



Food and Agriculture
Organization of the
United Nations

Advancing aquatic food solutions from pond to plate

Blue Transformation in action



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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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Foreword

By the year 2050 Africa will grow to 2.5 billion people, which means that 25 percent of the world's population will be African. Providing sufficient food, nutrition, and jobs for this growing population demands long-term planning and investment. Aquaculture has been identified as one of the sectors capable of contributing significantly to addressing the challenges. The continent has exceptional natural and social capital to drive the development of aquaculture, which would enhance food security, nutrition and livelihoods both locally, regionally and globally.

African aquaculture contributes only 2.5 percent of global animal aquaculture production, but it has been growing at almost 9 percent per year since the turn of the century, significantly above global averages. But despite increasing investment over the past decade, including from international and national financial institutions and commercial banks, it remains insufficient. While some progress is evident, the overall flow of public and private financing along the aquaculture value chain remains limited and, in certain countries, non-existent. The perception that aquaculture is technically complex and capital intensive, makes entrepreneurs and commercial banks to become hesitant to take risks and invest.

Yet, to ensure the per capita consumption of aquatic foods in Africa remains what it is today the production of aquatic foods would need to grow by 83 percent. If we wanted to bring the consumption of aquatic foods to the global average of about 20.5 kg per person and year, aquatic food production in Africa would need to increase by a staggering 280 per cent. Thus, the stakes are high, and so should the efforts of the FAO in support of the continent.

This first collection of examples highlights a handful of successful aquaculture stories from small and medium stakeholders in Africa, revealing the awakening of a sleeping giant on the continent. These examples are drawn from different countries and illustrate the significant development potential of aquaculture when the necessary commitment and resources are in place.

The FAO has a Blue Transformation roadmap to ensure aquatic foods contribute more significantly to ending hunger and poverty. Sustainable aquaculture expansion is a major objective of Blue Transformation. To realise the potential of this sector, Africa's aquaculture requires comprehensive development and business strategies, encompassing legislative and management frameworks, technological development, access to feeds and seeds, financial incentives, biosecurity controls, and innovative value chains tailored to national realities.

The FAO is ready to support its members in achieving a Blue Transformation.



Manuel Barange

Assistant Director-General and Director
Fisheries and Aquaculture Division
Food and Agriculture Organization of the United Nations





Introduction

This booklet includes a compilation of aquaculture success stories with a focus on aquaculture development in Africa. It serves as a representation of aquaculture good management practices within the broader framework of Blue Transformation: a targeted effort by which agencies, countries and dependent communities use existing and emerging knowledge, tools and practices to secure and sustainably maximize the contribution of marine and inland aquatic food systems to food security, nutrition and affordable healthy diets for all.

The primary objective is to create an awareness booklet that not only highlights successes but also serves as a tool to demonstrate the potential of aquaculture and its transformative impact on food security, nutrition, economic development, and employment. In addition, it aims to raise awareness of the sector through good practices, facilitating investment and the mobilization of resources among fish farmers, national and international private investors, financial institutions, governments, and development partners.

In this collection of stories, success manifests itself in many different forms. This includes examples of how small but well-designed and implemented projects and initiatives can change the entire sector in a country, or how empowering women and youth in aquaculture can empower entire communities, providing food while sustaining livelihoods. The impact of personal or public investment, even in the form of small startup technological packs and capacity development, is highlighted. The power of transforming the sector through development projects by using a full value chain approach is explored, along with the positive aspects of agroecology and ecosystem approaches in aquaculture. The narratives of personal triumphs by committed individuals who achieved notable success are included. The booklet also features stories highlighting aquaculture as a strategy to build resilience in communities under challenging conditions such as armed conflicts and the COVID-19 pandemic. Impressive takes are shared about how seemingly small events, such as ordering a fish dish at a restaurant, can transform a non-traditional aquaculture country into a major supplier.

These diverse successes are showcased through various perspectives, including accounts of the technical solutions implemented, descriptions of projects conducted by the Food and Agriculture Organization of the United Nations (FAO) and other partners, details about partnerships and financing, and the personal viewpoints of the individuals involved in these stories.

Within the FAO Strategic Framework 2022-2031, this booklet responds to the Blue Transformation objective of sustainable aquaculture expansion and intensification to address the growing global demand for aquatic foods and to distribute benefits equally. This collection of stories demonstrates progress towards this objective by illustrating how the responsible development and use of natural resources can make a genuine contribution to human well-being, food security and poverty alleviation.

Entrepreneur overcomes
personal challenges
to develop successful
aquaculture business in
CAMEROON



Entrepreneur overcomes personal challenges to develop successful aquaculture business in Cameroon



© FAO/B. Siengoy

Fish is an important part of the diet in Cameroon but much of it is imported and the local aquaculture sector is operating well below its potential.

One entrepreneur is trying hard to change this situation and is succeeding despite suffering from a visual impairment that curtailed his schooling.

"My father encouraged me in this area since childhood due to my eyesight problems," said Boris Kamgo, whose father also worked in aquaculture.

Boris, 34, is largely self-taught in aquaculture. FAO has also supported him with intensive trainings on aquaculture sustainable practices, site selection, and farm management to increase his knowledge and skills, with the aim of contributing to the development of the fish farming sector in Cameroon.

His entrepreneurial spirit has driven him to build an aquaculture business that is involved in the production and reproduction of catfish, tilapia and pangasius. Fruit growing, manufacturing fruit juice and nut processing also figure among his business interests.

Aquaculture plays a central role in an eco-farm that he runs. Water from his fish farm is used to grow pineapples to make juice. Pineapple waste is used to feed the herd, and cow waste fertilises the plantations and is processed to make biogas for electricity production. Agritourism and catering provide additional revenue streams for the farm.

Entrepreneurial drive from people like Boris is much needed in Central Africa where there are many constraints on the development of the sector. These include competition from marine capture fisheries, aquaculture infrastructure from the past that is not suitable for commercial-scale activities, and technical problems like a lack of data collection.

Other factors are also important in driving the sector's development. "Increases in aquaculture investment and capacity development are the keys for aquaculture transformation. These are encouraged by a responsible private sector, community leaders and good governance," said Mravili Athman, FAO Sub-Regional Coordinator for Central Africa.

Fortunately, the success of his business has put Boris in a position where is able and keen to give back to the community and ensure that aquaculture has a bright future in his homeland.

"Training young people is a crucial activity for me. I set up a facility on my ecological farm to serve as a school to train young people with disabilities and poor people involved in recycling and agricultural production to work in fish farming," Boris said.



Aquaculture novice beats
the odds in accessing
investment to set up thriving
fish farm in the
**DEMOCRATIC REPUBLIC
OF THE CONGO**



Aquaculture novice beats the odds in accessing investment to set up thriving fish farm in the **Democratic Republic of the Congo**



© FAO/J. Ngeleka

Andy Ngele started his fish farm in the Democratic Republic of the Congo in 2017 using his own money and a loan from his father.

He had some of the education needed to run a business after studying finance in the United States of America. And he had also identified a potential market for fish after seeing tilapia selling for what he saw as an attractively high price of USD 7 per kilo in his native country.

Andy located the farm in a forested area of the southern Democratic Republic of the Congo. He constructed 85 ponds with a total area of 3.7 hectares to produce fingerlings and plate-sized tilapia.

After a while, it became clear to Andy that he lacked some of the knowledge and skills that would make his fish farming venture thrive.

For him, one of the key steps in making his business work was meeting a FAO employee at a conference who told him about the User-Friendly Tool for Investment Decision Making in Aquaculture (UTIDA) developed by FAO. It is based on an interactive and easy-to-use model designed within a spreadsheet. The Tool assists small- and medium-scale fish farmers in their decision on whether to invest in aquaculture under specific assumptions, and whether their current investment is profitable and worth pursuing.

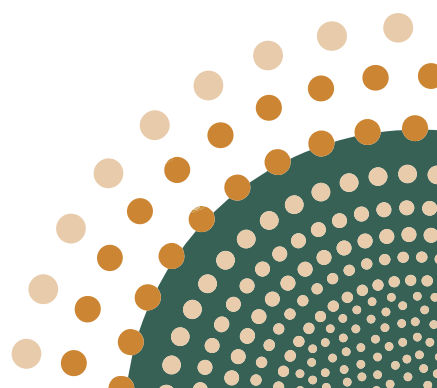
"I learned how to maximise profits on my farm and now that is what I am implementing," Andy said.

Other steps on the road to success taken by Andy included putting together and managing a team with a range of skills and knowledge as well as learning to develop his project step by step. A strong client-oriented marketing approach has also proved to be vital.

Andy's business is thriving, employing 40 staff and capable of producing 2.4 tonnes of tilapia per month.

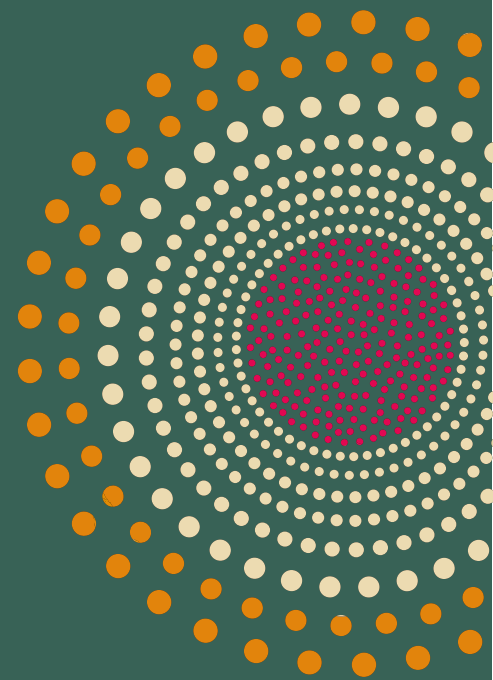
Now in his early 30s, Andy is confident enough to want to share what he has learned. "I was thinking about the experience I have and how I can put it out there for the authorities and for people to use," Andy said. He added that he wants to set up more aquaculture operations and businesses to increase his country's food production.

"FAO's activities on the promotion of aquaculture as a business have proven highly positive for the transformation of aquaculture on the continent. This story is a testament to it," said Aristides Ongone, FAO Representative in the Democratic Republic of the Congo.





KENYAN fish farm
tastes success
with support from
FAO's Africa
Solidarity Trust Fund



Kenyan fish farm tastes success with support from FAO's Africa Solidarity Trust Fund



© FAO

Enos Were, who studied business, and his wife Jedidah, an aquaculture graduate, started up their own fish farming project named Jewlet in 2010 while they were still employees in someone else's business. Soon afterwards, the couple quit to work full-time for themselves.

They benefitted from support from the Africa Solidarity Trust Fund, a FAO initiative that provided catalytic and flexible funding for Africa-to-Africa initiatives on food and agriculture.

The project supported improved access to finance for investment in aquaculture-related businesses, with particular focus on accelerating private sector investments in three areas of the aquaculture value chain: feed production, hatcheries, and grow-out facilities. There were more than 450 beneficiaries on 85 farms.

FAO provided Jewlet with the necessary equipment for a small recirculating system hatchery, intensive capacity training, and monitoring of production during the two years of the project.

The fish farm started out modestly, reaching production of 150 000 fingerlings per year in six ponds. With FAO's support, in 2016 and 2017 Jewlet produced 8.14 million fingerlings in 24 months, generating a gross income of more than USD 319 000, an increase of more than 70 percent compared to when it started to get help from the Africa Solidarity Trust Fund project. As of the end of 2023, Jewlet produced 1.2 million fingerlings per month.

Enos and Jedidah's dedication and FAO's strategic injection of funds and equipment drove the rapid growth of the couple's aquaculture project.

The transformational impact of the improved technology on Jewlet's production was clear to Enos. "You can't do today's job with yesterday's methods and be in business tomorrow," he said.

By the project's conclusion, they had established a sustainable farm focused on producing fingerlings and plate-sized tilapia. They had also enhanced their feed production capabilities and offered farm-to-farm extension services to other farmers, as well as to their clients who purchased seed and broodstock.

Jedidah has also become a symbol of women's entrepreneurship in aquaculture by holding 60 percent of the shares in the company and directing all matters related to seed production and trainings.

Beyond their personal success, they also became mentors to young farmers, researchers and officials. Through extensive training programs and their farm-to-farm extension services, they have boosted aquaculture in the areas of Kisumu, Homabay, Kakamega, and Nandi, in the vicinity of Lake Victoria in western Kenya.

There are many other success stories. "The aquaculture sector in Kenya is vibrant, Blue Transformation is a reality, and FAO is privileged to be part of it," said Carla Mucavi, FAO Representative in Kenya.

Entrepreneur turns fish
farmer in **LESOTHO**
after he spots an
opportunity during
a restaurant meal



Entrepreneur turns fish farmer in **Lesotho** after he spots an opportunity during a restaurant meal



© FAO/S. Phakisi

Stephen Pakisi's career as an aquaculture entrepreneur started when he went to dinner at a restaurant in South Africa.

He ordered trout. When the waiter brought the dish to his table, Stephen was struck by how pink it looked. This aroused his curiosity, so he contacted the fish supplier from whom he learned that the trout was imported. The colour did not matter. What did was his discovery that local supply in South Africa was not enough to satisfy demand.

Intrigued, Stephen researched the ideal conditions for farming trout: cold, clean water with sufficient dissolved oxygen. He realised that he knew a place exactly like that – Katse Lake in the Lesotho Highlands.

When his future business partner saw the site, he cried out, "A loch in the middle of southern Africa!"

Stephen's story is "classic entrepreneur stuff, a combination of self-confidence, business acumen and an eye for an opportunity, qualities that are needed to drive any venture forward," said Patrice Talla, FAO Sub-Regional Coordinator for Southern Africa.

Before the business achieved success, there were years of preparatory work. But they never gave up. As entrepreneurs, he and his business partner were mentally and financially prepared for the setbacks during the planning, development and implementation stages.

In 2006, Katse Fish Farm became Lesotho's first trout farm. Production grew from an initial 300 tonnes to more than 1 000 tonnes in 2023. It now has over 50 employees.

Lesotho now wants to see the aquaculture sector experience this kind of growth for food security and livelihood purposes. It has requested FAO's assistance, starting with the setting of the legal and institutional framework and capacity development.

Katse Fish Farm contributes to the community of Ha Lejone by donating a percentage of sales to its development trust and by giving fish to schools and clinics. Stephen is keen to stress the contribution of his employees. "No one works alone," he said.

Fish from Katse Fish Farms is supplied to major retailers in South Africa where it is a best-selling product at deli counters. Its production of more than 1 000 tonnes is marketed under the partnership brands Three Streams Smokehouse and Royale Highlands Trout.

"It's just a beautiful feeling to be associated with a project that allows you to learn every day," Stephen said.

He still has ambitions including establishing a world-class trout hatchery and expanding to regional markets.

"The farm is looking good with plenty of opportunity to grow," he said.



Aquaculture empowers
communities for Blue
Transformation in the
LAKE VICTORIA BASIN



Aquaculture empowers communities for Blue Transformation in the Lake Victoria Basin



© FAO

The Lake Victoria Basin has struggled with overfishing, among other anthropogenic actions, leading to ecosystem degradation, threatening the livelihoods of fisher communities who rely on it.

Demand for fish has increased sharply along with the growth in population, and this demand is projected to continue rising. As a result, maintaining food security while assuring sustainability and economic interests is a challenge.

Aquaculture was one possible way to resolve this dilemma but encouraging sustainability was essential.

The “European Union-East African Community True Fish Farming Story in Lake Victoria Basin” (TRUE-FISH) project’s overarching goals included enhancing food security, creating alternative livelihoods, and fostering economic opportunities in the region.

It aimed to lessen the pressure on fishery resources in Kenya, Uganda and the United Republic of Tanzania by implementing innovative fish farming techniques and providing comprehensive training and support to local communities. It addressed a skilled operator shortage, biosecurity risks, gender disparities, financial constraints, a lack of appropriate feeds and seeds at the right quality and price, and an unfavourable business environment.

The project provided practical training and knowledge to teachers and farmers. The strengthening of technical vocational education and training included training 35 staff members and developing 13 specialised courses, supported by investment of

USD 1.5 million in equipment. Through study tours and conferences, it implemented sustainable strategies, resulting in increased productivity. The improved yield not only boosts incomes but also ensures the long-term viability of businesses. To enhance access to commercial networks, TRUE-FISH organised East Africa Aquaculture Conferences in Kenya.

For aquaculture biosecurity, a regional strategy focused on the health of aquatic organisms in the entire lake basin, including Burundi and Rwanda. Over 40 training initiatives emphasised biosecurity, risk analysis, and disease monitoring.

The project also successfully drafted an extensive spatial map identifying areas for sustainable aquaculture development, taking into account environmental, economic, and social perspectives. The aim was to reduce conflicts among lake water users and mitigate climate change impacts.

TRUE-FISH also addressed environmental concerns by promoting responsible aquaculture methods to minimise adverse impacts on Lake Victoria’s fragile ecosystems.

“The project’s success demonstrated in Lake Victoria, is replicable in other lakes, yielding benefits like improved access to commercial networks, local skills development, spatial planning, and increased biosecurity,” said Ndiaga Gueye, Regional Senior Fishery and Aquaculture Officer at FAO.

Chilembene Historic Site:
a successful story
of innovative integrated
aquaculture solutions from
MOZAMBIQUE



Chilembene Historic Site: a successful story of innovative integrated aquaculture solutions from Mozambique



© FAO/ A. Menezes

In Mozambique, a decline in fisheries in recent years, together with poor production techniques and the high cost of aquaculture has resulted in fish scarcity and increasing prices, making it a delicacy that only few can afford. This has led to a diet low in protein and most of the population relying on cereals and vegetables. Climate challenges as well as the COVID-19 pandemic have compounded these problems, contributing to a fragile food system.

The Fundação para o Desenvolvimento da Comunidade (FDC), led by former First Lady Graça Machel, with FAO's support, has worked to rebuild the agrifood system in Chilembene in Gaza province, placing aquaculture at the core of its local transformation.

During FAO's McDougall Memorial Lecture in 2019, Ms Machel said, "Fish is more than food, it is a source of income, trade, and in coastal communities it is a way of life." She also stressed the need to transform aquaculture and use it as a catalyst for food security and employment.

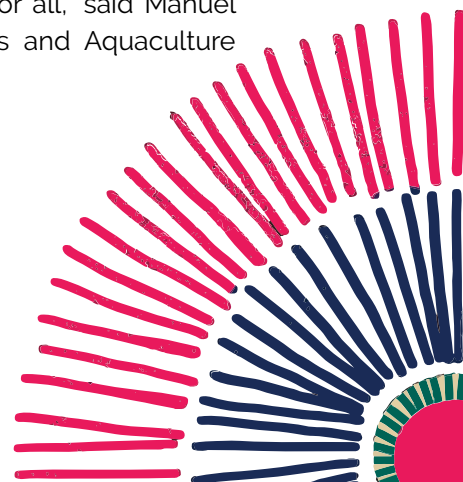
FAO provided assistance and capacity building on new technology and business skills as part of the project "Integrated Aquaculture Initiative on the Chilembene Historic Site." It connected aquaculture, agriculture, and livestock, aiming to develop a recirculating economy. Its aims were to restart local food production, develop fish farming, save energy, and recycle waste, while paying attention to the ecological balance.

The initiative provided intensive trainings and promoted employment. The direct beneficiaries were 15 women and four men from the community and 50 students, 60 percent of whom were women, from two agricultural universities.

FAO trained Aníbal Romão Bande, 34, in areas such as farm management, pond construction, fish harvesting, salting and smoking. "Through the training received, I feel well-equipped with technical knowledge and can address a significant portion of the day-to-day challenges in aquaculture," he said. The project gave people hope to start their own fish farming businesses, said Paulo Tovele, a university student.

Average fish production in the Chilembene Historic Site is estimated at 5 tonnes per cycle. The fish are sold locally and in Maputo as are all the eggs, rabbits, ducks and pigs that are also produced.

"The project demonstrated that even in the midst of a pandemic with strong partnership we can develop creative and effective foods and livelihood solutions for all," said Manuel Barange, FAO Assistant Director-General and Director of the Fisheries and Aquaculture Division.



Integrated aquaculture
supports displaced
communities in **NIGERIA**



Integrated aquaculture supports displaced communities in Nigeria



© FAO/A. Muhammed

Conflict in northeastern Nigeria has displaced large numbers of people in recent years, leaving communities to try to pick up the pieces of their lives far from home.

Among those who fled were fisherfolk from the Lake Chad Basin who took refuge in Maiduguri City and Jere in Borno State.

The challenge was to lift the community's members out of their dire circumstances by introducing durable solutions that could provide both immediate relief and long-term resilience.

FAO's project "Building resilient livelihoods in northeast States of Adamawa, Borno, and Yobe through climate change adaptation good practices and services" helped these communities to navigate the complex environment of post-emergency recovery. It contributed to rebuilding lives as well as fisheries and aquaculture livelihoods in a way that was sustainable, inclusive and empowering.

The project tackled this situation in three ways. It introduced a comprehensive approach combining sustainable aquaculture practices with homestead gardening to diversify nutrition and income sources. It also established a dedicated center for women in fish processing, providing training, resources and infrastructure to enhance their entrepreneurial skills and economic standing. In addition, it fostered collaboration with the community, offering technical expertise and involving locals in decision-making processes.

The project delivered results in terms of economic empowerment, nutritional diversity, women's empowerment, and resilience building.

Households participating in the Integrated Aquaculture and Homestead Gardening Cluster saw their incomes rise from USD 30 to USD 150 per month. "Initially, I doubted the impact of aquaculture on our lives. But the training changed everything. Now, not only has my income increased, but I've come to appreciate the importance of sustainable practices in our community," said Abubakar.


The Fish Processing and Tom Brown Production Center empowered 50 women, increasing incomes to approximately USD 50 per person per week.

An integrated approach improved community nutrition through a variety of locally produced food items that contributed to a more balanced and resilient diet. These included smoked catfish and spaghetti enriched with fish meal powder. They are sold in the community and in supermarkets.

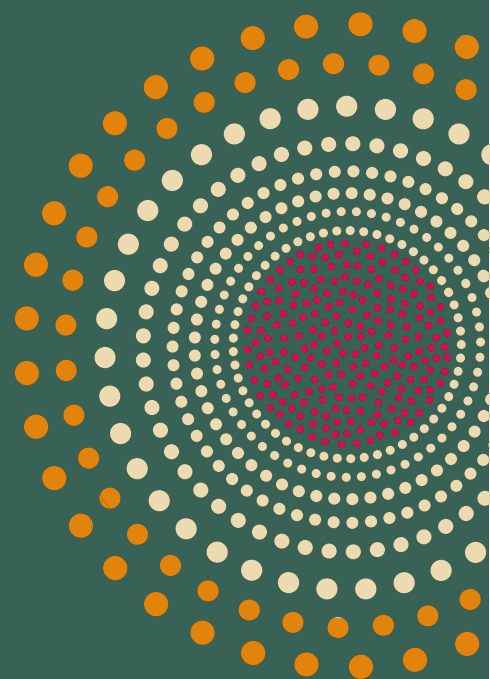
"Diverse food options improved my family's health. It's not just about surviving; it's about thriving," said Amina Al-Ameen.

A decrease in dependency on external aid and a rise in self-sufficiency demonstrated the community's increased resilience to future challenges.

The integrated approach, empowering women, diversifying nutrition, and building resilience are a model that can be adapted in similar contexts.



FAO project sparks
revival of **RWANDA's**
stagnating
aquaculture sector



FAO project sparks revival of Rwanda's stagnating aquaculture sector



© FAO/T. Mutesi

Rwanda's aquaculture sector started in the 1940s with small-scale pond farming, but technical and economic problems meant it never achieved sustainable growth.

To realise its true potential, FAO implemented a Technical Cooperation Programme named "Enhancing Commercial Aquaculture" and an Africa Solidarity Trust Fund project called "Promoting Agricultural Diversification to Reduce Poverty, Fight Malnutrition and Enhance Youth Employment Opportunities in Eastern Africa".

The projects supported 10 fish farmers' cooperatives and three individual fish farmers to gain entrepreneurial skills, increase productivity, and develop value addition. FAO and Rwanda's Government liaised with companies and groups of small-scale farmers to champion aquaculture. FAO organised trainings on fingerling production, feed formulation and farm management, renovated the broodstock, and provided basic infrastructure such as hatcheries and feed production equipment.

Rwanda's authorities followed the projects' vision and supported the operationalization of farming cooperatives and manufacturers of extruded feeds and the creation of an environment for private investments.

These initiatives changed a dormant sector into a vibrant one made up of private companies and cooperatives.

Substantial transformations were achieved as shown by Fine Fish Farm Ltd, a family-owned company that began farming tilapia in 2014. "It was challenging to find fingerlings and fish feed, and we had no prior knowledge in aquaculture. These initial difficulties led to many failures, pushing us to the brink of giving up," said Munyangayo Themistocle, one of its owners.

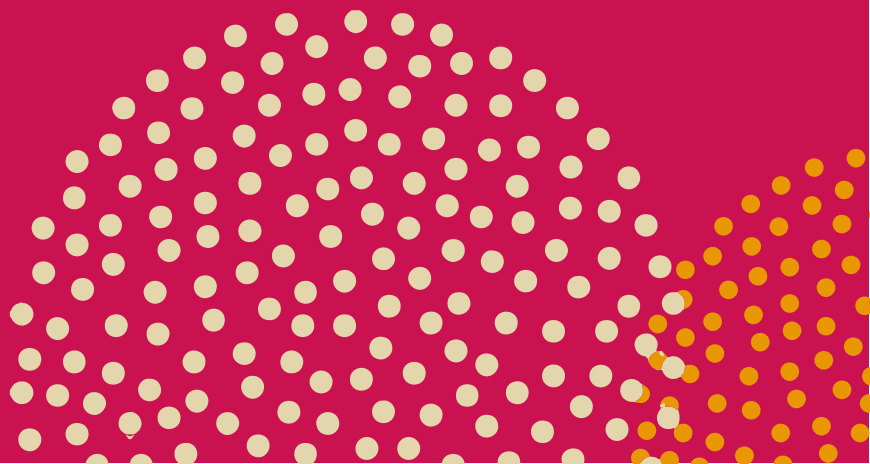
Fine Fish Farm Ltd now produces an average of 900 tonnes of fish per year, operates a hatchery with a capacity of 4 million fingerlings per year and manufactures 800 tonnes of feed per month. More than 140 people work there.

Its success is mirrored in Rwanda's aquaculture sector where production grew from 265 tonnes in 2011 to 7 059 tonnes in 2020, improving food security and nutrition, and increasing employment.

Factors behind FAO's successful support included planning tailored to local needs and well implemented small-seed projects like the Technical Cooperation Programme. Farmers injected their own funds and financial institutions trained in the technical and economic feasibility of aquaculture proved ready to lend to well run businesses.

"The success of the project, which was implemented under a project with limited funding, is replicable across sectors by leveraging FAO's expertise and programmes to effectively promote tangible solutions for enhancing economic growth and private sector development, while eliminating hunger, undernourishment, and poverty," said Coumba Sow, FAO Representative in Rwanda.

SOUTH AFRICA
sets up Aquaculture
Development Zones
to boost the sector's
growth



South Africa sets up Aquaculture Development Zones to boost the sector's growth



© DFFE, South Africa

Aquaculture is experiencing the most rapid growth among the food-producing sectors and has developed into a globally strong and vital industry that reduces poverty and increases food security.

South African fish farmers, however, have faced difficulties, including access to suitable earmarked land and sea space for aquaculture development.

FAO is assisting the authorities to develop the sector by establishing an appropriate legal and institutional framework, and by enhancing human capacity development via intensive trainings for officials responsible for aquaculture planning and extension officers.

South Africa's Government initiated the process of establishing Aquaculture Development Zones (ADZs) to boost the aquaculture sector's growth because of its potential to contribute to food and nutrition security, income, and livelihoods, and due to the high demand from farmers. South Africa's Department of Forestry, Fisheries and the Environment (DFFE) has identified land- and sea-based sites along the coast.

An ADZ is water or land set aside for exclusive aquaculture use whereby measures are taken to encourage its sustainable development. ADZs have a proven track record in developed and developing countries.

The benefits of ADZs are encouraging investor confidence, providing aquaculture services, managing risks associated with the sector, creating jobs, and developing skills.

The DFFE obtains consent from the land and water space custodians, undertakes the environmental impact assessment process, and sets up an ADZ. In some land based ADZs, infrastructure such as roads, electricity, reservoirs and water pumps are installed, removing the cost burden from farmers. For sea based ADZs environmental monitoring and food safety tests are conducted on behalf of farmers.

An important part of an ADZ is the management committee which safeguards the environment and protects smallholders and new entrants from high fees that would otherwise limit ADZs to the more powerful players.

The DFFE has established several ADZs in recent years including the Saldanha Bay ADZ in Western Cape. In 2021, there were 27 aquaculture farmers registered, producing approximately 3 600 tonnes of mussels and oysters. More than 750 jobs have been created including in fish processing.

South Africa is replicating this model across the country. It will investigate implementing ADZs in large freshwater water bodies across the country.

"ADZs demonstrate that when the natural resources and an enabling environment exist together, the combination attracts private sector investment," said Belemane Semoli, Chief Director, Aquaculture Development and Freshwater Fisheries, DFFE.



FAO expertise
transforms **UGANDAN**
school's struggling
aquaculture project



FAO expertise transforms Ugandan school's struggling aquaculture project



© C. Percival

Beatrice Ayuru founded the LIRA Integrated School in Uganda in 2000 to realise her vision of a way to combat illiteracy, eradicate poverty, and fight for girls' rights.

But the fish farming venture that she hoped would help finance the school, feed the children, and teach them about business was floundering.

"I had reached a point of withdrawal from fish farming because I saw no hope of its sustainability despite all the investment I had put in," she said.

FAO expertise helped turn the school's fish farm around. The African Solidarity Trust Fund project "Promoting Sensitive Agricultural Diversification" focused on enhancing food security and youth employment. It benefited small farmers groups, integrated schools with fish farming programmes, and fishing communities in northern Uganda. Among those it supported were 490 youths as direct beneficiaries, 38 groups, six commercial hatcheries and four small-scale feed mills.

A goal was to stimulate school-based aquaculture and address nutrition challenges through improved technical expertise, equipment, and management for better productivity.

"We were taken through the entire process: from the construction of ponds through to the business plan and cash flow," Beatrice said.

The project revitalised her struggling fish farm and transformed the school's nutrition programme. "In the 10 years that I've been in fish farming, I have never seen the quantity and quality of fish harvested that I have since FAO's intervention," Beatrice said.

She also started a poultry unit and a vegetable garden. "The combination of fish, eggs and vegetables in the pupils' diet on weekly basis has made a very big difference in our children's health and their ability to concentrate in class," she said.

Beatrice said she has learned that hands-on experience and passion can make someone excel in aquaculture. She also stressed the importance of a business plan, the right staff, and a strong capital base, adding that support is needed with expensive equipment and training.

Beatrice has achieved widespread recognition for her work including being invited to address the 2nd International Symposium on Agroecology in 2018, the FAO Women's Committee and other events.

Maria Helena Semedo, FAO Deputy Director-General, highlighted the role of women as transformative agents of society. She said, "This initiative exemplifies the potential for sustainable development and resilience on the ground through interventions targeted at women, as they are engines of growth and community pillars."

Uganda's wider aquaculture sector also benefited from the project. Improvements to fish seed production, hatchery facilities and fish feed have contributed to better food security, school feeding programmes and increased youth employment.

Social enterprise helps
women seaweed farmers
earn more in **THE
UNITED REPUBLIC
OF TANZANIA**



Social enterprise helps women seaweed farmers earn more in the United Republic of Tanzania



© N. Iraba

Seaweed is packed with essential minerals and nutrients, but making money from it has proved difficult for the mostly women seaweed farmers in the United Republic of Tanzania.

Assessments by two FAO-funded projects for the elaboration of the Zanzibar Aquaculture Development Strategy and Diagnosis of Seaweed Disease revealed that seaweed farmers have poor market access and earn too little to lift them out of poverty. Most production is exported raw at low prices due to a lack of investment in processing technology and product development. .

The National Aquaculture Development Strategy stresses the challenges of developing the sector in very fragile and valuable ecosystems. It has put in place actions for the expansion and transformation of the seaweed market including increasing productivity and developing new products through value addition for new markets.

Also, more finance is needed for research, infrastructure, and market expansion initiatives, said Nazael Madalla, the Director of Aquaculture in the Ministry of Livestock and Fisheries.

Despite the challenges, some seaweed farmers and other players are not giving up.

Nancy Iraba, a marine scientist, did her own research into the seaweed market and was not happy with what she found.

"Seaweed's nutritional properties were better known in more developed countries, not in my country where it was produced. Increasing consumption of seaweed in the United Republic of Tanzania and in all Africa became the goal," she said.

Her social enterprise project, Healthy Seaweed Co. Limited, is addressing this issue by pioneering the creation and production of high-quality, nutritious seaweed-based foods. The aim is to promote healthy living to address malnutrition and non-communicable diseases.

Seaweed production is also environmentally friendly as it does not need fresh water, arable land, fertilisers, or pesticides.

Nancy wanted her company to make a difference. In a country where 25 000 people work in the seaweed business, 80 percent of them female, it is empowering women seaweed farmers by providing access to markets and offering higher prices. The company is partnering with 130 women farmers from Kilwa on the mainland and in Zanzibar.

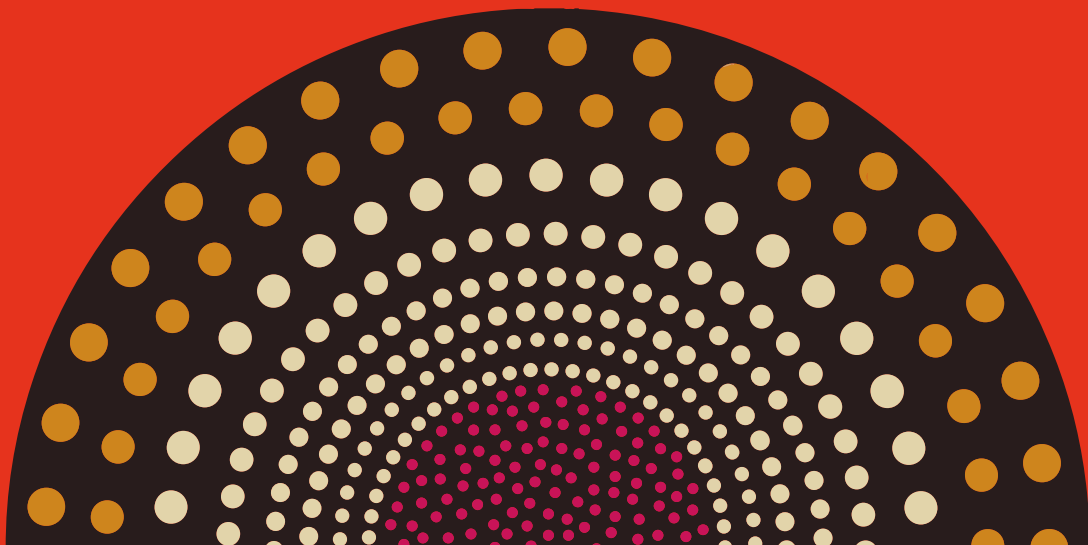
Working with the social enterprise means that the women seaweed farmers have increased their income from USD 30 to USD 80 per month. This has allowed some to send their children to school, start side businesses, and build their own houses.

"Empowering women farmers promotes gender equality and supports the sustainable development of communities," said Tipo Nyabenyi, FAO Representative in the United Republic of Tanzania.

Nancy has already developed 13 seaweed food product lines that are sold in shops in Dar es Salaam. The business is targeting other markets in Africa and already has over 2 000 customers.



FAO interventions
contribute to
the long-term growth
of **ZAMBIA**'s
aquaculture sector



FAO interventions contribute to the long-term growth of Zambia's aquaculture sector



Zambia is a landlocked country with abundant water resources for aquaculture. The sector is already contributing to its food security and nutrition but less than it could. FAO has supported the Government to develop it.

Aquaculture production increased almost fivefold between 2012 and 2021, rising from nearly 13 000 tonnes to over 63 000 tonnes.

Although this placed the country among the largest aquaculture producers in sub-Saharan Africa, rapid population growth means the sector needs to do much more.

"Development partners and the private sector are crucial players for the country to raise to its potential," said Ana Menezes, a FAO Senior Fisheries Officer.

FAO has been working with Zambia's Government and the African Development Bank since 2019 in the "Zambia Aquaculture Enterprise Development Project" (ZAEDP) to create the right framework for supporting the sector's sustainable long-term growth.

Suze Filippini, FAO Representative in Zambia, underlined the aim of the ZAEDP to stimulate a viable fish farming sector to promote economic diversification, food security and sustainable employment generation, and identified some of the areas the project targeted.

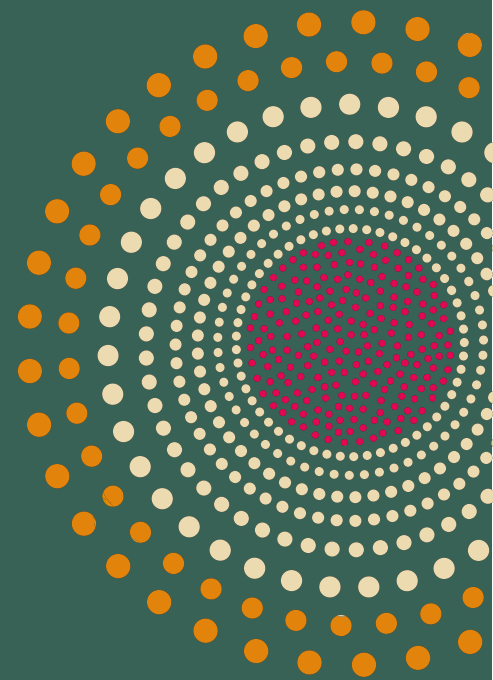
"FAO has worked with the Government, academic and research institutions, and farmers on various initiatives to boost the quality and availability of seed and feed, improve food safety and aquatic health management, and make affordable financing more accessible to fish farmers," she said. "It has also strengthened the institutional and legal framework of the sector and the collection of statistics."

One example of the ZAEDP's success is Beltesmol Fisheries and Logistics Limited in Siavonga, Southern Province. It received a loan to start up as a fingerling producer under the ZAEDP Aquaculture Seed Fund facility. The project provided intensive training to the farmer. To date, the hatchery has supplied over 2.5 million fingerlings, produces 1 million fingerlings annually, and has 16 permanent employees. It has diversified into cage fish production, processing, and feed supply.

Growing commercialisation has driven the rise in aquaculture production in Zambia, where increasing numbers of smallholder farmers are being attracted to the sector. And aquaculture is continuing to expand. In recent years, over 25 fish hatcheries and eight fish feed manufacturing companies have been established.

"Production has grown, capacity has been developed, policies have been enhanced. The project has demonstrated significant progress on all of its key main objectives," said Manuel Barange, FAO Assistant Director-General and Director of the Fisheries and Aquaculture Division.

ZIMBABWE's first
woman fish farmer
inspired during the
pandemic disruption



Zimbabwe's first woman fish farmer inspired during the pandemic disruption



© T. Chinhamu

Afra Nhanhanga used to work as a bus operator until the COVID-19 pandemic stopped public transport running.

Instead, she changed direction and became a fish farmer. She was inspired by women working in aquaculture in Kenya, Uganda, and Zambia whom she saw in a YouTube video. Afra noticed that there were none from Zimbabwe.

She remembered from a very early age that it was common practice to fish in the village stream and that it was of vital importance. "If you put fish on the table, families can survive," she said.

Afra believed a fish farm could be successful and that her new job could change her life and that of her community.

Along the way she has faced many challenges. In Zimbabwe, bank loans are hard to get, aquaculture is not well understood, and it is considered a risky business to invest in.

The local community helped her to dig the ponds in her village in Mashonaland West Province. Afra, now 48 years old, runs a fish farm that produces 7.2 tonnes of tilapia per year. It has three full-time employees and another 10 who also do agricultural work.

FAO made a documentary about aquaculture in Zimbabwe which included Afra's work, and this was a decisive factor in her continuing her project. She also took part in trainings and regional meetings.

After noticing her potential and commitment as a fish farmer, the FISH4ACP programme decided to support her in trialling black soldier fly feed on her farm. Chinhoyi University of Technology agreed with FAO to try out this feed and compare it with conventional feed. The objective is to introduce low-price feed that will cut production costs and increase profitability.

Patrice Talla, FAO Sub-Regional Coordinator for Southern Africa, underlined the importance of innovation and support for entrepreneurship in developing aquaculture in Africa. "Innovative technologies, like this alternative fish feed, have the potential to make Blue Transformation a reality," he said.

Afra is about to venture into cage culture production and has a small machine to start producing her own feed. "Soon, I'm converting the fish farm into a training hub for women, youths and school children," she said.

Support from FAO gave her the strength to continue running her business and the opportunity to grow. "I feel like FAO is pulling me when I am feeling tired," she said.

Advancing aquatic food solutions from pond to plate

Blue Transformation in action

This booklet offers a compilation of aquaculture success stories, primarily focusing on the transformative impact of aquaculture development in Africa. Anchored within the Blue Transformation framework, it underscores the importance of sustainable marine and inland aquatic food systems for global food security, nutrition, and economic growth. Highlighting diverse achievements, from empowering women and youth to catalyzing sector-wide changes through innovative projects, the stories exemplify the profound impact of aquaculture on communities and economies.

Through technical insights, FAO-led initiatives, financing details, and personal narratives, the booklet serves as a valuable tool to promote investment, awareness, and the responsible utilization of natural resources.