



# Sustainable Development Goals

**Vision by FoodTechAfrica**

September 2019



## Foreword

It is often said that the first rule of success is to have a clear vision. Simply put, the best ship in the world will just drift around endlessly without a keen shipper.

At FoodTechAfrica, our vision is to transform sustainable aquaculture in East Africa. We do so by bringing together expertise from across the aquaculture value chain and by developing local sustainable fish production.

Our vision was formed as early as 2011. Whilst talking to a Kenyan agricultural entrepreneur, we discussed his efforts in fish farming. He was firmly convinced that the market for fresh fish was booming yet had been unable to produce fish himself successfully. Key challenges included the lack of feed, lack of fingerlings (baby fish) and most of all, the expertise to farm fish in a successful and sustainable manner.

When you start digging into the subject, the figures are quite astounding. In 2016, a mere 0.4% of aquaculture production came from sub-Saharan Africa (Source: FAO). This, whilst due to a rapidly expanding population, East Africa's demand for protein is skyrocketing. Rather than relying on import, our opinion is that locally produced fish for the local market is the most sustainable way of catering to this increasing need. A challenge not easily tackled alone, and our initial efforts were met by many 'naysayers': this cannot be done, because it has not been done before. Well, as the saying goes, everything is always impossible until someone does it. We therefore decided to bring the aquaculture experts from both the Netherlands as well as East-Africa together in a single consortium: FoodTechAfrica.

Our vision for the future of aquaculture in East-Africa is closely aligned with the UN Sustainable Development Goals, which offer a universal framework to measure our social and environmental impact. Growth of the aquaculture sector has the potential to positively impact millions, but only if done so sustainably and inclusive. FoodTechAfrica is actively engaged in all steps of the value chain: from local aquafeed and fingerling production, sustainable farming techniques to transport, storage and serving the local customers with fresh fish: we carefully assess how to positively impact the entire value chain. Having established the first Ecomark certified fish farm on the African continent, we take pride in bringing innovative solutions and providing lasting livelihoods for the local employees of all partners involved in the FoodTechAfrica consortium.

We realize our journey has just begun. Being actively involved in aquaculture activities in Kenya, Tanzania, Rwanda and Uganda, we are excited about the prospects we can help foster. We thus invite you to join us, and work together to transform sustainable aquaculture in East Africa.



Wouter van Vliet

Director, Larive International



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## FoodTechAfrica

FoodTechAfrica is a public-private partnership of 21 companies and universities improving food security in East Africa through the establishment of a fully integrated aquaculture value chain.

Our exceptional journey started modestly in 2012, when a Kenyan farmer told us he could not make fish farming profitable for himself and other farmers around him. A surprise, as Kenya borders Lake Victoria; a source of fish for the region for centuries.

However, Lake Victoria's output is declining rapidly due to pollution, overfishing, and lack of regulation. The declining output has been partially replaced by the import of fish. A missed opportunity, as East Africa has excellent capabilities to produce local fish, for the local market.

FoodTechAfrica was built to unlock the potential of local fish production in a sustainable and profitable way, combining our powerful aquaculture solutions with market requirements. Our partnership brings a localized mix of knowledge, practical skills and technology to the table. Jointly, we enable fish farmers to overcome farming constraints and become profitable aquaculture entrepreneurs.

Our partners:



## Our journey so far



### Our regional success

When the journey of FoodTechAfrica started, it quickly became apparent that only a regional approach can create the critical mass needed to bring about structural change in the regionally interdependent value chain of aquaculture.

Following the excellent results of the project in Kenya, FoodTechAfrica introduced its farming activities to the wider East-African region. Aerated fish farming systems have now been established in Rwanda and Tanzania.

Local entrepreneurs are seeing the business opportunities in the success of existing farms, generating interest and industry growth. Localizing the program and placing additional emphasis on education and capacity building, the intervention strategy is proving to be a regional success.

### How we work

We believe that the great potential of aquaculture in East-Africa can only be unlocked by working together. Using the strengths of both Dutch and East-African partners, the project supports actors along the entire value chain.

Delivering impact through partnerships is key to our approach. By bringing different chain partners together in a single consortium, an effective strategy for the entire industry is jointly implemented and managed. This allows for development across the entire value chain, from inputs such as fish feeds and fingerlings, production system to the training of partners and farmers.

The concrete impact of the program is visible in the local communities. Improved food production, better access to fitting nutrition and job opportunities have effectively changed lives. By tackling problems along the value chain together, aquaculture challenges inhibiting individual partners are jointly overcome.



## Our impact so far

### Total direct annual production through FTA involvement

123 tonnes of fish  
880 tonnes of fingerlings

### Education

Over 4500 days of training.  
Over 300 people trained.  
Goal of number of people trained in feed production already surpassed threefold.  
Over 60 visits to our partner farms by aquaculture stakeholders.

### Job creation

Over 550 direct jobs created by FTA, with another estimated 3300 indirect jobs throughout the aquaculture value chain.

### Partnership

21 partnerships created



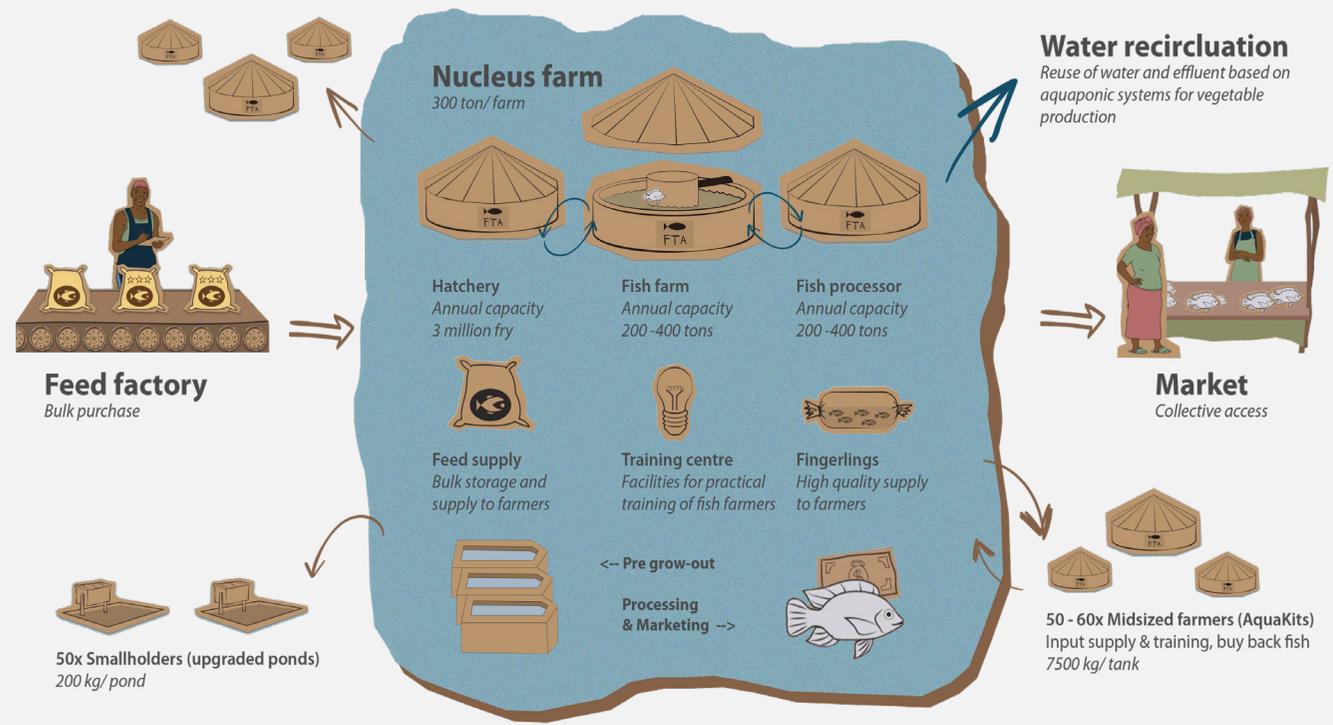
Our vision for aquaculture in East-Africa

## AquaHub model

We believe that aquaculture has the potential to meet the growing demand for protein in East Africa, while supporting food security and income generation. From local feed production and fingerlings to education and fish processing, the crucial building blocks for growth are already being put in place.

Yet, these building blocks cannot be seen in isolation. They can only be connected and engaged for sustainable growth through partnerships. For this reason, we consider value chain integration key to the growth of the industry. Combining the strengths of Dutch and East-African partners in one consortium, effective planning and managing of growth can take place. We are proving to be successful by turning the existing paradigm on its head. We are demonstrating that helping establish commercially viable fish farms with a critical size is key to sustainable growth.

These nucleus farms are the strong shoulders the industry can stand on, providing high-quality inputs, training and technical assistance to nearby small-scale farmers. A model which can be applied across the region.





## Regional integration

Successful aquaculture depends strongly on critical mass and scale. Our Aquahub model provides a fitting platform to reach critical mass locally, attracting investment in the rest of the value chain. An integral approach to the entire East-African Community is needed. We envision a regionally connected aquaculture value chain, with both inputs (feed) and fish freely trading over the borders.

By using the strengths of the different individual countries, the full potential of aquaculture in East-Africa can be unlocked. From environmental regulation to regional trade of aquaculture products, aquaculture development goes hand-in-hand with regional cooperation.

Long-term sustainable sector development is not only dependent on production infrastructure. As important to growth is an enabling business environment and fitting education. FoodTechAfrica is therefore actively taking the lead in training of both farmers and educators. Since our start, stakeholders have been, and are being trained in hands-on skills, whilst our demo farms have been visited by countless government officials, NGOs, stakeholders and farmers.

By working and training together with local knowledge institutes, a sustainable base of expertise is build for long-term sustainable growth. Moreover, active dialogue with local governments is leading to regional integration and a more conducive business environment.

Above all, creating a vibrant and viable aquaculture sector in East Africa requires cooperation between stakeholders. We are building the movement by leveraging the combined expertise of our consortium partners. Aquaculture has the potential to improve food security in East-Africa, whilst providing income and business opportunities to many.



*“ We have a vision of aquafarming being as popular as dairy farming”*

*Winnie Ouko*



# Our contribution to the SDGs

## Measuring our impact

East-Africa faces a considerable challenge to feed its rapidly growing population, whilst being disproportionately affected by climate change. We aim to sustainably transform East-African aquaculture, improving the lives of millions in the region.

We understand that our interventions themselves impact the environment, the economy and the local communities. Aquaculture has the potential to contribute to development, but only if done sustainably and through collaboration with all stakeholders in the region.

The United Nations' 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs) provide a unique framework to guide the world towards a sustainable and resilient future. It also provides a \$12 trillion economic opportunity for business and development partners.

The SDGs can only be achieved if all stakeholders work together on its implementation. At FoodTechAfrica, our contribution towards achieving the SDGs is central to our work and we use its framework to measure our impact.

Throughout the following section, we will highlight our impact on the 7 SDGs that are closest related to our work.





## Hunger in East-Africa

Hunger is still a pressing issue in the East-African region. Not only do many still suffer from undernourishment, the hidden hunger of malnourishment further affects millions. Protein deficiencies in children and adults lead to life-long complications and loss of life.

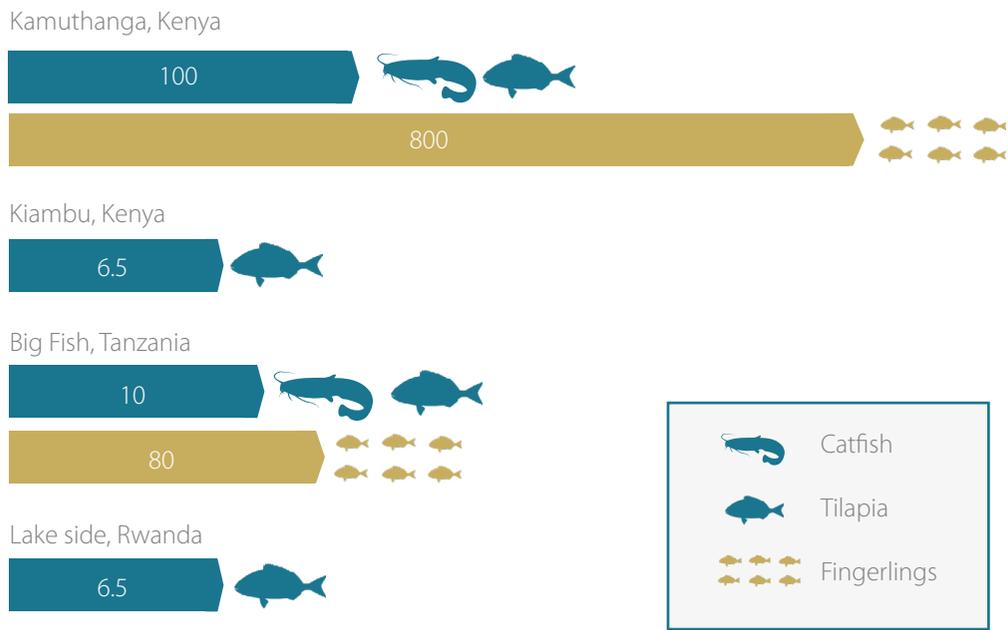
*“End hunger, achieve food security and improve nutrition and promote sustainable agriculture”*

### Our contribution

For many living in East-Africa, fish is the primary source of protein. Through increased production per capita, FoodTechAfrica provides high-quality proteins for an affordable price to local communities. The use of RAS technology allows for production to be close to urban centres, bringing food to where it is most demanded.

The development of commercial aquaculture does not only provide food and nutrition, but also contributes to food security through employment and economic growth. Moreover, by providing high-quality inputs through nucleus farms, small-holder farmers are able to provide food for themselves, their families and their local community.

### Total direct and indirect annual production of fish in tonnes through FTA Involvement



**4 QUALITY EDUCATION**



**Education systems in East-Africa**

Key to quality education is ensuring the gained knowledge provides opportunities for life. In East-Africa, there is often a mismatch between the education provided and the job market requirements. Students lack the practical skills needed to work in the jobs available or to start their own.

*“Ensure inclusive and equitable quality education and promote lifelong learning possibilities for all”*

**Our contribution**  
 In our program, students are trained hands-on in all aspects of sustainable fish farming, enabling them to either start their own business or work for established farms. From farm management to feed production, our activities have provided a platform for learning and capacity building. Alumni have proven to be essential to the program, growing the sector with their new expertise. By working together with the local knowledge institutes, capacity building is supported and long-lasting impact is achieved. Those trained serve themselves as ambassadors and educators, spreading their knowledge among many in their own local community.



- Education**
- Over 4500 days of training
  - Over 300 people trained
  - Goal of number of people trained in feed production already surpassed threefold
  - Over 60 visits by stakeholders

What I've learned on the FTA training is now the backbone of what I do in the farm  
**John Eric - Fish Farm Manager Kiambu**



**5 GENDER EQUALITY**



## Gender equality in East-Africa

In East-Africa, gender equality is still far from achieved. Although women are highly involved in the agricultural sector, they often do not have decision power or land ownership. Within the aquaculture value chain, women lack access to the knowledge and skills needed to effectively participate in commercial aquaculture<sup>1</sup>.

*“Achieve gender equality and empower all women and girls”*

**Our contribution**  
 Achieving gender equality means to take action. To date, our training program has comprised for at least half of female participants and the lead trainers have often been female role models. Key to our education program is teaching business and entrepreneurial skills, empowering women to start their own business. At our partner farms, women employees are vital parts of the organizations, working in hatchery and farm operations or in key management positions.



**Zena Mndeme, Director of Operations, Big Fish Tanzania**  
*We felt we should make sure that fish is available for everyone, for every Tanzanian.*

<sup>1</sup> Gender Impact Study of the Kenya Market-Led Aquaculture Program (2016), Farm Africa

**8 DECENT WORK AND ECONOMIC GROWTH**



**Employment in East-Africa**

Within East-Africa, the number of unemployed or poorly employed people still remains high, especially among those who are young. Often employed in the informal sector, many are facing difficulties to earn a decent living wage.

*“Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all”*

**Our contribution**

FoodTechAfrica has provided direct job opportunities for over 550 employees by our work so far. By providing training, high-quality inputs and through stimulating entrepreneurship, the initiative has created many more indirect income opportunities. Those trained and employed at the different locations are primarily youth, who have learned the skills needed for a lifelong career. Looking ahead, the aquaculture industry in East-Africa has the potential to propel sustainable economic growth through innovation and the creation of SMEs.



FoodTechAfrica created an estimated 550 direct jobs.



On the picture:

- <sup>1</sup> Kamuthanga farm in Machakos, Kenya
- <sup>2</sup> Unga feed Factory in Nairobi, Kenya
- <sup>3</sup> Big fish farm in Dar es Salaam Tanzania

**9 INDUSTRY, INNOVATION AND INFRASTRUCTURE**



## Industrialization in East-Africa

East-Africa is experiencing a true industrialization drive. Many of the individual governments have made industrialization the spearhead of their policy, aiming to reach middle-income status or beyond. Yet this drive is stifled by a lack of access to the required capital and technology.

*“Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation”*

### Our contribution

Through innovation and by providing decades of combined expertise, FoodTechAfrica supports the development of the aquaculture industry. Key infrastructure to sustainably develop the entire sector has been built, including the first extruded floating fish feed mill in Nairobi. The production in aerated systems is a great example of innovation in infrastructure, successfully adapting a high-technology solution to the local context of East-Africa. Local sourcing of ingredients leads to further innovation and adds value to agriculture products. By exploring pioneering technological solutions in collaboration with local entrepreneurs, such as solar-based electricity systems or insects for fish feed, innovation is fostered. In turn, this innovation provides market opportunities for business growth.

On the picture:

- <sup>1</sup> RAS demonstration farm in Kiambu, Kenya
- <sup>2</sup> Potential farm for AcroCrop booster



### Case Study: The AquaCrop Booster

FoodTechAfrica developed the AquaCrop Booster, a system designed to benefit from the unique opportunities for circular innovation from controlled aquaculture.

By capturing and treating the nutrient rich waste water in the system, the affluent water can be used for irrigation of other crops in the integrated farming systems of East-Africa. Trials show that this system significantly reduces fertilizer use. Moreover, the need for pesticides dropped significantly, as chemical fertilizers are replaced by a natural product.

**12 RESPONSIBLE CONSUMPTION AND PRODUCTION**



## Consumption and production in East-Africa

Talk of the global population reaching 10 billion by 2050 has been around for some time. Yet, this statistic actually hides the source of this growth, and its implications. Africa and Asia will contribute the lion's share of this new headcount and as a result face potentially catastrophic food shortfalls unless a dramatic boost in productivity can be achieved.

*“Ensure sustainable consumption and production patterns”*

### Our contribution

We seek to fundamentally disrupt unsustainable production patterns by locally producing fish for local consumption, with minimal environmental impact. With water and land becoming even more scarce resources, fish farming should minimize the use of these resources.

The recirculation aquaculture system (RAS) design of FoodTechAfrica is the most efficient method currently available to produce fish in the region. Sourcing locally and exploring alternative types of proteins for aquafeed is a key part of our approach to a sustainable value chain.

By producing close to the market, post-harvest losses are minimized. As recognition of its sustainability, the Kamuthanga fish farm of FoodTechAfrica has been the first farm on the African continent to be awarded the EcoMark Africa certification at the platinum level, the highest of four certification levels.

Farms with direct FTA involvement



Non FTA



**17 PARTNERSHIPS FOR THE GOALS**



**Partnerships in East-Africa**

Inclusive and sustainable development can only be achieved through partnerships and collaboration. Local entrepreneurs in East-Africa generally lack access to technology and knowledge essential for successfully starting their business.

*“Strengthen the means of innovation and revitalize the global partnership for sustainable development”*



**Our contribution**  
 Through a North-South Public-Private Partnership of parties from East-Africa and the Netherlands, FoodTechAfrica is a great example of a global partnership for sustainable development. Through the exchange of technical knowledge and innovation, the global development agenda is accelerated. By working together, business opportunities previously unattainable open up. This partnership is ever expanding, providing an inclusive platform for global collaboration.





## Get involved

To transform the aquaculture industry in East-Africa, a partnership between all different stakeholders is needed. More initiatives are needed to carry the sector forward and kickstart development. We realize that our ambitions are high and that we cannot and should not attempt to carry them out on our own.

At FoodTechAfrica, we are thus building a movement. A movement to change aquaculture in East-Africa, that includes farmers, donors, producers, governments, researchers, NGOs, civil society organizations, the local communities and all those involved in the aquaculture value chain.

We would like to invite you to join us in this movement. If you or your organization would like to hear more about FoodTechAfrica, our upcoming activities or potential collaboration, please get in touch through the contact details below.

### Disclaimer

This document has been prepared for general guidance only. The reader should not act on any information provided in this study without receiving our specific professional advice. Larive International B.V. shall not be liable for any damages resulting from the use of information contained in this document.

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