

## Fish and Food Security in Africa

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Today, in sub-Saharan Africa, one out of every two people (49%) lives on less than \$1 a day (World Bank 2004a). While in other regions chronic hunger is receding, in sub-Saharan Africa malnutrition is still rising in both absolute and relative terms. More than one third (34%) of the sub-Saharan African population is undernourished (FAO 2003) – an increase of 9 million since the 1996 World Food Summit – with dramatic and sometimes irreversible consequences on the physical, social and economic development of the communities concerned. Between 15 000 and 20 000 African women die each year (41–55 every day) due to severe iron-deficiency anemia. Vitamin A deficiency in children is common across the whole continent, contributing to the deaths of more than half a million African children annually (UNICEF 2004).

Fish, as a source of “rich food for poor people”, can play an important role in improving Africa’s food security and nutritional status; more than 200 million Africans eat fish regularly (Box 1). Fresh, but more often smoked, dried, or even as powder, fish is a critical source of dietary protein and micronutrients for many isolated communities in rural areas. Fish may also be the sole accessible and/or affordable source of animal protein for poor households in urban or peri-urban areas. Nutritionally, fish is therefore one extremely important direct source of protein and micronutrients for millions of people in Africa. But fish also contribute indirectly to national food self-sufficiency through trade and exports. In equivalent terms, 50% of the low-income food deficit countries’ import bill for food was paid in the year 2000 by receipts from fish exports.

### Box 1. Food security, nutrition and poverty

Food insecurity remains one of the most visible dimensions of poverty and is generally the first sign of extreme destitution. “Food security”, defined by FAO as “a condition when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life”, concerns not only food production and distribution but also has social, economic and institutional dimensions. A household achieves nutritional security when it has secure access to food (i.e., food security) coupled with a sanitary environment, adequate health services and knowledgeable care to ensure a healthy life for all household members.

Table 1. African countries with per capita fish supply greater than 20 kg and/or a fish proteins/animal proteins ratio greater than 20%.

Country	Per capita fish supply (kg)	Fish proteins/animal proteins (%)
Angola	6.6	27.1
Benin	9.4	28.5
Burundi	3.2	29.6
Cape Verde	25.3	30.6
Comoros	20.2	61.8
Congo Dem. Rep.	5.7	31.0
Congo Republic	25.3	48.8
Cote d’Ivoire	11.1	36.9
Equatorial Guinea	22.6	61.9
Gabon	44.6	35.0
Gambia	23.7	61.7
Ghana	22.5	63.2
Liberia	4.9	23.0
Guinea	16.0	60.2
Malawi	5.7	37.7
Oman	24.1	21.5
Sao Tome and Principe	21.4	61.5
Senegal	36.3	47.4
Sierra Leone	13.4	63.0
Tanzania	10.3	33.6
Togo	17.3	50.2
Uganda	9.8	30.0

Source: Anon (2000).

Table 2. Nutritional value of catfish (per 100 g); numbers differ according to species.

Nutrient	Quantities	Unit
Protein	18.2	g
Iron	0.82	mg
Calcium	9.0	mg
Iodine	0.1	mg
Potassium	321	mg
Vitamin A	0.02	mg
Vitamin B2	0.1	mg
Vitamin B6	0.2	mg
Poly-unsaturated fatty acids		
Other minerals, vitamins, micronutrients		

Source: US Department of Agriculture (2002).

## Direct Contribution of Fish to Food and Nutrition Security

### Protein and calorie intake

FAO estimates that fish provides 22% of the protein intake in sub-Saharan Africa. This share, however, can exceed 50% in the poorest countries (especially where other sources of animal protein are scarce or expensive). In West African coastal countries, for instance, where fish has

***In Africa, vitamin A deficiency kills half a million children annually.***

been a central element in local economies for many centuries, the proportion of dietary protein that comes from fish is extremely high: 47% in Senegal, 62%, in Gambia, and 63% in Sierra Leone and Ghana (Table 1). Equally important is the fish's contribution to calorie supply. Where there is a lack of alternative locally produced protein and/or where a preference for fish has been developed and maintained, fish can provide up to 180 calories per capita per day.

### Micronutrient supply

The importance of fish as a crucial element in diets, especially the diets of infants, young children and pregnant

women, is now widely recognized. In low-income countries, staples such as rice, wheat, maize and cassava make up the bulk of the food consumed by the people, and they supply the majority of energy and nutrients. However, some essential nutrients are not found in these staples, or are found only in small quantities, for example, iron, iodine, zinc, calcium, vitamin A and vitamin B. These nutrients must be supplied by other foods. The fish contribution in the supply of these elements can be particularly important (Table 2) as well as in the supply of fatty acids that are necessary for the development of the brain and body.

### Fish: A rich food for poor people

Over large parts of sub-Saharan Africa, fishing for subsistence plays a central role in sustaining human well-being. For those who cannot afford to buy food – especially not meat – fish obtained through the

***Fish is an indispensable source of micronutrients such as iron, iodine, zinc, calcium, vitamin A and vitamin B.***

household's own fishing efforts (subsistence) is essential; it can make the difference between good and bad nutrition, between recovered health and prolonged illness, or between food security and starvation.

These subsistence catches are not simply the fish brought back home by full-time fishers as part of their remuneration share or their daily catch. These fish are also, even mainly, those big or small ones caught by the youngest son on the edge of the river after school hours, or speared in seasonal ponds by the wives or the daughters during collective fishing festivals, or caught by the men in the floodplain during the flood recession season. For these fish, the commercial value (a few dollars) does not reflect the invaluable contribution in terms of

***A few hundred grams of fish consumed at a subsistence level, can make the difference between good and bad nutrition, between recovered health and prolonged illness, or between food security and starvation.***

proteins, calories and micronutrient intake for the entire family. Studies have shown that in many regions, fish – unlike many other high-protein foods – is consumed more equally among household members, including women and children. Additionally, the fact that women may not systematically need men to acquire these fish on a subsistence basis reinforces the fundamental role that fish can play in food and nutritional security in Africa.

While fish as a subsistence product is an important source of direct food security for fishing households, the generation of incomes derived from wages in the fisheries sector or from fish trade is often even more important as an indirect contribution to food security. Inland and coastal fisheries and related fish processing and trading provide full- or part-time employment to between 6 and 9 million people in sub-Saharan Africa<sup>1</sup>. Using a (conservative) ratio of 1 to 5 for household size, a total of some 30 to 45 million people (men, women and children) in Africa therefore depend indirectly on fish for their livelihoods<sup>2</sup>.

<sup>1</sup> Compiled by the authors from various sources.

<sup>2</sup> This estimate does not take into account trans-sectoral linkages to other rural activities and services (multiplier effects).



Fish market, Zambezi.



Fish farmers, Malawi.

J. Thodesen

## Indirect Contribution of Fish to Food and Nutritional Security

### Food security through employment for the poor

In many parts of Africa, small-scale fisheries and related activities (trade, processing) provide income to rural communities where alternative employment opportunities are scarce or even non-existent. In these situations small-scale fisheries, fish processing and trade provide people with

***Some 30–45 million people in Africa depend on fish for their livelihoods.***

an important, and sometimes crucial, form of safety-net that helps protect them against the effects of agricultural product price volatility, macro-economic crises, structural reforms, harvest failures, political turmoil and other factors that threaten rural stability and food security. In this way small-scale fisheries substitute and/or complement other economic activities and help households sustain their standard of living and food purchasing power.

## Women, fish processing and food security

For women in particular, fish processing and trading provide a very important livelihood support. In West and Southern Africa, women dominate the processing, retailing and local trading. Because small-scale processing and/or trading at local markets require relatively few investments, have generally low operational costs, do not require strong physical strength and can be undertaken by unskilled labor, they provide opportunities for a large number of women, many from the lowest strata of the community where they lack education, literacy and the financial capital to engage in other activities. For them, many of whom are heads of households, fish therefore represent the primary – and sometimes the only – source of income. In Western Province of Zambia three quarters of the women involved in the fish trading activities are single-headed households.

***Many of the women involved in trading lead single-headed households. For them fish represent the primary – and sometimes the only – source of income to support their livelihood and their children.***

## HIV/AIDS and fish in sub-Saharan Africa

In several countries in southern Africa (South Africa, Malawi, Zambia) over 30% of the adult labor force lives with HIV. Beyond the dramatic impacts on those men and women who are infected, the pandemic also affects the livelihoods of the millions of others (elders, children, wives and husbands) who were initially depending upon this labor force for their livelihoods. This situation is causing an increase in food insecurity in the entire region by breaking the already fragile balance between labor, work and food entitlements. Fish, and in particular cultured fish (e.g., in small garden ponds), can play a mitigating role in this crisis as the work has a low physical labor requirement, the product has high nutritional properties and it can generate cash that can be used to purchase other foods and medication (Box 2).

## Fish Food Security in Africa: Past, Present and Future

### Fish supply in Africa and its impact on fish food security

Fish supply in Africa is in crisis. Per capita consumption in sub-Saharan Africa is the lowest in all regions and it is the only part of the world where consumption is declining (Figure 1). The main reason for this decline is the leveling off in capture fish production and the still-growing population. Just in order to maintain the current level of per capita supply of fish in sub-Saharan Africa (6.6 kg/year) up to 2015, fish production (capture fisheries and aquaculture) must increase by 27.7% over this period. This assumes an average annual population growth of 1.9% over the period 2002-2015 (World Bank 2004b).

Unfortunately, returns from Africa's capture fisheries are stagnating and access to food, incomes and livelihoods for the small-scale fishers who depend upon them are likely to reduce further. As demand for fish and competition for access to fishing areas increase, lower income groups are likely to become marginalized, replaced by more powerful groups with growing interests in these scarce natural resources.

An alternative is aquaculture, or fish farming. Worldwide aquaculture provides 38% of total fish production, an increase from 16% only 15 years ago. In sub-Saharan Africa, however, aquaculture supplies less than 2% of fish production. The potential for very substantial growth to reach levels such as those in Asia is

***Africa is the only continent in the world where fish supply per person is declining.***

extremely high. FAO projections show that with just 5% of the suitable areas used, Africa could meet its fish production target. The task, however, remains enormous. Based on 1997 levels, aquaculture would have to increase by

#### Box 2. Fish farming as a 'Low-Labor Solution' for HIV/AIDS affected households

In Malawi, small-scale fish ponds offer a valuable addition to local farming systems without substantially adding to the labor burden—an option that has been taken up by HIV/AIDS affected households including those headed by widows and orphans. These families show improved nutritional status through fish consumption, and use income from fish sales to obtain further health services, including HIV/AIDS care. In recent nutrition studies, fish has been shown to contain combinations of proteins, vitamins and minerals that help fortify affected persons against the susceptibility to secondary diseases, while improved nutrition also increases the effectiveness of anti-retroviral drugs. AIDS-orphan groups in Zambia are now following the example set in Malawi.

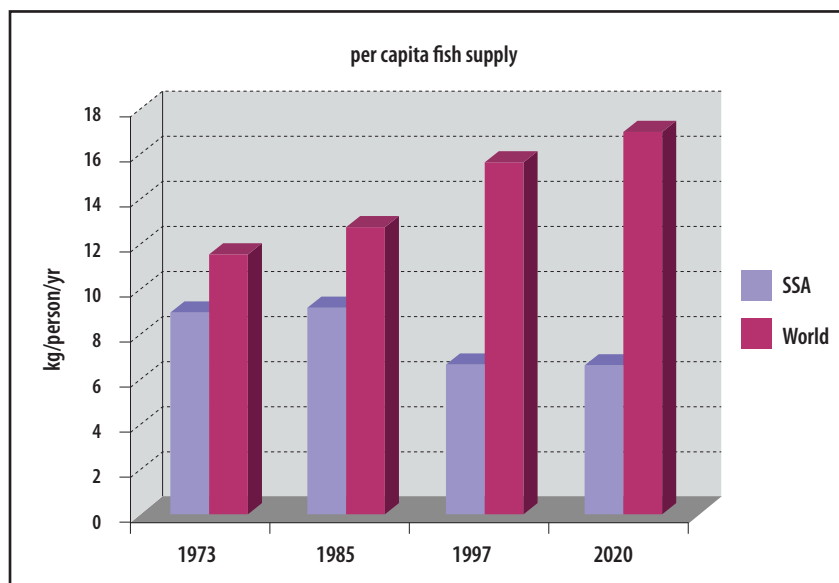


Figure 1. Actual trends and 2020 projections of per capita fish supply in the world and in sub-Saharan Africa (SSA). Source: Delgado et al. (2003).

267% by 2020 to maintain the current fish consumption level in Africa (Delgado et al. 2003).

### Fish trade: Economic opportunity or threat to food security?

Historically, income generated through fish food trade has been beneficial for the developing world as a whole, and the international trade in fishery products continues to be of great importance. Between 1980 and 2001, the net receipts from fish trade by developing countries increased from US\$ 3.4 billion to US\$ 17.4 billion. This is a higher growth rate than the increase in the net exports of other agricultural commodities such as coffee, bananas, rice and tea (FAO 2003). However, while developing countries as

a whole are projected to continue to be net fish exporters in 2020, sub-Saharan Africa's current fish trade deficit is expected to worsen 9-fold, increasing from 54 thousand metric tonnes in 1997 to 492 thousand metric tonnes in 2020 (Delgado et al. 2003). In this context, careful analysis is required if current export strategies adopted by some African countries to target other continents'

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markets (Europe, Asia, America) are not to undermine local and regional food security. Two issues are of particular concern.

First, while the fish removed from African markets can in principle be replaced (in theory) by imports, and the foreign exchange earnings generated through fish exports can stimulate national economies in multiple ways, the benefits of international trade versus the stimulus to local economies through increased local processing, and national and regional trades have not been fully analyzed or demonstrated (Kurien 2004). At the present moment what is certain, however, is that market failure is more the norm than the exception for the rural poor in Africa, and efficient redistributing trickle-down mechanisms are yet to be created in much of the sub-Saharan continent.

Second, too strong a focus on international export can be detrimental to Africa's local food security because it removes policy-makers' attention, research and management efforts, and donor support away from the small-scale fisheries which supply local, provincial or even national markets, and refocuses these limited resources on the export-oriented industrial or semi-industrial fisheries. This situation has important consequences, in particular where local

***International fish-export strategies don't simply remove fish physically from African markets, they also remove policy-makers attention from 'local' fisheries.***

fisheries contribute significantly to local diets and where local trade provides a powerful economic engine indirectly supporting the food security of small-scale processors and traders.

## The Way Forward

Investments in five major areas will improve the contribution of fish to food security in Africa.

1. Provide support for small-scale, labor intensive coastal and inland fisheries.



Lake Chilwa fish market.

R. Brummett

2. Promote small-scale rural and peri-urban aquaculture entrepreneurship.
3. Improve fish market chains through local small-scale investments.
4. Favour local, national or regional fish trade within Africa.
5. Monitor the changes and feed back the information into the decision-making process.

## Supporting capture fisheries

Capture fisheries will continue to provide the bulk of fish food in Africa for many decades. Sustained efforts are therefore needed to support, promote and protect small-scale labor-intensive (both coastal and inland) fisheries. Investments in applied research and capacity building will be required to improve and strengthen the socio-institutional mechanisms underpinning the fisheries management process. But investments to improve environmental management are also required to sustain

fisheries, especially in inland fisheries where increasing pressure on land and water (through e.g., irrigated agriculture, hydro-power dams) is leading to high environmental degradation. These inland fisheries provide the basis of the livelihoods – and therefore the indirect support to food security – for millions of people, usually amongst the less educated and unskilled labor in Africa.

## Developing aquaculture

Aquaculture will play an increasing role in food security in Africa. Small-scale integrated fishing-farming systems will provide alternative and/or additional employment opportunities for growing rural populations in remote areas. Closer to the urban centers, in peri-urban areas, opportunist micro or small-scale enterprises will mushroom, driven by the increasing demand of the urban population for higher-quality fish products. Finding the appropriate institutional settings (either public, private or public-private partnerships) that ensure the creation and maintenance

of efficient extension services to support these new rural and peri-urban micro-enterprises, will require substantial investment and capacity building.

### **Improving value-added through better market chains**

In many parts of Africa, post-harvest losses exceed 30% of the catch. This has a double impact on food security by reducing income for producers and reducing the total quantity of fish available to consumers. Because of weak market infrastructure and facilities in rural areas, the majority of the fish – especially in inland fisheries – is still marketed as dried and/or smoked products. Local public and private investments are urgently needed to support small-scale marketing initiatives in these areas. Such initiatives could improve food and nutritional security dramatically for both

#### ***The majority of fish is still marketed as dried or smoked products.***

producers and (rural and urban) consumers, through better income for the producers and better quality and more quantity for the consumers, while also helping to stimulate rural development and foster economic empowerment of women traders.

### **Increasing benefits from local, national and regional fish trade**

Local and regional fish trade in Africa is already very substantial but it has the potential to expand further and help stimulate markets at multiple levels. Regional cooperation and appropriate

national policies can have a major impact in fostering trade and reinforcing national and regional food security.

### **Supporting decision-makers with relevant information**

Effort should be made to monitor the impacts of fish supply and trade (changes in market structures, changes in prices, etc.) on the food availability and nutritional status of the national population. This monitoring – which should be made in partnership with national health services – will then have to be fed back into the fisheries management systems and other relevant decision-making arenas, to improve and strengthen the role of fish as a critical element of food and nutritional security in Africa.

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### **References**

- Anon. 2000. Communication from the Commission to the Council and the European Parliament. COM (2000) 724, Brussels: European Commission, 20 pp.
- Delgado, C., Wada, N., Rosegrant, M., Meijer, S. and M. Ahmed. 2003. *Fish to 2020: Supply and Demand in Changing Global Markets*. Washington, DC: International Food Policy Research Institute, and Penang: WorldFish Center.
- FAO. 2003. *The State of Food Insecurity*

in the World (SOFI 2003). Rome: Food and Agriculture Organization, 36 pp.

- Kurien, J. 2004. *Responsible fish trade and food security - toward understanding the relationship between international fish trade and food security*. Rome: Food and Agriculture Organization and Royal Norwegian Ministry of Foreign Affairs, 107 pp.
- UNICEF. 2004. *The State of the World's Children 2004*. Online at <http://www.unicef.org/sowc04/>
- United States Department of Agriculture. 2002. *National Nutrient Database for Standard Reference, Release 15*. Washington, DC: USDA.
- World Bank. 2004a. *Millennium Development Goals*. <http://www.developmentgoals.org/> Washington, DC: World Bank.
- World Bank. 2004b. *2004 World Development Indicators*. Washington, DC: The World Bank.

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