



Sun-dried fish production to build resilient coastal communities in Somalia

Strengthening livelihoods and food security in a context of drought and armed conflicts

→ Context

In May 2017, following decades of civil war and political upheaval, coupled with persistent and worsening drought effects, nearly half of the Somali population (6.7 million people) faced acute food insecurity. With one of the least-developed fisheries sectors – averaging one per cent of the country's annual gross domestic product (GDP) – and the longest coastline in continental Africa, Somalia's fisheries sector has great potential to fundamentally influence its national food security.

The Food and Agriculture Organization's (FAO) fisheries programme in Somalia contributes to improving livelihoods and food security. This promising practice explores one aspect of the fisheries programme in Somalia, which focuses on training youth and Internally Displaced Persons (IDPs) to sun-dry fish for income generation and household consumption. The quality products are packaged and marketed into inland city markets, the fresh offcuts are cooked and eaten daily. Offcuts become a sought after commodity and have played a role in significantly improving the nutrition status in the IDP communities involved. Sun-drying of fish has been piloted in the northern coastal town of Bossaso, where IDPs are expanding new communities and face a dire need of livelihood assistance to support their predominantly female-headed households. Activities are being well received by coastal communities of Puntland and disadvantaged communities of the coastal city of Berbera, Somaliland.

→ Challenges

- Coastal communities are consistently the most food insecure in Somalia;
- Social norms restrain IDPs from economic opportunities to purchase fishing equipment, which would allow them to fish at sea;
- Fresh fish is generally limited to coastal areas, whereas inland populations cannot access better nutrition or livelihood generation from fish;
- High ambient temperatures, poor handling (e.g. lack of ice and insulated containers), poor hygiene and sanitation, and lack of refrigeration facilities (ice plant and cold storage) cause spoilage of fresh fish that leads to a high level of post-harvest losses; and
- Lack of recent data, funds and capacities to effectively provide good governance and implement policies leads to piracy and illegal fishing.



©FAO/Michael Savins

Key facts

Geographic coverage → Somalia coastline

Donor → Governments of Norway and the United States of America

Fish species → Tuna, small pelagic fish

Target group → Coastal communities, IDPs, women and youth

Gender → Approximately 60 per cent of first-round training participants were women and many represented female-headed households. Women's fisheries-related work is often considered an extension of domestic work, both of which are undervalued economically and often absent in official data collection, as unpaid labour is excluded. The promising model of this project includes men and women working side-by-side and participating equally in each aspect of the training. Packaging and retail systems are key training topics which increase women's knowledge and access to markets. Women's income is improved and their economic contribution is increased while shifting their labour effort into the realm of paid and recognized work.



What is sun-dried fish production and how does it contribute to building resilient livelihoods?

Sun-drying of fish requires a low initial investment while efficiently creating value-added and shelf-stable fish products for income generation and consumption. In Somalia, this practice is particularly effective given the ideal climate for natural drying, as well as the abundance of underutilized small pelagic fish. Skills in sun-drying fish have existed historically; however, 30 years of civil war has degraded the skill base and eroded access to the market. This programme is building resilience amongst youth, IDPs and women of female-headed households through training in an improved sun-drying method, providing knowledge and empowerment to diversify household diets as well as incomes.

→ Methodological approach

Training is provided to improve existing fish handling practices of beneficiaries in order to enable them to produce shelf-stable dried fish products and to develop their business management capacity. Training participants are provided with complete fish processing and marketing packages consisting of a processing table, sun-drying racks, processing utensils and equipment, and packaging equipment. The training of trainers (ToTs) delivers a comprehensive ongoing program for up to one month full time. FAO assists in the legal registration of community business entities. FAO also strengthens community youth businesses to be financially self-reliant through access to sustainable markets.

Training topics include:

- Good fish handling and hygiene based on global good practices
- How to produce different dried fish products with at least six months shelf-life
- How to add value by marinating fish using local recipes and ingredients
- How to make simple fish processing equipment such as processing and drying tables
- Good product packaging and storage (e.g. gas barrier pouch packaging, plastic storage containers)
- The use of labelling
- How to calculate costs and returns
- Marketing

The comprehensive capacity development scheme fosters **self-reliance throughout the full production chain**; from cleaning and treating the fish to drying and packaging it using sustainable and environmentally friendly techniques.

Sun-dried products create youth employment opportunities and support home consumption for the beneficiaries. Quality products are packaged and labelled using modern packaging equipment for retail sale. By-products from processing such as fish heads and frames are cooked and eaten fresh.



Nutrition

Fish is an excellent source of **high quality protein** and also provides **high levels of bioavailable minerals, vitamins** and **essential fatty acids**. In particular, fish (e.g. sardines, mackerel and tuna) is a rich source of **vitamin B12**, which is mainly found in land animals such as livestock. Vitamin B12 is essential for growth, brain function, and nervous system maintenance. Small fish provides high levels of bioavailable **calcium, zinc** and **iron**, and can even enhance the uptake of micronutrients from plant-source foods in the meal.

Promoting household consumption of dried and fish-based products, notably in areas where the local population have limited access to land animal meat, has a great potential to **improve nutrition particularly during the lean season**.

Historically, many Somali communities have relied on meat from livestock for animal-source foods. However, political instability and climate change, notably severe and unmitigated droughts, have brought a persistent shortage of livestock meat. This urgent need for animal-source nutrients has shifted some demand towards fish, especially among the most vulnerable groups in Somalia with little access to livestock farming or market, such as IDPs, women and youths.

→ impacts

- With the **availability of safe fish products**, fish consumption is increased, household nutrition is improved and access to (aquatic) animal-source nutrients is increased.
- Reliance on **safety nets** during drought and lean seasons is reduced.
- Food waste and post-harvest losses are reduced due to the increase in fish processing activities at the landing site.
- Fishing focus is diverted to more readily available pelagic species currently considered as underutilised, e.g. tuna, sardines and scads.
- Charcoal-smoked fish processing and associated habitat degradation are reduced.
- **Market opportunities** and income are increased for existing fishing communities who benefit from extensive inland city markets.
- **IDPs are integrated in a new community** through income-generating activities and an increase in food security.

→ Sustainability

Providing sustainable income generation for large populations of marginalized people is central to the design of this project, while simultaneously providing reliable, safe products for consumption and retail. The sustainability of this practice is ensured by:

- Utilising small pelagic fish as raw material that are currently considered under-exploited;
- Capitalizing on local sources of flavouring and other materials (spices and seasonings such as salt, cardamom, ginger, etc.) for the flavoured dried products and imported packaged materials;
- Improving fish handling, hygiene and processing practices to guarantee product quality and safety; and
- Linking final products to demand from on-going local inland towns' marketing programmes.

An essential part of sustainability is **developing fish processors' capacities on the proper preservation and quality control of flavoured dried fish along the fish drying value chain.**

Monitoring product quality and safety will be included in training programmes to strengthen sustainability. Ultimately, external oversight of food safety control (e.g. histamine testing in processed scads, sardines, mackerel, tuna and anchovies) will be implemented. By diversifying livelihood options to increase women's income, the nutritional status of all household members will be improved and household food security can be sustained.



©FAO/Mohamud Yasin Artan



I can pay for household expenses and school fees now that I can earn income thanks to the fish processing techniques that FAO trained us on.

I learnt how to adopt good hygiene practices and reduce the risk of spoilage, and making fish edible for a longer period of time. I believe that I sell fish differently, I process fish better than before. This is because I understood that the quality of the final product starts with good handling at sea.

The most important things for my job are to get fish processing equipment such as tables, drying racks, cooling boxes and storage containers for the finished products. These things will improve my job and increase my income which will result in a good life for my family.

**Safiya Mohamoud Dakhare, mother of 8
Project beneficiary**





©FAO/Will Baxter

→ Replicability and upscaling

The activities are replicable in areas where fresh fish lands, but due to weak cold chain systems do not reach the majority (and most food insecure) of consumers, and where high ambient temperatures and sunshine hours are sufficient to dry the fish quickly before spoilage occurs.

To assist in upscaling, a simple pictorial processing guide outlining good practices will be produced and disseminated throughout the region. Next steps will include the improvement of packaging and (pouch) sealing techniques for more shelf-stable products. The training activities, which more than 90 IDP participants have already completed, will be replicated using other underutilised species in various coastal communities in Somalia.

FAO's fisheries programme in Somalia plans to **expand this work in the northeastern coastal communities**, where conditions are ideal, and there are plans to engage with other UN and NGO partners to partake and engage in this work.

Processing table with sun shade and drying processing racks

The processing table top is built sustainably using locally-sourced low-cost materials.

Build-up of fish waste and flies is prevented by draining fluids from the processing table into a central drum which can be emptied away from the processing area. The lightweight tables and drying racks can be easily moved to new locations.



©FAO/Michael Savins

→ More information

On the Coastal Fisheries Programme in Somalia:

SO-Fisheries@fao.org

Michael Savins, Head of unit fish consumption and fleet renewal FAO Somalia

Michael.Savins@fao.org

On resilience good practices:

- KORE@fao.org
- www.fao.org/in-action/kore/good-practices/en/

References:

- FAO 2016. *Strengthening sector policies for better food security and nutrition results. Fisheries and Aquaculture, Policy Guidance Note 1.*
- Kawarazuka N. (2010). *The contribution of fish intake, aquaculture, and small-scale fisheries to improving nutrition: A literature review. The WorldFish Center Working Paper No.2106. The WorldFish Center, Penang, Malaysia. 51 p.*
- *Sun-drying fish, the Somali way: Skilling women to fight hunger and build stronger coastal communities: <http://www.fao.org/fao-stories/article/en/c/1095882/>*

This publication has been produced with the assistance of the European Union. The contents of this publication are the sole responsibility of FAO and can in no way be taken to reflect the views of the European Union.

