Progress Report 3 2021 submitted by WorldFish

Project: Piloting inclusive business and entrepreneurial models for smallholder fish farmers and poor value chain actors in Zambia and Malawi

Project coordinator: Netsayi Mudege

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Countries: Zambia, Malawi

R4D Phase

Reporting period: 01/01/2021 to 31/12/2021

Contract duration: 10/05/2019 to 09/05/2022

State of Project Implementation

Briefly describe, with reference to the Logical Framework Matrix, the state of activities (indicating "completed", "ongoing" or "suspended") as well as the achievement of the indicators for the outputs and purpose (as far as already possible). (4000 characters)

Output 1: We aim to establish 70 IBEMs (40 in Zambia and 30 in Malawi) to provide seed and feed to 3000 farmers (30% women and youth) by 2021. We target 50% women and young people as IBEMs/ Aquapreneurs). Only 7% of IBEMS in Zambia are women compared to 37% in Malawi. To cater for the gender gap, in 2021 all IBEMS in Zambia and Malawi and their spouses were trained on business management and entrepreneurship.

Malawi added three hatchery operators IBEMS, due to the demand by farmers and the Department of Fisheries to promote the availability of fingerlings in underserved areas. Malawi also identified 12 feed operators and trained them. Zambia added one feed operator due to feed demand in one of the districts. Feed Operators in Malawi and Zambia received start-up commercial feed at 70% subsidy. A total of 29,950kgs of commercial feed, worth ZMW 450,533 was distributed in Zambia in two batches, and 17,400kgs worth MWK 14,912,400 in Malawi. A total of 13,450kgs and 8,980.5kgs were sold in Zambia and Malawi earning the feed IBEM a revenue of Euros 21771.12 within six months after distribution. Overall the project now has 68 IBEMS, two of which are operating as both feed and seed operators. In Zambia, HO produced 805,177 fingerlings and in Malawi 80,776 fingerlings. In Malawi, the project hosted a meeting to improve stakeholders' understanding of the project's objectives and purpose, validate the fish seed and feed business models, and develop an initial outline of the innovation platform. 37 participants (15 being women) from government, private sector, and smallholder farmers attended the meeting (see annex 2).

Output 2: We hosted two innovation platform meetings in Zambia, one each for seed and feed (see annex 3). In Malawi, we hosted one innovation platform meeting (see annex 4). All IBEMS are members of the innovation platform. During the Innovation platform meetings, IBEMS discussed the challenges they faced, for example, in feed procurement, production of sex-

reversed fingerlings and discussed potential solutions to the challenges. Feed IBEMS in Malawi and Zambia have initiated discussions with feed private sector companies.

Output 3: The project adapted training materials for use by smallholder farmers. In Zambia, there was a request from IBEMS for an English manual. The English manual was finalized (please see attached document). The English and Chichewa training manuals for Malawi were tested and validated with IBEMS during a ToT. The project awaits the materials to be approved by the government of Malawi through the department of fisheries before publishing online (see annex 5 and 6).

An on-farm mentorship and coaching trajectory was initiated for IBEMS. Four business mentorship visits and two business mentorship and training visits were completed in Zambia and Malawi, respectively. IBEMS were mentored and coached to develop and implement gender-responsive business plans. The business mentorship sessions covered i) business planning ii) record keeping; (iii) basic financial accounting and financial management; (iv) marketing and advertisement; (v) feed handling and storage; (vi) fish feeding regimes; (vii) re-investing capital gains for sustainability; and (viii) offering extension services to farmers. In addition to business planning and entrepreneurship training, Hatchery operators were mentored on best hatchery management practices, fingerlings handling, and grow-out fish production.

Output 4: We implemented the M&E Plan and captured data on production, sales and training. We implemented the baseline survey in Malawi and collected data (see annex 7).

Deviations from the work-plan: COVID-19 related mobility restrictions led to the suspension of fieldwork in Zambia & Malawi. This delayed hosting of demonstration ponds in Zambia and Malawi and some training. We have initiated negotiations for a no-cost extension to finalize activities that were delayed following the outbreak of COVID-19

General Achievements and Problems encountered

Highlight important achievements, methodological breakthroughs, experiences and major limitations of project implementation, unexpected side effects of project activities (refer to assumptions); report on the use of results by other scientists and/or projects and report on feedback from users regarding interim results and implications for NARS.

MAXIMUM 3.000 characters

The project's important achievements are 1) Developing, translating, and testing the English and Chichewa Better Management Practices manuals in Malawi, 2) Use of BMP materials for training by IBEMS who were able to reach 586 farmers in Malawi 3) Hosting the stakeholder meeting in Malawi to validate the IBEMs models and create buy-in from the private sector, NGOs and government., 4) AllerAqua, a private sector player, through linkages with the project trained an additional 250 farmers on fish feeding practices and feeding tables (see materials), 5) increased participation of women in the project from 14% at baseline to 28% in Zambia 6) Recruitment of broodstock in Malawi and sampling of broodstock to test TiLV and EUS before distributing the broodstock to farmers, 7) Recruitment of the Malawi Research Assistant and intern to speed-up project implementation in Malawi, 8) Developing the innovation platform strategy (See annex 8) and successfully innovation platform meetings in Zambia and Malawi (see reports), 9) Thirty IBEMS in Malawi (11 women and 19 men) and 31 (26 males and 5 females) in Zambia were

coached and mentored on business management and entrepreneurship and developed and implemented their business plans, 10) Malawi distributed 1626 brooders (1014 female brooders and 612 male brooders). 11) In Zambia, Feed IBEMS have paid EUR 6933 (30%) down payment for feed (see annex 9) In Malawi, 6 feed IBEMS have contributed EUR 1469 (30%) towards the cost of feed. In Zambia, 7 IBEMS sold all their feed, and 5 have started purchasing their own feed. In Zambia, 13,450 kgs of feed was sold by the 10 feed operators while in Malawi 8,980 kgs were sold at prevailing market prices. Through the innovation platform, 9 IBEMS in Zambia have come together to purchase feed-in in bulk from suppliers to reduce costs. 12) Zambia's Seed IBEMS produced 547,832 in 2021 a substantial increase from 75,000 in 2021. In Malawi IBEMS have produced 80,776 fingerlings.

Problems encountered and lessons: The cooperative model has worked well for seed production but not for feed. We will explore the reasons for this in 2022. We had problems sourcing feed in Malawi, thus the project is exploring direct feed imports by the IBEMS. We experienced challenges recruiting broodstock from the wild including 1) high losses to theft as brooders were being conditioned in hapas at lake Chiuta and 2) high mortality rate at the station due to the limited time the fish was conditioned at the lake. IBEMS experienced mortalities due to poor fish handling during the winter season. We mentored and coached IBEMS on-farm to reduce the number of mortalities experienced to normal levels. An aquaculture scientist travelled from Zambia to mentor and coach the research assistant in Malawi on appropriate procedures.

Feedback from users: The participants were excited to have a platform to exchange knowledge and information

Progress Towards Outcomes (and Goal)

Highlight how the project achievements to this date show progress towards development outcomes. State your main arguments (i.e. quantitative or qualitative data and corresponding means of verification).

MAXIMUM 3.000 characters

Progress: Outcome 1: IBEMS and smallholders have adopted the following technologies: use of fingerlings conditioning ponds before transportation to smallholder farmers, knowledge of fish spawning including identification of male and female fish; collection and counting of fry from the parent fish, use of commercial feed and proper feeding practices, use and management of hapa-based fingerling production system, well-constructed fish ponds with inlet and outlet ponds. Six (6) hatchery operators have adopted the production of sex-reversed fingerlings. There were complaints that some hatchery operators were delivering fewer fingerlings than customers ordered in Zambia. The problem turned out to be caused by inexperience by hatchery operators in counting fry fingerlings correctly. Additionally, some hatchery operators reported problems with the sex-reversal of their fingerlings. The mentorship and coaching team discovered that some Hatchery Operators were not correctly using the sex reversal feed. These issues were addressed during mentorship and coaching visits and the innovation platform meetings. Outcome 2: Aller Aqua has trained IBEMS on feed tables and also packed some feed in smaller KGs such as 5kgs to facilitate access to feed by smaller farmers. Outcome 3: There is evidence of increased productivity and profitability among smallholder farmers who have adopted better management practices in aquaculture Zambia. Fingerling sales have increased from 75,000 in 2020 to 547,832 In less than a year, Feed IBEMS in Zambia have already recouped the initial investment and

made profits, the feed was retailed at prevailing market prices. Between mid-October 2020 and the end of December 2021, Hatchery Operators in Zambia have produced 805,177 fingerlings (worth EUR 41206). The seed business recouped all the investment costs amounting to EUR 30 000 used to set up the hatchery operators in Zambia. Six hatchery operators in Malawi have sold fingerlings worth EUR318. Outcome 4: Considering the increased involvement of women and youth, HOs and FOs are closely engaging with their spouses and children to manage the business. IBEMS in Zambia participated in business training together with their spouses. IBEMS make efforts to reach women with training. Outcome 5: Through the availability and accessibility to fingerlings, knowledge, fish feed and other inputs, we anticipate an increase in fish for home consumption and on local markets.

Means of verification: A database of existing fish farmers in the project area in Zambia has been developed by WorldFish. M&E: WorldFish implements its project using MEL – monitoring, evaluation and learning system. The GIZ project is integrated and managed by this system. A MEL plan has been developed to guide M&E activities and other data gathering efforts for the project. We collected baseline data in Malawi in 2021.

BMZ Outcome Target and IDO Contribution

Report the number of beneficiaries already reached (by training, exercises, fieldwork etc.).

Highlight how the project achievements to this date show progress towards achieving the beneficiary targets (BMZ Outcome targets of adoption/consumption/application of practices) and IDO contribution. State your main arguments (i.e. quantitative or qualitative data and corresponding means of verification).

MAXIMUM 3.000 characters

Direct beneficiaries: According to the log frame, 3,000 households in Zambia and Malawi will have increased access to key inputs (sub-IDO 1.3.4), namely fingerlings, fish feed and knowledge to enhance productivity and profitability (IDO 1.4 and 1.3) of smallholder aquaculture. Access to key inputs contributes to the BMZ target: By 2022, 1,440,000 smallholder households have adapted technologies developed by a CG center. In 2021 1,290 (224 women) Zambia and 586 (196 women) in Malawi were trained on various aquaculture topics. All IBEMS in Malawi and Zambia were coached and mentored on business planning and management, feeding, hatchery operations, and better management practices for aquaculture. There were six mentorship and coaching visits for seed IBEMS in Zambia and five for feed IBEMS; in Malawi, there were three mentorship and coaching visits for feed and seed IBEMS.Three hundred seven people (55% women) came into direct employment. These include IBEMS, their spouses who expanded their aquaculture business to earn a living income. A total of 1876 smallholder farmers (27% of women are women) expanded their employment or reduced underemployment in Malawi and Zambia. These people were trained and adopted new, improved farming methods leading to improved productivity and incomes. Six hundred seven people (479 [51% women] in Zambia- and 128 [30% women in Malawi]) have increased their income as a result of the project.

Indirect beneficiaries: 27,000 people within local and district markets, will have increased access to nutrient-rich fish for consumption (IDO-2.2). Reaching these indirect beneficiaries will contribute to the BMZ target: By 2022, 1,440,000 people, of these 50% women, consume healthy and nutritious food. Rural development and food security; 5270 in Zambia and 2468 in Malawi people

were supplied with farmed fish for food security. As a result of improved incomes, some households are upgrading their living conditions, for example, through constructing better houses.

Means of verification: The number of farmers trained can be verified through training reports and attendance registers. Each IBEMs has been trained to record all farmers they reach with training. Each hatchery operator collects information about the number of fingerlings sold, the number of clients, the number of fish bought per client, telephone number and sex of the client. Feed operators have been trained to record all their clients and how much they sell. Collected information is verified during routine monitoring visits and monthly support and mentorship visits. During the training of IBEMS in Zambia, we emphasized the nutritional aspects of fish. This information can trickle down to other farmers trained by the IBEMS and hopefully increase fish production and consumption.

Review of Impact Pathway

Briefly review your impact pathway / theory of change towards impact. Have your assumptions been verified so far? Point out any adjustments necessary.

MAXIMUM 3.000 characters

The project is being implemented according to the designed impact pathway and will contribute to the project outcomes. The impact pathway remains the same. Our assumptions have been verified. We believe that from the progress we have made, we will be able to contribute to Sustainable Livelihood Outcomes (SLOs) related to poverty reduction, improved food and security nutrition for health, and improvement of gender equality in the sector. This project closely links to the "Aquaculture Technical, Vocational and Entrepreneurship training project" financed by NORAD, which collected smallholder aquaculture census data from Northern and Luapula provinces. As the problem of cooler temperatures in the cold season was affecting fingerlings production, towards the end of 2021, the AQTEVET project purchased two greenhouses for two of the best performing seed IBEMS. These IBEMS have already started experiencing an increase in fingerlings production. However, we will be able to assess the real impact of the greenhouses after the winter season in 2022. In Malawi, because of an unusually long dry season some ponds completely dried and hatchery operators with ponds that still have water are temporarily keeping brooders for those whose ponds have dried awaiting the rainy season. However, hatchery operators are now increasing the depth of their ponds to be able to hold water for longer periods of time

Assumptions: "The modified IBEMs are fit for purpose, and there are enough local entrepreneurs interested in and capable of piloting the models'. A stakeholders meeting validated the models in Malawi as having the highest potential to provide access to quality inputs for local farmers. A recurring problem noted was the lack of seed certification standards to ensure that Hatchery Operator IBEMS consistently produce quality seed. Stakeholders suggested that the national innovation platform could tackle this and work closely with the Zambian government through the Zambia Bureau of Standards to improve seed standards and consequently the quality of available seed. This information was passed onto the national

innovation platform led by the ministry of livestock and fisheries, funded by the GIZ office in Zambia.

Conclusions for the following Reporting Period

State if the project plan is still relevant and if goal, purpose and outputs are still achievable.

Point out issues, which require adjustment of the work-plan, including comments from in-house peer reviews and/or validation of progress by peers.

Draw conclusions for the further implementation of the project.

MAXIMUM 3.000 characters

Project plan: The project plan is, in general, still relevant, although the implementation of activities is behind schedule.

Achievement of goals: The project has reached at least 50% of its target of farmers with training, mentorship and coaching through IBEMS. There will be a need for a budget realignment and a no-cost extension until December 31 2022, to finalize the project activities and fully meet the project goals and objectives. Several factors have caused us to deviate from the planned timeline, including the following

- Delayed start of field activities in Malawi. GIZ approved the revised Malawi work plan and budget in December 2020. Prior approved implementing partners (University of Stirling and IMANI) could not align with GIZ funding requirements which necessitated proposal revision. Field implementation in Malawi started in January 2021. COVID-19 related mobility restrictions led to the suspension of fieldwork in Zambia between April and July
- In Malawi, we suffered an outbreak of Epizootic Ulcerating Syndrome, which delayed the collection and dissemination of broodstock.
- In both Malawi and Zambia, COVID-19 related restrictions particularly concerning, travel and workshops, also delayed implementation.

Adjustments: The project was supposed to set up a national innovation platform. However, as part of the monthly meetings with the GIZ office in Zambia, it was agreed that the GIZ Zambia would focus on developing the Multistakeholder innovation platform, while the WorldFish develops a localized innovation platform in Northern and Luapula provinces. The Northern and Luapula innovation chapter will then feed its concerns into the national platform once it is up and running. WorldFish has taken an active role in setting up the national innovation platform and gave a keynote address at the first multiple stakeholders meeting hosted by the Ministry of Livestock and Fisheries in Nairobi. A similar approach was adopted in Malawi, where the aquaculture round table already exists. Participants at the launch meeting encouraged that the local innovation platform report issues and participate in the proceedings of the Aquaculture Round Table to avoid duplication of roles and activities.

Publications, Papers and Reports

Upload documents

- Business plan training for feed and seed operators in Malawi
- https://mel.cgiar.org/reporting/report/id/8974/del_id/24759
- Business Plan training and coaching report Zambia
- https://digitalarchive.worldfishcenter.org/handle/20.500.12348/4758
- Feed Operator Assessment report Malawi
- Feed operator assesment report Zambia
- https://digitalarchive.worldfishcenter.org/handle/20.500.12348/4758
- Training and mentorship reports
- Innovation platform report Malawi
- https://mel.cgiar.org/reporting/report/id/8973/del_id/18938
- Innovation Platform meeting report (seed) Zambia
- Innovation Platform meeting report (feed) Zambia)
- Project start-up and stakeholder workshop report Malawi in May 2021 andPPTs
- https://dx.doi.org/20.500.12348/4986.
- Mentoring and Coaching of Feed operators in Malawi
- https://mel.cgiar.org/reporting/report/id/8973/del_id/18938
- Mentoring and Coaching of Feed operators in Zambia
- https://mel.cgiar.org/reporting/report/id/8973/del_id/18938
- The Seed Innovation Platform Workshop Proceedings (Draft)
- Hatchery Operator On-Farm Training, Mentorship and Coaching Report
- Innovation Platform strategy
- Blogs Newspaper reports
- http://blog.worldfishcenter.org/2021/06/gender-integrated-business-strategies-empower-women-in-zambia/
- Innovation platform meeting PPTs
- BMP Chichewa Malawi
- BMP English Malawi
- BMP English Zambia
- Broodstock collection report 2021 Malawi (Alinafe)
- Broodstock distribution report Alinafe
- https://digitalarchive.worldfishcenter.org/handle/20.500.12348/4724

1. Innovatio platform concept Paper
   https://digitalarchive.worldfishcenter.org/bitstream/handle/20.500.12348/4759/83f908cdc68fb2deeb6fb12874e4d07b.pdf?sequence=2&isAllowed=y
2. Increasing the availability and accessibility of fish seed in rural communities of northern Zambia through smallholder hatchery operators (set up and implementation)
   Innovating Zambia's aquaculture sector boosts food security | WorldFish (worldfishcenter.org)
3. Fish Farming-a lucrative business
   https://drive.google.com/drive/folders/1n6eJxlea9EUJXbq3rmhJEr6zloK1OJ8K?usp=sharing
4.

Summary – 5000 characters

Summarise the overall progress and main results of the project to date.

In 2021 COVID-19 also disrupted the implementation of some activities. For example, Zambia was not able to host field days which were hosted closer to the end of the year when activities were allowed. However, some IBEMS and farmers had already harvested. When fieldwork was possible, WorldFish was able to collect baseline data in Malawi as well as carry out ToT and coaching and mentorship visits. However, despite these setbacks, the project has made significant project towards achieving outcomes.

In summary, the project achieved the following:

1. Developed seed models, feed models and recruited and trained IBEMS for Malawi. Malawi recruited additional IBEMS and trained all IBEMS in a ToT event in early 2021. See attached powerpoints describing the validated seed and feed models for Malawi
2. Between mid-October 2020 and the end of December 2021, Hatchery Operators in Zambia have produced 805,177 fingerlings (worth EUR 41,206), and of these, they have sold 547, 832 worth EUR 28036. Six hatchery operators in Malawi have sold fingerlings worth EUR318.
3. Equipping IBEMS and providing broodstock: The project distributed 1626 broodstock in Malawi and 3100 broodstock in Zambia. Zambia purchased an additional 1000 female broodstock from commercial suppliers and distributed these to farmers to have better female to male ratios. An additional 550 broodstock was sourced from the tested and distributed in Malawi. Towards end of 2021, an additional 1500 was recruited, screened and will be distributed to farmers in January 2022.
4. Malawi team recruited additional hatchery operators after feedback from the Fisheries Department that some areas were underserved. These hatchery operators were trained and equipped, which will increase the availability of seed once they start producing.
5. Recruited broodstock Malawi and sampled broodstock to test TLV and EUS before distributing the broodstock to farmers
6. Developed, translated and tested training materials in English and Chichewa for Malawi.
7. Conducted a feed literature review and scoping study. The results of these studies were used
8. Hosted an online stakeholder meeting in Malawi and validated the feed and seed models
   44 people participated. The meeting was attended by private sector, government representatives including from the department of fisheries, international organizations, NGOs and smallholder farmers. The meeting achieved its outcomes related to validation of the feed models and providing relevant information to stakeholders to create buy-in. Emerging from this meeting and through further engagement, participants requested that the project also do physical project launches in the districts when the COVID-19 situation permits.
9. A total of 47, 350kgs of feed was distributed to 23 feed operators in Zambia and Malawi. Within six months, feed operators in Zambia sold 93% of the feed they received through the project at market prices, and 5 of the IBEMs managed to buy more feed on their own

for sale. Due to high demand of feed, one additional feed IBEM was recruited in 2021, bringing the total number of IBEMs to 41.

10. Hatchery Operator training and Trainer of Trainers in Zambia. All hatchery operators in Zambia were trained (see training reports). Forty-six participants (including both HOs and FOs) took part in the trainer or trainers workshop in Kasama, Zambia. All trained IBEMS expressed confidence that they will be able to train other farmers on BMPs for aquaculture and regarded the training as useful (see training reports). IBEMS in Zambia have trained 1, 290 farmers on Better Management practices (1012 of then trained by hatchery operators and 278 by feed operators)
11. Recruitment of new staff: WorldFish hired a Research Assistant and an intern in Malawi who started in March of 2021. This sped up implementation of project activities in Malawi.