international food security agenda of the Dutch government.
- Insights on the possibilities and limitations of Dutch private sector involvement in tackling fish-food security solutions in the global south.

⁵ e.g. Kittinger et al. 2017; Golden et al. 2017