An AgriFoSe2030 Brief
March 2020

AgriFoSe2030

Agriculture for Food Security 2030
- Translating science into policy and practice

Beyond subsistence: Transforming aquaculture in Kenya

This policy brief highlights the need among stakeholders to adopt an economically viable business approach in aquaculture. It describes how policy makers need to consider gender issues to enable Kenyan aquaculture to make a sustainable contribution to food security and improved livelihoods in the country.

Early aquaculture production in Kenya

Kenyan aquaculture dates back to the 1800's when it was introduced to support sport fisheries. Pond culture of tilapia and catfish was introduced in the 1960s, as a result of the Government's promotion of rural fish farming through the 'Eat More Fish' campaign. We saw an increase in ponds being constructed, especially in the Central and Western parts of the country. However, this was faced with challenges associated with shortage of supplies such as feed and seed, insufficient extension services and poor technical skills. Due to this, there was a sharp reduction in aquaculture production in the 1970s.

Interest in aquaculture was, however, triggered again during the Fish Farming Enterprise and Productivity Programme under the Economic Stimulus Programme introduced in 2009 and where aquaculture was identified as an area for economic growth by the Government in 2000. This resulted in increased production in aquaculture.

Key messages

- With rapid population increase coupled with a decline in fish catches from Lake Victoria, aquaculture is the future for fish supplies in Kenya.
- Although the sector has made remarkable progress in the last 20 years, there are some challenges that have contributed to stagnation in production.
- For the sector to meet current and future demands for fish, and contribute to food security, it must address issues concerning availability of quality feeds, training, access to credit facilities and women's participation in Kenyan aquaculture.
- Such development could support resource-poor smallholders to transform to sustainable semi- or intensive fish farmers.

An increased demand in the early 2000s

Since 1999, the sector experienced a turnaround that led to increased production mainly due to consistent efforts in on-farm research and Training Support Programmes (CRSP) contributing to the transfer and use of new fish farming technologies. Consequently,

Fish farming has the potential to contribute to the rising demand for fish for a growing population in Kenya.

the sector recorded growth in research, training and private sector involvement between 2002 and 2006, therefore contributing to increased production. It surged from 1500 to 2500 kg per hectare from 1999 to 2005.

In the end of the 2000s, the Government of Kenya identified aquaculture as an area for economic growth in its poverty reduction strategy and embarked on further development of the sector. The Fish Farming Enterprise and Productivity Programme (FFEPP) of the Economic Stimulus Programme (ESP) in 2009 triggered fresh interest and focus on aquaculture as a viable economic activity. Awareness and practice of aquaculture particularly in rural areas increased. Farmers adopted either independent fish farms or an integration of fish farming with crop and or livestock. All in all, remarkable progress in freshwater aquaculture was witnessed, with production leaping from 4000 to 23500 tonnes/yr between 2007 and 2013. Today, freshwater aquaculture is dominated largely by tilapia and African catfish under semi-intensive culture systems with feed and fertilizer inputs, yielding production levels of about 3 tonnes/ha/yr.

A few bottlenecks for continued increase in Kenyan aquaculture

Despite the fact that there is a rapid annual population increase of 2.42 percent in Kenya, fish consumption has been reported to have declined from a modest 6 kg per capita in 2000 to 4.5 kg per capita in 2011, largely due to low supplies of fish from fisheries from the main supply of fish, which comes from Lake Victoria.

Compared to other agricultural production sectors, access to credit facilities for aquaculture is

relatively low. Due to limited access to extension services, there is still poor technical understanding of aquaculture technologies in the production of fish feeds, seed production and water quality management, leading to slow transition from semi- to more intensive fish farming. Affordable feed is another key challenge for Kenyan aquaculture. Fish feed production is estimated to account for 40 to 50 percent of the total variable production costs for fish farmers today. An inadequate policy framework and lack of standardised guidelines for the fish feed industry have contributed to slow growth of the sector. Meanwhile, farmers use locally available ingredients of lower nutritious quality, such as rice and maize bran (used to up to 76 percent) and fish meal from dry fresh water shrimp and *Rastrineobola argentea*, also known as "omena".

Aquaculture as a livelihood source for women

Like many other sectors, aquaculture is Like many other sectors, aquaculture is characterized by social and economic gender disparities, with women dominating in fish processing and trading activities but hardly represented in sector-relevant management positions. In Kenya, overfishing of wild fish stocks has had profound effects on women, whose livelihoods can no longer be sustained in fish processing plants. Fish trade used to be considered a good business for resource-poor women, since it required little start-up capital and resulted in little wastage as unsold fish can be eaten by families; thus, offering women opportunities for income. However, due to increased demand for fish, women have increasingly been marginalized from fish trade and processing. As a result, many of the women have turned to fish farming activities as an alternative means of sustaining their livelihood. They produce and sell fingerlings for baitfish in Nile perch fishing or to other fish farmers, therefore increasing their income, food and nutrition security.

However, women need further training in aquaculture technologies such as feeding, seed production and processing to enable them to gain the full potential of aquaculture as a livelihood and retain their role in the sector. There is also a need to address the issue of access to credit facilities for women's role in aquaculture to be realized fully.

Fish on decline in Lake Victoria

In the last two decades, Lake Victoria fisheries transformed from a traditional livelihood activity to an industrial regime. Inevitably, fish catches have declined largely due to overfishing coupled with introduction of exotic species and eutrophication.

Given the current population growth rate in Kenya combined with the fact that fish stocks in Lake Victoria and other water bodies are on the decline, there is need for concerted efforts by the lake's member states to boost aquaculture production for food security and nutrition.

To maintain the current level of fish consumption of 4.5 kg per capita, total annual fish production must increase by approximately 50 000 tonnes by the year 2020. This can be achieved either by the construction of an additional 12 500 ha of ponds or by intensification in existing ponds.

Increasing women's participation in aquaculture will require more than just awareness and sensitivity to gender issues. It must go further to involve the concerted effort by gender champions, researchers, expert networks and policy advocates.

Where do we go from here? – Key recommendations

Kenya's aquaculture sector has undergone various changes that have contributed to its current status. The introduction of Fish Farming Enterprise and Productivity Programme under the Economic Stimulus Programme made significant contribution to the current productivity levels of 3 tonnes/ha/yr. Productivity appears to have stagnated at this level, however, a factor attributed to various challenges facing the sector. To meet current and future demands for food and to contribute to better livelihoods, the sector must transform from smallholder to commercial levels. This calls for intervention from both the Government and

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non-government institutions. Here we present the following recommendations:

- Increase access to credit facilities and related guidelines for fish farmers, particularly women.
- Support the establishment of fish farming cooperatives and informal table banking inititives, which have proven to work best for the resource-poor.
- Train farmers and financiers on aquaculture business management skills to achieve cost-effective investments in the sector. Some of this training should focus specifically on women farmers
- Build capacity for aquaculture extension at different levels by providing: short courses, certificates, diplomas and degrees to enhance adoption of technology for increased production in aquaculture.
- Provide tailor-made short courses on a farmer-to-farmer basis as well as on-farm training to improve fish farming techniques among farmers.
- Increase public-private partnerships for producing affordable fish feeds fish for increased fish feed supply.
- facilitate access to credit and training and link women to management and market information systems to improve women's participation in aquaculture. The marketing support activity is there to connect women fish farmers to a Farmed Fish Marketing Information System (FFMIDS) through mobile technology as part of a larger set of value chains.

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We thank the AgriFoSe2030 programme and the Swedish International Development Agency for the financial support provided.

We thank partners and researchers involved in the programme for the knowledge and ideas provided.

Review acknowledgement to AgriFoSe2030's Communication and Engagement team.

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