

## Opportunities for Small-Scale Aquaculture in Malawi

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### Key Messages

- Small-scale aquaculture has potential to improve food security in Malawi and contribute to rural livelihoods as a source of income.
- Small-scale fish farmers are impeded by a lack of access to high quality feed, fingerlings, relevant aquaculture extension services, and well-structured output markets, and are also affected by climate change.
- Promising areas for investment in small-scale aquaculture therefore include improving access to high quality fish feed through domestic production, training certified hatchery operators, facilitating access to formal fish markets, and developing guidelines for cage farming.

### Introduction

In sub-Saharan Africa, small-scale fish farming (aquaculture) has gained much attention due to its nutritional and socio-economic importance. Small-scale aquaculture has potential to contribute to Malawi's development by increasing food production, improving food and nutrition security, and serving as a secondary income source for rural households.<sup>1</sup>

Aquaculture could play a particularly important role in Malawi, which has historically depended on wild fish capture to meet local demand. This is because wild fish catches have, in recent years, been in sharp decline due to overexploitation.<sup>2</sup> Moreover, demand for animal protein, including fish, is projected to rise as Malawi becomes increasingly urbanized and as more people enter the middle class. Furthermore, our results show that small-scale fish farming is generally profitable, though the gross margins tend to be limited (mean=MK 116,258; median=MK 25,500). Nevertheless, although aquaculture has experienced some growth, the sector remains small: There are around 9,000 small-scale fish farms in the country, and

between 2005 and 2020, aquaculture production increased from 813 tons to 9,399 tons, representing 5% of Malawi's total fish production that year.<sup>3</sup>

This policy brief provides an overview of the factors hindering the sustainable growth of small-scale aquaculture in Malawi. It further highlights some opportunities for investment and policy interventions that can address these challenges and unlock sector's potential.

### Data

This brief draws on primary data collected in 2021 through the MwAPATA Aquaculture Survey. The survey targeted small-scale fish farms in 10 districts where fish farming is most common in each of Malawi's three regions. These are Nkhatabay and Mzimba (Northern Region), Ntchisi, Nkhotakota, and Mchinji (Central Region), and Phalombe, Thyolo, Mulanje, Machinga, and Zomba (Southern Region). In total, 732 interviews were conducted with both individually and communally owned and managed farms. The survey captured information on farm operations, fish production, and challenges faced.

**Table 1. Challenges faced by small-scale fish farmers**

<b>Challenge</b>	<b>Share of farms (%)</b>
Lack of access to good quality feed	65.9
Theft and predators	57.4
Lack of input markets	40.0
Poor environmental conditions	35.9
Poor quality of fingerlings	32.2
Lack of extension service trainings	31.3
Lack of access to structured markets	28.2
Lack of access to credit/ low income	27.7
Lack of equipment	24.3
Shortage of land	7.2
Fish diseases	4.3
Fish farming is labor intensive	3.3

Source: MwAPATA Aquaculture Survey 2021

## Results

Small-scale fish farmers in Malawi face a number of challenges, as shown in Table 1.

**Lack of access to high quality feed:** Commercial feed, also known as floating feed, provides balanced nutrition for cultured fish. However, just 7.4% of fish farms use floating feed. Commercial feed is often unavailable in local markets and is expensive, as it is imported from neighboring countries like Zambia. Farmers instead use homemade feed comprised of maize bran or plant matter. Though cheaper, home-formulated feed does not contain the necessary nutrients for fish, leading to low productivity.

**Theft and predators:** Over half (57.4%) of the farmers reported that fish productivity was low because of theft and animal predators that prey upon the fish before harvest. Such predators include otters, swans, and monitor lizards. Theft of fish is most common among fish farms that are located far from the farmer's homestead.

**Lack of markets for inputs and equipment:** Farmers often do not have access to markets to

purchase aquaculture inputs, such as fertilizers, commercial feed, fingerlings, thermometers, or oxygen meters. Some farmers borrow fishing nets from agricultural extension stations during harvesting. However, this is discouraged because fish diseases, such as Epizootic Ulcerative Syndrome (EUS), can be transmitted through shared nets.

**Poor environmental conditions and climate change:** Fish production requires adequate water for fish rearing, with the most common water sources being groundwater (74.9%) and river water (24.2%). However, 35.9% of farmers reported that they face environmental stressors such as drought (which causes fish ponds to dry up) or flooding. In some districts, such as Dowa, Ntchisi, and Nkhotakota, farmers had abandoned fish farming because their ponds had completely dried up.

**Poor quality of fingerlings:** Almost one-third (32.2%) of fish farmers reported that they lack access to high quality fingerlings. Rather than using new hybrid fingerlings, most farmers source their fingerlings from other farmers (54.0%), while 19.9% use recycled fingerlings, resulting in smaller fish.

**Lack of relevant aquaculture extension services:** Extension services play a crucial role by expanding farmers' access to information and improving their skills, thereby increasing the likelihood of technology adoption and raising farm productivity. A majority (72.8%) of farmers accessed extension services and trainings in the previous year. Nevertheless, 31.3% reported that the topics covered were not relevant for fish farming, with the available programs mostly focused on crop production.

**Lack of access to well-structured markets and market information:** Farmers have trouble accessing information on markets, consumers, and fish prices. Moreover, 28.2% reported that they lack markets for fish. This prompts farmers to sell their

fish right at the farm. Thus, most farmers sold their fish to customers at the farm-gate (65.6%) or in village or rural markets (40.7%), while it was less common to sell to traders that came to the village (20.9%) or through other market channels.

**Lack of credit and limited cash flow:** Credit is an important tool for improving farm productivity, particularly because it facilitates the adoption of modern technologies and the establishment or expansion of farming operations. However, just 6.2% of the fish farms had taken out a loan (primarily from commercial banks, microfinance institutions, or any government programs) in the past year.

**Lack of equipment for fish farming:** A majority of fish farmers do not own important pieces of equipment, such as hapas (cage-like structures made of mesh nets to hold fish), fish graders, or scoop nets. Instead, farmers mostly own simple assets such as buckets, indicating a low level of technology usage. Just under one quarter (24.3%) of farmers reported that equipment for fish farming is expensive, to the point where it is unaffordable.

**Shortage of land:** A shortage of land is yet another problem faced by fish farmers. Specifically, 7.2% of the farmers reported that the land they possess is not enough to expand fish production due to competition with crop production, and that access to land is further limited by land disputes. This was especially the case for community farms (farms owned and managed by a group of fish farmers).

**Fish diseases:** Fish diseases have a negative impact on fish farming in Malawi, and 4.3% of farmers were affected by EUS. This was reported mostly in Mchinji District, where a EUS outbreak was first reported in 2019.<sup>4</sup>

**Fish farming is labor intensive:** A shortage of labor was reported by 3.3% of the farmers. This challenge tended to be noted by farmers working on community farms where “free-riding” is a

problem. Farmers also noted that their low incomes make it difficult to pay for seasonal laborers, and survey results show that labor was hired on 29.3% of fish farms.

### **Opportunities and policy recommendations for small-scale aquaculture in Malawi**

Alongside these challenges, there are also opportunities for the development of small-scale aquaculture in Malawi:

**Feed production:** As noted, small-scale farmers do not have access to high quality and affordable commercial feed, with commercial feed most often imported from Zambia. There is therefore an opportunity to invest in domestic fish feed production to meet local demand and bring down the price. Further, there is a need to explore the use and cost effectiveness of insects, such as Black Soldier Fly (BSF) and mopane worm, as an alternative to traditional fish feed.

**Fingerling production:** As noted, most farmers use recycled fingerlings because new fingerlings are either unavailable or prohibitively expensive. There is an opportunity to invest in fingerling production both at large-scale, commercial facilities and at the farmers’ level. However, certification protocols for fingerling production have not yet been developed in Malawi. There is therefore a need to develop protocols and train certified hatchery operators to supply high quality fish seed within their localities.

**Access to formal fish markets:** Fish farmers lamented the lack of reliable fish markets. Where there is a good road network, farmers can coordinate plans to harvest their fish and sell in more lucrative markets as a group. Thus, there is need to organize fish farmers into groups/ organizations/ cooperatives and strengthen existing associations to facilitate fish marketing.

**Provision of loans and credit:** Fish farmers emphasized a lack of credit to support their fish

farming businesses. Nonetheless, some communities had vibrant village savings and loans groups (VSLs) from which the farmers borrowed money to boost their businesses. There is therefore an opportunity to invest in VSLs that can potentially foster the growth of small-scale aquaculture in Malawi.

**Cage farming:** Most fish farmers practice pond-based fish farming. However, Malawi has great potential for cage farming in existing water bodies such as lakes, large reservoirs (e.g., irrigation schemes and dams), and rivers. Cage farming can help Malawi meet domestic demand for fish and reduce imports.<sup>5</sup> Therefore, there is need to develop guidelines for cage aquaculture.

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1. Béné, C., Arthur, R., Norbury, H., & Allison, E.H., Beveridge, M., Bush, S., Campling, L., Leschen, W., & Little, D., & Squires, D., & Thilsted, S.H. (2016). Contribution of fisheries and aquaculture to food security and poverty reduction: Assessing the current evidence. *World Development*, 79, 177-196.
2. Limuwa, M. M., Singini, W., & Storebakken, T. (2018). Is fish farming an illusion for Lake Malawi Riparian communities under environmental changes? *Sustainability*, 10(5), 1453.
3. Government of Malawi. (2021). Annual Economic Report. Budget document No. 2, Ministry of Economic Planning & Development and Public Sector Reforms.
4. Munthali, M. (2021). The Epizootic Ulcerative Syndrome outbreak in fish is a threat to Malawi's economy. MwAPATA Policy Perspective No. 4, Lilongwe.
5. Munthali, M., Nyondo, C., Muyanga, M., Chaweza, R., Chiwaula, L., Mwalwanda, T., & Zhuwao, F. (2021). Food Imports in Malawi: Trends, Drivers, and Policy Implications. MwAPATA Working Paper No. 06, Lilongwe.



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