

Aquaculture's role in nutrition in the COVID-19 era

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Aquaculture, the relatively young but fast-growing industry of farming of fish and other marine life, now produces around half of all seafood consumed by humans. A new paper from American University published today examines the economics of an aquaculture industry of the future that is simultaneously environmentally sustainable and nutritious for the

nearly 1 billion people worldwide who depend on it for health and livelihoods.

Of the scenarios the paper discusses, included are two approaches that illustrate what aquaculture might look like if nations refocus inward for food and nutrition security in the COVID-19 era.

"Seafood is essential to meeting global food and nutrition security goals," said Jessica Gephart, the paper's primary author and an assistant professor of environmental science at American University. "Under what circumstances, and with what policies, can we maximize aquaculture for its nutrition benefits and sustainability for all who rely on [seafood](#)?"

This is a challenging question to answer, especially in the COVID-19 era. As the pandemic is still unfolding, the full scope of long-term damage to food systems is unknown, the paper notes. Yet, the aquaculture industry is suffering major setbacks, as some exports are being halted, workers are being laid off, demand has dramatically decreased, production units are incurring large losses and some countries are reconsidering their reliance on foreign seafood. The authors note that such setbacks "can be particularly long-lasting for a budding sector, with many young farms that potentially lack the capital to weather the storm and the political clout to secure sufficient recovery aid."

The demand for seafood is expected to increase significantly by 2050, the paper notes, if historical trends in income and [population growth](#), urbanization, and diets are maintained. This has prompted researchers to contemplate the future role of aquaculture in meeting demand and supporting nutrition needs. "Nutrition sensitivity" refers to the multiple benefits derived from diverse foods, including improving nutrition, valuing the social significance of food, and supporting livelihoods.

For aquaculture, this means a food system that supports public health

through production of diverse seafood, provides multiple, rich sources of essential nutrients, and supports equitable access to nutritious, safe, and culturally acceptable diets that meet food preferences for all populations, without compromising ecosystem functions, other food systems, and livelihoods.

The paper describes and discusses four possible scenarios for the future of the growth of aquaculture, with the first two outlining what an inward approach might look like. Elements of each of these scenarios exist in current production systems from around the world:

Growth-first, nationalistic approach. In this scenario, countries throughout the world turn inward for economic growth and focus on supporting national industries to meet seafood demand. Overall, diversity of seafood available in each country generally declines. Countries with mature aquaculture sectors that already supply a diversity of production technologies, species and product types will continue to meet some nutritional needs, but for a narrower range of consumers and at increased cost, and to a more limited extent.

Sustainable growth, localized approach. In this approach, countries throughout the world adopt sustainable local food production approaches focused on small-holder production. While some traditional production systems are highly productive, in general, global aquaculture production grows at a relatively slow rate—if at all—and total production is relatively low. Countries that have retained a cultural history of developing small-scale aquaculture will see an increase in these production systems, supported by government-backed schemes and extension services. When production is at the household scale, women are more likely to play a key role, increasing the likelihood that nutritional benefits flow directly to the most vulnerable.

Sustainable growth, globalized world. The world fully embraces the

application of sustainable development principles, taking advantage of the benefits of globalized [food systems](#) while strengthening environmental governance. Global competition and high levels of technology transfer lead to relatively high global inland and marine seafood production. Favoring production of seafood in line with local environmental contexts, this world leads to moderate global species diversity. High global seafood production and low trade barriers enable low seafood prices, improving seafood access in urban areas and areas with transportation infrastructure connections and access to electricity for refrigeration.

Growth first, globalized world. In this scenario, the world moves toward further economic globalization and encourages boundless economic growth. Through genetic selection and modification, as well as technological innovations, the [aquaculture](#) industry develops intensive production systems with limited environmental regulation. Production systems rely on globalized supply chains, sourcing feed ingredients internationally, and taking advantage of low labor costs for processing. Through competition, massive production of only a few species results, which are highly traded and spread rapidly (akin to the dominance of four species in the meat market, led by chicken). Targeted policy interventions would be necessary to help nutritionally vulnerable populations.

More information: Jessica A. Gephart et al, Scenarios for Global Aquaculture and Its Role in Human Nutrition, *Reviews in Fisheries Science & Aquaculture* (2020). [DOI: 10.1080/23308249.2020.1782342](https://doi.org/10.1080/23308249.2020.1782342)

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