

Transforming Fish-farming for Poverty Reduction in Tanzania: A Situation Analysis and Recommendations on the Way Forward

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EXECUTIVE SUMMARY

ESRF conducted a study to examine the pond fish-farming industry in Tanzania as governed by the Fisheries Act No. 22 of 2003 with the associated regulations and the National Fisheries Sector Policy of 1997. The policy and its strategy statements aim at transforming the fisheries sub-sector into sustainable commercial and competitive fishing. The objective of the study was to generate baseline information required for monitoring and evaluation of the transformation of the pond fish-farming and inform policy decisions makers. The results of the survey suggest that pond-fish farming could not be transformed due to a number of issues, including: limited government support as observed in the poor state of the transport infrastructure, insufficient extension services, inadequate fisheries knowledge and use of old technology, low farm-gate prices, lack of proper fish fingerings and fish feed, as well as limited access to financial services. Furthermore, the findings revealed that people perceive fish farming as easy and not requiring much preparations, fish farming is a male-dominated activity, ponds are constructed along water streams without considering the country's environmental preservation rules and regulations, and stakeholders lack strong associations or a board to link them up with the government and other organisations.

To address these challenges it is recommended that the government should increase its commitment to the industry by developing the required infrastructure, training more aquaculture officers and distributing them to all wards with pond fisheries potential, as well as providing incentives such as subsidized quality aquaculture inputs and credit facilities. The government should also enforce the set legal frameworks and institutional reforms that will encourage investments in small-, medium- and large-scale commercial aquaculture while addressing issues of gender to make sure that all disadvantaged groups are included. Local government authorities should establish shamba darasa (demonstration sites) at ward or village level for people interested in pond-fish farming to learn from. The formation of associations of aquaculture stakeholders will make it easier for members to be trained and access finance, information, and new technology, as well as agree on reasonable farm-gate prices.

Background to the problem

Tanzania's fisheries sub-sector possesses an indisputable potential of contributing substantially to the achievement of Sustainable Development Goals. The country has the greatest pond-fish farming potential in Africa, posing a significant avenue for poverty reduction through employment creation, generate foreign currency, contribute to good nutrition, attract tourism and financially empower farmers, processors and traders along the fish value chain. The aim of the government, as stipulated in the National Fisheries Sector Policy and Strategy Statements of 1997 as well as in the Fisheries Act

No. 22 of 2003 and the Fisheries Regulations of 2009, is to transform the fisheries sub-sector into modern, commercial and sustainable fishing, one that caters for fish demand in both domestic and foreign markets by 2025. To accelerate the implementation of the policy, the government had to put in place the National Aquaculture Development Strategy (NADS) in 2009 and the Fisheries Sector Development Programme (FSDP) in 2010. Additionally, the government established the Fisheries Education and Training Agency (FETA) in 2011 to offer diploma courses in aquaculture. It also introduced degree programmes in aquaculture at the

University of Dar es Salaam and Sokoine University of Agriculture to assure availability of appropriate knowledge and skills.

Despite all these initiatives, the aquaculture industry still remains at an infancy stage. Pond fish farming that

dominates the fresh water fish culture system in Tanzania remains at subsistence level, with men being the main actors; generally, with 3 fingerings per square meter stocking density and the average area of fish pond of 300m² (i.e., 15m x 20m). Subsequently, the fisheries industry contributes by only 1.4% to the GDP while aquaculture accounts for only 1% of total fisheries production.

The aforementioned status implies that the government is unlikely to attain its aim of transforming the fisheries sub-sector by 2025. Poor performance of the fisheries industry amid the ameliorated policy, legal and institutional frameworks still raises questions as to whether the actors along the value chain are well integrated or the environment is good enough to trigger the desired transformation. With that concern, ESRF conducted a study in 2013 to analyse the policy framework and examine the opportunities and constraints existing along the pond-fish farming value chain. The study used Kagera, Kilimanjaro Mbeya, Morogoro, Njombe and Ruvuma, as case studies. The aim was to generate a knowledge base that would be useful in guiding the focus of interventions for enhancing transformation of aquaculture to a commercial level.

Reasons for Current Status of Pond Fish Farming in Tanzania

The survey was conducted in 6 regions and involved 293 stakeholders along the pond-fish value chain, i.e., input and services suppliers, farmers/producers, processors and traders. The findings from the survey suggest that the current poor status of pond-fish farming is caused by different factors that can be categorized as follows:

Majority of actors are male of productive age but most of them have attained primary education:

All 293 randomly selected pond fish farming actors conducted small-scale extensive and semi-intensive pond-fish farming. While 82% of all farmers were males, 96% of the small-scale farmers were at a productive age (between 18 and 50 years) and 70% of them had attained primary education. Much of the pond fish farming was done in freshwater and the average size of the ponds was 300m². Since much of information on pond fish farming is written in English it was not easy for farmers with primary school education to read and understand.

Before starting fish farming business, over 90% of the interviewed farmers thought that the activity was simple and easy and, therefore, did not seek assistance from fisheries officers nor attend any training. Consequently, their businesses failed

Lack of Proper Knowledge and Technology:

Small fish ponds were often integrated with other agricultural activities like gardening and animal and poultry production on small pieces of land. The location of most of the ponds was contrary to the National Environment Management Council (NEMC)'s directives of keeping any farming activity 60 meters away from water sources. The ponds were dug by farmers without any technical advice and most of them were strategically located very close to the natural water sources to allow a smooth flow of water in and out of the ponds. Typically, they were located in the valleys where the roads were either very poor or absent because the principal location criterion was access to water. The study found that 77% of the farmers raised mixed-sex fish that had very high reproduction rate and, hence, created high competition for space, air and food. Majority of the farmers did not know about mono-sex fish farming currently being practiced in many places of the world.

Notably, 75% of the farmers had never received any training in aquaculture, while most of the trained farmers underwent only general training in the same. Only 6% received short-term training on fish processing and 12% received entrepreneurship courses. Around 80% of the farmers did not get any advice from trained extension service officers. Meanwhile, 37% of the farmers were not changing water in the ponds while only 19% harvested fish at the recommended age of six months. A whole 63% of the farmers were harvesting under-weight or unknown weight fish, and 82% did not have access to energy to pump water and store fish.

Incomplete Value Chain:

There were no people or firms that specifically processed fish from ponds because the amount of fish produced from ponds was so small and was sold to consumers from surrounding communities. Also, there were no suppliers of inputs required in pond fish farming; as a result, farmers used any alternatives available to them. For example, animal feed processors and traders were unaware of fish feed processing technology. As a result, farmers fed the fish with food leftovers, cereal bran, vegetables and wild grass. There also were no potential suppliers of fingerlings or fish gears meant for pond fish farming. It was further observed that 60% of the farmers obtained fingerlings from fellow farmers, 24% from government institutions, and 12% from lakes and rivers.

Limited Capital and Support from the Government:

Lack of capital made farmers construct ponds of very small storage capacity and low quality as well as fail to install water pumps for filling and draining ponds. Farmers also failed to buy freezers, cold trucks or build cold rooms to preserve harvested fish due to limited capital. Very few farmers wanted to process fish feeds but could not do so because of their limited capital. On the other side, stakeholders in the pond fisheries industry did not

see enough commitment by the government in promoting the economic activity. Almost all interviewed stakeholders indicated that government support to the activity was very low. Statistics show that between 1980 and 1990, the period when each village had a fisheries officer and the government had demonstration fish ponds, there was increase in production of fish; but this did not last long because the government could not sustain the budget to support the officers. Currently, there is only one aquaculture officer in each region who works with the fisheries officers in the districts. The demonstration ponds that had been established in 1990s as *shamba darasa* no longer exist. Aquaculture and fisheries officers did not have transport facilities to make them visit and advise farmers in rural areas. Farmers who wanted services from these officers had to facilitate them with transport costs. This constrained the dissemination of knowledge and technology on pond-fish farming. Farmers who tried to import fish feeds had to go through cumbersome procedures and paid high taxes like importers of other commodities. Stakeholders are expecting the government to provide them with interest subsidized credit as well as subsidized inputs, such as fish feeds and gears.

Poor or lack of transport infrastructure to valleys where much of pond-fish farming is done made farmers sell fish to customers in nearby areas and at very low prices. Also, lack of electricity hampered them to pump water and store or process harvested fish.

Policy recommendations

The study observes that the following need to be done to trigger off transformation in the pond-fish farming industry in Tanzania:

1. Special programs should be put in place to build capacities of people who are interested in undertaking businesses along the pond-fish farming value chain. Since most of the stakeholders have only primary school education, it would be important to introduce basic education on fish

primary and secondary education curriculum.

2. Commitment of the government to the industry needs to be increased in terms of:

- Developing and maintaining the required infrastructure, i.e., roads, water and energy.
- Training of more aquaculture officers and distributing them to all wards with pond fisheries potential.
- Providing incentives such as subsidized quality aquaculture inputs and credit facilities.
- Enforcing the set legal frameworks and institutional reforms that will encourage investments in small-, medium- and large-scale commercial aquaculture while addressing issues of gender to make sure that all disadvantaged groups are included.
- Local government authorities should establish *shamba darasa* at ward or village level as reference centers for people interested in pond fish farming to consistently draw lessons from.
- A robust information and communication plan to facilitate knowledge and technology dissemination to farmers should be developed. However, this should be implemented in Kiswahili for a wider access among the stakeholders.

3. Encourage the private sector to invest in the industry and, especially, in the missing points of the value chain (i.e., supply of inputs and processing of fish-pond products).

4. Increase appropriate low-investment technology uptake.

This necessitates an increase of fish-farmers' access to appropriate low-investment technologies that have been developed by the national research and development institutions (R&Ds). Available researches and technologies at the fisheries research institutions and universities need to be disseminated to farmers to bridge the gap between research and development.

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