

Action brief

Technology helps boost climate resilience in the fish value chain in Uganda

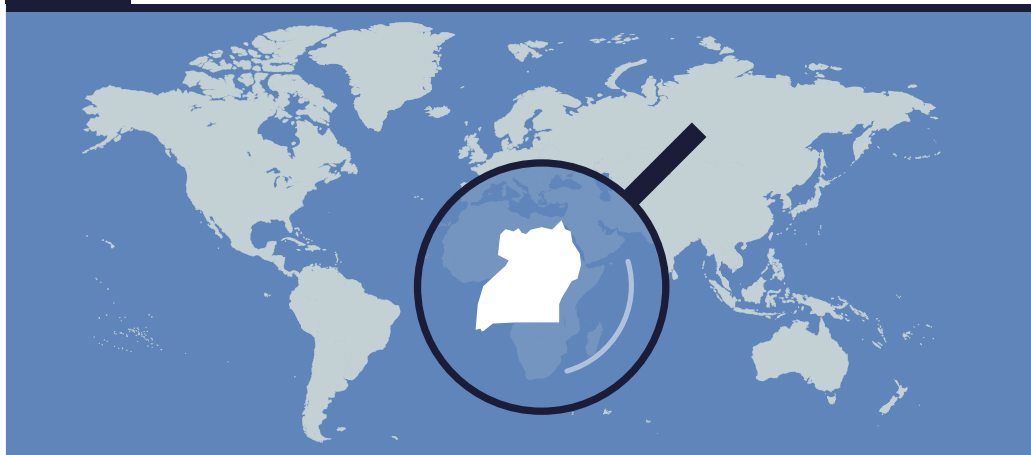
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Country: Uganda
Topics: Nutrition Sensitive
Sub-topics: Climate change

Date: 2023



Overview



Uganda's food production exceeds its consumption, according to the World Food Programme, but widespread poverty has hindered access to nutritious foods, especially animal proteins and micronutrients.

Furthermore, climate change and illegal and unsustainable fishing practices have threatened the country's robust fisheries subsector and endangered the ecosystem and biodiversity of Lake Victoria, the world's second-largest freshwater lake.

Though landlocked, Uganda is rich in lakes, rivers and other wet areas, which make up approximately 18 per cent of its terrain. The country has used this fact to its advantage, establishing a fishing industry that [contributes 12 per cent of the agricultural gross domestic product](#), according to the Uganda Revenue Authority, and is a key source of livelihood for local populations.

Fish is a vital source of micronutrients, providing protein, omega-3 fatty acids, iron and other essential minerals and vitamins.



SDGs





Objectives of the action brief

This action brief aims to share work that has been done within the Ugandan fish value chain to mitigate climate change and boost nutrition:

- The adoption of an act regulating the fishery of small fish species, improving processing safety and promoting the consumption of under-used species
- Data collection to avoid overfishing and maintain a healthy ecosystem
- The use of climate-smart technologies for processing fish
- The promotion of underused fish as a source of nutritious food



Period covered

This action brief begins with the launch of the NutriFish project in 2019 and continues through the present day.



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What action was taken?

Uganda's Makerere University, with its strong fisheries and aquaculture programme, has been at the forefront of fisheries and aquaculture training. It advocated for the Fisheries and Aquaculture Act of 2022, which focused on protecting small fish species in the major lakes and water bodies of Uganda and providing for fisheries conservation, sustainable management, utilization and development.

In addition, to adapt to climate change and help mitigate malnutrition in Uganda, the University's College of Natural Sciences implemented the NutriFish project in partnership with the National Fisheries Resources Research Institute, Nutreal Ltd. and McGill University.

The project involved research and interventions to improve access to nutritious food and foster a sustainable environment that ultimately would reduce waste along the fish value chain, particularly for the small pelagic fish that are essential to the water ecosystem. Key initiatives of the project:

- **Improve data collection in Lake Victoria:** The National Fisheries Resources Research Institute, collaborating with Tanzanian and Kenyan counterparts and the Lake Victoria Fisheries Organization, developed a mobile app for electronic catch assessment surveys. By providing accurate data on fish stocks, the app helps policymakers make informed decisions to prevent overfishing, such

as managing boat licensing. The app, used by more than 670 stakeholders as of early 2023, replaced the less accurate and time-consuming paper-based data collection methods, reducing data gathering costs by 80 per cent.

- **Promote underused fish species:** Researchers determined that small fish like *mukene*, traditionally used mainly for animal feed, are rich in nutrients and contain significantly more iron and zinc than commonly consumed species like Nile perch. Previously, fishers had wasted *mukene* and other "trash fish" while trying to catch more profitable species. Promoting the consumption of *mukene* and other small fish through efficient processing and social behavior change campaigns has helped enhance food security and fishers' livelihoods. The project provided training to 127 fishermen to improve fish handling and meet quality standards.
- **Reduce post-harvest losses:** To mitigate losses during the rainy season, when it is harder to dry fish, the project introduced cleaner and faster solar tent drying technology. This halved the drying time for *mukene*, extended the fish's shelf life to five months, and doubled the incomes of women in the value chain.



→ **Develop nutrient-packed fish products:** In collaboration with Nutreal Ltd., a local processing company, researchers developed five nutrient-enriched fish products using *mukene*, all certified by the Uganda National Bureau of Standards. These products, including a fish-enriched maize flour and cooking sauce, are quick and nutritious alternatives to traditional food options.

The project trained 68 people in fish quality standards, hygienic practices and post-harvest processing. By early 2023, these people had then educated more than 400 community members, further extending the project's impact.



What would the country do differently?

→ **Establish contingency plans:** The project could have benefitted from contingency plans for emergencies and shocks, such as COVID-19, natural disasters and economic crises.

→ **Foresee and plan for potential delays in interventions:** There were delays in obtaining approval and certification for the fish-enriched products and in conducting laboratory analyses, and it would have been more effective to allocate sufficient time for each step of the process.

→ **Make a plan for surveys:** The Women's Empowerment in Agriculture Index surveys were helpful but required extensive planning. This tool, aimed at assessing women's empowerment by collecting data from both men and women in the same household, should be planned before project commencement to ensure adequate funding. Implementing this tool required significant time and resources, both human and financial. Furthermore, the surveys should have shorter and more flexible formats to maintain accuracy and respondent engagement. For the endline survey, interview durations were shortened by the elimination of repetitive questions.





Adaptation and applicability

Encouraging consumers to adjust their habits requires extensive behaviour change communication. This project included the following tactics:

- Training and awareness sessions to explain the nutritional benefits of *mukenge* and to showcase recipes for cooking the fish.
- A cookbook to increase the use of the small fish. The book, which contained 16 recipes, was endorsed by the Minister of State for Fisheries, allowing broader publicity.

→ A radio awareness campaign helped convince the public of the nutritional benefits for childhood development and health of *mukenge* and other small fish.

It also is important to address language barriers via local translators and to encourage women’s participation by engaging men. Implementing quotas and adapting activities to women’s workloads and schedules also can help increase their representation in certain parts of the value chain.



Next steps

- The people trained under the NutriFish project will persist in their efforts to raise awareness about crucial aspects such as fish quality standards, hygienic practices in fishing, and post-harvest processing.
- In addition, a plan is in place to provide extensive enterprise development training for local communities with a focus on marketing and product processing, which are key to enhancing the economic benefits of the fisheries sector. By empowering communities with these skills, the project aims to boost local economies and ensure the sustainability of the practices introduced by the project.



Further information

Useful links

-  <https://news.mak.ac.ug/2022/05/new-cookbook-by-nutrifish-project-to-increase-consumption-of-small-fishes/>
-  <https://idrc-crdi.ca/en/research-in-action/enhancing-food-security-and-livelihoods-fishing-communities-uganda>

References:

-  <https://data.unicef.org/topic/nutrition/womens-nutrition/>
-  <https://ura.go.ug/en/overview-of-the-fishing-sector/>



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