

Blue Food Assessment workshop, June 2019

- Summary of meeting outcomes

Workshop Participants

NAME	ORGANIZATION
Crona Beatrice	SRC
DeClerk Fabrice	EAT
Gelcich Stefan (remotely)	Pontifica Universidad Católica de Chile
Golden Chris (remotely)	Harvard School of Public Health
Graham Elizabeth	FAO
Halwart Matthias	FAO
Hicks Christina	Lancaster University
Jonell Malin	SRC
Kjellesvold Marian	IMR
Leape Jim	Stanford COS
Little David	University of Stirling
Mgaya Yunus	University of Dar es Salaam
Naylor Roz	Stanford
Patil Pawan	World Bank
Philips Michael	WorldFish
Selig Elizabeth	Stanford COS
Sweet Lisa	World Economic Forum
Teleki Kristian	Sustainable Ocean Initiative, WRI
Thilsted Shakuntala	WorldFish
Tigchelaar Michelle	Stanford COS
Troell Max	SRC
Westin Maria	EAT
Wood Sophie	Sustainable Ocean Initiative, WRI

Suggested structure and scientific content

While there have been many studies of the global food system, including most recently the EAT-Lancet Commission, there has been little attention to the role of aquatic foods in those systems. We are launching a two-year project to address that gap. Tentatively titled the Blue Food Assessment (BFA), this project aims to expand scientific understanding of the role of blue food for planetary health and human wellbeing and outline pathways for a transformation to sustainable and healthy blue food for all people on the planet, now and in the future.

This assessment will be led by Stanford University and the Stockholm Resilience Center, in partnership with EAT. At the workshop, we developed a first draft plan. We will aim to publish a Perspective piece (“Setting the scene”) in time for the UN Ocean Conference in June 2020 and then to produce the Assessment by Spring 2021 in time for a joint global conference on the future of food, proposed by the three UN food agencies.

- **Structure**

- A set of academic papers that results in a special issue or collection, and perhaps a book.
- A synthetic peer-reviewed assessment integrating the findings of the academic papers for publication in a high-level academic journal.
- A companion summary and communications materials for policy and practice audience.
- The Friends of Ocean Action, Stanford, SRC, WRI, FAO, and EAT in parallel are supporting a Blue Food Coalition comprised of individuals and institutions from business, civil society and policy to accompany the BFA.
- Additional research and papers could be featured in online compilations on this theme.

- **Timeline**

- Approximately 18-24 months for academic work, from start to publication of special issue.
- 6-12 months for impact translation, dissemination, engagement.
- Probably some overlap between the above two phases.

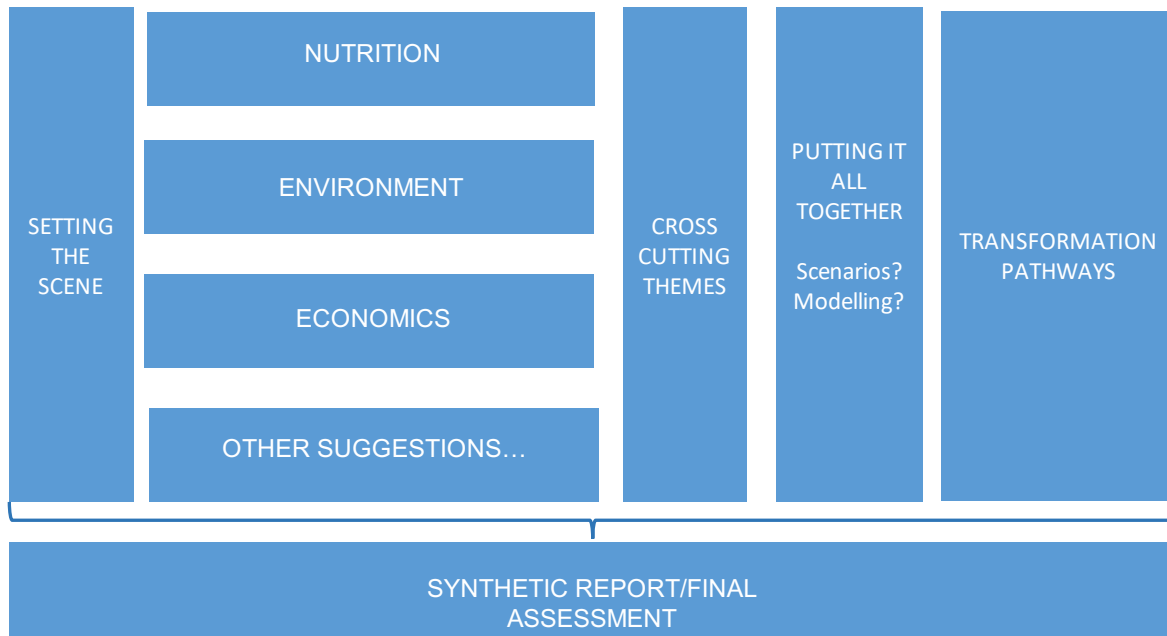


Figure 1. Blue Food Assessment suggested structure. A perspective paper to set the scene. Followed by 3-4 review papers, a set of cross cutting theme paper(s), a modelling/scenario paper, a paper outlining transformation pathways and finally a synthetic paper summarizing the findings from the BFA.

During the June 11 workshop, we had some rich discussions on the need to scale down and use cases or regionalized models/examples for the content of the BFA. While not specifically addressed in the paper descriptions below, this is something to keep in mind when continuing to shape the BFA content.

Below we outline, in brief, the tentative suggested content of some of the proposed sets of papers.

1. *Perspective piece to set the scene (possibly by June 2020)*

A Perspective piece published in time for the UN Ocean Conference next June, could set the stage for the full Assessment. It would make the case that aquatic foods and their linkages with the broader food system are central to any discussion of the future of food, thus point out the potential role of blue food in the broader food transformation. It would also elucidate the many challenges facing aquatic foods and the people dependent on them and highlight some of the environmental impacts from blue food production systems as well as barriers to a continued expansion of the sector. In addition, the paper should outline the potential of transforming aquaculture and capture fisheries and the importance of a more equal distribution of exiting blue food. This paper will thus emphasize the need to identify integrated transformative pathways.

Reviews

- 2. *Nutrition:*** The nutritional benefits of aquatic foods span a huge range – from high-protein, low-micronutrient whitefish fillets to micronutrient-dense small pelagic fish eaten whole. Besides reviewing the state of the art of the science on nutrition related to the diversity of aquatic foods, a key ambition with this theme is to position this science firmly in the more general discourse of human nutrition. The latter is currently informed by the two often quite separately pursued fields of under-nutrition, and overnutrition and non-communicable diseases (NCDs). There is a recognized need within the field of human nutrition that these two diverse outlooks on human nutrition result in rather different policy recommendation. On the one hand, under-nutrition benefits from virtually any increase in protein and micro-nutrients (including aquatic), while over-nutrition requires substitution of un-nutritious food, or simply reduction of food intake. By linking the issue of Blue Food nutrition to this broader debate our hope is to add to a more holistic discussion on how aquatic foods can best and most equitably add to human diets now and in the future. This paper also aims at identifying knowledge gaps on analytical data on nutrients in blue foods, from farm/fishery to plate.
- 3. *Environment:*** Blue foods, both farmed and wild-capture, also have widely varying environment impacts. This paper would be the first comprehensive analysis of the diversity in impact and product environmental footprints in both the aquaculture and fisheries sector, and the inherent interconnectivity between these food system components as well as terrestrial food systems. This is imperative because seafood is a tremendously diverse food category, ranging from e.g., intensive high-input shrimp and salmon farming to low-intensity mussel farming in aquaculture; and from low-bycatch and low-fossil fuel pole and line fisheries, to benthic trawl fisheries with significant bycatch, collateral habitat damage and fossil fuel dependency. Recognizing and

understanding this diversity is paramount as aquaculture is set to grow significantly in the coming decades, and is already one of the fastest growing food production systems in the world. However, to date there is no comprehensive source which pulls together and analyzes this diversity in impact in both the aquaculture and fisheries sector, and also analyzes the inherent interconnectivity between various food system components (through feed) which fundamentally affects sustainability. An additional strand of work of this paper (or papers) would be to evaluate the potential of blue food game changers, e.g. innovative production systems, extractive and integrated aquaculture and new disruptive technologies including low impact feeds.

4. **Economics:** In many places, high-value fisheries and aquaculture for international markets are intertwined with small-scale production that is vital to local livelihoods and food security. At the same time, blue food will be needed to feed the world—including at least half of the global population living under \$2/day. This paper will therefore (potentially) explore the following key questions: How can production of sustainable blue food be achieved in a way that makes this accessible and affordable to this global demographic? Environmentally certified systems are likely to be too expensive for the poor. How can the goal of “feeding the world” be reconciled with environmental sustainability? Will small-scale producers participate in the scaling up process, or will it be done by big corporations? How to get economic development and equity into the same equation when considering and planning blue food production growth.

Papers exploring cross-cutting themes

At this BFA workshop, we discussed the need for a set of papers to bind together the domains covered in the reviews (above) and explore cross-cutting issues, such as equity, diversity, food security and the role of markets and trade in determining production and consumption outcomes. While the content of these are not yet defined, below we outline a few tentative topics. We encourage you to add your thoughts and ideas, and aim to have further discussions about the development of these particular papers as the BFA proceeds.

5. **Climate Change:** This paper will take an integrative food system approach to climate change, looking at impacts on marine and freshwater fisheries, as well as aquaculture and the terrestrial crops it depends on. One key question will be how diversity in geographic and species-specific impacts will affect access of various communities to nutritious diets. Also, where are environmental changes causing the most disruption to the delivery of blue food, and what market/policies exacerbate these issues?
6. **The Value of Diversity:** Aquatic foods are hugely diverse in species, production systems, and benefits. Large-scale aquaculture growth, however, could lead to a focus on ‘aquatic staples.’ This paper will examine the importance of aquatic food diversity to healthy diets, environmental impacts of simplified versus diversified systems, and societal resilience. Moreover, the paper will explore the potential constraints on maintaining diversity, e.g. current breeding programs for aquaculture concentrated on relatively few species.

- 7. *Global Markets & Local Food Security:*** Aquatic foods are the most traded food product globally with developing countries typically exporting high-quality products in exchange for lower quality ones. So far these trade patterns have been analyzed mainly from an economic perspective, but the reviews outlined above make apparent the many environmental, nutritional and equity challenges of aquatic food value chains. This paper will evaluate the trade-offs between economic gains (at national vs local levels), nutritional needs, and environmental impacts of various blue food scenarios, in selected regions of the world.

Scenarios and transformation

8. Scenarios for Blue Food Futures

This paper (or set of papers) was envisioned as another way of tying the different domains of environment, nutrition and land-sea interactions together, by using either quantitative modeling or scenario methodologies, or possibly both.

The concurrent global challenges outlined in our scene-setting perspective piece assure that all aspects of the seafood value chain will undergo massive transformations in the years to come. What direction these transformations will take will be shaped by shifting consumer preferences, political narratives, and large-scale investments, as well as trade policy and environmental constraints, such as climate change. What transformations would ensure that all people, including under-nourished populations, are ensured access to sustainable and affordable aquatic foods?

We would aim to play out what the planetary health implications would be of various aquatic food transformation scenarios. For instance, one scenario could focus on prioritizing environmental impact reduction, e.g. through bivalve production, while another scenario could focus on maximizing profit through the production of high-value (more environmentally impactful) farmed species such as salmon. Across these scenarios would run an analysis of equity implications by looking at both the distribution of, and need for increased access to, nutrients/protein; but also at the benefit distribution accruing from the seafood value chains.

9. Transformation Pathways

Given the ambition of the BFA to be relevant to both policy and industry the collection of papers under the BFA will also need to address the fact that the future of blue food will be shaped by the choices of myriad decision-makers, from consumers and fishers, to governments, financiers, and multi-national companies. This paper would therefore aim to identify key leverage points in that complex adaptive system, and the most promising pathways for change.

Impact/action track (Blue Food Coalition) and its connection to the BFA

The BFA will be closely aligned with a parallel effort to engage policy makers and industry in a dialogue that primes these arenas for the science to come.

We intend the Blue Food Assessment to provide the scientific foundation for bringing blue food into the heart of food system dialogues and decision-making. The papers described above will provide the basis for, and be synthesized into, a peer-reviewed assessment published in a high-level journal that distills that science into key insights for decision-makers in the public and private sector, including tailored messages to key stakeholders, e.g. agricultural ministers, public health authorities etc.

A productive interaction between the BFA and the Blue Food Coalition (the impact/action track) right from the start is highly important; enabling improvement of the BFA content in relation to actual impact and pragmatic needs.