



LIZZY MUZUNGAIRE FOR WORLDFISH

FISHFIRST! ZAMBIA PROJECT

Lessons Learnt Workshop Report

Venue: Lake Safari Lodge, Siavonga

6-7TH JUNE 2023

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I. EXECUTIVE SUMMARY

The report focuses on the proceedings of a two-day workshop conducted in Siavong on Lessons learned for scaling the Complimentary Food for Africa (ComFA+). The main objectives of the workshop were to; i) Disseminate the results of the ComFA+ Dishes Test-Taste conducted during the Nutrition Training Workshop in June 2022, ii) Launch the developed ComFA+ Kapenta fish powder recipe book, iii) Generate feedback on the use of ComFA+ fish powder recipes and products and iii) Conduct a scaling readiness assessment of ComFA+ Fish products. The workshop was conducted at the Lake Safari Lodge in Siavonga from 5 to 6 June 2023.

On the first day of the workshop, the following areas were covered, 1) the project overview, 2) the dissemination of the results from the taste test conducted in June 2022, and 3) the launch of the ComFA+ recipe booklet, 4) the taste test of instant ComFA + small fish porridge developed by Silva Foods and, 5) the gathering of lessons learned during the implementation of the project. On the second day, the workshop participants conducted a scaling readiness exercise for the ComFA+ small fish powder instant porridge.

The Siavonga District commissioner officiated the workshop. Nine mother-child pairs, three community health workers, the Department of Fisheries, the Ministry of Health, and entrepreneurs attended the workshop. The participants were drawn from Gwembe, Siavonga, and Sinazongwe districts.

Presentations and focus group discussions characterized the workshop.

2. INTRODUCTION TO THE PROJECT AND WORKSHOP OBJECTIVES

FishFirst! Zambia project is a project focused on Research for the Development and scaling of staple-fish products for enhanced nutrition in the First 1,000 Days of Life. The project's goal is to determine ways of increasing access to nutritious fish diets among vulnerable family members, particularly mothers, and infants. The focus of the project is Lake Kariba, which is in the Southern Province of Zambia. The districts targeted are; Siavonga, Sinazongwe, and Gwembe.

FFZ Project objectives include

- i. Assess the current state of small pelagic fish harvesting, processing, and trading activities from
- ii. the point of catch at Lake Kariba through processing and sale
- iii. Identify social and gender barriers to entry into and participation in these activities for different fishery value chain actors, particularly women, and youth
- iv. Assess how small pelagic fish are consumed within households, particularly among mothers and infants
- v. Explore how it may be possible to upgrade the small pelagic fish value chain via improving the processing of fish after catch (such as drying on racks), storing fish, and selling/trading methods to reduce post-harvest loss and improve food safety
- vi. Develop and test nutrient-enhanced ComFA+Fish products/recipes for enhanced nutrition particularly benefiting mothers and infants in vulnerable households. The nutrient-enhanced ComFA+Fish products/recipes will focus on staple dried fish powder, crops (e.g. maize, sweet potato, cassava, soy), and seasonal fruits (e.g., mango)
- vii. Explore options to scale production and marketing of the ComFA+Fish products/recipes with private and public sector actors, particularly women and youth entrepreneurs.

WorldFish in partnership with Mississippi State University hosted the two-day workshop in Siavonga at the Lake Safari Lodge between the 5th and 6th of June.

2.1 Workshop objectives

The main objectives of the workshop were to; i) Disseminate results of the ComFA+ small fish taste test conducted during the Nutrition Training Workshop in June 2022, ii) Launch the developed ComFA+ small fish powder recipe book, iii) Generate feedback on the use of ComFA+ fish powder recipes and products and iii) Conduct a scaling readiness assessment of ComFA+ small fish instant porridge.

On the first day of the workshop, the following areas were covered, 1) the project overview, 2) the dissemination of the results from the taste test conducted in June 2022 and 3) the launch of the ComFA+ recipe booklet, 4) the taste test of instant ComFA + small fish porridge developed by Silva Foods and, 5) the gathering of lessons learned during the implementation of the project. On the second day, the workshop participants conducted a scaling readiness exercise for the ComFA+ small fish powder instant porridge. Refer to the agenda in Annex 1 and the participants list in Annex 2.

Workshop outputs

The following are the expected workshop outputs

1. A workshop report
2. A validated ComFA+ small fish recipe book
3. A scaling readiness assessment of ComFA+ small fish instant porridge

DAY 1

3.1 Welcoming remarks

Ms Lizzy Muzungaire, Project Manager-WorldFish, who was also the workshop facilitator, welcomed the participants to the workshop. She gave a brief background on phase II of the project, where nutrition training was conducted, and gave participants highlights of what the meeting was designed for. She thanked all the mothers who participated in the nutrition training and the community health workers. She thanked the District Commissioner for officiating the event, the Ministry of Health and the Department of Fisheries for their unrelenting support throughout the project implementation.

3.2 Project Overview and workshop objectives

Dr Netsayi Mudege, Senior Scientist at WorldFish and FishFirst! Zambia host country PI project welcomed the workshop participants. She gave a brief background of the project, including the project's aims and objectives, a summary of the project's accomplishments, and finally, the aims and objectives of the meeting.

She highlighted the following project accomplishments:

1. The Women Empowerment in Fisheries Index survey which was conducted in Gwembe, Sinazongwe, and Siavonga districts. She highlighted that the survey reached 485 respondents aged between 18 and 48. 61.6% of those surveyed were women.
2. The training on nutrition and the role of small fish, which was conducted in June 2022
3. Cooking demonstrations and taste tests for ComFA + small fish meals conducted
4. Development of ComFA+ small fish powder recipe books in English and Tonga

She reiterated the objectives of the meeting and thanked the guest of honor Mr. Geoffrey Jakopo, Siavonga District Commissioner, for attending the workshop. She also mentioned that the project was honoring his request at the beginning of the project that the project disseminates the research results. She also thanked Dr Adidja Sumbwe MD, the Siavonga District Health Director, and Mr. Kenny Chisha, Acting District Fisheries Coordinator, Siavonga District, for attending the event. She reiterated that WorldFish and its partners will continue to support the government's efforts to end hunger and malnutrition in Zambia.

Lastly, she summarized the project agenda for the two days as follows:

Day 1 would consist of presentations of project results, the recipe book's launch, and group discussions on experiences with the training and using products developed by the project and

scaling suggestions. Day 2 would focus on the Scaling readiness assessment for ComFA+ small fish powder instant porridge, developing the next steps and closing remarks for the project.



FIGURE 1 DR NETSAYI MUDEGE GIVING THE PROJECT OVERVIEW. PHOTO CREDIT; AGNESS CHILEYA, WORLDFISH

3.3 Presentation of research results

ComFA+Fish Sensory Panels I-II Results

Taste-Test Results – Nutrition Status among Children 6 to 24 months

Dr Kathleen Ragsdale from MSU made the presentation. She explained complementary feeding and the power of dried fish powder in improving nutritional outcomes.

The results were based on ComFA+Fish sensory panels conducted in June 2022 in Siavonga. The sensory panels consisted of 42 mother-baby pairs. The mother's sensory panel tasted four dishes 1) fortified chibwabwa fisashi, 2) Kapenta Chutney, 3) fortified complementary maize porridge, and fortified bean-vegetable soup.

Although fortified chibwabwa fisashi and kapenta chutney had high overall acceptability, all dishes had high overall acceptability.

The infant panel tested the fortified complementary maize porridge and confirmed the high acceptability of ComFA+Fish complementary maize porridge among infants.



FIGURE 2 DR KATHLEEN RAGSDALE PRESENTS RESEARCH RESULTS- PHOTO CREDIT; AGNESS CHILEYA, WORLD FISH

FishFirst! Zambia: exploring food Insecurity among Lake Kariba fishing families – results from the household hunger scale II

Robert Kolbila from MSU presented the household hunger scale results based on data from the Women Empowerment in Fisheries Index survey conducted in 2021. He stated that 45% of the households in the survey experience occasional, moderate, and severe hunger, 37% of households sometimes experience having no food at all in the dwelling, and 11% of households would sometimes go for a whole day and night without eating. He also mentioned

The presented results showed that although the study districts produced Kapenta, which can significantly improve the health of infants and young children, many of the three districts studied had worse stunting, wasting, and underweight indicators than the national level rates.

He noted that further analysis was still being undertaken to compare research results by gender to understand how men and women, boys and girls experience food insecurity in similar and different ways.

Robert Kolbila from MSU presented results from the survey that was conducted in 2021. The survey was meant to understand the constraints and opportunities faced by women, men, and youth involved in harvesting, processing, and selling/trading small pelagic fish. The goal was to determine ways to increase access to these nutritious fish among vulnerable family members, particularly mothers, and infants.



FIGURE 3 ROBERT KOLBILA PRESENTING RESULTS FROM THE 2021 SURVEY. PHOTO CREDIT, AGNESS CHILEYA

Video Demonstration of FishFirst! Zambia Achievements and Group Reflections on Lessons Learned

Agness Chiley, Communications Assistant (WorldFish), presented video highlights of the 2022 nutrition training hosted by the project in Siavonga. Mothers who attended the training also appeared on the video describing what they learned and liked about it. Caregivers who participated in the nutrition training and were present at the lessons learnt workshop appreciated the video as a good recap of the training event.

See the link to the video below

[FFZ video-Nutrition training Siavonga.mp4](#)

Discussion

The discussion section took place after the three presentations.

Mrs. Mbikazi Dube asked if the survey could ascertain which gender was more malnourished. In response, Robert stated that the research did not cover that aspect.

Dr Adidja Sumbwe (Siavonga District Health Director) explained that Siavonga experiences malnutrition. She stated that in 2022 the district had admitted 30 severely malnourished children and lost 11 of those children. In 2023 the health center treated seven children suffering from severe malnourishment and lost one child. She mentioned that it is unfortunate that many of the children in need are brought to health services' attention when it is too late. She expressed confidence that a program that focuses on the consumption of nutrition-dense locally available foods and good feeding practices can go a long way to reducing the problem of malnutrition in children. In light of this, she commended WorldFish and MSU for the intervention, stated that it was a timely and very welcome move, and indicated her desire to see the initiative scaling up fast.

Mr. Kenny Chisha, Acting Siavonga District Fisheries Coordinator, emphasized the need for continuity of the project and advised participants to bring more people on board and spread the message on the benefits of consuming small fish and even fish powder in addition to other nutritious foods.

3. KEYNOTE SPEECH AND LAUNCH OF THE COMFA+ SMALL FISH POWDER RECIPE BOOKLET

Dr Adidja Sumbwe (Siavonga District Health Director) introduced the guest of Honor Mr. Geoffrey Jakopo to give his keynote speech and launch the recipe booklets.

Mr. Geoffrey Jakopo- Siavonga District Commissioner

In his keynote address, Mr. Jakopo noted an urgent need to eradicate malnutrition among children and adults along Kariba's lakeshores, especially in rural communities where the problem is severe. He indicated that kapenta, which has abundant micronutrients, is produced in large quantities along Kariba's lakeshores. He stated that his district Siavonga also produces soybean, maize, groundnuts, and pumpkin leaves. Thus, all the ingredients to make nutritious meals are available locally. However, local people need to know how to use the locally available nutrient-dense foods. For example, he noted that parents spend a lot of money purchasing expensive, less nutritious store-bought famous brands of porridge to feed their infants. On the other hand, nutritious foods like kapenta that can go a long way to alleviate malnutrition are underutilized and suffer high post-harvest losses every year during the rainy season.

“The efforts being made by the project will help us eradicate malnutrition, by supplementing the much-needed nutrients to benefit infants, mothers, and the vulnerable. Since this food supplement is produced abundantly in Siavonga, I would want to appeal to all participants to put to good use the abundant kapenta, and soya beans that we grow abundantly along the river including maize, groundnuts, and chibwabwa(pumpkin leaves). We have all these ingredients available locally, but the only problem is that we do not know how to put to good use the foods that we have.

Let us learn to put this kapenta to good use, which usually goes to waste. I make an appeal to our mothers here to put to good use the knowledge that they have gained here for the benefit of the general community.

As a government, these are projects that we are ready to support. I encourage participants from the three districts to form cooperatives in their communities so that whatever they have learned here may be put into practice. All the people to help them are right within their localities; therefore, there is no excuse for this initiative to fail.

As a government, we are ready to fund such initiatives because we do not want them to die. As the project team goes back to look for more funding for the next phase, we, as government will not just sit back and see this good effort die, we will supplement your efforts. We want to make sure that this fish powder is produced on a full scale within our communities. Whenever mothers prepare meals for their children even for us adults, who are also undernourished in some cases, this should be readily available.

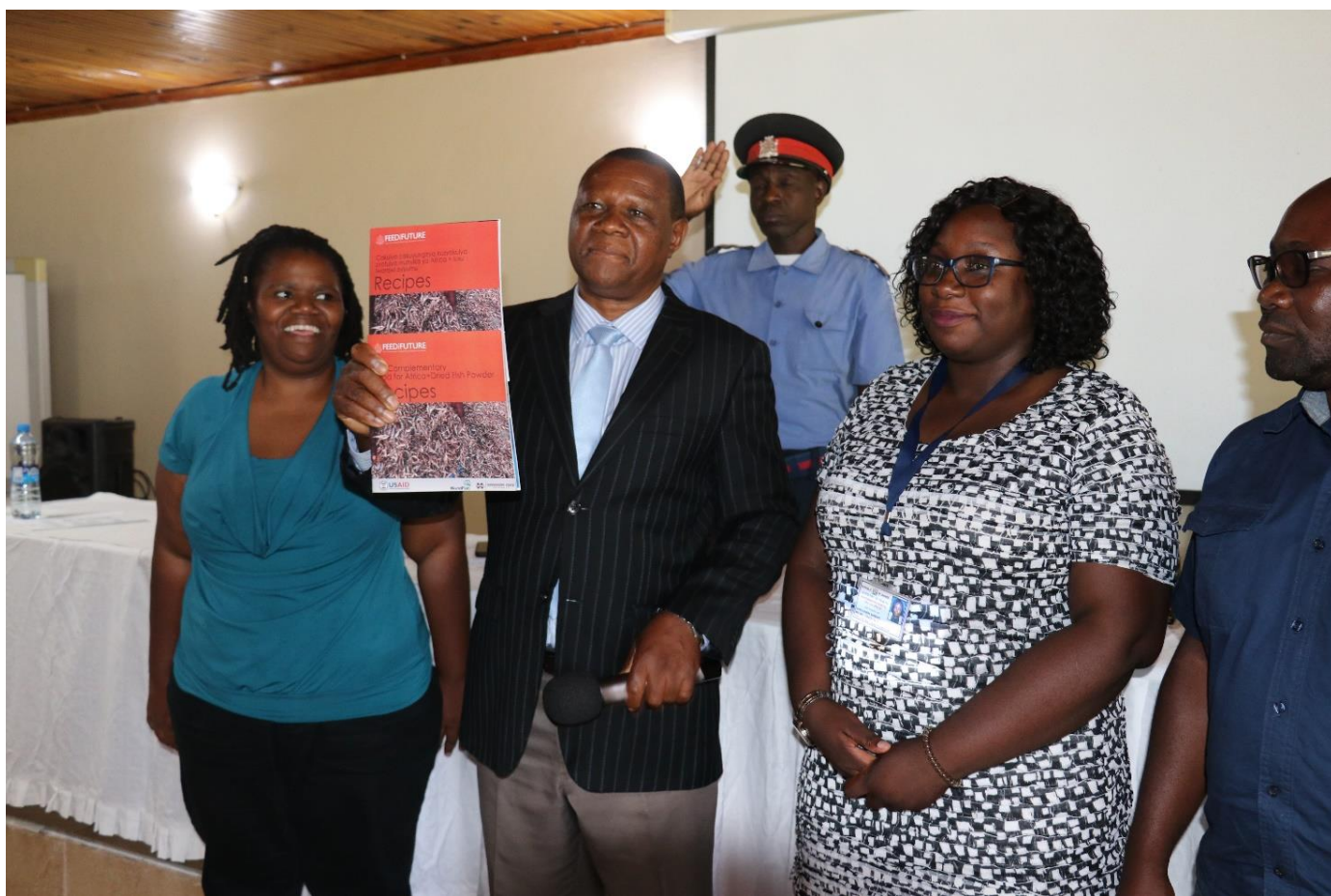


FIGURE 4. MR. GEOFFREY JAKOPO (CENTRE) SIAVONGA DISTRICT COMMISSIONER LAUNCHES THE RECIPE BOOKLET. PHOTO CREDIT, AGNESS CHILEYA, WORLD FISH

I have seen kapenta fishers catching kapenta and selling the whole lot of it without leaving anything for the family. We want to make sure that the kapenta and fish that are caught are feeding families in the different recipes presented in the booklet. Our fishers have a tendency of feeding their families vegetables and thinking that fish is only meant for sale to cities. We are ready as a government to see to it that the kapenta powder that will be generated from our districts here gets to market in the cities after we have sufficiently met the local demand in our communities. This will

also help in job creation and we hope that our fishermen find a ready market for the product. As a government, we are ready to help in facilitating loans to help the cooperatives boost their businesses by enhancing the consumption of fish.

I will share the information I have received here with my counterparts in Sinazongwe and Gwembe so that we can work together in developing our communities. It is evident that we have undernourished children in our districts including adults.

I encourage all of you present here to learn as much as possible so that we are able to work together. To the Ministry of Health, Ministry of Fisheries and Livestock, please utilize our offices so that this good idea does not die, my office is ready to work with you.”

The DC launched the Complimentary Food for Africa + dried fish powder recipe booklets (English and CiTonga versions), which contain seven fish-based recipes that were tasted at the nutrition training held in 2022.

4. FEEDBACK ON USING DRIED FISH POWDER

Three focus groups were set up; Mothers, the Business community, and Government. The following were the questions discussed, and responses are indicated per group. All groups presented the results of their discussions in a plenary session.

Mothers/Caregivers Nutrition Priorities

Mothers mentioned that providing nutritious and diverse diets was crucial to promoting children's healthy growth. They said kapenta and other fishes like tilapia, groundnuts, and dark green leafy vegetables are important foods for children. Women mentioned that due to the training they received, they now give their children nutritious foods and try to raise awareness among other caregivers that did not attend the nutrition training. However, they mentioned that since they have not reached many women, many children still do not get enough nutritious foods for healthy growth. They mentioned that sometimes mothers are overworked and do not have time to prepare nutritious meals for infants and young children. Other mothers work and leave children under the care of older siblings and nannies who may not feed the children correct and adequate foods.

Women mentioned the following challenges to providing safe and nutritious foods for their children:

- Lack of (or limited) knowledge and skills on nutrition messages and how to prepare the dishes
- Limited access to healthy and nutritious foods as a result of vulnerability
- Lack of access to healthy and nutritious foods during some periods of the year, especially for seasonal foods such as sweet potato

- They mentioned that resources such as information packs with nutrition messages, more capacity and awareness-raising efforts targeted towards caregivers and start-up capital for women to invest in farming and fishing could help women support their families and provide nutritious foods throughout the years.



FIGURE 5. MOTHERS DURING A FOCUS GROUP DISCUSSION SESSION. PHOTO CREDIT, AGNESS CHILEYA, WORLD FISH

Government Representatives' Priorities on Nutrition

Government representatives were asked about the most pressing nutrition challenges in Zambia. They listed the following challenges:

- Inadequate metric equipment in health centres, as weighing scales break and are replaced every few months.
- Lack of linkages between community activities and health activities and campaigns. There is a great need to link health initiatives and activities to community programs implemented by other government departments and stakeholders.
- Therapeutic foods in erratic supply at the hospitals. Delay in the referral
- Lack of nutrition data to identify early signs of sickness. When kids are sick, it is too late to act.
- Fisheries production is a challenge. There is a deficit in fish production, and the produced fish are primarily marketed outside the community. Very little is consumed by the

communities that produce the fish. Because of high fish demand in cities, higher production may also not lead to higher fish consumption in the villages and communities where fish is produced. Producers care more about the money from selling fish rather than consuming the fish.



FIGURE 6. GOVERNMENT REPRESENTATIVES DURING A FOCUS GROUP DISCUSSION. PHOTO CREDIT; AGNESS CHILEYA WORLD FISH

Government representatives mentioned the RUTF for nutrition management program as a key government program seeking to address malnutrition. The program focuses on training community health workers, promoting community-based adolescent and infant feeding practices, and identifying and timely referring any malnutrition cases to the relevant health centers. They also mentioned that other projects could easily build on existing government infrastructure to promote better health outcomes for infants and young children. For example, the government has community health workers and outpatient community referrals, children are measured and weighed regularly, and borderline and at-risk children are identified and targeted with treatment or malnutrition prevention programs.

Entrepreneurs' Experiences

Among entrepreneurs, only two utilized the recipe. A male entrepreneur had made kapenta powder porridge for children to demonstrate to women at the under-5 clinics at Shimatika Health Post. Women liked the porridge. A female entrepreneur prepared fish powder for her grandchildren in Lusaka and sent it occasionally. The grandchildren like the kapenta fish powder-based porridge.

However, all entrepreneurs that had attended the training did not utilize any of the kapenta powder

recipes for business purposes because of the following reasons:

- They were not sure that their clients would like the products (restaurant operators)
- Lack of other ingredients, "In Sinazongwe, we have a challenge of growing pumpkins and sweet potato leaves. They tend to be difficult to grow in our area due to drought"
- Kapenta is expensive, so the dishes with kapenta powder would become expensive, and the clients may not afford it (restaurant operators).
- The target market for the products is not clear. Business people were not sure that in a place like Siavonga, people would have the money to purchase kapenta fish-powder-based products.
- No equipment to grind the fish powder
- For some business people, it also entails switching businesses. Switching businesses can be challenging and expensive since the business person must invest in new equipment.
- It is not easy to introduce new products. Big investments in market research are needed that SMEs cannot afford. They gave an example of large manufacturers like Trade Kings which can do market research and market campaigns to reach their target audiences when they are introducing a new product.



FIGURE 7. ENTREPRENEURS DURING A FOCUS GROUP DISCUSSION. PHOTO CREDIT; AGNESS CHILEYA, WORLD FISH

Discussion session

After the plenary presentations, the following issues were raised:

- Netsayi mentioned that 10 grams of kapenta is enough to cover the daily nutritional needs of a young child, so caregivers should not worry that they would need to consume a lot of fish to meet their nutrition goals.
- The District Commissioner noted the need to change the mind-set of people to keep a small amount of the fish they catch instead of selling off everything and raise awareness about the importance of consuming the fish, especially small fish.
- Other participants noted that there might be a need to have regular nutrition talks to keep communities informed. It was pointed out that some discussions also need to focus on men since they have the power to make decisions about food consumption in the household but often do not have the same information and knowledge women have about nutrition. So when it comes to deciding whether to keep some fish for household consumption or sell everything, women getting FishFirst! Zambia project information may not have a voice. We taste-tested instant porridge over two consecutive days at the workshop. Sylva Foods Solutions, a key local partner that mass-produces, markets, brands, and exports pre-packaged foods for European markets, prepared two separate flavors (vanilla and plain) of dried kapenta-based instant porridge for FishFirst! Zambia for workshops at Lake Kariba. More than 30 public and private sector persons taste-tested the two porridges.

The test used a 5-point scale

- How well do you like the aroma/smell of the food? (AROMA)
- How well do you like the appearance of the food? (APPEARANCE)
- How well do you like the way the food feels in your mouth? (TEXTURE)
- How well do you like the flavor/taste of the food? (FLAVOR)
- . How well do you like the sweetness of the food? (SWEETNESS)
- How well do you like or dislike how easy food will be to use in an infant’s meal at least once daily? (convenience)
- Overall, how well do you like the food? (OVERALL ACCEPTABILITY)

Although vanilla porridge had higher acceptability scores, all porridges has higher overall acceptability.



FIGURE 9. SCORING AFTER SAMPLING THE INSTANT PORRIDGE. PHOTO CREDIT; ANESS CHILEYA, WORLD FISH



FIGURE 8. TESTING THE VANILLA INSTANT PORRIDGE. PHOTO CREDIT; AGNESS CHILEYA, WORLD FISH

DAY TWO

5 SCALING READINESS

Keagan Kakwasha, Monitoring and Evaluation Specialist for WorldFish presented on scaling readiness, defining what scaling is and the issues that need to be considered when conducting a scaling readiness assessment and the two tools that groups used during the assessment.

After the presentation, participants were split into two groups (1) Mothers/Caregivers; 2) entrepreneurs and government representatives) to conduct a scaling readiness assessment of the instant ComFA+ fish powder porridge.



FIGURE 10. KEAGAN KAKWASHA MAKES HIS PRESENTATION. PHOTO CREDIT; AGNESS CHILEYA, WORLD FISH

After the assessment activities, the groups presented their discussion in plenary.

Mothers/Caregivers scaling readiness assessment of ComFA+Fish instant porridge

Define the core innovation(s) / technology (ies) for scaling.

The core innovation the women's group evaluated was the ComFa+ Fish instant porridge. They identified that the core innovation needed to be supported by the availability of kapenta, baobab fruit, and other local ingredients. They mentioned that instant kapenta-based porridge must come

in different flavors so toddlers could find a flavor they like to promote its consumption. They also emphasized that ComFA+Fish instant porridge should not only be targeted at infants and young children but also meet the needs of other groups, such as adolescents and pregnant women.



FIGURE 11. ONE OF THE MOTHERS PRESENTS DURING PLENARY. PHOTO CREDIT; AGNESS CHILEYA, WORLD FISH

Should ComFA+fish instant porridge be scaled up?

Mothers stated that it would be good if the instant ComFA+Fish-based porridge could be scaled because:

- It is highly nutritious, with all the necessary nutrients infants and other groups require.
- It is easy to prepare and can be made by childminders, improving the health of infants and young children who are left at home with older siblings, nannies, and other relatives.
- They mentioned that the ComFA+ Fish powder instant porridge could be scaled through community markets, clinics, health facilities and school feeding programs, national shows, and fairs.

Scaling outcomes

They stated that the intended scaling outcomes could include the following:

- Improved health of infants and young and families at large
- Reduction in malnutrition for infants and young children
- Improving the health of pregnant and lactating mothers
- Speedy healing of the sick
- Improved lifestyle for the aged
- Increased number of children attending school since the porridge will attract them to schools that have school feeding programs
- Help mothers to deal with time poverty by providing a quicker way to make porridge.
- Increased incomes for local businesses

Will the selected innovation for scaling be helpful to contribute to your institution and national or international development objectives? If so, which ones

- Government promoting good health for all
- Education for all
- Zero maternal deaths
- Reduced deaths as a result of HIV

What are the complementary innovations that would be necessary to support this innovation?

- Mabuyu processing technology to extract the powder
- Usika/tamarind extractions
- Packaging to be attractive
- Product promotion strategies (churches/schools/markets/cooperative meetings/community meetings/crusades/national events etc)

What bottlenecks are you likely to encounter by examining the following landscapes as they relate to the core innovations?

Innovation landscape.

- Lack of machinery
- Lack of capital and other accessories
- Access to fish/kapenta

Intervention Landscapes.

- Failure to sensitize and train others— distances to be covered versus transportation mechanism
- People being rigid to accepting change
- Myths (and misconceptions)/ traditional beliefs/religious beliefs

Stakeholder landscapes.

- Conflicting interests

What stakeholders would be necessary to engage in the scaling-up process and why?

- Communities / especially mothers and caregivers (
- Ministry of Health
- Ministry of Fisheries
- Ministry of Agriculture
- Ministry of Education
- Ministry of Community Development
- Ministry of SME
- Ministry of Technology
- Other line ministries
- NGOs and Development partners (DAPP/World Vision/WorldFish/Maryland/ADRA) & FBOs
- Donor community
- Micro-finance institutions, including the Citizens Economic Empowerment Commission (CEEC)
- Local councils that manage Constituency Development Fund (CDF)
- Private sector
- Media

Entrepreneurs and government representatives scaling readiness assessment of ComFA+Fish instant porridge

Discuss whether/not the core innovations/ technologies should be scaled in this context and why?

Entrepreneurs and government representatives supported that the instant ComFA+ fish porridge should be scaled will cut down on time to make the porridge since mothers will need hot water only, and it also uses locally available ingredients that are rich in nutrients.

Participants also mentioned that the porridge would help men to be more involved in childcare.

“It can be prepared by both men and women. Men are lazy so this instant porridge makes it easier for them to prepare food for children; if God willingly, they [men] may end up feeding the baby...because we know that they are lazy even to feed the baby”.

An entrepreneur from Gwembe district explained that instant porridge uses fish ingredients and can help provide nutritious food in a drought when staple food like maize production goes down. He said,

“This one can help with issues of climate change, we stay in the valley, and the rain pattern is poor so in the event that farmers have not produced maize the innovation can improve nutritional availability”.

Where should this technology be scaled out?

- “If it can be produced in large quantities, it can be used in schools under the school feeding program”. There are school feeding programs in Gwembe, Siavonga and Sinazongwe. The school feeding program diet includes magwaza (plain boiled maize grain), soy porridge, and Shima with beans”.
- The ComFA+fish instant porridge can also be scaled in health centres and can be recommended for outpatients who have nutrition problems after an illness to take it to improve their health. Health workers in the group discussion were hesitant to include instant porridge in the diets of inpatients but advised that it could work well with outpatients.
- It was noted that traditional leaders should also be included in scaling out this porridge because their subjects will easily take it up if they are on board. Sometimes it can be rejected if people think it is meant for family planning. That is where sensitizing traditional leaders could be helpful.

What would be the intended scaling outcome?

- Improve nutrition to reduce malnutrition.
- Improved incomes
- In children to improve the cognitive development
- For school children to improve their concentration
- To encourage the consumption of fish in the fisheries communities that are not currently consuming fish

Will the selected innovation for scaling be useful to contribute to your institution and national or international development objectives? If so, which ones

- One of the UN goals is to end hunger, so this innovation would contribute to ending hunger. The Ministry of Education would benefit. Business people can make more money, and the government can benefit from taxing the business people.
- The innovation can be useful in the government decentralization policy for the constituency development fund (CDF), where communities are requested to form cooperatives and develop a business idea that the government can fund through CDF. Cooperatives can produce and sell ComFA+ fish instant porridge.
- The government has a program to improve maternal and child health; at the hospital, we have a capacity-building program on addressing malnutrition; hence this innovation can be helpful to our program.

What are the complementary innovations that would be necessary to support this innovation?

- Dried pumpkin leaves, groundnuts, grinders (solar+power), space where to process the powder, labour, machinery to process the fish, packaging materials, advertisement, having the grinders at a fare price which exempt some import taxes, pounding fish requires workforce if you don't have a motorized machine. The kapenta is also needed since it is a key ingredient in producing ComFA+ fish instant porridge.

What bottlenecks are you likely encounter by examining the following landscapes as they relate to the core innovations?

Innovation landscape

- Raw materials are expensive and may not be readily available. In times of fishing ban, in that period, there is likely to be less kapenta, and if it is available, the prices are high. If

there are no machines to process the kapenta into powder, it would be challenging to produce the fish powder.

- Product acceptability: it is a new product, so it requires a lot of advertising or sensitization.

Intervention Landscapes.

- The school feeding program is one program that can support the successful scaling of instant porridge.
- Secondly, existing cooperatives under CDF in these communities could support scaling these innovations. The cooperatives can access funding and use the money to buy machinery and other raw materials to produce instant porridge, provided they are trained to produce it.

Stakeholder landscapes.

- The Ministry of Health (using community health workers/volunteers) should be of awareness raising if you want people to consume ComFA+fish porridge.
- The private sector can help produce ComFA+fish instant porridge because of its capacity to buy raw materials, grinders, and packaging before it reaches consumers.
- Another respondent added that it is important to consider traditional leaders to participate in the sensitization to help remove any misconception barriers that can hinder the adoption of ComFA+fish instant porridge. A group participant said:
 - “You see when I look at the fish powder, it looks like a spice or herbal powder which could be used for various reasons. Someone can think that it is used as a sex booster or birth control. These beliefs can affect adoption if people are not sensitized on what it is and what it is used for”.
- Community health workers could also be motivated to sensitise their communities. Other relevant partners include
 - Schools or the Ministry of Education,
 - Ministry of Health
 - Local municipal councils,
 - Social welfare
 - The Department of Fisheries to regulate the fish supply
 - Yalelo, Kariba harvest, fishers association, fish farmer cooperative, farmers association, and Zamfresh could be contacted for supplying fish,
 - Mbikaze restaurant in Siavonga,
 - Local government for funding through CDF, citizen’s economic empowerment commission (CEEC) and other funding institutions.

6 WAY FORWARD

Dr Netsayi Mudege thanked all the participants for attending the workshop and actively contributing to the discussions. She explained that WorldFish and Mississippi State University are looking for more resources to continue project interventions. She urged the mothers to utilize local and available products and not just wait for external help. She reiterated the District Commissioners' sentiments that working together will help address malnutrition in target communities and nationally

8. CLOSING REMARKS

In closing, Mr. Kenny Chisha, Siavonga District Acting Fisheries Coordinator, thanked MSU and WorldFish for organizing the workshop. He stated that the workshop was a success whose efforts should not go in vain. He also thanked all the participants and government and private sector

representatives that had attended the workshop. He reiterated the need to work together to achieve the goal of eradicating poverty and malnutrition.



FIGURE 12. MR. KENNY CHISHA GIVES REMARKS DURING THE WORKSHOP. PHOTO CREDIT; AGNESS CHILEYA, WORLD FISH

In yesterday's session, the director of health indicated that malnutrition is real in our district, not only in Siavonga but also in Gwembe and Sinazongwe. The statistics given only indicated a few cases which were reported. There are certainly more cases that have not been reported showing that malnutrition is a real problem in our country. That is why interventions such as these are critical to reducing the levels of malnutrition."

Mr. Chisha reiterated the DC's words stating that the government is ready to support such initiatives. Cooperatives could use the constituent development funds to fund their business ideas in the fish value chain. He explained that the presence of the DC throughout the day one session clearly shows the importance that the government places on initiatives supporting its efforts in combating malnutrition. He stated that although the project was ending, those trained and equipped with knowledge should take the idea of fortifying food with small fish powder forward so that it does not die a natural death. He mentioned that all stakeholders needed to unite to promote better nutrition

in the first 1000 days of children's lives because malnutrition "leaves severe scars on our children's cognitive abilities". He once again thanked the participants and declared that the workshop had ended.

9 ANNEXES

Annex 1. Agenda

FishFirst! Zambia: Phase III Learning Event & Workshop

Dates: 06 – 07 June 2023

Venue: Lake Safari Lodge, Siavonga

OBJECTIVES:

- 1) Conduct Learning Events 1-4: ComFA+Fish Sensory Panels I-II Results
- 2) Focus Group Discussions on scaling ComFA+Fish and ComFA+Fish Scaling Readiness Exercise [3 Stakeholder Groups]
- 3) Conduct training: Scaling Readiness Assessment for ComFA+Fish Instant Porridge
- 4) Launch DRAFT ComFA+Fish Recipe Booklets (English version; Tonga version)
- 5) Conduct ComFA+Fish Sensory Panels III of two instant porridges
- 6) ComFA+Fish Champion Presentation – Bicycle: For Community Health Volunteer Worker

AGENDA

DAY 1: 06 JUNE 2023

TIME	ACTIVITY	RESPONSIBILITY
8:30 – 9:00	Arrival and Registration	Chindika (WF) and Nasilele (DoF)
9:00 – 9:05	National Anthem and Prayer	Agness and Mutoloki
9:05 -- 9:15	Welcoming remarks	Moderator: Lizzy Muzungaire (WF)
9:15 – 9:35	Introductions	Moderator: Lizzy Muzungaire (WF)
9:35 -- 9:55	Project Overview and Workshop Objectives	Netsayi Mudege (WF)
9:55 – 10:15	Learning Event 1: <i>ComFA+Fish Sensory Panels I-II Results</i>	Kathleen Ragsdale (MSU)*
10:15 – 10:30	Learning Event 2: <i>Video Demonstration of FishFirst! Zambia Achievements and Group Reflections on Lessons Learned</i>	Agness Chileya (WF)*
10:30 – 11:00	HEALTH BREAK	Phyllis Kabamba
11:00 – 11:20	Learning Event 3: <i>Household Hunger Scale II Results: Lake Kariba Fisher Families and Food Insecurity</i>	Robert Kolbila (MSU)*
11:20 – 11:30	Introduction of Keynote Speaker	Adidja Sumbwe MD, Siavonga District Health Director
11:30 – 11:50	Keynote Speech & Launch: DRAFT ComFA+Fish Recipe Booklets (English version; Tonga version)	Geoffrey Jakopo, Siavonga District Commissioner
11:50 – 12:50	LUNCH	Agness Chileya
12:50 – 14:50	ComFA+Fish Focus Group Discussions – Perceptions of Dried Fish Powder for Child & Household Nutrition: Group 1: Mothers/Comm. Health Vol. Workers; Group 2: Entrepreneurs/Business; Group 3: Government	Group 1: Lizzy and Phyllis Group 2: Keagan and Chindika Group 3: Robert and Makayla
14:50 – 15:50	Plenary Presentations/Recaps from Groups 1-3	Moderator: Lizzy Muzungaire (WF)
15:50 – 16:00	HEALTH BREAK	Phyllis Kabamba

16:00 – 17:00	Sensory Panel III - Part 1: Plain ComFA+Fish Instant Porridge	Moderator: Lizzy Muzungaire (WF)
17:00 – 17:15	ComFA+Fish Champion Presentation – Bicycle: For Mme. Betty Muleya on behalf of FishFirst! Zambia team	Geoffrey Jakopo, Siavonga District Commissioner
17:15 – 17:30	Closing Remarks	Moderator: Lizzy Muzungaire (WF)

*Moderator will select an attendee to translate for those who prefer Tonga.

DAY 2: 07 JUNE 2023

TIME	ACTIVITY	RESPONSIBILITY
8:30 – 9:00	Learning Event 4: <i>Scaling Readiness Assessment for ComFA+Fish Instant Porridges</i>	Keagan Kakwasha (WF)*
9:00 – 11:00	ComFA+Fish Scaling Readiness Exercise: Group 1: Mothers/Comm. Health Vol. Workers; Group 2: Entrepreneurs/Business; Group 3: Government	Group 1: Lizzy and Phyllis Group 2: Keagan and Chindika Group 3: Robert and Makayla
10:30 – 11:00	HEALTH BREAK	Phyllis Kabamba
	Sensory Panel III - Part 2: Vanilla ComFA+Fish Instant Porridge	Moderator: Lizzy Muzungaire (WF)
11:00 – 12:30	Plenary Presentations/Recaps from Groups 1-3	Moderator: Lizzy Muzungaire (WF)
12:30 – 12:40	Way Forward	Netsayi Mudege (WF)
12:40 – 12:50	Closing Remarks	Adidja Sumbwe MD, Siavonga District Health Director
12:50 – 13:00	Closing Remarks	Kenny Chisha, DoF Acting District Coordinator, Siavonga District
13:00– 13:10	National Anthem and Prayer	Agness Chileya (WF)
13:10 – 14:00	LUNCH	Chindika Sakala (WF)

*Moderator will select an attendee to translate for those who prefer Tonga.

Annex 2: List of participants

	Name	Town	Mobile number	Designation
1	Dr Kathleen Ragsdale	Mississippi	+16626941894	Project PI
2	Dr Netsayi Mudege	Lusaka	+260974 802844	Project PI Zambia
3	Lizzy Muzungaire	Lusaka	+260973 466282	Project Manager
4	Keagan Kakwasha	Lusaka	+260976 175344	Monitoring & Evaluation Specialist
5	Robert Kolbila	Mississippi		
6	Agness Chileya	Lusaka	+260976 619324	Communications Assistant
7	Chindika Sakala	Lusaka	+260977 441641	Accounts Manager
8	Phyllis Kabamba	Lusaka	+260979 009625	Accountant
9	Makayla Smith	Missisipi		Intern
10	Chrispine Chikani	Lusaka	+260977 423427	Driver
11	Gawaya Kamanga	Lusaka	+260977 247810	Driver
12	Patrick Mboloma	Lusaka	+26079 208993	Driver
13	David Mwanza	Sinazongwe	0977280922	
14	Betty Muleya	Sinazongwe	0977246552	Community health worker
15	Fanwell Muvulo	Sinazongwe	0973445841	
16	Margaret Mwamba	Sinazongwe	0975451780	
17	Carol Mweemba	Sinazongwe	0779771209	
18	Annie Sinamugulu	Sinazongwe	0978661302	
19	Twaambo Mandeva	Gwembe	0977953712	Nurse
20	Marvis Nyangale	Gwembe	0776238271	Mother
21	Bertha Sikuboma	Gwembe	0973803300	
22	Sillah Siawwapa	Gwembe	0971045066	
23	Margaret Malisana	Gwembe	0975830201	
24	Modrine Zulu	Gwembe	0977479450	
25	Geoffrey Jakopo	Siavonga	0977439992	District Commissioner
26	Adidja Sumbwe	Siavonga	0974332117	District Health Director
27	Kenny Chisha	Siavonga	0977948054	Fisheries District Coordinator
18	Alice Champo	Siavonga	0972139660	Mother

	Name	Town	Mobile number	Designation
29	Estelly Makasa	Siavonga	0972372035	Mother
30	Mike Chipanda	Siavonga	0970296562	
31	Lackson Chipeleme	Siavonga	0979429026	Community Health worker
32	Nasilele Walubita	Siavonga	0777777831	Department of Fisheries
33	Clara Mweemba	Siavonga	0977 971491	
34	Chilufya Kasela	Siavonga	0974492838	
35	Mbikazi Dube	Siavonga	0977595738	SME
36	Miyanda Maiba	Siavonga	0977416032	Department of Fisheries
37	Tobias Mantuku	Siavonga	0977767676	
38	Yotam Hachiwa	Siavonga	0977527099	
39	Isaac Mukondya	Siavonga	0979340154	
40	Brandina Lambwe	Siavonga	0976886403	Zanis

About WorldFish

WorldFish is a nonprofit research and innovation institution that creates, advances and translates scientific research on aquatic food systems into scalable solutions with transformational impact on human well-being and the environment. Our research data, evidence and insights shape better practices, policies and investment decisions for sustainable development in low- and middle-income countries.

We have a global presence across 20 countries in Asia, Africa and the Pacific with 460 staff of 30 nationalities deployed where the greatest sustainable development challenges can be addressed through holistic aquatic food systems solutions.

Our research and innovation work spans climate change, food security and nutrition, sustainable fisheries and aquaculture, the blue economy and ocean governance, One Health, genetics and AgriTech, and it integrates evidence and perspectives on gender, youth and social inclusion. Our approach empowers people for change over the long term: research excellence and engagement with national and international partners are at the heart of our efforts to set new agendas, build capacities and support better decision-making on the critical issues of our times.

WorldFish is part of One [CGIAR](#), the world's largest agricultural innovation network.