

Fish

A RICH SOURCE
OF NUTRIENTS



Advocacy Brief 2020

Key Facts

- Fish are a rich source of micronutrients, protein, and essential fatty acids, critical to cognitive and physical development for healthy growth.

- Fish is an important source of micronutrients in regions where malnutrition is high and can play a crucial role in reducing it.

- More than 1 in 3 people rely on fish for at least 20% of their total animal protein intake, making fish a vital food source for healthy diets.

- Fish from warmer waters contain higher concentrations of calcium, iron and zinc.

Fish Composition¹

Minerals

Calcium, iodine, iron and zinc

Protein

Vitamins

vitamin A, vitamin B₁₂ and vitamin D

Essential fatty acids

- Fish from cold thermal regimes have higher concentrations of omega-3 fatty acids¹.

- Smaller fish contain higher concentrations of calcium, iron and omega-3 fatty acids¹.

The consumption of fish contributes to some of the Sustainable Development Goals (SDGs)

Contributing
to the SDGs

1 NO POVERTY



2 ZERO HUNGER



3 GOOD HEALTH AND WELL-BEING



8 DECENT WORK AND ECONOMIC GROWTH



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



17 PARTNERSHIPS FOR THE GOALS



Introduction

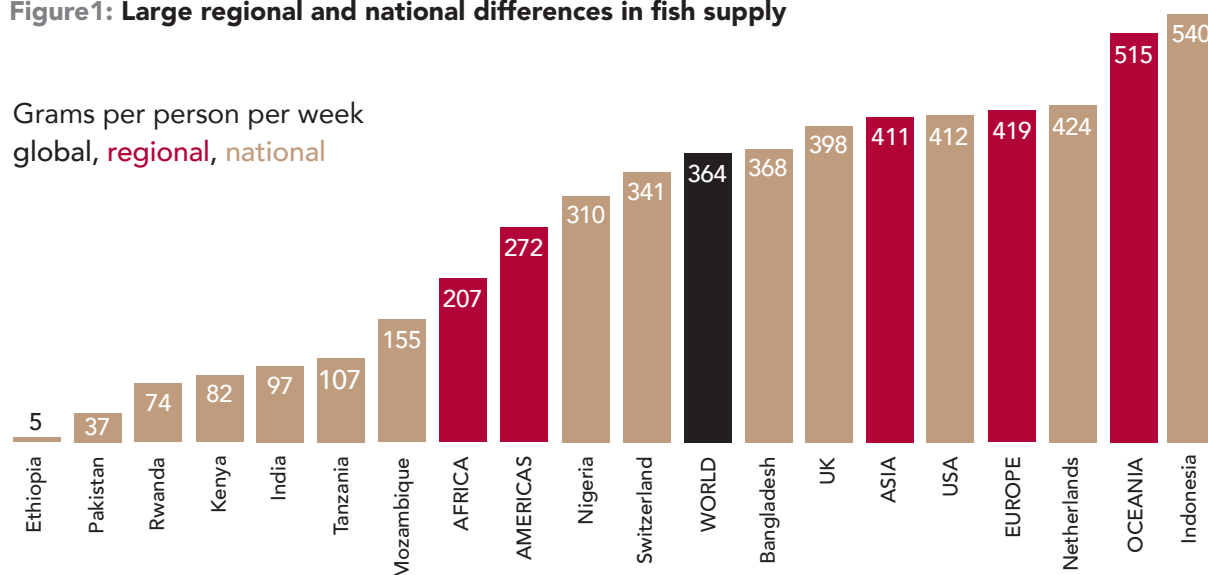
Fish and seafood supply around the world

The global average supply of fish and seafood per person has more than doubled since the early 1960s, even as population has done the same. In many places, fish has become more affordable compared to other animal-source foods such as meat or poultry. Aquaculture in particular has contributed hugely to improved fish supply over the last several decades, but the availability and accessibility of fish can still be low in many low-income settings, including across many of the countries where GAIN's programmes operate.

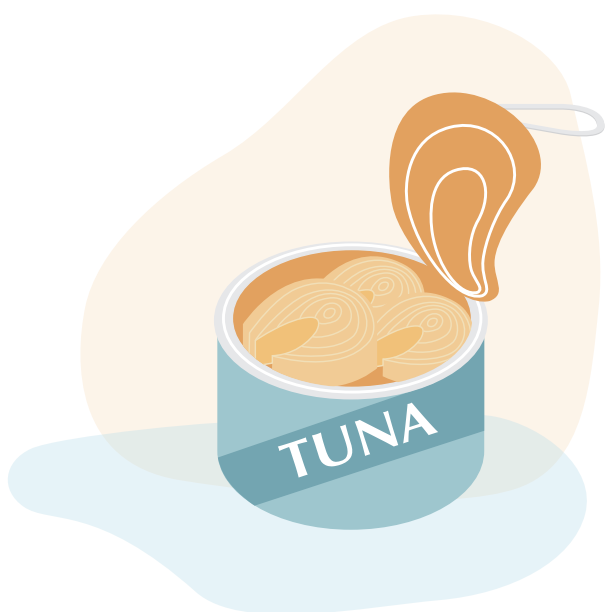
Globally, average fish supply is around 52 grams per person per day, or around 364 grams per person a week. National and regional variation is wide. Figure 1 demonstrates some of this variation across countries where GAIN's main offices are located (Figure 1). Supply is generally higher in Asia than in Africa – though in India and Pakistan it remains relatively low, while in Nigeria, it is approaching the global average.

Figure 1: Large regional and national differences in fish supply

Grams per person per week
global, **regional**, **national**

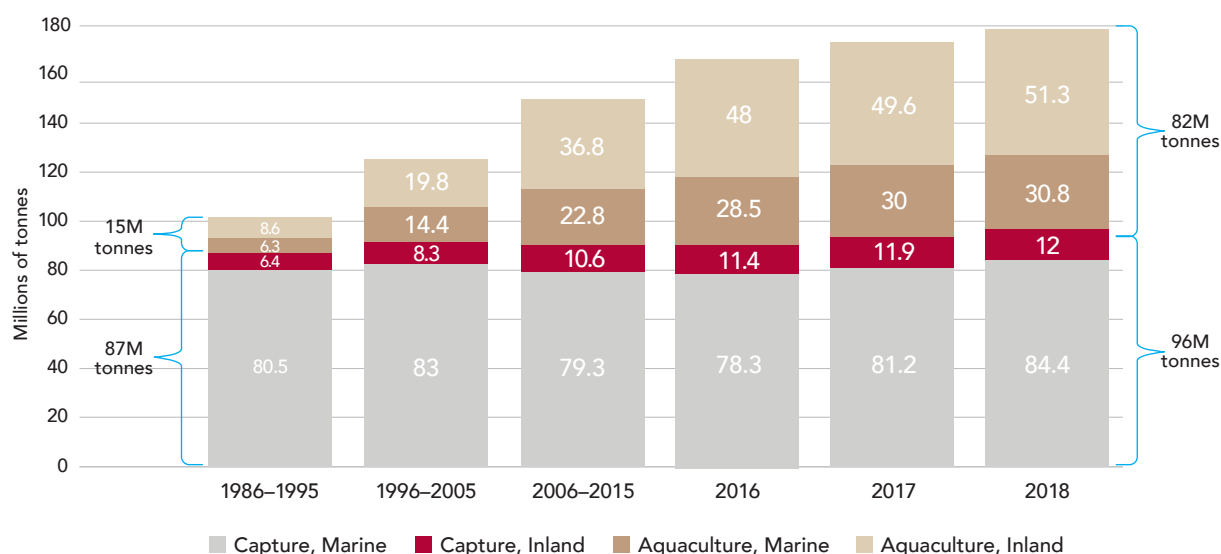


Sourceⁱⁱ



A typical tin of tuna might contain around 160g, so the range shown in the figure above displays supply varying from the equivalent of about 1 and a half tins of tuna a year per person on average in Ethiopia, to almost half a tin's worth per person a day in Indonesia. It is worth remembering however that national averages conceal large differences in individual access – for many resource-constrained people even in emerging economies, accessing a healthy diet is prohibitively expensive.

Figure2 : Trends in world fisheries and aquaculture production (average per year)



Source: iii



Globally, fish provided more than 3 billion people with 20 percent of their average per capita intake of animal proteins, reaching 50 percent or more in countries such as Bangladesh, Cambodia, the Gambia, Ghana, Indonesia, Sierra Leone, Sri Lanka and several Small Island Developing States.

Global capture fisheries production in 2018 reached a record 96 million tonnes, with the increase mostly driven by marine capture fisheries, where production increased from 81 million tonnes in 2017 to 84 million tonnes in 2018. Catches from inland fisheries were at their highest ever in 2018 at 12 million tonnes, having nearly doubled over a period of thirty years. Inland water catches are more concentrated than marine catches, both geographically and by country. Sixteen countries produced more than 80 percent of the total inland catch, with Asia accounting for two-thirds of global inland production since the mid-2000s. Inland catches are also important for food security in Africa, which accounts for 25 percent of global inland catches, while the combined catches for Europe and the Americas account for 9 percent.

The contribution of world aquaculture to global fish production reached 46 percent in 2018, up from 26 percent in 2000. At the regional level aquaculture accounted for 18 percent of total fish production in Africa, 17 percent in Europe, 16 percent in the Americas and 13 percent in Oceania (FAO 2020).

Our vision: more available, accessible, desirable, and safe fish

The Global Alliance for Improved Nutrition (GAIN) works on **supply** and **demand**, as well as on changing **incentives, rules and regulations** to encourage **production** and **consumption** of nutritious and safe foods. We seek to understand and tackle barriers faced by small enterprises working to boost availability, affordability, desirability, and convenience of **nutritious foods like fish**, especially for people on low-incomes and particular populations who stand to benefit from greater consumption of nutrient-dense foods, such as children.

How fish can help tackle malnutrition and be enjoyed as part of a healthy diet

Fish plays an important role in preventing malnutrition. Fatty fish; high in omega-3s and small fish eaten whole, containing nutrients in the skin and bones can play an essential role by providing micronutrients to vulnerable populations. Improving dietary intake through diversifying the diet is one way to improve nutritional status. Adding small fish into the typical nutrient poor starch-heavy diet can increase micronutrient intakes effectively, with high bioavailability crucial for healthy growth and development, especially in children.

TABOOS:

Consuming fish is considered taboo among many groups of people across the world for various cultural and religious reasons. For example, fish were once considered unclean water snakes in some regions of Africa and India which has resulted in communities becoming fish avoiders today. This presents significant challenges in areas where malnutrition rates are high – where fish could be an affordable and available source of protein and micronutrients essential for healthy growth and development in children.



GAIN case studies



1. Supporting SMEs supplying nutritious food to poor consumers

One of GAIN's flagship programmes, the **Marketplace for Nutritious Foods (MNF)** supports local small and medium enterprises (SMEs) to accelerate accessibility, desirability and quality of nutritious foods, including fish. Through the MNF, GAIN provides technical assistance, grants and training to improve businesses' capacity to produce nutritious and safe foods at scale, leading to improved production and consumption of these foods – which in turn improve people's diets and health.

One element of the MNF programme is the **Innovation Accelerator**, which helps to actively scale promising ideas through packages of support including technical advice, business planning and financial investment.

Gatundu Fish Farmers' Cooperative was selected for support by GAIN as part of a call for proposals for the Innovation Accelerator. The group benefits from technical and business support delivered by Kenya Women Holdings, a local development organisation which focuses on female entrepreneurial empowerment and which was contracted by GAIN to support the cooperative.

Joseph Mbatia is a member of the **Gatundu Fish Farmers' Cooperative** and has benefitted from training in financial management, aquaculture and entrepreneurship, as well as ongoing technical support. Mr Mbatia has been quietly developing his own innovative approach to fish farming since the Marketplace programme selected the cooperative to receive support. He currently has three ponds, one already stocked with tilapia, from which he plans to recycle the wastewater to irrigate his 0.9-acre plot where he farms livestock and grows crops.

Despite being a member of the Gatundu Fish Farmers' Cooperative, Mr. Mbatia didn't initially farm fish – or even eat it. His interest in fishing only developed into a solid business idea following visits to Sagana and Mwea model fish farms, organised as part of GAIN's support to the fish farmers' cooperative through its Marketplace for Nutritious Foods programme.

Visiting the successful fish farms inspired Mr Mbatia so much that he started working on four new fish ponds straight away. By introducing more fingerlings in the other ponds, he recycles the wastewater to use for irrigation on his farm, learning that water from the fish ponds contain nutrients beneficial for the plants, in turn increasing production of quality food for the market.

Such an innovative, integrated way of thinking fits perfectly with Mr Mbatia's existing approach to farming. For example, he uses waste from his pigs to fuel a biogas plant which generates energy used for cooking. He also hopes to build a greenhouse, replace his current coffee plantation with more ponds, and even start his own hatchery, helping to address one of the biggest challenges facing small-scale fish farmers; access to finance. The cost of fingerlings is high and can burden fish farmers.

In Kenya, fish farming is an increasingly popular option for farmers trying to supplement unreliable incomes from poor soils. An initiative from the Kenyan government has been advocating aquaculture to support both farmers and fish stocks, which is an important source of food in many parts of the country.

“I have learned a lot not only from the training, but also from the extension visits. With that, I am now an expert in digging.”



2. Working to reduce loss and waste of nutritious food

In 2015, GAIN and its partners created the **Postharvest Loss Alliance for Nutrition (PLAN)** to bring together a wide range of public and private sector stakeholders addressing this issue to collectively reduce loss of nutritious foods along the entire supply chain. PLAN's mission is to coordinate measurable actions to address losses in perishable and nutritious food supply chains and increase people's access to these foods, particularly people in low-income households.

Indonesia is among the world's largest contributors to food loss. Fish was chosen with the Ministry of Health as a test commodity to reduce postharvest losses. Widely available in Indonesia, fish is an abundant source of animal-based protein. Main activities are encouraging reduction of loss of fish along the supply chain by encouraging development and adoption of new technologies. GAIN's programme brings together various partners to find sustainable technology-based solutions that will be tested in East Java.

In October 2019, GAIN's Indonesia's Postharvest Loss Alliance for Nutrition (IPLAN) ran a Business Innovation Challenge (BIC) to surface local innovations to reduce loss and waste of fish. The Challenge called for innovations in processed fish-based foods that reduced loss and waste.

A mother daughter duo – Imeda and Rani – established a small business processing fish and vegetables into healthy snacks in 2012. In response to the BIC, Imeda and Rani planned to process Pangasius, a medium-sized catfish, of lower-grade into a cereal product. The fish is relatively easy and inexpensive to produce, with strong potential for mass production. Most Pangasius is either exported or sold to restaurants and when it doesn't meet high standards, it's often wasted.

Rani's idea was to make a healthy drink from fish: no one in Indonesia was processing fish into a healthy cereal drink, even though another cereal drink produced by a major company was already popular. Using her background in food technology, Rani suggested to her mother to



experiment with producing this drink, which she called IFIT cereal, and to submit it to the BIC. The IPLAN 2019 BIC received 277 proposals. Although IFIT cereal was seen as innovative, some jury members doubted its potential taste. The cereal drink tastes milky, a little sweet with a hint of ginger to reduce the fishy taste. Despite concerns on its palatability - IFIT scored high on its nutritional content, with high levels of protein, iron, zinc, and calcium. The IFIT fish cereal drink was selected as one of the five IPLAN BIC winners, and Rani used the seed funding provided by GAIN's IPLAN programme to meet food industry licensing requirements, such as renovating the production site and purchasing improved equipment. The award ceremony was a highlight of the National Fish Day ceremony, attended by thousands of people from all provinces of Indonesia.

The winners' products were displayed at a booth in the exhibition area, which was visited by the Minister of Maritime Affairs and Fisheries (MMAF) and other high-level officials. One member of the national parliament ordered 1,000 boxes of the cereal drink. Not long after, the MMAF ordered 2,000 boxes of the product for use in its Eating Fish campaign. From January to March 2020, Rani and her mother sold over 6,000 boxes (each containing five sachets) through direct sales and exhibitions. Their local district fishery office, proud of their achievement, lent them a wrapping machine to help with packaging.

“We have a big dream. We want this product to be listed in big retail markets in Indonesia, so we can contribute directly to improving people’s nutrition. We believe that our highly nutritious product could help reduce anaemia and therefore contribute to the national programme to reduce stunting.”

Rani

BADUTA ATIKA

Baduta is a multi-component programme developed by GAIN, together with partners, to improve maternal and infant nutrition. Piloted in two districts of East Java Province, Indonesia from 2013 to 2017, Baduta's behaviour change component was developed using the Behaviour Centred Design approach. It used multiple entry points, including mass media campaigns and interactive demonstrations for caregivers of young children and expectant mothers that were designed to tap into emotions, known as emotional demonstrations or "emo demos".

For example, **one of Baduta's TV campaigns** focused on a man preparing for work. He tells a gossipy neighbour that the vegetables his wife has packed for his lunch are enough for him but that his pregnant wife needs different food. The gossipy neighbour says she only ate fruits and vegetables while pregnant. The mother-in-law comes back from the market with chicken liver for her pregnant daughter-in-law and tells the gossipy neighbour that during pregnancy, especially during the first three months, a woman needs to eat at least one portion of chicken liver, egg, or fish a day to remain strong and energetic during pregnancy. This campaign promotes incorporating animal-sourced foods, specifically liver, eggs and fish into a pregnant woman's diet.

The formal evaluation of Baduta found significant positive effects on several infant and young child feeding practices, such as diversification of children's diets. The emo demos were a popular component of the programme and **proved feasible and highly acceptable**.



Fish as an important source of missing micronutrients for weaning children

Recent research by GAIN and UNICEF called Comprehensive Nutrient Gap Assessment (CONGA) identified key nutrient gaps faced by young children aged 6-23 months in Eastern and Southern Africa, as well as South Asia. CONGA also highlighted the micronutrient-dense foods that are already relatively affordable in local contexts, though under-consumed, identifying good candidate foods to help plug particular nutrient gaps. Fish appears as an important and affordable source of various micronutrients in seven of the nine countries in which CONGA research was conducted. The findings (Table 1) point to a need to increase demand among families with young children, particularly those on low incomes, to include items like fish in children's meals.

Table 1: Comprehensive Nutrient Gap Assessment (CONGA) findings relating to fish

Country	Key micronutrients of concern among young children	Dairy for particular nutrients of concern
Bangladesh	Zinc, vitamin A, calcium, iron, iodine	Small fish for calcium and vitamin A
India	Iron, vitamin A, zinc, vitamin B ₁₂ , folate, calcium	Fish for vitamin A and vitamin B ₁₂
Mozambique	Iron, vitamin A	Dried fish for iron
South Africa	Vitamin A, calcium	Small fish for calcium and vitamin A
Tanzania	Vitamin A, calcium	Small dried fish for calcium and iron
Uganda	Iron, calcium	Small dried fish for calcium and iron
Zambia	Iron, calcium	Small dried fish for calcium, vitamin A, vitamin B ₁₂ , zinc and iron

Source^{iv}

Recommendations

It's clear that in many settings, people stand to benefit from more fish in their diets, particularly people in low-income households, including young children.

Governments can make policies and regulations work for improved fish supply – for instance through funding schemes to develop and boost uptake of aquaculture. These might include schemes to improve fingerling or fish-feed supply. Governments can also contribute to multi-stakeholder efforts to reduce loss and waste of fish along the supply chain.

Governments and the private-sector can support structures to identify and address key systemic barriers to scaling and commercializing aquaculture by engaging key stakeholders. They might for example; identify how to streamline the process of obtaining a license to fish, which is currently a major barrier to formalizing the commercialization of aquaculture.

On the demand side, governments, private-sector stakeholders, development partners, and consumer groups can work together to develop innovative demand-generation campaigns, encouraging people – particularly our younger generations – to desire fish and other healthy options, while tackling taboos associated with fish consumption.

Governments can also subsidise healthy food consumption, particularly among low-income groups. Where governments procure food and meals, such as for school feeding programmes, they can ensure these include fish where appropriate, in line with national dietary guidelines.

The private sector can also play a big role, by complying with government efforts to improve food environments, or by voluntarily improving safety and quality of offerings. Food manufacturers for example might incorporate more micronutrient-rich fish in processed food offerings, while all companies, particularly larger ones, can offer workplace nutrition programmes that include healthy offerings such as fish. Larger companies can mentor smaller ones, for instance to improve the nutrition and business cases of their offerings. Small and medium enterprises can join networks like the Sun Business Network to amplify their voices and to better access available opportunities such as trainings in their communities of practice.

Individuals, consumer groups, and non-governmental organisations have a crucial role to play in amplifying the voices of the marginalized and holding both government and private sector actors to account, particularly where commitments are made.

The supply challenges around the affordability and availability of fish, as well as underexploited opportunities to boost demand for healthy diets, including fish, occur in many places. Programming to support fish will remain firmly on GAIN's plate in the future, as part of our commitment to making healthy foods and healthy diets more available, accessible, and desirable.

References

- i FAO (Food and Agriculture Organization of the United Nations). 2020. The State of World Fisheries and Aquaculture 2020. Sustainability in action. FAO, Rome. <http://www.fao.org/3/ca9229en/CA9229EN.pdf>
- ii Constructed with data from FAOSTAT
- iii Constructed with data from FAOSTAT
- iv GAIN and UNICEF CONGA reports, available at: <https://www.gainhealth.org/resources/reports-and-publications/comprehensive-nutrient-gap-assessment-conga-eastern-and-southern-africa> AND <https://www.gainhealth.org/resources/reports-and-publications/comprehensive-nutrient-gap-assessment-conga-south-asia>

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