



3.11 Sustain and Expand Sustainable Resilient Blue Food Production Systems

a. What, in brief, is the solution?

National governments employ newly-created analytical tools to more accurately assess the nutritional and socio-cultural assets and utilities of blue foods¹ resulting in more pro-active usage policies and a greater allocation of resources in support of blue food systems with a smaller environmental footprint. The solution has two parts: 1) Development of a *national nutritional and livelihood assessment that accounts for the role of blue foods* in delivering protein and vital micronutrients to the population, both currently and into the future under climate change scenarios; and 2) Based on assessment results and identified priorities, *enact policy and funding decisions in support of effective fishery management and/or the launch of the 'next generation' of sustainable aquaculture*. This solution will support the achievement of a nation's aspirations through nutrition-sensitive policies that balance priorities including ecosystem function, livelihoods, food security, equity, and economic goals.

Climate change and overfishing [threatens fishery production](#). We can buffer climate-driven losses in seafood production under all but the most severe climate scenarios in most countries, and for some countries potentially increase production with less ecological damage *right now and into the future*². Climate-resilient fishery management begins with implementing the six basic tenets of sustainable fishery management³, while incorporating forward-looking management targets, creating trans-boundary agreements for sustainable management of fish stocks, and building the systems resiliency. It is critical that equity considerations drive the process and outcomes of fisheries management to improve food and nutrition security. Healthier fish stocks and habitats create healthier ecosystems, food systems and fishing communities that are more [resilient to the impacts of climate change](#).

Aquaculture development has already greatly increased the supply of aquatic food; but the next decade calls for us to launch the next generation of sustainable aquaculture practices in order to re-direct production away from high-impact high-priced fed aquaculture species towards those with a smaller environmental footprint and sustainably meet current food-provisioning needs to keep up with growing demand for protein and micronutrients. Like wild fish and aquatic plants, cultivated species offer great promise for diversification of both diets and livelihoods, reducing the risk of increased malnutrition because of climate change. Aquaculture can also generate co-benefits in the form of ecosystem services especially from culture of extractive (filter-feeding) molluscs and algae. Investing in sustainable low-tropic and extractive aquaculture (including both animals and plants) and expanding sustainable fed aquaculture on land and in open ocean, are essential to new generation of resilient aquaculture operations. The key is to take this step-in harmony with coastal and riparian communities' needs, to complement and not displace wild caught fisheries.

b. What was/were the source(s) from which this solution emerged?

This solution emerged from a collaborative process between ACAI members Environmental Defense Fund and Stockholm Resilience Centre, and in consultation with blue food experts who are documenting the nutrition, livelihood and food security [contributions](#) and potential areas for growth of blue foods including the [Blue Food Assessment](#), Duke University, Harvard University, the Nature Conservancy and World Wildlife Fund.

¹ Blue food, includes fish, aquatic plants, algae, and invertebrates from both marine and freshwater environments

² Free, et al (in press)

³ Management targets and limits that take climate science into account; Adaptive, science-based catch or effort limits and other management measures; Strong and effective accountability and enforcement measures; Secure tenure and appropriate forms of co-management where stakeholders at different scales (e.g., local, regional, national) share decision-making and implementation responsibilities. This includes adherence to [Voluntary Guidelines for Securing Sustainable Small-scale Fisheries](#) and [Voluntary Guidelines on the Responsible Governance Tenure of Land, Fisheries and Forest in the Context of National Food Security](#); Diversification of the species targeted and the "blue foods" that communities and countries depend upon; Transboundary fishery management agreements that allow for equitable food and nutrition provisioning considering climate-driven shifts



c. What problem is it trying to address within food systems?

Blue food adds an additional and much needed dimension to the increasingly crowded food landscape. It imperative it gets high priority when formulating the overall food system agenda. One out of every 5 people rely on fish as a source of essential micronutrients, such as zinc, vitamin A and fatty acids that is not easily replaced, and 3.3 billion people rely on fish for nearly 20% of their animal protein. Yet despite its [significant contribution to nutrition and food security](#), the blue food sector is generally seen as a ‘natural resource’ with emphasis placed on policies that maximize economic rents (or foreign exchange) and production, while contributions to food and nutrition security is underappreciated and undervalued. These valuable resources and the environments they depend on are at risk due to threats from climate change, unsustainable aquaculture growth and overfishing. Furthermore, there is no ready substitute for the nutritional niche occupied by blue foods so we must quickly recognize their value and take steps to secure and grow their contributions.

d. Why is addressing that problem important for achieving the goal of your ACAI?

Projections show that by 2050, about 4.5 billion people will rely on blue foods, especially fish. However with predicted declines in fish catch from overfishing over the next few decades, if we conduct business as usual, this will put 10% of the world’s population at [risk of malnutrition](#). It is vital to manage this critical resource and ensure sustainable growth of the aquaculture sector. When designed and implemented properly, these blue food sectors can be a powerful means to address biodiversity loss while contributing to food and nutrition security, and building climate and disaster defenses – delivering triple bottom-line benefits in terms of nutrition, resilience to climate-induced shocks, and biodiversity.

e. How can this solution address that problem?

We’ve demonstrated that we can [reverse the decline in wild fisheries](#) and restore their abundance with good management. But we will experience a decline in the available protein and micronutrients unless we rapidly scale these successful governance and management tools. This is possible if we invest, proportionately to blue foods’ value, in capacity-building tools and continue to refine and implement climate resilience adjustments to our management systems. Similarly, in aquaculture, exponential growth has resulted in more food, but also increased pollution, habitat destruction, disease spread, chemical use and high dependence on high input resources like soy and wild fish for feed. Solutions to these impacts are rapidly evolving and merit heightened regulatory attention and governmental resources. By recognizing and valuing how important blue foods currently contribute (and in many instances can grow their contribution) towards food and nutrition security, countries would strategically prioritize funding and make blue food-friendly policy decisions to support their maintenance and sustainable growth.

f. Why does this solution align to the definition and criteria for a ‘game changing solution’ developed by the Summit?

This solution is game changing as it meets all three criteria: impact at scale, actionable and sustainable. Investment in these systems can be a development tool to help support food and livelihood provisioning and economic development for small-scale producers, while minimizing and mitigating environmental degradation. We need to continue progress by increasing the scale of support and application, for ocean and freshwater systems, that can deliver on UN SDGs progress (including 2, 3, 13, 14) and support resilient coastal communities worldwide.

g. What is the existing evidence supporting the argument that this solution will work, or at least that it will achieve the initial outcomes described above?



This solution is based on examples of success around the world, emerging scientific research, and innovative technological applications and [documented evidence](#) of chronic underinvestment in ocean and aquatic resources. [Ongoing research](#) is chronicling the inadequately measured contributions of small-scale producers and will add evidence about both nutritional and livelihood roles for wild fisheries. There is large and growing body of research demonstrating the [importance of blue foods](#) to current global food and nutrition security, and the opportunity to grow their contribution sustainably into the future under various climate scenarios in an environmentally sound way, if the right policies and investments are put in place.

h. What is the current and/or likely political support for this idea?

Interest in and support for better valorizing blue foods is reaching an inflection point. A recent paper urging that we '[Recognize fish as food in policy and development funding](#)' documents why the need for the shift is so timely, and why we need to improve metrics, promote nutrition-sensitive aquatic food systems, and more equitably manage the distribution of blue foods to maximize nutritional value and human health impact, and do all of this in the context of food systems as a whole. The [High Level Panel for a Sustainable Ocean Economy](#) has endorsed blue foods and FAO fisheries officials expressed strong support for taking 'fish as food' directly to those making food policy at their biennial meetings in February 2021. Political support outside of the somewhat narrow fisheries arena will depend upon how well the narrative of the potential for fish to feed the world is presented.

i. Are there certain contexts for which this solution is particularly well suited, or, conversely, contexts for which it is not well-suited at all?

Blue foods are part of the nutritional foodscape in both coastal and landlocked countries; marine and freshwater fish and aquaculture are highly varied. This solution has very broad applicability as systems can be designed and adapted to meet identified goals in many geographic contexts. Action and investment should be prioritized to support the communities most vulnerable to climate change and most dependent on blue foods for current and future food and nutrition security.

j. Who are the key stakeholders to be further involved in the process of developing and refining the solution idea?

Key stakeholders include: men and women fisherfolk and aquatic farmers along with policy makers, scientists, civil society, and the commercial fishing and aquaculture industries. The seafood industry includes large-scale actors and corporations and small-scale fishing vessels and fishing communities. Both groups (large- and small-scale) have recently moved to increase their political engagement and policy capacity for purposes of supporting and implementing sustainable practices.