

Policy Advisory Note on Aquaculture Development in Zambia

The prospects for commercial small scale aquaculture in Zambia

Zambia does not currently produce enough fish to meet national demand. The Department of Fisheries estimates that total production from capture fisheries and aquaculture combined leaves a shortfall of over 50,000 tonnes per year¹. This offers opportunities for increased supply from local, small scale commercial fish farmers. There are currently more than 6000 small scale fish farmers with over 13,000 fish ponds covering 342 ha throughout the country, predominantly in Eastern, North-Western, Northern and Luapula provinces. They farm a variety of species including the tilapia species *Oreochromis niloticus*, *O. andersoni*, *O. macrochir* and *Tilapia rendalli*. Typically smallholder producers in Zambia harvest only around 1000kg of fish per hectare, per year. For comparison, “best practice” pond aquaculture in Asia can produce ten to twenty times that amount of fish from the same area. Increasing productivity is therefore a priority if small scale producers are to benefit from the current fish deficit.

The importance of access to quality fingerlings

One of the most significant factors in raising productivity is the quality of the fingerlings (fish seed) that are used for growing out. In small scale systems, fingerlings are usually produced in the same ponds as food fish. This is far from optimal. These fingerlings have usually failed to grow properly, or are offspring from tilapia that matured early. In either case, the genetic growth potential of the fish population will deteriorate over time. The unfortunate farmers who use these fingerlings are in effect selecting for the wrong traits, either early maturity and/or slow growth. This can be compared with using recycled hybrid maize seed – however good the husbandry practices are, productivity is limited. Access to high quality fingerlings is crucial.

Results of a recent consultancy study² show that small scale farmers who a) stock with high quality fingerlings purchased from specialised producers; b) adopt clean harvest practices (harvesting the entire twice a year) and c) use formulated feeds earn on average 8-10 times the profit of those who do not. Distribution of high quality fingerlings will therefore contribute towards increased food security and economic development among: 1) subsistence farmers who will be encouraged to commercialise their fish farming activities; 2) existing small, medium and large scale commercially oriented producers who are currently unable to purchase quality fingerlings from specialised producers; 3) people involved in post harvesting activities i.e. processing, transport, marketing etc; and further upstream 4) farmers who produce feed ingredients e.g. soy, maize, peas, etc.

Towards a viable fingerling distribution model

Despite the long distances between fingerling producers and fish farmers in many parts of Zambia, transport itself is not a significant problem given sufficient volumes. The proposed fingerling distribution model is based on transporting 100,000 fingerlings with a size of 0.5-0.75g per piece by a 1-ton pickup from a private sector fingerling producer either directly to a fingerling holding station in the targeted areas, or to Lusaka bus station for further transport in smaller batches by bus. The crucial element for the model to work is fingerling holding stations, at which the fingerlings are held and sold on to fish farmers in the surrounding area. This would allow sufficient volumes to be transported at economic rates. To achieve maximum impact, extension

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¹ Choolwe G. Mudenda, 2006 “Economic Perspectives of Aquaculture Development Strategy of Zambia” consultant report, Development Consultant, Lusaka Zambia, TCP/ZAM3006 for MACO/FAO

² Lars Windmar, 2007 “Market, policy, infrastructural and institutional support requirements for the successful introduction of a pro-poor fingerling distribution model in Zambia” and “Generic template for a fingerling distribution model that would facilitate pro-poor Aquaculture in Zambia”, consultant reports, World Fish Centre, Zomba, Malawi

and advisory services would need to be delivered alongside the fingerlings, as well as credit to allow small scale producers to pay for fingerlings and other inputs in the short term.

Investing in fingerling holding stations: public-private partnerships

Setting up and running fingerling holding stations on a greenfield basis is only currently economically viable in areas where there is already significant demand for fingerlings. At present, only Lake Kariba offers the necessary concentration of fish farmers. In areas where aquaculture has mainly been promoted as a non-commercial activity, the returns would be insufficient to attract private investment. However, this would change within a few years if small scale aquaculture expanded on the basis of improved input supply. This is a classic chicken and egg situation – the investment in holding stations is required to allow aquaculture to take off, but until it takes off, returns are not sufficient to attract the necessary investment.

A form of public-private partnership is therefore needed to reduce the risk to investors. The most promising way forward appears to be for the Department of Fisheries to lease existing public infrastructure (ponds etc.) to private operators who would then manage the holding stations. This would reduce the cost of setting up the holding stations. Partnerships with donor projects in specific provinces may also be required to allow cost-sharing.

Recommendation 1: Initiate a pilot project implementing the distribution model on a public-private partnership basis in selected provinces where the long term potential for commercial aquaculture is medium to high. The objective will be to facilitate a sufficient increase in aquaculture production in the area to ensure that further development of the sector takes place without external support.

An enabling environment for aquaculture development

For the fingerling distribution model to have maximum impact, and to promote aquaculture more generally, the Government must create an enabling environment, in which private sector investment in commercially-oriented small scale and large scale aquaculture is viable and attractive. This is a matter of urgency as strong competition from efficient production in Asia could otherwise capture the potential market in the near future.

Recommendation 2: Create an enabling environment for the private sector development of aquaculture. In particular:

- Identify high potential zones for commercial pond and cage aquaculture development. High potential zones should be selected with respect to: 1) biophysical conditions; 2) available infrastructure; and 3) conflicting activities e.g. nature conservation, capture fisheries, tourism, industrial development, etc.
- Address species and zoning issues. The Environmental Council of Zambia currently allows farming of exotic species in some districts, although it is reported to be time consuming and expensive to obtain a production licence for a specific site. As a result, commercial aquaculture is dominated by large, capital-intensive and labour-extensive operators.
- Facilitate capacity building within Government so that the Department of Fisheries can coordinate the development of both subsistence and commercial aquaculture with respect to a broad range of critical success criteria including financial viability and social, economic and environmental sustainability.
- Include Aquaculture as a priority sector in the Zambia Development Agency, ZDA Act and consider the establishment of an Aquaculture Multi Facility Economic Zone at Lake Kariba.