

Briefing Note # 6

Ocean20: Blue Foods

Key Recommendations:

1. Integrate blue foods into national planning processes and mechanisms (NDCs, NAPs, NBSAPs), national dietary guidelines, national health policies and national trade accounting systems.
2. Promote integration of nutrition outcomes into fisheries management and sustainable aquaculture development.
3. Recognise and support the central role of small-scale actors and women in blue food systems to ensure healthy, just and sustainable food systems transformation.
4. Promote the inclusion of blue foods in diets as a sustainable and nutritious option for enhancing food diversity.
5. Foster regional cooperation to build resilient blue food value chains across borders, support value addition and product diversification and promote food safety.

Acronyms for noting:

NDC - Nationally Determined Contributions

NAP - National Adaptation Plan

NBSAP - National Biodiversity Strategy and Action Plan

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Ocean20: Blue Foods

Aquatic “blue” foods play a critical role in global food security. They are highly diverse, rich in protein, essential micronutrients, and fatty acids, and often critical to marginalized resource users, while offering sustainable alternatives to many terrestrial animal-source proteins.

Food systems are located at the nexus of global goals for health, environment, climate, and justice. The recent report by the EAT-Lancet Commission on Healthy, Sustainable and Just Food Systems¹ illustrated how current food systems account for nearly 30% of global greenhouse gas emissions. Food systems are also the largest contributor to pushing five of the six planetary boundaries processes that regulate life on earth over their defined thresholds. These include Climate Change, Biosphere Integrity, Land System Change, Freshwater Change and Biogeochemical Flows. Transforming the way in which food systems are developed and managed, including the use of under-utilised aquatic production systems such as seaweed and kelp, could cut these greenhouse gas emissions in half.

The lack of awareness of the important contribution of blue foods, as well as unsustainable practices such as illegal, unregulated and unreported (IUU) fishing, climate change, ecosystem degradation, vague and often inconsistent policy frameworks, and a lack of targeted financing, threaten the resilience of aquatic food systems and by extension the communities that rely on them. This brief explores how just and equitable blue food contributions to food security and socio-economic development, could support the G20 agenda, through inclusive and locally-managed resources. It highlights the importance of considering both terrestrial and aquatic food systems as a part of complex socio-economic and ecological systems. The brief recognises the interconnectedness of human well-being, environmental health, and governance, aligning with the broader G20 commitments.

The recommendations build on insights from the T20 Indonesia policy brief “Integrating blue foods into food system policy and practice”² and the United Nations Food and Agriculture Organisation (FAO) reports on Blue Transformation. They also align with the 2030 Agenda for Sustainable Development Goals (SDGs), particularly SDG-2 (Zero Hunger), SDG-13 (Climate Action), and SDG-14 (Life Below Water). In the context of Africa, the recommendations align closely to the recently adopted Comprehensive Africa Agriculture Development Program (CAADP) Kampala Declaration, Strategy, and Action Plan (2026-2035), and provide tangible examples from regional blue food systems, including in South Africa, to highlight best practices and success stories.

¹Rockström, J. et al. The EAT–Lancet Commission on healthy, sustainable, and just food systems. The Lancet, Volume 406, Issue 10512, 1625 - 1700

²<https://www.global-solutions-initiative.org/publication/integrating-blue-foods-into-food-system-policy-and-practice/>

1. Blue foods in global food systems

Blue foods play a critical role in global food security. More than 40 percent of the world’s population depends on aquatic foods for at least 20 percent of their animal protein intake.³ For hundreds of millions of people, these foods are their primary source of protein and provide essential micronutrients such as calcium, iron, vitamin A, vitamin B12, and omega-3 fatty acids. In many places, these micronutrients cannot be easily replaced by land-based alternatives.⁴

Blue foods are particularly important for developing countries and vulnerable communities. Globally, around 600 million people depend, at least partially, on the aquatic food sector for their livelihoods, with nearly 500 million involved in small-scale fisheries and aquaculture supply chains.⁵ Women play key roles in these systems, comprising 24% of fishers and fish farmers and 62% of processing workers around the world in 2022, where sex-disaggregated data are available.⁶ In the small-scale capture fisheries sector alone, women constitute approximately 47% of workers, accounting for around 56 million jobs along the entire fisheries value chain, and are most active in processing and trade activities⁷.

Blue and green food systems are deeply interconnected – in diets, in supply chains, and in the environment⁸. For example, capture fisheries provide feed inputs for aquaculture and livestock; terrestrial crops provide feed inputs for aquaculture. Excess nutrients from agriculture and aquaculture can pollute rivers and cause coastal dead zones, undermining fisheries and ecosystems. Blue foods are globally the most traded food products – for developing countries, net revenues from trade of blue foods exceed those of all agricultural commodities combined⁹.

Climate change poses severe challenges to blue food systems. Rising atmospheric greenhouse gas (GHG) concentrations affect marine and freshwater production capacities, aquaculture feed supply, and post-production processes. For example, pelagic fisheries face shifts in species distributions, while coral reef fisheries and bivalve production suffer from ocean acidification. Inland fisheries contend with changes in freshwater quality and availability, and fed aquaculture is impacted by terrestrial crop losses affecting feed supply. Small-scale actors, women, Indigenous communities, and other marginalized groups are particularly vulnerable to these climate impacts, especially those communities that rely on

³ FAO. 2024. The State of World Fisheries and Aquaculture 2024 – Blue Transformation in action. Rome. <https://doi.org/10.4060/cd0683en>

⁴ Golden, C. D., et al. 2021. Aquatic foods to nourish nations. *Nature*, 598(7880): 315-320.

⁵ FAO. 2022. The State of World Fisheries and Aquaculture 2022. Towards Blue Transformation. Rome, FAO. <https://doi.org/10.4060/cc0461en>

⁶ FAO. 2024. The State of World Fisheries and Aquaculture 2024 – Blue Transformation in action. Rome. <https://doi.org/10.4060/cd0683en>.

⁷ <https://www.fao.org/voluntary-guidelines-small-scale-fisheries/key-thematic-areas/gender-equity-and-equality/en>

⁸ Cottrell, R. S., et al(2018). Considering land-sea interactions and trade-offs for food and biodiversity. *Global Change Biology*, 24(2), 580–596.

⁹ FAO. 2020. The state of world fisheries and aquaculture 2020. Sustainability in action. Rome. <https://openknowledge.fao.org/items/b752285bb2ac-4983-92a9-fdb24e92312b>

aquatic food for sustenance and economic stability.¹⁰¹¹ Ensuring these groups are represented in planning and decision-making is important for enhancing the resilience of aquatic food systems and supporting food and nutrition security.

Blue foods can also play roles in reducing GHG emissions from food systems. They generally have a lower carbon footprint than terrestrial animal-source foods, with some, such as bivalves and seaweed, having minimal or neutral GHG emissions¹². Sustainable management of aquatic food systems offers significant potential for reducing emissions in existing systems by, for example, more effectively managing capture fisheries. There is an even bigger opportunity for emission reduction by shifting from high-emission species and practices to lower emission species. There is considerable variation in GHG emissions across different species, geographical regions, and farming practices. For instance, the CO₂ emissions from small pelagics are one-eighth those from flatfish, while bivalves emit, on average, one-ninth the CO₂ of farmed shrimp. Targeted investments in sustainable and low-carbon aquatic foods can support low-emission development strategies, addressing both poverty and food and nutrition insecurity.

2. Blue foods in Africa/South Africa

Africa's population totalled more than one billion in 2024. An average of 15.2% of Africa's people remain undernourished, representing a decrease of only 2.4% over the past 10 years. Blue foods from fisheries and aquaculture, provide food and nutritional security to an estimated 200 million people. While aquatic animal products contribute an estimated 18% of all animal protein in Africa (more than the global average of 15%), the average per capita annual fish consumption is only 9.4kg, less than half of the global average, and is projected to decline further without targeted interventions. A growing population and increased per-capita income are estimated to increase demand for aquatic products by 30% by 2030.

Africa is grappling with significant health challenges linked to deficiencies in essential micronutrients, such as vitamin A, vitamin B12, zinc, and iron, which have contributed to approximately 257 million people being classified as undernourished. Recent studies have increasingly highlighted seafood as a rich source of bioavailable macro and micronutrients, presenting a unique opportunity to bolster nutrition across the continent. Blue foods not only represent one of the few sustainable protein sources, but it also has the potential to help countries remain within the planetary boundaries by promoting a more environmentally friendly and just food system¹³.

¹⁰ FAO. 2024. Blue transformation actions on climate resilient aquatic food systems

¹¹ Cooley, S., et al, 2022: Oceans and Coastal Ecosystems and Their Services. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M.the FAO strategy on climate change. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 379–550, doi:10.1017/9781009325844.005.

¹² Gephart, J. A., et al. 2021. Environmental performance of blue foods. *Nature*, 597(7876): 360-365

¹³ FAO. 2024. The State of World Fisheries and Aquaculture 2024 – Blue Transformation in action. Rome. <https://doi.org/10.4060/cd0683en>.

This promise is, however, tempered by growing concerns regarding the sustainability of blue foods, as approximately 35% of capture fish stocks in Africa are fully exploited or overfished. This sustainability dilemma raises questions about the long-term viability of relying on fisheries to bridge the nutritional gaps. Nevertheless, research indicates that a relatively small fraction of the available production from fisheries could effectively close these nutrient gaps¹⁴. For instance, in Namibia, only 9% of the fish caught within their Exclusive Economic Zone (EEZ) is needed to meet the dietary iron requirements of its population, while in West Africa, the nutritional needs of all children under five could be fulfilled with 20% or less of the current catch.

Despite these findings, many African countries are falling short in leveraging blue foods to meet their nutritional needs. For example, South Africa currently meets only 9% of its protein requirements through blue food, Mauritania meets only 10% of its protein needs through blue foods, Gabon meets 40%, and Tunisia meets 18% of its protein needs through blue food. The high and low percentages seen in these countries can be attributed to either an increase in exports, fisheries, or aquaculture production, and/or an increase in imports¹⁵.

Fisheries and aquaculture are an essential commodity sector, providing a critical contribution of aquatic foods to Africa's agri-food systems. Fish remains Africa's most highly traded commodity, contributing to international, as well as intra- and inter-regional fish trade. Africa is currently a net exporter of aquatic animal products, but significant volumes of fish are imported to meet growing demands and supplement animal protein needs¹⁶. The heavy reliance of Africa on external aquatic food supply chains is a significant food security risk.

Some of the key interventions required to shift the transformation of food systems towards more sustainable, just and healthy solutions will require comprehensive and integrated responses that: promote increased investment into the sector; strengthen fisheries management and sustainable aquaculture development, including the diversification of production to include previously under-utilized aquatic production systems; increase inclusivity and empowerment of small-scale actors, women, youth and marginalised groups; and strengthen resilience to shocks.

¹⁴ Coomson, J. B., Smith, N. W., & McNabb, W. (2025). Contribution of large-scale food fortification to micronutrient requirements of women of reproductive age in Sub-Saharan Africa. *Proceedings of the Nutrition Society*, 84(OCE2), E168.

¹⁵ Akinyemi, T. J., Boustany, A., Finkbeiner, E., Gephart, J., Zuercher, R., (in prep) Impacts of fisheries, aquaculture and trade on nutrients available through blue foods in Africa

¹⁶ FAO. 2024. *The State of World Fisheries and Aquaculture 2024 – Blue Transformation in action*. Rome. <https://doi.org/10.4060/cd0683en>.