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Aquaculture technical, vocational, and entrepreneurship training for improved private sector and smallholder skills project in Zambia



RESEARCH PROGRAM ON Fish



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List of abbreviations

7NDP	Zambia 7th National Development Plan
NRDC	Natural Resources and Development College
Norad	Norwegian Agency for Development Cooperation
SDG	Sustainable Development Goals
TEVET	Technical Education, Vocational and Entrepreneurship Training
TVET	Technical Vocational and Entrepreneurship Training
UNESCO	United Nations Educational, Scientific and Cultural Organization

Justification

Youth unemployment: Zambia currently has a high rate of youth unemployment. There are also noticeable disparities between men and women in the labor force, especially a lack of women formally working in the fisheries sector who have received fisheries skills training (CSO 2015).

Challenges faced by the TEVET system: The current technical education, vocational and entrepreneurship training (TEVET) system in Zambia faces challenges, including developing skills that are relevant to the private sector (UNESCO 2016; UNESCO-UNEVOC 2010; Mwanza 2008).

Poor linkages between smallholders and the private sector: There are poor linkages between smallholder fish farmers and the private sector (Krishnan and Peterburs 2017), which create challenges for organizing smallholders to improve input supply, TEVET, aggregation and sale of their outputs, and for their greater participation in other aquaculture value chain activities.

Decreasing smallholder production and productivity: There has been a noticeable decline in

the production and productivity of smallholder fish farmers in recent years (Kaminski et al. 2017; Genschick et al. 2017), and smallholder fish farmers are being increasingly excluded from the value chain (Kruijssen et al. 2018).

It is within this broad background that [WorldFish](#) and partners ([BluePlanet](#), [Natural Resources Development College](#) and [Musika](#)) designed a project proposal, funded by the Norwegian Agency for Development Cooperation ([Norad](#)). The project is being implemented in the provinces of Lusaka, Northern and Luapula over a 3.5-year period from mid-2018 to the end of 2021. The project comprises two components:

1. Upgrading the fisheries science curriculum (long- and short-term courses) and training tools at the Natural Resources and Development College (NRDC) and developing an online training platform and internship program at the NRDC but with links to other TEVET institutions to scale the upgraded training “package” over the course of the project.
2. Enhancing the technical education, vocational and entrepreneurship skills of rural women, men and youth smallholder commercial fish farmers and



Smallholder fish farming system in Mbala District, Northern Province, Zambia.

increasing their linkages to input/output markets and entrepreneurship opportunities via private sector extension support and services delivery.

The aquaculture value chain development goal of this project is to increase the number of human resources working for the private sector and the number of smallholder commercial fish farmers with enhanced aquaculture knowledge and up-to-date practical skills to help sustainably grow the sector and make it more inclusive. Its objective is to develop the aquaculture knowledge and practical skills of students and smallholder commercial fish farmers (especially women and female youths) participating in TEVET to enable them to find gainful employment in the private sector.

The project aims to help the Government of the Republic of Zambia and global stakeholders to meet a number of broader development goals and outcomes. One of the main goals of the Zambia 7th National Development Plan (7NDP) is to diversify the economy and create jobs (GRZ 2017). A major factor inhibiting the diversification of the economy and job creation in Zambia is inadequate skills and innovation. The government aims to help improve the skills of the workforce by promoting training programs and investments in technical education, vocational and

entrepreneurial skills that promote self-employment, particularly among youths, and “strengthen the interface between job seekers and the market” (GRZ 2017). Another strategy to create jobs is to promote small-scale agriculture through developing farmers organizations and rural infrastructure. The 7NDP will promote gender equality and women’s empowerment by enhancing capacities to mainstream gender and engender policies, plans, programs, projects, activities and budgets via implementation of the [National Gender Policy](#). The project also supports the United Nations Educational, Scientific and Cultural Organization (UNESCO) strategy for technical and vocational education and training (TVET) (2016–2021), which aims to enhance the relevance of TVET systems of member states and “equip all youth and adults with the skills required for employment, decent work, entrepreneurship and lifelong learning” (UNESCO 2016). Implementation of the key project activities will enable the project to contribute to helping achieve various [Sustainable Development Goals \(SDGs\)](#), most notably SDG1 (No Poverty), SDG4 (Quality Education), SDG5 (Gender Equality), SDG8 (Decent Work and Economic Growth) and SDG10 (Reduced Inequalities).



Photo credit: Chona Mwaemba/WFP/IFH

Smallholder fish farmer, Luwingu District, Northern Province, Zambia.

Key activities for the aquaculture technical, vocational and entrepreneurship training for improved privator sector and smallholder skills project

Below is a summary of the key activities that are being implemented for the project. Activities 1–4 fall under Component 1 of the project, while Activity 5 falls under Component 2.

Component 1 Activities

Activity 1: Training students from the NRDC, using the upgraded curriculum, tools and online training platform

The aim of this activity is to upgrade the fisheries science curriculum (for long- and short-term courses), training tools and online training platform at the NRDC.

Sub Activity 1.1: Carry out research to identify content, best technologies, practices and approaches to include in the curriculum, training toolkit and online training platform, including assessments with companies from the private sector to understand their technical and practical skills needs to further develop the aquaculture industry.

Sub Activity 1.2: Design and pilot the upgraded curriculum, training tools and online training platform. In the first year of implementation, the project will carry out an endorsement process with the University of Zambia, after which it will begin a training of trainers procedure that will potentially run throughout the project. This will ensure that NRDC faculty implement the upgraded package commendably.

Activity 1 outputs: Upgraded curriculum (long- and short-term courses), training tools (e.g. a toolkit comprising various manuals, references to fisheries/aquaculture resources), online training platform and a training of trainers manual to implement the upgraded package.

Activity 1 outcome: Enhanced knowledge base of students trained at the NRDC.

Activity 2: Students from the NRDC gain practical skills through internships specifically tailored to address the needs of the private sector

The aim of this activity is to develop and operationalize a novel internship program that links students (especially women and female youths) to private companies operating throughout the aquaculture value chain to acquire necessary practical skills. This will help them find gainful employment after completing their training.

Sub Activity 2.1: Carry out needs assessments of private companies to inform the focus of the internship each student will undertake. The assessments will be an important input when the internships are designed with faculty, students and private companies.

Sub Activity 2.2: Pilot the internship program with private companies for students to gain up-to-date, industry-relevant practical skills and to build relationships between students and future employers.

Sub Activity 2.3: Develop a low-cost and appropriate aquaculture field training center at the NRDC, where students can hone their aquaculture practical skills.

Activity 2 outputs: Outputs for this activity will include (1) an internship program document and assessment report to inform the design of tailored internships that are both gender- and youth-responsive and fit the needs of the private sector, and (2) an aquaculture field training center design and costing as well as a plan for construction and sustained private sector investments.

Activity 2 outcome: Enhanced practical skills of students gained from internships specifically tailored to address the needs of the individual private company.

Activity 3: Students from the NRDC find gainful employment with companies operating in the aquaculture value chain or set up their own aquaculture-related businesses, and prospective students are encouraged to apply to the fisheries science department at the NRDC

The objectives of Activity 3 are to (1) increase opportunities for students (especially women and female youths) either to find gainful employment with private companies operating in the aquaculture value chain or to set up their own aquaculture-related businesses, and (2) increase the number of students (especially women and female youths) applying to the fisheries science department at the NRDC.

Sub Activity 3.1: Set up an extensive review system to enable private companies to provide feedback about how each student (intern) performed during his/her internship and to further develop relationships between students and private companies that will hopefully translate into future employment opportunities.

Sub Activity 3.2: Develop business plans with students and link students to financial institutions. This will be a compulsory part of the training process, as it is expected that some students will opt to open their own aquaculture-related business after completing their training.

Sub Activity 3.3: Market the upgraded curriculum. This will include developing a marketing strategy for the upgraded package at the NRDC that specifically considers the needs and aspirations of women and female youths and the barriers they face. It is, however, expected that by adopting this strategy the institution will attract a greater number of students overall during the course of the project. Also, offering short courses tailored to meet the needs of small and medium enterprises will likely result in an increased number of students signing up for such courses.

Activity 3 outputs: Outputs for this activity will include (1) an internship review system and forms, (2) assessments of the needs and aspirations of women and female youths and the barriers they face, (3) gender- and youth-responsive marketing

tools developed over the course of the project to attract more students, and (4) a plan to link financial institutions with students who wish to set up their own aquaculture-related businesses (including developing business plans).

Activity 3 outcome: Contracts signed with private companies, or new businesses opened along the aquaculture value chain after students complete their studies, along with an increase in the number of students applying to the NRDC.

Activity 4: Scaling the upgraded fisheries/aquaculture package for adoption/modification by other TEVET institutes in Zambia

Linking up with other TEVET institutions to scale the upgraded package will be a core focus of the project starting in Year 2.

Sub Activity 4.1: Engage other TEVET institutions, such as the Kasaka Fisheries Training Institute and Mansa Trades, in a dialogue to determine the feasibility of adopting/modifying the upgraded package.

Sub Activity 4.2: Develop plans to scale the upgraded package to other TEVET institutions and possibly integrate into projects wishing to achieve similar objectives.

Activity 4 output: A plan to scale the upgraded fisheries/aquaculture package to other TEVET institutions in Zambia.

Activity 4 outcome: TEVET institutes in Zambia adopt/modify the curriculum, training tools, online training platform and internship program for integration within their institutions.

Component 2 Activities

Activity 5: Private sector linkages with and TEVET provided to smallholder commercial fish farmers

The key objective of Activity 5 is to develop the capacities of commercial actors along the aquaculture value chain to deliver sustainable and profitable pro-poor, gender- and youth-responsive market services to the smallholder sector, including the provision of inputs and technologies, output marketing opportunities and extension, vocational training and technology transfer.

This is being implemented in the aquaculture high potential zones of Northern and Luapula provinces, where the [Zambia Aquaculture Enterprise Development project](#) will develop one of its aquaparks and where other donor-funded aquaculture development projects will take place starting in 2019.

Sub Activity 5.1: Assess market actors: The project will work with partners to identify and meet key commercial players along the aquaculture supply chain already active within the two target provinces and those who have the potential to invest in the region to enter the aquaculture market. The project will assess actors in the aquaculture value chain in terms of their current or potential “value” to the market. In particular, it will review their willingness and ability to make sustained and commercially oriented investments in developing the smallholder aquaculture market and determine those who are willing to integrate a gender- and youth-focused lens into their business models. From this assessment, a portfolio of “clients” will be developed, including

- seed and feed suppliers;
- suppliers of equipment and other technologies relevant to the lower end of the market;
- formal fish buyers and processors;
- small rural “intermediary” businesses that do or could act as “last mile” distributors of inputs and training/extension services and/or “first mile” aggregators of outputs;
- auxiliary service providers, such as financial institutions and transporters.

Sub Activity 5.2: Conduct commercially oriented, gender- and youth-responsive market research:

One of the key constraints to private investment in the aquaculture market is the lack of understanding of the smallholder landscape, especially women and youth smallholders. Therefore, the project will support

the private sector to carry out the necessary market research to identify and select commercially oriented fish farmers and eventually organize them for easier training and skills development, input supply and linkages with output markets.

Sub Activity 5.3: Provide early stage investment support: The project will devote funds to bring down some of the initial costs and risks of investment in the “greenfield” market through demand-driven catalytic grant support to corporate clients. This will occur, for example, in terms of logistics and basic infrastructure, such as decentralized distribution, aggregation and storage facilities. The emphasis will be on supporting the elements of the business that directly involve engagement of the smallholder aquaculture market, particularly women and female youths who are interested in playing a significant role in and benefiting from the market.

Sub Activity 5.4: Increase the capacity of private actors to deliver outreach, farmer training and extension services: The project will support private companies to pursue aggressive outreach strategies that involve going out to the market (rather than waiting for the market to come to the companies) with gender- and youth-responsive products, marketing opportunities and market services. Critically, this will also include embedded extension, training and capacity building services.

Sub Activity 5.5: Demonstrate and test technologies: The project will support the private sector to demonstrate and test productivity enhancing and, where appropriate, labor-saving technologies and best management practices as part of their farmer engagement strategy, especially as a means of including more women and female youths, who carry the extra burden of performing unpaid/domestic tasks in addition to agricultural duties. Equally, relevant approaches will be used to improve the efficiency of the supply chain, such as strategies (but also technologies) for the distribution of fingerlings and commercial feeds and cold chain innovations.

Sub Activity 5.6: Strengthen capacity development of value chain intermediaries: The project will integrate small gender- and youth-inclusive businesses (agro dealers, processors, traders, service providers, etc.) within the aquaculture value chain into the capacity development process.

In addition, students at the NRDC will have the opportunity to intern with some of the private sector partners identified when carrying out this activity. This will develop their technical and vocational skills on how to provide extension support to smallholder fish farmers to ensure the private sector can continue to provide such services after the life of the project.

Activity 5 outputs: Outputs for this activity will include (1) private sector landscaping and capacity needs assessments and development plans, (2) a

smallholder fish farmer population census (in each target district) and a cluster farmer identification and selection plan, (3) a fish farming systems analysis, (4) a smallholder project component with a detailed implementation plan, and (5) smallholder training tools (e.g. private sector, lead farmer and smallholder best management practices manuals).

Activity 5 outcome: Enhanced organization of farmers trained on TEVET, and services provided by the private sector.



Smallholder fish farmers in Luwingu, Northern Province, Zambia.

Project theory of change

An illustration of the project theory of change and impact pathways is presented in Figure 1 below.



Figure 1. Theory of change and impact pathways for the Aquaculture Technical, Vocational, and Entrepreneurship Training for Improved Private Sector and Smallholder Skills project.

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