Improving access to aquatic foods

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Standfirst: Food systems must transform to provide undernourished people with greater access to nutrient-rich foods. Whilst there has been a push to increase volumes of food production, too little attention has been paid to the factors that enable access to nutritious foods.

Global and national-level analyses of the economic and production potential of aquatic foods highlight that, even where national fisheries production is high, many people do not have access to aquatic foods. The factors that enable or impede aquatic foods to flow within reach of people with different nutritional needs, across diverse economic, geographic, and social circumstances, remain poorly understood.

In this issue of Nature Food, Bennett et al., 2022 provide a much-needed exemplar to the research and policy community, digging below national-level data to analyze factors that lead to different aquatic foods being physically or economically accessible throughout Malawi.[3] The authors trace data from the point of landing to the point of sale for two nationally important fish: *Engraulicypris sardella,* the Lake Malawi sardine, which is locally known as *usipa,* and fish referred to locally as *chambo* (which mainly refers to the species *Oreochromis karongae).*

They find the small fish *usipa* is available in many rural markets throughout the nation, and is frequently sold in small amounts and in sun dried form. These rural markets serve almost a quarter of Malawi's population. By contrast, *chambo* were sold whole, predominantly fresh, and commanded higher prices per kilogram. *Chambo* were sold in fewer markets that were mainly in urban areas that served households with relatively higher incomes.

Bennett et al. provide important commentary on affordability (i.e., price *relative* to purchasers' wealth), the form of fish being sold, and the minimum portion size that can be acquired. They found that the small fish *usipa*, known to be denser in nutrients compared to larger fish, were both physically and economically more accessible to people with lower incomes living in rural areas. A complementary study that included Malawi found rural households closer to fishing grounds experienced better access to fish (illustrated through higher rates of fish consumption), but also that in rural areas fish consumption between poorer and wealthier households was more equal; in populations further from fishing grounds, the reverse was true.[4]

The disaggregation Bennet et al. apply to analyze two separate species offers the opportunity for policy and investment recommendations distinct for each species and their respective supply chains. A

commonality is that both fisheries require managing amidst changing ecologies of Africa's Great Lakes and rivers,[5] needing special efforts to rebuild declining *chambo* stocks.

Given the direct role *usipa* play as a foundation of nutrition in rural areas, there are some supply chain investments worthy of special note. While receiving relatively low research and policy attention, dried fish supply chains (of which usipa is a major contributor) are prolific throughout sub-Saharan Africa and other parts of the world.[6] The process of sun drying or smoking fish concentrates the nutrients of the already nutrient rich, small-bodied fish. Dried fish, and fish powder made from dried fish, are potent supplements to the diets of infants and young children, whose small stomachs need foods dense in both nutrients and calories.[7] The sun drying method is relatively climate-friendly and safe compared to smoke drying. Nonetheless, people drying fish can experience substantial economic and physical losses of product whilst drying.[8] Social and technical investments in dried fish supply chains have potential to help remove social and gendered barriers, reduce loss and waste, improve product safety and quality, and ultimately improve access and consumption amongst nutritionally vulnerable groups.[9]

Bennett et al. note the geographically variable, gendered nature of the role people play in fish supply chains. Worthy of further research attention are the other ways gender plays into supply chains that ultimately impact access and consumption.[10] This includes gendered control over productive assets and household decision-making about food purchases, gendered roles and knowledge of food preparation and nutrition, intra-household distribution of nutrient rich foods, and sex and age differences in nutritional needs, i.e., women and young children, at certain physiological time points, have higher nutrient needs per calorie than men.[11]

The situation in Malawi reflects both opportunities and challenges experienced throughout sub-Saharan Africa, which houses one quarter of the worlds' undernourished children.[1] This makes the analysis by Bennett et al. illustrative for Malawi, and informative for the Africa Great Lakes region and sub-Saharan African nations, where diets could benefit from better access to quality aquatic foods (i.e., finfish, crustaceans, mollusks, aquatic plants, and algae that have been farmed or wild-caught from oceans, lakes, rivers, or wetlands). In these contexts, there is a great need for nutrient dense, animal-source foods to complement starchy, nutrient-poor diets.

Factors that enable and restrict access to nutrient rich foods represent critical technical, social, and economic levers through which investment can bring about change within food systems to deliver nutrition outcomes for all people. National policies that govern food systems set the rules of that game, and have significant impact over whether and how people experience benefits from aquatic foods.[12] Bennet et al., contribute to an important body of literature that illuminates geographic, economic, and social factors critical to consider in the pursuit of food and nutrition security for all.

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Conflict of Interest Statement

The authors declare no competing interests.