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DEVELOPMENT SUPPORT TO COMMERCIAL AQUACULTURE IN INHAMBANE PROVINCE

November 2019

SDGs:



Countries:

Mozambique

Project Codes:

TCP/MOZ/3604

FAO Contribution:

USD 282 000

Duration:

19 January 2017 – 30 June 2019

Contact Info:

FAO Representation in Mozambique

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Implementing Partners

The Ministry of Sea, Inland Waters and Fisheries and the National Institute for Aquaculture and Fisheries Development (IDEPA).

Beneficiaries

Fisheries officers, select farmers, and fish processors, traders and vendors.

Country Programming Framework

Outcome 1: Improve productivity and production in all sectors with emphasis on agriculture.

Output 1.2: Producers in agriculture and fisheries sectors have enhanced capacity to adopt sustainable production techniques for own consumption and improved market participation.



BACKGROUND

Over the past decade, the Government of Mozambique has been promoting the use of aquaculture to combat declining fish productivity. Importantly, the optimal climatic conditions (temperature and rainfall), abundant water sources, availability of flat plains and already established market prime Mozambique for the successful adoption of commercial fish farming. However, since aquaculture is a relatively new venture in the country, the basic principles of fish farming are, in general, poorly understood. The major barriers to the development of the aquaculture sector include limited access to high quality fish seeds, poor quality and/or expensive feed, sub-optimal pond construction, poor farm management and limited market access. In Mozambique, subsistence fish farmers tend to operate as individuals and focus on fish numbers rather than providing sufficient nutrients for animal growth. Consequently, this has resulted in limited fish production and difficulties regarding the division of labour and the marketing of surpluses. Additionally, despite the establishment of IDEPA, there are still inadequate advisory services for aquaculture development as the agency and its officers lack knowledge and field experience.

To address these challenges, the Government of Mozambique requested assistance from FAO in an effort to transform and develop fish farming value chains. The ultimate goal of the project was to cultivate an economically sustainable and socially inclusive aquaculture sector driven by public-private partnerships (PPPs). Using the Inhambane province as a starting point, the provision of technical and material support to farmers was designed to enhance the management of farmer associations, promote commercial aquaculture activities, improve the production and marketing of both seeds and feed, and support the implementation of good fish farming practices with efficient technology.

IMPACT

The project aimed to improve food security and nutrition in Mozambique and reduce poverty along value chains in the fisheries sector.

ACHIEVEMENT OF RESULTS

A baseline assessment of the aquaculture sector was performed through a review of regional farming activities, followed by a training workshop that addressed identified weaknesses within the industry. Utilizing the expertise of aquaculture and agribusiness officers, as well as a project consultant, a series of training workshops were carried out to develop the capacity of fisheries officers and fish farmers on how to effectively run aquaculture as a business.

Throughout the course of the project, numerous on-farm extension training sessions on feed production and feed management were delivered. Importantly, farmers' access to sufficient and high quality fish seeds was enhanced thanks to the setup and operationalization of a hatchery that also received technical capacity development. Additionally, training sessions were provided for select stakeholders, which included a training centre for farmers from the province, on seed production and handling, hatchery management and biosecurity.

The pertinent issue of farmers' access to suitable feed was largely addressed through the provision of equipment and training for small-scale producers. This infrastructure allowed for the production of non-commercial feed. Capacity building activities were also carried out for an on-farm feed producer, developing its potential for commercial feed production in the future. On top of this, a series training sessions were carried out for select stakeholders, addressing the topics of feed formulation, production, handling, pricing, marketing and distribution.

IMPLEMENTATION OF WORK PLAN

Project activities were implemented within the allocated budget, accounting for lower than anticipated funding availability for the recruitment of experts. Administrative processes and the organization of travel for international personnel also complicated the lengthy recruitment process.

The reluctance of project stakeholders, particularly the Government, to establish PPPs was a major obstacle throughout project implementation. The Government only became fully dedicated to involving other stakeholders in the development of aquaculture value chains in 2019. Nevertheless, the project played an important role in advocating for the adoption of a value chain approach to aquaculture in Mozambique, and key stakeholders recognized this as an important step for the future.

FOLLOW-UP FOR GOVERNMENT ATTENTION

A key area for follow-up action is the further development and implementation of models and management arrangements through the formalization of PPPs that support commercial fish farming. Additionally, as commercial aquaculture develops and expands to other provinces that have good potential, it will be important to evaluate its impact on poverty reduction along aquaculture value chains.

SUSTAINABILITY

1. Capacity development

Under the project, stronger relationships were developed between key stakeholders, particularly as the Government became more receptive to working with all actors in the aquaculture sector. These relationships, however, need to be further developed and formalized beyond the project. While the technical and operational capacity of small-scale fish seed and feed producers was developed, Mozambique was not fully prepared for the expansion of commercial aquaculture by project closure. In spite of this, the development of the technical capacities of stakeholders under the project will support the establishment of PPPs, as well as the development of a more economically sustainable and socially inclusive aquaculture sector.

2. Gender equality

The project was designed to benefit both male and female workers in the aquaculture sector. A record was kept of female involvement in capacity development activities, which is particularly important given their active role in farming and as government extension officers.

3. Environmental sustainability

The project addressed issues relating to biosecurity, good husbandry practices and quality control within the aquaculture sector.

4. Human Rights-based Approach (HRBA) – in particular Right to Food and Decent Work

The enhanced technical capacity of stakeholders supports the development of a socially inclusive economy as commercial aquaculture develops in Mozambique. Critically, a long-term goal of the project is to reduce poverty at all points along aquaculture value chains.

5. Technological sustainability

The technology introduced during the project is highly suited to the prevailing conditions for fish farming in Mozambique. Small-scale farmers adopted good practices and gained sufficient knowledge in aquaculture production and management. The skills developed for the successful production and management of fish seeds and feed will need to be applied in the context of commercial aquaculture.

6. Economic sustainability

A project proposal for continued capacity building activities in the aquaculture sector was developed, forming part of an ongoing effort to support commercial aquaculture in Mozambique. This initiative is aligned with other priorities that were identified in the sector as part of a strategic industry plan supported by the Norwegian Agency for Development Cooperation (Norad).



DOCUMENTS AND OUTREACH PRODUCTS

Documents

- ❑ Tilapia Hatchery and Grow-Out – First Mission Report. A Napuru. July 2017. 21 pp.
- ❑ Inception Report. V Schmidt. July 2017. 54 pp.
- ❑ FAO Consultation Report A2. L de Wet. March 2018. 17 pp.
- ❑ FAO Report of Aquaculture Platform for Inhambane Meeting. V Schmidt. June 2018. 12 pp.
- ❑ Terms of Reference for the Established Aquaculture Platform for Inhambane. June 2018. 2 pp.
- ❑ FAO Consultation Report A3, L de Wet. October 2018. 13 pp.
- ❑ FAO Consultation Report A4. L de Wet. December 2018. 17 pp.
- ❑ FAO Consultation Report B1. L de Wet. June 2019. 15 pp.
- ❑ FAO Consultation Report B2 – Aquaculture and Aquafeed Supply in Mozambique. L de Wet. August 2019. 20 pp.



Outreach Material

- ❑ Platforms for Partnerships along the Value Chain. V Schmidt and B Hladka. May 2017.
- ❑ Aquaculture Review. L de Wet, V Schmidt and B Hladka. October 2018.
- ❑ Introduction to Aquaculture Techniques. V Schmidt. October 2017.
- ❑ Tilapia Grow-out in Cages. V Schmidt. October 2017.
- ❑ Tilapia Grow-out in Ponds. V Schmidt. October 2017.
- ❑ Introduction to Aquafeeds. V Schmidt. October 2017.
- ❑ Fish Feeding. V Schmidt. October 2017.
- ❑ Aquaculture Models. V Schmidt. October 2017.
- ❑ Post-harvest Processing. V Schmidt. October 2017.
- ❑ Aquaculture as a Business Modules. V Schmidt and B Hladka. November 2017.
- ❑ Tilapia Nutrition Basics Manual. L de Wet. March 2018.
- ❑ Tilapia Feed Formulation Manual. L de Wet. March 2018.
- ❑ Commercial Tilapia Feed Manufacturing Manual. L de Wet. March 2018.
- ❑ Tilapia Feed Evaluation Manual. L de Wet. March 2018.
- ❑ Tilapia Feeding Management. L de Wet. March 2018.
- ❑ Farm-made Tilapia Feeds. L de Wet. March 2018.
- ❑ Good On-farm Aquafeed Management Practice. L de Wet. March 2018.
- ❑ Tilapia Production Manual. L de Wet. August 2018.
- ❑ Selection of Broodstock. L de Wet. August 2018.
- ❑ Nursery Care and Early-stage Production of Tilapia Fry and Fingerling Manual. L de Wet. August 2018.
- ❑ Tilapia Grow-out Manual. L de Wet. August 2018.
- ❑ Record Keeping Manual. L de Wet. August 2018.

ACHIEVEMENT OF RESULTS - LOGICAL FRAMEWORK

Expected Impact	Nutrition and food security improved, and poverty along the sector value chain reduced		
Outcome	Increased aquaculture productivity, fish production, value addition, incomes and employment along the aquaculture value chain for targeted beneficiaries		
	Indicator	Two innovative aquaculture practices adopted by producers in fisheries sector	
	Baseline	0	
	End Target	2	
	Comments and follow-up action to be taken	The project developed the capacity of over 30 farmers in innovative aquaculture practices, which were adopted and applied in the province. One producer was making on-farm fish feed, as well as fingerlings, for distribution throughout the province.	
Output 1			
Baseline			
Indicators		Target	Achieved
– Aquaculture review conducted. – Inception held.			Yes
Baseline			
Comments			
Activity 1.1			
Conduct a review on aquaculture activities in the regions targeted by the project			
Achieved		Yes	
Comments		The information gathered was useful for the next phases of the project.	
Activity 1.2			
Organize one training workshop to discuss and address the weaknesses identified by the Activity 1.1			
Achieved		Yes	
Comments			
Output 2			
Farmers' capacity to conduct aquaculture as a business is developed			
Indicators		Target	Achieved
Training sessions conducted			Yes
Baseline			
Comments			
Activity 2.1			
Organize a three-day training workshop on conducting aquaculture as a business for fisheries officers			
Achieved		Yes	
Comments		A 3-day training of trainers was held by project task force officers and a project consultant assisted trainers with the rollout of an improved extension programme for farmers.	
Activity 2.2			
Organize three training workshops of one day each on conducting aquaculture as a business			
Achieved		Yes	
Comments		The training was carried out by a project consultant. More farmer-level support, through farmer-farmer extension, would be useful beyond the project.	

Output 3	Access to sufficient good quality fish seed is secured		
	Indicators	Target	Achieved
	– Training sessions conducted. – PPP agreement signed.	– 4 training sessions. – 1 agreement.	Yes
Baseline			
Comments	It was not possible to implement PPP arrangements because there was insufficient buy-in from project stakeholders – most of the commercially-oriented farmers and the Government were not willing to adopt this approach. In addition, until 2019 it was not possible to convince the Government to involve all the required stakeholders for this activity. Nevertheless, the advocacy for a value chain approach to aquaculture, including the facilitation of a platform for value chain actors, resulted in recognition by stakeholders that such an approach would be adequate and required for the next phases of the project.		
Activity 3.1	Using results of the review on aquaculture activities conducted under Output 1.1, estimate the current and potential demand for seed in each district		
	Achieved	Yes	
	Comments	The estimates were included in the aquaculture review.	
Activity 3.2	Organize one or two consultation meeting(s) with farmers to explain the approach of the project in assisting them in resolving the issue of access to sufficient good quality seed		
	Achieved	Yes	
	Comments	The Government decided not to involve larger scale farmers directly for PPP under the project. Instead of this activity, extension training sessions on feed production and feed management were provided on-farm.	
Activity 3.3	Prepare a standard PPP agreement between the project and farmers		
	Achieved	No	
	Comments	Extension training sessions on feed production and feed management were carried out in place of this activity.	
Activity 3.4	Sign the agreement under the Activity 3.3 with selected associations and individual farmers.		
	Achieved	No	
	Comments	Extension training sessions on feed production and feed management were carried out in place of this activity.	
Activity 3.5	Based on the agreement under the Activity 3.3, assist the signatories of the PPP under Activity 3.4 in establishing small but efficient modern privately operated hatcheries		
	Achieved	Partially	
	Comments	Although the Government decided not to establish PPP with larger scale farmers under the project, the technical capacity of one hatchery producer was developed, contributing to its successful setup and operationalization.	
Activity 3.6	Based on the agreement under the Activities 3.3 and 3.4, avail the necessary equipment and supplies (including brood stock, feed, and others) to get the hatcheries running		
	Achieved	Partially	
	Comments	Although the Government decided not to establish PPP with larger scale farmers under the project, the technical capacity of one hatchery producer was developed, contributing to its successful setup and operationalization.	
Activity 3.7	Organise two training sessions for one day each for farmers on seed production, hatchery management, bio-security, fish seed handling, etc.		
	Achieved	Yes	
	Comments	Training sessions were carried out for two select stakeholders, one being a training centre involving farmers from the province.	
Activity 3.8	Collect and analyse data and disseminate the resulting information on the technical and economic feasibility of quality seed production for use by other interested farmers and entities		
	Achieved	Yes	
	Comments	This information was included in the aquaculture review, as well as other project reports.	

Output 4	Farmers' capacity to produce good quality and accessible feed is developed		
	Indicators	Target	Achieved
	– Training sessions conducted. – PPP agreement signed.	– 4 training sessions. – 1 agreement.	Yes
Baseline			
Comments	Owing to insufficient buy-in from the Government and commercial feed producers, PPP arrangements could not be implemented under the project. Project activities were further complicated by the fact that the Government was only convinced to involve all the required stakeholders in 2019. Nevertheless, the advocacy for a value chain approach to aquaculture, including the facilitation of a platform for value chain actors, resulted in recognition by stakeholders that such an approach would be adequate and required for the next phases of the project.		
Activity 4.1	Using results of the of the review on aquaculture activities conducted under Output 1.1, estimate the current and potential demand for feed in each district		
	Achieved	Yes	
	Comments	The estimates were included in the aquaculture review.	
Activity 4.2	Organize one or two consultation meeting(s) with farmers to explain the approach of the project in assisting them in fish feed production and access		
	Achieved	Yes	
	Comments	Since the Government decided not to involve larger scale farmers directly for PPP under the project, extension training sessions on feed production and feed management were provided on-farm as an alternative.	
Activity 4.3	Prepare a standard PPP agreement between the project and farmers feed manufacturers		
	Achieved	No	
	Comments	Since the Government decided not to involve larger scale farmers directly for PPP under the project, extension training sessions on feed production and feed management were provided on-farm as an alternative.	
Activity 4.4	Sign the agreement under the Activity 4.3 with selected associations and individual farmers		
	Achieved	No	
	Comments	Since the Government decided not to involve larger scale farmers directly for PPP under the project, extension training sessions on feed production and feed management were provided on-farm as an alternative.	
Activity 4.5	Based on the agreement under Activity 4.3, assist the signatories of the PPP under Activity 4.4 in establishing small and efficient privately operated feed mills		
	Achieved	Partially	
	Comments	Although the Government decided not to establish PPPs with larger scale producers under the project, the technical capacity (to produce fish feed) of commercial animal feed producers in Maputo and one producer (hatchery) in Inhambane was developed, contributing to the successful setup and operationalization of feed production. It should be noted that given the prevailing scale of fish production through aquaculture in the country, the economy of scale required for commercial fish feed production could not be implemented.	
Activity 4.6	Based on the agreement under Activities 4.3 and 4.4, avail the necessary equipment and supplies to get the feed mills running		
	Achieved	Partially	
	Comments	Although PPPs were not established between larger scale farmers and the Government, small producers were provided with equipment and training for the production of non-commercial feeds. Capacity building activities were also provided for 1 on-farm feed producer in the province. The farm could become suitable for commercial production beyond the project.	
Activity 4.7	Organize two training sessions for one day each for feed manufacturers on feed formulation, production, handling, pricing, marketing and distribution, etc.		
	Achieved	Yes	
	Comments	Training sessions were carried out for 3 selected stakeholders in Inhambane and Maputo.	
Activity 4.8	Collect, analyze data, generate and disseminate the resulting information on the technical and economic feasibility of quality feed production by small privately owned feed mills for use by other interested farmers and entities		
	Achieved	Yes	
	Comments	This information is included in the aquaculture review, as well as other project reports.	

Output 5	Selected local poultry and/or livestock feed producing mills' capacity to produce good quality and accessible fish feed is developed		
	Indicators	Target	Achieved
	Training sessions conducted	-2 training sessions -1 agreement	Yes
Baseline			
Comments	As mentioned under Outputs 3 and 4, it was not possible to implement PPP arrangements and the Government only agreed to involve all the necessary stakeholders for successful implementation of project activities in 2019. Nevertheless, the value chain approach to aquaculture was recognized as a necessary step for the implementation of the project.		
Activity 5.1	Using on results of the of the review on aquaculture activities conducted under Output 1.1, identify local poultry and/or livestock feed producing mills willing to produce fish feed		
	Achieved	Yes	
	Comments	The identified mills were included in the aquaculture review.	
Activity 5.2	Select one or two of the local poultry and/or livestock feed producing mills willing to produce fish feed		
	Achieved	Yes	
	Comments	Two of the main animal feed producers based in Maputo were identified and expressed interest in a fish feed line.	
Activity 5.3	Establish a partnership agreement with selected local poultry and/or livestock feed producing mills to produce fish feed		
	Achieved	No	
	Comments	On-farm extension training activities were carried out in place of establishing partnerships with local mills that were willing to produce fish feed.	
Activity 5.4	Collect, analyse data, generate and disseminate the resulting information on the technical and economic performance of the feed production by local poultry and/or livestock feed producing mills for use by other interested farmers and entities		
	Achieved	Yes	
	Comments	This information was included in the aquaculture review, as well as other project reports.	

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For more information please contact: Reporting@fao.org