

Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by JICA Philippines Office: October, 2014

Country Name	Comprehensive Outreach and Fish Breeding Project
Republic of the Philippines	

I. Project Outline

Background	The fishery industry was recognized as one of the prominent industries with high potential for more job creation and effective land utilization. The supply of wild milkfish fry, however, was decreasing due to deterioration of coastal resources. To address this situation, millions of artificially produced fry were imported from Indonesia and Taiwan in early 2000s, but these fry were said to suffer high mortality rate due to the long transportation time. On the fish farmers' side, small fish farmers had been facing difficulties in improving their livelihood due to various factors such as high price of feeds and inappropriate operation of fish farming. In addition, intensive aquaculture development led to serious environmental problems such as deterioration of water quality of fish ponds. It resulted in mass mortality of reared fish in the ponds and negatively affected farmers' income and livelihood.												
Objectives of the Project	<ol style="list-style-type: none"> Overall Goal: Livelihood of fish farmers is enhanced in the pilot municipalities. Project Purpose: Aquaculture outreach functions in the pilot municipalities. 												
Activities of the project	<ol style="list-style-type: none"> Project site: Region I, III, and IV-B. (Pangasinan, Pampanga, and Oriental Mindoro) Main activities: (i) Formulation of the plan to improve fry production and hatchery management; (ii) Preparation of the technical manual for hatchery workers and implementation of the training; (iii) Establishment of Philippine Bangus Development Plan (PBDP) hatchery network; (iv) Preparation of the technical manual for extension workers and fish farmers and implementation of the training; and (v) Support for farmers' knowledge sharing. Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese Side</td> <td style="width: 50%;">Philippine Side</td> </tr> <tr> <td>1) Experts: 9 persons</td> <td>1. Staff allocated: 10 persons.</td> </tr> <tr> <td>2) Trainees received: 1 person in Japan, 5 persons in Indonesia</td> <td>2. Land and facilities: Land, laboratory and equipment necessary for the project activities, office space and facilities, etc.</td> </tr> <tr> <td>3) Equipment: 3.14 million peso including vehicles, engine pump, etc.</td> <td>3. Local cost: 25.5 million pesos</td> </tr> </table> 					Japanese Side	Philippine Side	1) Experts: 9 persons	1. Staff allocated: 10 persons.	2) Trainees received: 1 person in Japan, 5 persons in Indonesia	2. Land and facilities: Land, laboratory and equipment necessary for the project activities, office space and facilities, etc.	3) Equipment: 3.14 million peso including vehicles, engine pump, etc.	3. Local cost: 25.5 million pesos
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Ex-Ante Evaluation	2006	Project Period	November 2006 to April 2010	Project Cost	295 million yen								
Implementing Agency	Bureau of Fisheries and Aquatic Resources, Department of Agriculture (DA-BFAR), National Integrated Fisheries Technology Development Center (NIFTDC)												
Cooperation Agency in Japan	IC Net Limited and Fisheries & Aquaculture International Co., Ltd.												

II. Result of the Evaluation

1 Relevance
<p>This project has been highly relevant with Philippines' development policy of "development of the fishery sector, notably aquaculture sector" as set in policy documents including the Medium Term Philippine Development Plan (2004-2010) and PBDP (2013-2016) at the time of both ex-ante evaluation and project completion. It has been consistent with development needs for sufficient and stable supply of milkfish fry. The project was relevant also with Japan's ODA policy at the time of ex-ante evaluation: Country Assistance Program (2002), in which agricultural and rural development was considered as one of the means for alleviating poverty and redressing regional disparities.</p> <p>Therefore, relevance of this project is high.</p>
2 Effectiveness/Impact
<p>The project aimed to strengthen aquaculture outreach functions in the pilot local government units (LGUs) in the Provinces of Pangasinan, Pampanga and Oriental Mindoro, through the formulation of the improvement plan for fry production and hatchery management, training of hatchery workers and extension workers, establishment of PBDP hatchery network¹, and support for farmers' knowledge sharing. The Overall Goal was set for improving the livelihood of fish farmers in the pilot LGUs through raising the profitability level of milkfish aquaculture².</p> <p>The Project Purpose was mostly achieved by the time of project completion. NIFTDC's supply of milkfish fry increased after the project started but the supply of milkfish eggs decreased. The decrease of egg supply was due to the suspension of milkfish production of satellite hatcheries damaged by typhoons and decreased needs from the private hatcheries. Regarding fry production in the off-season (July to February), it had been increasing every year during the project period and contributing to the supply of fry throughout the year. As to the NIFTDC's outreach function and activities for fish farmers, 80% of pilot fish</p>

¹ PBDP targeted 5 central hatcheries and 12 satellite hatcheries and planned to add 10 public satellite hatcheries and 10 private satellite hatcheries as of 2006.

² Experiments were done during the project period to develop and verify an environment-friendly milkfish aquaculture technique mentioned below that is inexpensive and adoptable in the field by fish farmers; (1) Effective use of natural food, (2) Improvement of income generation through fingerling production, and (3) Income generation with group approach. (Page 14-17 of Final Report April 2010)

farmers had applied the knowledge and skills introduced by the project on milkfish aquaculture and hatchery management before the project completion. It was also confirmed that 93.6% of non-pilot fish farmers who participated in the training had applied learned knowledge and skills by the end of the project.

After the project completion, some of the project effects have continued. NIFTDC totally stopped supply of milkfish eggs, as nearby PBDDP hatcheries in Region I have closed down their operation or shifted to production of other species. Fry supply had been decreasing after the project completion, attributed to poor water quality at NIFTDC, prolonged breakdown of the seawater intake system, and frequent typhoons. They have increased in 2013, but have not returned to the same level at the project completion for both high- and off-seasons. For the stable supply of milkfish fry, backyard hatchery system³ was recommended by the Terminal Evaluation Team but it has not been introduced at the time of ex-post evaluation. Besides fry, in 2014, NIFTDC has started supplying milkfish fingerlings⁴ to BFAR regional offices to ensure high survival rates. Regarding the continuity at the farmers' level, more than half of both of the pilot and non-pilot fish farmers have continued their learning from the project, although some farmers quitted milkfish aquaculture because of the typhoons' damages on their fishponds.

Regarding the Overall Goal, the project has proven that the use of natural food (e.g. lumut and lablab) and fermented rice bran reduced feed cost by as much as 50% compared to commercial feeds. But the improvement of the livelihood of fish farmers in the pilot municipalities as a whole was not confirmed at the time of ex-post evaluation. As the profitability of milkfish aquaculture was not verified by the quantitative data and the official statistics at the ex-post evaluation, profitability was examined by the information collected by the interview with fish farmers about the production cost and sales⁵. All the interviewed fish farmers answered that the production cost has increased, approximately 10%, annually. They feel that this has been caused by increase in the cost of farm inputs including commercial fish feeds⁶, fertilizers and labor. On the other hand, 54% of the interviewed fish farmers responded that the production sales have increased more than the cost increase. They assume that the contributing factors to the sales increase were higher stocking density, improved water quality resulting from increased use of natural food and LGUs' intensive monitoring, and increased farm-gate price of milkfish.

So as to other impacts, the project experience has been spread to outside pilot municipalities through NIFTDC's biannual training on milkfish production and hatchery management and some LGUs' efforts. It is observed that the number of fish processing enterprises increased in Dagupan and Lingayen and more female workers have been hired and involved in fish feeding and vending. There has not been negative impact on the environment. Rather, the water quality of fish ponds has improved because of the promoted use of natural feed and water quality monitoring conducted by LGUs. There was no land acquisition and resettlement.

Thus, achievement of the Project Purpose was mostly achieved at the time of completion, but the achievement of the overall goal in the pilot municipalities as a whole was not confirmed. Therefore, effectiveness/ impact of the project is fair.

Achievement of the Project Purpose and Overall Goal

Aim	Indicators	Results																											
(Project Purpose) Aquaculture outreach functions in the pilot municipalities.	1) Supply of milkfish eggs and fry of NIFTDC are increased compared to those before the actual operation of the project started. (Those figures for 2006 are 27.46 million and 2.03 million, respectively.)	(Project completion) Supply of milkfish eggs: Not achieved Supply of milkfish fry: Achieved (Ex-post Evaluation) Supply of milkfish eggs: Not achieved. After the project completion, milkfish eggs have not been produced at NIFTDC Supply of milkfish fry: Achieved . Fry supply decreased to 2012 but increased in 2013.																											
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	2) NIFTDC produce fry in off-season month (July-February) every year.	(Project Completion) Achieved. - NIFTDC produced fry in off-season months every year. (Ex-post evaluation) Still producing every year but decreased drastically after the project completion.																											

³ Backyard hatchery system is a system which has a central hatchery (such as NIFTDC) that produces milkfish eggs and excess of milkfish eggs can be provided to small-scale hatcheries (backyard) for pilot testing. With assistance from a central hatchery, the technology on construction of hatchery facilities, larval rearing, harvesting, packing, and distribution among others, will be transferred to local fishermen eager to become involved in the milkfish egg production. This is called as "Bali model" in Indonesia and NIFTDC counterparts observed the effectiveness of the model during their training in Indonesia.

⁴ Fry are fish just after they are hatched. They are very small and often actually look like dirt in the water. Fingerlings vary in size, but generally are older. http://www.answers.com/Q/What_is_the_difference_between_fry_and_fingerlings_in_Aquaculture

⁵ Interview was conducted with 48 fish farmers in 6 pilot municipalities in 3 target provinces, namely, Dagupan City and Lingayen of Pangasinan Province, Sasmuan and Masantol of Pampanga Province, and Bongabong and Naujan of Oriental Mindoro Province.

⁶ It is observed at the time of ex-post evaluation that most of the fish farmers would resort to using commercial feeds as an alternative in case production of natural foods is difficult. For instance, source of organic manure was not an issue during project implementation due to the presence of poultry in Pangasinan. However, at the time of ex-post evaluation, it was informed that there has been a decrease in the number of poultry in the area and thus affecting production of organic manure. As such, it became more convenient for fishermen to resort to commercial feeds which are readily available in the market. During focus group discussions with fish farmers, it was learned that farmers are using commercial foods because production of natural foods such as "lab-lab" and "lumut" has become a challenge due erratic weather (for instance, lumut or algae can only grow during rainy season) and limited source of organic manures (such as chicken manure) necessary for natural food production. Further, particularly for Pampanga's case, fishponds cannot be drained on a regular basis because of flooding and/or their river is silted with lahar.

		(million)							
		2006	2007	2008	2009	2010	2011	2012	2013
		0.21	0.90	2.35	2.72	6.36	0.67	0.56	2.60
	3) 50% of fish farmers, who participated in trainings but not pilot farmers, apply skill and knowledge introduced by the project.	(Project completion) Achieved. - 93.6% of fish farmers (not pilot farmers) who participated in training applied skill and knowledge introduced by the project. (Ex-post evaluation) Effects being continued. - 68% of the interviewed fish farmers (not pilot farmers) who participated in training continue applying skill and knowledge introduced by the project.							
	4) 70% of fish farmers, who participated in pilot activities, continue to apply knowledge and skill on milkfish aquaculture and management introduced by the project.	(Project completion) Achieved. - 80% of fish farmers who participated in pilot activities answered that they would continue to apply knowledge and skill on milkfish aquaculture and management introduced by the project. (Ex-post evaluation) Effects being continued. - 77% of the interviewed fish farmers who participated in pilot activities have continued applying knowledge and skill introduced by the project.							
(Overall goal) Livelihood of fish farmers is enhanced in the pilot municipalities.	Profitability of aquaculture production of a fish farmer in the pilot municipalities is improved (decrease in production cost and increase in sales) compared to the one before the actual operation of the project started.	(Ex-post evaluation) Increase in the profitability in the pilot municipalities as a whole was not confirmed - All the interviewed fish farmers answered that the production cost has increased. Among them, 54% answered that the sales has increased more than the cost increase, while the rest (46%) answered that it has not changed.							

Source: Completion Report, NIFTDC records, and interview with fish farmers, LGU-MAO staff.

3 Efficiency

While the project period was within the plan (ratio against the plan: 100%), the project cost exceeded the plan (ratio against the plan: 118%), mainly due to extended months of the experts' dispatch to recover delayed activities. Therefore, efficiency of the project is fair.

4 Sustainability

In the policy aspect, the project is still given importance in the current development policy. PBDP is effective, and the fishery sector remains a priority in the Medium Term Philippine Development Plan (2010-2016). Also, the National Fishery Sector Development Program identifies milkfish as a priority commodity, and BFAR has been promoting the development of mariculture parks managed by the LGUs with milkfish aquaculture as a predominant activity.

Institutionally, the organizational responsibility of BFAR and NIFTDC is the same as the one during the project period. However, the network of PBDP hatcheries strengthened by the project has not been functioning. The reasons are (i) Nearby PBDP's milkfish hatcheries have terminated their operation after being damaged by typhoons, and (ii) several private hatcheries have closed down their operation due to low profitability, as imported milkfish is reportedly sold at a lower price. Outreach activities for fish farmers have not continued because of insufficient human resources of LGUs; Among the six interviewed LGUs, four LGUs do not have sufficient extension workers. As a result, milkfish farmers' meetings to share the good practices have not been organized after the project completion.

Regarding the technical aspect, most of NIFTDC staff specialized in milkfish and hatchery workers remain in the same position, and the on-the-job training is given to the newly employed staff at NIFTDC. The technical manuals developed by the project have been utilized at NIFTDC. They have been also distributed to all PBDP hatcheries, but their utilization has not been monitored. Outreach activities such as technical advice and dispersal of fingerlings have been conducted in the four of the interviewed six pilot LGUs, but it is not sufficient to cover all the needs of fish farmers. In the two LGUs in Oriental Mindoro where NIFTDC and BFAR stopped technical support after the project completion, no extension services have been provided. These areas are dependent on rice and rice production has been more prioritized even since before the project.

Also in the financial aspect, there have been minor problems. For NIFTDC, necessary budget has been allocated for milkfish hatchery management, outreach activities and operation and maintenance of the equipment. However, the sufficient budget is not secured at the LGUs level. For example, among the interviewed 6 LGUs, the five LGUs lack adequate budget for extension activities, even despite BFAR's financial support. LGUs' prioritization in other commodities such as rice and corn is another factor for insufficient budget allocation for fishery extension services.

From these findings, it is considered that the project has some problems in institutional, technical and financial aspects of the implementing agency; therefore, sustainability of the project is fair.

5 Summary of the Evaluation

The project has mostly achieved the Project Purpose. As the Project Purpose, NIFTDC's supply of milkfish eggs and fry have increased, and the fish farmers who participated in the project activities have applied the knowledge and skills introduced by the project. For the Overall Goal, the improvement of the livelihood of fish farmers in the pilot municipalities as a whole was not confirmed at the time of ex-post evaluation but 54% of the interviewed fish farmers responded that sales from the milkfish production are increasing after the project started. Regarding the efficiency, the project cost exceeded the plan. As for the project sustainability, although BFAR and NIFTDC have maintained their function and resources, the pilot LGUs have not conducted sufficient extension services for farmers due to insufficient budget and staff.

In light of above, the project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing agency:

For BFAR and NIFTDC:

- For stable supply of milkfish fry, it is desirable, as recommended by the Terminal Evaluation Team, to introduce a backyard hatchery system around NIFTDC, which was observed by the counterparts during their training in Indonesia that it worked effectively there. It could be piloted in Pangasinan, and if it is found successful, then expand the system to PBDP hatcheries.
- In order to reduce milkfish production costs, NIFTDC should continuously develop technologies to reduce the costs and disseminate such technologies to LGUs, which put priorities on milkfish farming. In this regard, regular monitoring visits by NIFTDC personnel to pilot LGUs are necessary to understand the problems faced by milkfish farmers.
- BFAR regional offices should intensify their technical support to LGUs, which put priorities on milkfish farming, such as farmers' training and techno-demo farms, especially in Oriental Mindoro, so that they strengthen outreach services. In this regard, technical assistance by NIFTDC to BFAR regional offices is essential.
- It is necessary to organize farmers' meetings for sharing good practices.

For pilot LGUs:

- It is recommended to continuously seek technical and financial assistance from agencies mandated to provide extension support services such as BFAR regional offices, NIFTDC, etc.

Lessons learned for JICA:

- After the project ended in April 2010, it was found out that no outreach services or technical support were conducted in some pilot LGUs, especially those located far from NIFTDC. To enhance sustainability of the project effects for the project which has counterparts both in the national level institution and local government units, it is important to formulate a common understanding about an appropriate exit plan or strategy to be conducted by each institution during project period.
- Despite the increase in production cost, some milkfish farmers were able to realize profits through improved stocking density. This was realized through the significant improvement in water quality resulting from increased use of natural food (not commercial fish feed) and intensive monitoring of water quality by the LGU. The project has proven that giving due importance to environmental aspects in milkfish aquaculture extension generates positive effects even in the short term.



(Nursery tanks used for milkfish production in Oriental Mindoro)



(Some parts of the Naujan Hatchery for broodstock management)