



View Point

Sustaining healthy diets: The role of capture fisheries and aquaculture for improving nutrition in the post-2015 era



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ABSTRACT

The Sustainable Development Goals (SDGs) agenda makes achieving food security and ending malnutrition a global priority. Within this framework, the importance of fisheries in local and global food systems and its contribution to nutrition and health, particularly for the poor are overlooked and undervalued. This paper reviews current fish production and consumption from capture fisheries and aquaculture, highlights opportunities for enhancing healthy diets and outlines key multi-sectoral policy solutions. Mirroring the call for a diversification of agricultural research and investment beyond a few staple grains, it is anticipated that productivity gains for a few farmed aquatic species will not suffice. Capture fisheries and aquaculture have a complementary role to play in increasing fish availability and access, and must be promoted in ways that support measurable nutrition and health gains. This paper argues that the lack of a nutrition-sensitive policy focus on capture fisheries and aquaculture represents an untapped opportunity that must be realised for ensuring sustainable healthy diets for all.

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Introduction

A core vision of the post-2015 development agenda is a “healthy life for all” in a world where everyone consumes food that is “affordable and nutritious” (United Nations, 2015). Several of the Sustainable Development Goals (SDGs) (No. 2 and No. 14 in particular) speak to the importance of supporting consumer choice and enhanced nutrition by promoting agricultural productivity among small-scale producers and supporting links between local and global markets. Those goals focus on the importance of sustaining food production, on the one hand, and on securing year-round access to diverse foods, on the other.

Fish¹ production and trade contribute significantly to global agricultural output. Fish production in 2012 exceeded 158 million metric tons, while the value of international fish trade amounted to USD129 billion (HLPE, 2014). An increasingly large share of fish entering global markets derives from aquaculture (the farming of aquatic animals and plants); the world’s fastest growing food production sector for more than four decades (Tveterås et al., 2012). Much of fish produced and traded within low-income countries derives from capture fisheries (non-fed fish harvested from undomesticated ecosystems). These two production systems have important complementary roles in meeting rising demand for fish and other products (such as animal feed and fish oil), and enhancing incomes and nutrition among smallholder producers, fishers and poor consumers. However, fisheries policies are increasingly articulated around value-creation through export to urban and

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¹ The term ‘fish’ is used in the broadest sense to include all aquatic animals, including fish (both fed and non-fed), crustaceans (e.g. shrimp, prawns, crabs), molluscs (e.g. oysters, mussels, snails) and other aquatic invertebrates.

international markets. Capture fisheries institutions concentrate ownership and use of fishing assets to maximize economic output which may bring benefits to resource conservation and trade, but decreases the quantity of fish available on local markets (Béné et al., 2010). Aquaculture policies tend to focus on maximizing productivity and economic efficiency (Hishamunda et al., 2009). These policies leave little room for promoting diversity of systems and species, or accessibility of fish among poor consumers whose diets typically lack nutrient-rich foods.

Acknowledging the need for public health policymakers to actively engage with agricultural sub-sectors, the Second International Conference on Nutrition (ICN2) stated that “fisheries and aquaculture need to be addressed comprehensively through coordinated public policies” (FAO and WHO, 2014). The call for improved policy coordination, environmental protection, enhanced fish production and reduced loss and waste represents a major opportunity to promote capture fisheries and aquaculture as key nutrition-sensitive agricultural sub-sectors.

The term ‘nutrition-sensitive agriculture’ was described by Ruel and colleagues as agriculture policies and interventions that support improved nutrition outcomes as distinct from ‘nutrition-specific’ public health interventions (such as vitamin A supplementation or promotion of exclusive breastfeeding) (Ruel et al., 2013). While there is much debate regarding the impact of agriculture on nutrition, fish systems are rarely mentioned. Indeed, the role of the fisheries sector in improving diets continues to be overlooked in discussions of sustainable food systems. The benefits of fish for health are well demonstrated. Can fisheries play a greater role in healthy diets in coming years? In answering in the affirmative, this paper argues that the lack of a nutrition-sensitive policy focus on capture fisheries and aquaculture represents an untapped opportunity.

This paper has three parts: the first describes the current state of production and consumption of fish in selected countries and evidence on the value of fish to nutrition and health. Section ‘Capture fisheries and aquaculture in healthy diets’ explores opportunities for enhancing future diets and challenges to production and trade, with a focus on low-income countries where the highest burden of undernutrition and micronutrient deficiencies are found. Section ‘Policies for nutrition-sensitive capture fisheries and aquaculture’ proposes a policy agenda to enhance and sustain the capture fisheries and aquaculture sub-sectors as a core part of the SDGs development agenda to 2030.

Capture fisheries and aquaculture in healthy diets

Estimated global consumption of fish continues to increase, reaching an all-time high of 19 kg/capita/year in 2011 (Table 1), up from 9 kg/capita/year in 1961 (FAOSTAT, 2015). Fish production continues to grow at an average annual rate of 3.2%, largely due to increases in aquaculture with relatively stable supply from capture fisheries (FAO, 2014). Aquaculture is projected to contribute 63% of global fish consumption by 2030, and in some Asian countries, particularly China, fish production from aquaculture already now exceeds that from capture fisheries. Fish is one of the most traded food commodities, with consumption in mid- and high-income countries increasingly derived from imports, while low-income countries are more heavily reliant on local supply (FAO, 2014). However, trade is bidirectional, with a trend for low-income countries to export high-market value fish products and import low-market value products for domestic consumption (Asche et al., 2015). This trade pattern is demonstrated in Table 1, with total per capita fish production being much higher than consumption in some countries (e.g. Norway, Peru and Chile), whereas, per capita consumption is greater than production in others (e.g. Nigeria,

Japan and Republic of Korea). Consumption patterns vary widely, with fish as the most important animal-source food in Bangladesh and Indonesia, and India with the lowest per capita consumption.

The benefits of fish to nutrition and health are well-documented. Rimm and Mozaffarian found that fish intake is associated with a 36% reduced mortality risk from heart disease (2006), while a meta-analysis by Zhao et al. showed that consumption of 60 g fish/day is associated with a 12% reduction in mortality (2015). Focusing on global mortality, Lim et al. found that diets low in seafood omega-3 fatty acids accounted for 1.4 million deaths in 2010 (2012). Building on the same data, Ezzati and Riboli calculated that diets low in fish and seafood are responsible for roughly 1% of the world’s total burden of disease-related disability-adjusted life years (DALYs) (2013). In addition, fish consumption in United States of America is significantly associated with long-term weight loss (Smith et al., 2015). As a result, an increasing number of countries (mostly high-income) are recommending minimum levels of regular fish consumption in their national dietary guidelines (National Health and Medical Research Council, 2013; The Danish Veterinary and Food Administration; U.S. Department of Agriculture and U.S. Department of Health and Human Services, 2010).

The benefits of fish are associated in part with high concentrations of bioavailable minerals and vitamins, essential fatty acids and animal protein (Bogard et al., 2015b; Wheal et al., 2016). Fig. 1a–f shows the contribution to recommended nutrient intakes from selected fish species for pregnant and lactating women, infants and young children (FAO and WHO, 2004). Fig. 1b shows that fish are a rich source of vitamin B12, only found in animal-source foods, which is essential for multiple functions, including growth, brain function and nervous system maintenance. As a source of highly bioavailable calcium, small fish are particularly important in the diets of the poor which are often low in milk and milk products (Hansen et al., 1998). The same applies to zinc and iron which are considered ‘problem nutrients’ globally. Fish are also a unique source of long chain omega-3 fatty acids. It has been shown that intake of omega-3 fatty acids in pregnancy is associated with reduced risk of early preterm delivery (and a modest increase in birth weight) (Imhoff-Kunsch et al., 2012), whereas, low seafood consumption during pregnancy increases the risk of suboptimal neurodevelopmental outcomes, including cognition and fine motor skills (Hibbeln et al., 2007). In addition, fish enhances the uptake of micronutrients from plant-source foods in the meal (Michaelsen et al., 2009; Sandström et al., 1989). The high levels of nutrients in fish underpin the potential value of fish to healthy diets. Small indigenous fish species which are eaten whole (with bones, head and viscera; very little cleaning loss and no plate waste) have large potential to contribute to micronutrient intakes (Bogard et al., 2015b). Similarly, ground dried small fish provide a dense source of nutrients which is valuable for young children who eat small meals due to limited stomach capacity (Bogard et al., 2015a).

Estimated global fish consumption (19 kg/capita/year in 2011) is expected to increase to 22 kg/capita/year in 2024, with increases in all regions (OECD and FAO, 2015). However, this projected increase masks widening global inequities in fish consumption, with the poor in all regions continuing to have low intakes. To address this issue, policymakers globally must consider how to make more fish accessible to the poor, while increasing supply sustainably.

Opportunities for enhancing current and future diets

As recommended by ICN2 (FAO and WHO, 2014), sustainable food systems that promote healthy diets must build on ‘nutrition-sensitive agriculture’. To be nutrition-sensitive, agricultural policies and interventions should leverage production and

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