

## 付 属 資 料

1. 協議議事録 (M/M) (合同評価報告書を含む)
2. PDM
3. 評価グリッド
4. プロジェクト実施体制図
5. プロジェクト活動実績総括表

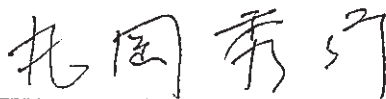
**MINUTES OF MEETING  
ON  
THE TERMINAL EVALUATION  
FOR  
SMALL-SCALE AQUACULTURE EXTENSION FOR PROMOTION OF  
LIVELIHOOD OF RURAL COMMUNITIES IN MYANMAR PROJECT**

The Japan International Cooperation Agency (hereinafter referred to as “JICA”) dispatched the mission, headed by Mr. Hideyuki MARUOKA, to the Republic of the Union of Myanmar (hereinafter referred to as “Myanmar”) from February 29 to March 16, 2012, for the purpose of conducting Terminal Evaluation for “Small-scale Aquaculture Extension for Promotion of Livelihood of Rural Communities in Myanmar Project” (hereinafter referred to as “the Project”) in accordance with the Record of Discussions on the Project.

For this purpose, the Japanese mission and the Myanmar authorities concerned formed the Joint Terminal Evaluation Team (hereinafter referred to as “the Team”). After review and analysis of the activities and achievements of the Project, the Team prepared Joint Terminal Evaluation Report (hereinafter referred to as “the Report”), which was presented to the Joint Coordinating Committee (hereinafter referred to as “the JCC”).

The JCC discussed the major issues pointed out in the Report and agreed the matters attached hereto.

Nay Pyi Taw, March 15, 2012



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Mr. Hideyuki MARUOKA  
Deputy Director General  
Rural Development Department  
Japan International Cooperation Agency  
Japan



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Mr. Khin Ko Lay  
Director General  
Department of Fisheries  
Ministry of Livestock and Fisheries  
Republic of the Union of Myanmar

ATTACHMENT

1. The Joint Terminal Evaluation Team presented the Report to the JCC.
2. The JCC accepted the Report and agreed to take necessary measures for successfully sustaining and extending the achievement of the Project.

Annex 1: Joint Terminal Evaluation Report

  
10/31/12



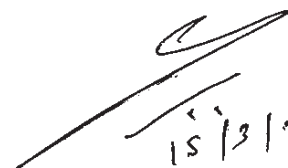
**Joint Terminal Evaluation Report  
For  
Technical Cooperation for  
Small-scale Aquaculture Extension for Promotion of Livelihood of  
Rural Communities in Myanmar Project**

**Nay Pyi Taw  
March 15, 2012**

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Mr. Hideyuki Maruoka  
Leader  
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15/3/2012

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## List of Abbreviations and Acronyms

CARTC	Central Agricultural Research and Training Center
C/P	Counterpart
DoF:	Department of Fisheries
FTF:	Farmer to Farmer
JCC:	Joint Coordinating Committee
JFY	Japanese Fiscal Year
JICA:	Japan International Cooperation Agency
MAS:	Myanma Agriculture Service
M/M:	Minutes of Meeting
ODA	Official Development Assistance
OJT:	On the Job Training
PDM:	Project Design Matrix
PO:	Plan of Operation
R/D:	Record of Discussion
SAEP:	Small-scale Aquaculture Extension for Promotion of Livelihood of Rural Communities in Myanmar Project
LVBD	Livestock Breeding and Veterinary Department
SLRD	Settlements and Land Records Department



## 1. Introduction

### 1.1 Objectives of the Terminal Evaluation

Objectives of the Terminal Evaluation were as follows:

- (1) To verify the achievement and implementation process of “Small-scale aquaculture extension for promotion of livelihood of rural communities in Myanmar project (SAEP)” (hereafter referred to as “the Project”) in terms of five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact and Sustainability) based on the Record of Discussion (R/D) and Project Design Matrix (PDM);
- (2) To identify the obstacles and facilitation factors that have affected the implementation process and to review the project plan of the remaining period of the Project; and
- (3) To discuss and identify necessary measures for overcoming challenges on the project operation and, report and recommend the results of discussions to the relevant government agencies in Myanmar and Japan.

### 1.2 Members of the Terminal Evaluation Team

#### (1) Japanese Side

Table 1-1: JICA Evaluation Team Members

Name	Job Title	Designation & Organization
Mr. Hideyuki Maruoka	Leader	Deputy Director General, Rural Development Dept., JICA
Mr. Satoshi Chikami	Small-scale Aquaculture	Senior Advisor in Fisheries Development/Rural Development, JICA
Ms. Midori Shinzawa	Aquaculture extension	Staff, International Affairs Division, Fisheries Agency, Government of Japan
Ms. Aika Tomimatsu	Evaluation Planning	Staff, Paddy Field Based Area Division 1, Rural Development Dept., JICA
Mr. Harumi Iida	Evaluation Analysis	Global Link Management Co. (Consultant)

#### (2) Myanmar Side

Table 1-2: Myanmar Evaluation Team Members

Name	Designation & Organization
U Maung Maung Lwin	Asst. Dir., Aquaculture Division, DoF
U Saw Lah Paw Wah	Asst. Dir., Aquaculture Division, DoF

### 1.3 Schedule of the Terminal Evaluation

The Terminal Evaluation is conducted from February 29, 2012 to March 17, 2012. The

schedule of the Terminal Evaluation is attached as ANNEX 1.

## 2. Outline of the Project

### 2.1 Background of the Project

“Small-scale aquaculture extension for promotion of livelihood of rural communities in Myanmar project (SAEP)” has been officially launched in 2009 for the cooperation period of 3 years. The objective of the Project is to increase the number of farmers who are implementing small-scale aquaculture for the improvement of their livelihood in the target townships. To achieve the objective, small-scale fish culture including small-pond culture and rice-cum-fish culture is introduced to the farmers as the main activities of the Project. The Project also takes the so-called farmer-to-farmer extension approach as a main strategy to promote small-scale aquaculture among rural farmers without much dependence on governmental extension services. Since advanced farmers who are willing to transfer aquaculture technology to other farmers play essential roles to sustain the aquaculture development, the Project trains the core farmers on techniques of fish seed production, grow-out culture as well as intermediate culture of fish seed (to grow small fry to fingerling size). Those core farmers that produce fish seeds are motivated to approach and teach suitable aquaculture methods to other farmers in order to extend the market for fish seeds they produce. By establishing core farmers as local seed suppliers, the problem of inadequate seed supply will also be solved.

### 2.2 Summary of the Project

According to the PDM ver.2 authorized by the first JCC held on November 3, 2009, summary of the Project is as follows: The PDM of the Project is attached as ANNEX 2.

#### Project Title

- Technical Cooperation Project for Small-scale aquaculture extension for promotion of livelihood of rural communities in Myanmar project

#### Responsible Organization (and Implementing Organizations)

- Department of Fisheries (DoF), Ministry of Livestock and Fisheries

#### Project Duration

- June 8, 2009 – June 7, 2012 (36 months)

#### Target Area

Five (5) target townships from Ayeyarwady and Bago Regions, and Kayin State



### Target Group

- Farmers in the target townships with land for aquaculture such as pond and/or rice-field

### Overall Goal

Small-scale aquaculture for improvement of livelihood is disseminated in Ayeyarwady and Bago Regions and Kayin State, and extended in other less developed areas.

### Project Purpose:

Number of the farmers who are implementing small-scale aquaculture for the improvement of their livelihood is increased in the target townships.

### Outputs:

- 1) Necessary conditions and techniques on the small-scale aquaculture promotion for farmers in the target townships are clarified.
- 2) Extension systems of the small-scale aquaculture for the farmers in the target townships are strengthened.
- 3) “Pilot farmers” and “core farmers” are selected in the target township and “farmer to farmer” extension approach is practiced by them.

## 3. Methodology of the Terminal Evaluation

### 3.1 Procedure

Means of the Terminal Evaluation included analysis of documents, field survey and interview with stakeholders such as counterpart personnel, JICA experts, and so forth while using PDM. At the same time, Evaluation Grid which includes “Actual Project Achievement and Implementation Process” and “Five Evaluation Criteria” was prepared for the Evaluation. (Result of Evaluation Grid is attached as ANNEX 7 and 8)



### 3.2 Items of Analysis

Items of Analysis are 1) Project Achievement, 2) Implementation Process and 3) Five Evaluation Criteria.

#### (1) Project Achievement

Project achievement was measured in terms of Input, Output and Project Purpose in comparison with Objectively Verifiable Indicators of PDM as well as Plan of Operation (PO).



(2) Implementation Process

Implementation process of the Project was reviewed to see if activities had been implemented according to the schedule delineated in the PO, to see if the Project had been managed properly and to identify obstacles and/or facilitating factors that had affected the implementation process.

(3) Five Evaluation Criteria

Definition of Five Evaluation Criteria is described below.

Table 3-1: Definition of Five Evaluation Criteria

Relevance	Relevance refers to the validity of the Project Purpose and the Overall Goal in connection with development policy of the Government of Myanmar as well as the needs of beneficiaries, and policy of Japanese Official Development Assistance.
Effectiveness	Effectiveness refers to the extent to which the expected benefit of the Project has been achieved as planned. It also examines whether these benefits have been brought about as a result of the Project.
Efficiency	Efficiency refers to the productivity of the implementation process, examining if the inputs of the Project have been efficiently converted into the outputs.
Impact	Impact refers to direct and indirect, positive and negative impacts caused by the implementation of the Project, including the extent to which the Overall Goal has been attained.
Sustainability	Sustainability refers to the extent to which an implementing agency can further develop the Project, and the benefits generated by the Project can be sustained under the recipient country's policies, technology, systems and financial state.



#### 4. Project Performance and Implementation Process

Inputs made by both Japanese and Myanmar sides during the project period since the inception of the Project in June 2009 are summarized as follows. (List of Inputs from Japanese and Myanmar sides is shown in ANNEX 4.)

##### 4.1 Inputs

##### 4.1.1 Inputs from Japanese side

##### (1) Assignment of Experts

Totally, 6 experts have been assigned and dispatched for the Project. Those experts are in the fields of 1) Chief Adviser/Extension Policy, 2) Coordinator/Small-scale Aquaculture Technology, 3) Rural Socio-Economic Research, 4) Technical Advisor on Aquaculture and Extension, 5) Freshwater Fish Seed Production, 6) Extension for Small-scale Aquaculture Technique, and 7) Case study on Small-scale Aquaculture Extension<sup>1</sup>.

##### (2) Acceptance of C/Ps for Training in Japan

Since the Project was started, a total of 17 counterparts participated in 9 training courses in Japan. Name of training courses and number of participants are shown in Table 4-1 as following.

Table 4-1 Counterpart training in Japan

Year	Name of Training course	No. of participants
2009	Counterpart Study Program on Inland Water Fisheries for Community Development	3
	Fish Disease Prevention and Hygienic Handling of Culture Fish	1
2010	Counterpart Study Program on Inland Water Fisheries Community Development	3
	Fish Disease Prevention and Hygienic Handling of Culture Fish	1
	Workshop on Fisheries Management and Technology	3
	Gender Mainstreaming in Fishing Community Development	1
2011	Planning for Fisheries Community Development	1
	Counterpart Study Program on Inland Water Fisheries Community Development	3
	Gender Mainstreaming in Fishing Community Development	1
Total		17

##### (3) Provision of Equipment

<sup>1</sup>One expert took two titles in the field, therefore, the number of the dispatched experts and the filed is not matched.

Equipment provided for the Project activity was motorcycle, tractor, water pump, generator, grass cutter and etc. Total cost of providing equipment was 10,773,000 JPY.

#### (4) Operational Expenditure

The operational expenditure which excludes the cost of equipment, for implementing project activities was borne by the Japanese side. For JFY 2009 (from June 2009 to March 2010) and JFY 2010 (from April 2010 to March 2011), the expenditure was 17,212,000 JPY in total. Also, the expenditure for JFY 2011 (from April 2011 to March 2012) was 7,065,000 JPY. Therefore, total operational expenditure for the Project by this time is 24,777,000 JPY. (see Table 4-2 Operational expenditure of Japanese side)

Table 4-2 Operational expenditure by Japanese side

Year (JFY)	Amount (JPY <sup>2</sup> )
2009	10,927,000
2010	6,785,000
2011	7,065,000
Total	24,777,000

#### 4.1.2 Inputs from Myanmar side

##### (1) Assignment of Counterpart Personnel

In the project activity, 8 members have been assigned as C/Ps of the Project from DoF. They are Project Director, Project Manager, Project Coordinator, 3 Technical staffs and 2 project staffs (Secretary).

##### (2) Necessary Budget for the Operation of the Project

The Myanmar side has spent necessary cost for the operation of the Project. The cost includes allowance for the project activity of local DoF staff and utility cost for the project office.

##### (3) Facilities

DoF has provided an office space and other necessary facilities for JICA Experts in Yangon city.

#### 4.2 Activities Implemented

Almost all the planned activities have been implemented as scheduled with some minor

<sup>2</sup>As reference, exchange rate of 1US\$ to JPY is 80.4823 JPY and 1Kyat is 0.09851 JPY as of March 2012 by JICA official exchange rate.

modifications in accordance with actual conditions.

#### 4.3 Achievement of the Outputs

##### (1) Output 1

Necessary conditions and techniques on the small-scale aquaculture promotion for farmers in the target townships are clarified.

At first, a baseline survey was conducted by the Project in order to gather data and information on social and economic conditions of the target townships in August 2009. Result of the baseline survey was utilized to make indicators of PDM of the Project. On the other hand, a series of interview surveys was conducted to understand the level of small-scale aquaculture practices. The result of those surveys was utilized for the project activities.

The Project introduced three types of small-scale aquaculture: pond culture, rice-cum-fish culture and cage culture, and identified appropriate small-scale aquaculture, which is affordable and adaptable to local conditions in each target township.

According to the result of verification, pond culture and rice-cum-fish culture are recommended as appropriate method for all the five target townships due to its simple techniques and low cost. On the other hand, cage culture is considered not appropriate for small-scale farmers in Ayeyawady Region because it needs amount of initial cost for making cage and operational cost for cage maintenance and feed. Also, higher skills are required to operate cage culture.

In order to strengthen capacity of C/Ps in DoF and the target farmers, technical manuals and guidelines were prepared by the Project. Those manuals and guidelines have been utilized in the series of trainings by the Project. List of technical manuals and guidelines are listed in Table 4-4.

Table 4-4 List of technical manuals and guidelines

	Name of manuals and guidelines	User (for use)
1	General knowledge of fish culture (revised edition)	Farmer
2	Procedure of site selection, pond construction, pond preparation and pond management for Fish culture (revised edition)	Farmer
3	Knowledge of book keeping and legal procedure of fish pond construction and lecture license for farmers (revised edition)	Farmer
4	Booklet about "Ten motto on small-scale aquaculture"	Farmer
5	Small-scale hatchery and seed production (new edition)	Core farmer, local DoF staff
6	Management model of the core farmer by selling fish seeds	Core farmer, local DoF staff
7	Guideline for farmer to farmer aquaculture extension approaches	Core farmer, local DoF

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		staff
8	Notebook on the small-scale aquaculture	Core farmer, local DoF staff
9	Selection criteria and management plan for pilot farmers and core farmers	Core farmer, local DoF staff
10	Material on the case study of the aquaculture farmers (Booklet and Power point slide)	Dissemination material

Regarding present condition of Output 1, indicators have been fulfilled as seen in Table 4-5. Therefore, Output 1 has been achieved.

Table 4-5 Present achievement of each indicator of Output1

Indicator	Status of achievement
1-1: More than 10 kinds of booklets and manuals to be used for training activities of the Project are prepared.	In total, 10 kinds of technical manuals and guidelines have been prepared by the Project in order to strengthen capacity of the local DoF staff and farmers in the target townships.
1-2: Technical and economic feasibilities are verified for more than two (2) small-scale aquaculture methods in target area.	The Project introduced three methods: pond culture, rice-cum-fish culture and cage culture. The Project identified that pond culture and rice-cum-fish culture would be appropriate for the target townships through the verification.

(2) Output 2

Extension systems of the small-scale aquaculture for the farmers in the target townships are strengthened.
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In order to strengthen the capacity of the local DoF officers in the five target townships, the Project has implemented OJTs and training courses. Contents of those trainings include simplified methods for monitoring, routines of recording data, technical points of extension works for farmers, and others. The local DoF staff was required to give appropriate technical advice for farmers and conduct regular monitoring in each township.

Since the second year of the Project, the local DoF staff has started to conduct regular monitoring along the monitoring plan by their own. Also, those staff has given technical guidance to farmers regarding aquaculture and has worked for preparation of workshops and trainings for farmers.

Table 4-6 Training course for local DoF staff

Number of training	No. of implementation	Target	No. of participant
Trainer's Training	1	local DoF staff	47
Total			47

On the other hand, first version of “Guideline for Farmer to Farmer (FTF) Aquaculture Extension Approaches” was made by the Project in August 2010. The experience of the project activities was incorporated into the guideline.

Regarding present condition of Output 2, indicators have been fulfilled as seen in Table 4-7. Therefore, Output 2 has been achieved.

Table 4-7 Present achievement of each indicator of Output 2

Indicator	Status of achievement
2-1: Monthly monitoring and periodical technical assistance are carried out by DOF staff stationed at local offices in the five target townships.	Since the second year of the Project, regular monitoring has been conducted by local DoF staff in each township. Those DoF staff has visited farmers who joined the Project, and they have collected monitoring sheets to send them to the project office.
2-2: Guideline/program of FTF training is prepared.	“Guideline for FTF Aquaculture Extension Approaches” was made by the Project in August 2010.

(3) Output 3

“Pilot farmers” and “core farmers” are selected in the target townships and “farmer to farmer” extension approach is practiced by them.

In the second year of the Project, core farmers were selected from pilot farmers by the Project. Selection criteria of core farmers were; their interest and eagerness for aquaculture, social status in community and location for being hatchery station. One core farmer was selected from each of Yae Kyi, Pyay and Letpandan townships, and two core farmers were selected from Paan township. In total, five core farmers were selected and have worked in the Project.

On the other hand, a series of capacity development trainings for the target farmers regarding small-scale aquaculture was conducted by the Project. Core farmers and pilot farmers have strengthened their capacity to undertake aquaculture. (see Table 4-8 and ANNEX 5 List of Training)

Table 4-8 Training courses for farmers

Title of training	No. of courses	Target	No. of participant
General Aquaculture Training	12	Pilot farmers	498
Book Keeping Training	3	Pilot farmers	110
Review Workshop	9	Pilot farmers	351
Seed Production Training	4	Core farmers	18
Total	27		977

\*cumulative number of participant

The core farmers in Pyay and Letpandan have already functioned as seed producer providing seeds to other pilot farmers, and they have implemented FTF extension in cooperation with DoF staff. They have taken initiative to introduce aquaculture to new farmers. On the other hand, the core farmers in Yae Kyi and Paan have implemented FTF extension, but it is necessary for them to reach a sufficient level.

Regarding present condition of Output 3, indicator 3-1 has been fulfilled. Indicator 3-2 has not been fulfilled but it will be fulfilled by the end of the Project. Therefore, Output 3 will be achieved.

Table 4-9 Present achievement of each indicator of Output3

Indicator	Status of achievement
3-1: More than four (4) core farmers who can provide aquaculture training for farmers are established.	Core farmers in Pyay (1), Letpandan (1) and Paan (2) have implemented FTF extension including training for farmers in cooperation with local DoF staff.
3-2: More than 15 trainings aiming at small-scale aquaculture extension are carried out in cooperation with core farmers (FTF trainings)	In Pyay and Letpandan, core farmers took initiative to organize General Aquaculture Training for 4 times, and Review Workshop for 3 times. And also, a core farmer in Paan has cooperated to organize General Aquaculture Training and Review Workshop for 4 times. In addition, other Review Workshop is planned in Letpandan for 4 times.

#### 4.4 Achievement of the Project Purpose

Number of the farmers who are implementing small-scale aquaculture for the improvement of their livelihood is increased in the target townships.

The Project introduced three types of small-scale aquaculture; pond culture, rice-cum-fish culture and cage culture, and identified appropriate small-scale aquaculture, which is affordable and adaptable to local conditions in each target township. In 2011 - 2012 year<sup>3</sup>, a total of 150 farmers practiced small-scale aquaculture in the target townships including 75 farmers who newly practiced summer-rice-fish culture. All of them are small-scale aquaculture farmers/groups that newly started aquaculture through the Project. The number of farmers for small-scale aquaculture will increase for next season. (see the detail in ANNEX 6 Number of Farmers in the Project)

Table 4-10 Number of pilot and encouraged farmers in five townships\*<sub>1</sub> (year 2011 to 2012)

Township	Pilot farmer* <sub>2</sub>	Encouraged farmer* <sub>3</sub>	Total
Yae Kyi	5	3	8

<sup>3</sup> For rice-cum-fish culture of dry season, 4 farmers are duplicated in the total number, because they have already practiced other culture method. Therefore, gross number of the farmers are presently 150.



Kyaung Kone	6	0	6
Letpandan	9	81	90
Pyay	23	2	25
Paan	15	6	21
Total	58	92	150

\*1 Number of small-scale aquaculture farmers/groups that newly started aquaculture through the project activity and practiced it in year 2011 to 2012.

\*2 Pilot farmer: farmers who participated in the Project since 1<sup>st</sup> year, and got labor support for pond improvement/construction, water pump, and in-kind assistance with seed, feed, and fertilizer from the Project.

\*3 Encouraged farmer: farmers who participated in the Project since 2<sup>nd</sup> year, and got only in-kind assistance with seed, feed, and fertilizer from the Project.

Regarding present condition of Project Purpose, indicators have been fulfilled as seen in Table 4-12. Therefore, Project Purpose has been achieved.

On the other hand, it is desirable to conduct an endline survey in order to verify degree of the impact by the Project on the improvement of famers' livelihood.

Table 4-12 Present achievement of indicator of Project Purpose

Indicator	Status of achievement
Number of small-scale aquaculture farmers/groups that newly started aquaculture through the project activity become more than 100.	150 farmers have practiced small-scale aquaculture in the target townships in total.

#### 4.5 Achievement of Overall Goal

Small-scale aquaculture for improvement of livelihood is disseminated in Ayeyarwady and Bago Regions, Kayin State, and extended in other less developed areas.

The number of farmers for small-scale aquaculture has been increasing year by year. For 2012-2013 year, more than 160 farmers are expected to implement small-scale aquaculture. However, to achieve the Overall Goal of the Project, further expansion of small-scale aquaculture is necessary.

In this regards, several issues arise. Firstly, pilot farmers and encouraged farmers have been assisted by the Project with fish seed, feed and necessary equipment, etc. It is not clear whether those farmers can continue small-scale aquaculture even after the completion of the project support. From technical point of view, in order to reduce cost borne by the famers, integrated farming should be promoted in cooperation with other government organizations such as Myanmar Agriculture Service (MAS), Irrigation Department, Settlements and Land Records Department (SLRD), and Livestock Breeding and Veterinary Department (LBVD). Secondly, core farmers in Yea Kyi, in

Ayeyawady and Paan in Kayin still need technical support to adapt seed production and FTF extension. Those core farmers can firmly adapt the skill and the technology by receiving continues support. Thirdly, in order to expand the project activities in an efficient and effective manner, it is indispensable to prepare operational plan indicating goals, approaches, activities, budget and other resources required, and timeframe. And finally, institutional arrangement would be required to establish appropriate organizational structure and to allocate personnel, budget, etc.

Therefore, Overall Goal can be achieved if the issues mentioned above are properly addressed.

Table 4-13 Present achievement of each indicator of Overall Goal

Indicator	Status of achievement
1: Number of farmers who are implementing small-scale aquaculture in the target areas becomes more than 300 farmers.	150 farmers practiced small-scale aquaculture and the number of the farmers implementing small-scale aquaculture in the target area is increasing year by year.
2: Farmers in the other townships adjacent to the target townships start implementing small-scale aquaculture.	In order to promote small-scale aquaculture in the other townships, dissemination of outcome of the Project, capacity building of those local DoF staff, technical guidance to farmers, etc. would be necessary.

#### 4.6 Implementation Process

##### (1) Management of the Project

Joint Coordinating Committee (JCC) was organized at national level to manage the Project. In the JCC, Japanese and Myanmar sides supervise and review overall progress of the Project and discuss issues which arise. JCC was held two times since the commencement of the Project and another one is scheduled in March 2012 as the followings;

- 1<sup>st</sup> JCC : November 2009
- 2<sup>nd</sup> JCC: February 2011
- 3<sup>rd</sup> JCC: March 2012 (scheduled)

##### (2) Participation and Involvement of C/Ps

Japanese expert team and Myanmar's counterpart personnel regularly and in necessary occasion discuss the project activities. Japanese expert team has often visited the office of DoF to meet Myanmar's counterpart personnel, for discussing implementation of several activities, reporting the condition of target farmers and making decisions on the Project.

##### (3) Response to the Recommendation from Mid-term Review

###### i) Determination of the most suitable aquaculture model

Through implementation of a number of the verification, the Project identified that pond culture and rice-cum-fish culture would be appropriate for small-scale farmers in the target townships.

ii) Conduct of case study and sharing of information with stakeholders

The case study of small-scale aquaculture by the Project was conducted by a Japanese expert in November to December 2011. Result of the case study was compiled into booklet and power point slide for dissemination among farmers and DoF staff in other areas.

iii) Promotion of rice-cum-fish culture

The Project implemented the verification study of rice-cum-fish culture in demonstration farm at CARTC/MAS. And also, the Project implemented another verification for rice-cum-fish culture of dry season in Letpandan. From the verification, issues and remarks for promotion of rice-cum-fish culture were clarified.

iv) Rural leadership in small-scale aquaculture extension

The core farmers in Pyay and Letpandan have taken initiative for FTF extension on small-scale aquaculture. They are expected to continue such leadership in communities due to economic incentives. On the other hand, the core farmers in Paan have been functioning FTF extension despite of low economic benefit, but they are active to work for improvement of their community as a leader of rural society.

## 5. Evaluation Based on the Five Criteria

### 5.1 Relevance

The aim of the Project is consistent with policies of the Government of Myanmar as well as needs of the target area, and Japanese official development assistance policy. And, the Project is correctly designed to achieve its purpose. Therefore, relevance of the Project is high.

#### (1) Policies of the Government of Myanmar and Needs of Target Area

Fisheries policy of the Government of Myanmar has guided to secure fish food produces, to support the livelihood of the farmers and rural people, and to expand freshwater aquaculture. Also, Rural Development and Poverty Alleviation Program has been implemented by the government to reduce poverty and to enhance food security of rural sector. One of local needs of the target areas is increase of available fish through small-scale aquaculture, producing more fish from paddy fields, small-scale ponds and cages. All farmers are aware of importance of food security.



This Project is aimed at identification of low-cost small-scale aquaculture technologies that include local seed production, and also at development of FTF extension approach that depends less on input from the government. Therefore, the Project can contribute to improve livelihood of small-scale farmers through affordable and adaptable small-scale aquaculture in the target area.

(2) Consistency with Japanese Official Development Assistance (ODA) Policy and Strategy of JICA

The Project has been implemented along the policy of ODA. Japan's ODA policy to Myanmar has three priority areas; "Urgent humanitarian needs", "Human resources development that contribute to democratization and economic restructuring", and "Targeting all the ASEAN or CLMV countries". The Project is considered within "Urgent humanitarian needs" pillar. In addition, strategy of JICA for Myanmar focuses on "Humanitarian needs" under this pillar, and the Project is in relation to three sectors, which are "Agricultural and rural development", "Support for socially vulnerable", and "Support for minority group and refugee".

(3) Relevance of Project Design

For introducing small-scale aquaculture to farmers in the target townships, the Project consist of three outputs, those are 1) clarification of conditions and techniques on the small-scale aquaculture, 2) strengthening of extension system among farmers, and 3) extension of small-scale aquaculture through selected "pilot farmers" and "core farmers". These components are appropriate to introduce small-scale aquaculture to farmers in the target townships.

5.2 Effectiveness

Through implementation of activities and achievement of Outputs, the Project Purpose has been already achieved. Therefore, it could be said that effectiveness of the Project is high.

(1) Achievement of the Project Purpose

Project Purpose is to increase the number of farmers who implement appropriate small-scale aquaculture in the target townships. In order to achieve the purpose, the Project introduced three types of small-scale aquaculture; pond culture, rice-cum-fish culture and cage culture.

According to the verification, pond culture and rice-cum-fish culture are recommended as appropriate method for all the five target townships due to its simple techniques and low cost. On the other hand, cage culture is considered not appropriate for small-scale farmers in Ayeyawady Region because it needs amount of initial cost for making cage and operational cost for cage maintenance and feed. Also, higher skills are required to operate cage culture.

Consequently, 150 farmers have practiced small-scale aquaculture in the target townships since the commencement of the Project, in which the indicator for Project Purpose is fulfilled. Thus, Project Purpose has been achieved.

## (2) External and Internal Factors to Affect the Project

Since the Project started, none of serious external and internal factors affects the Project to achieve its purpose, except for legal constraint on conversion of rice paddy into fish pond which has hindered promotion of pond culture.

In addition, it should be noted that different ethnic groups have different perception on the value influencing incentive mechanism for implementing small-scale aquaculture. This leads to the necessity to take into consideration different incentives other than economic benefit, such as honor and community cohesion on one hand, and attentions to be paid concerning the use of income which may be donated to monasteries, churches, the old ages, and social welfare instead of saving it for the purchase of inputs on the other.

## 5.3 Efficiency

Regarding implementation of the Project, Inputs from Japanese side and Myanmar side are efficiently utilized in the project activities. And, the relationship between both sides has been kept well through implementing activities together and organizing JCC. The Project has been well managed and implemented without delay. Thus, the Project has been efficiently implemented.

### (1) Inputs, Activities and Production of Outputs

Inputs from Japanese side such as experts, local costs, equipment and training courses in Japan have been fully utilized in the project activities. In the beginning, Japanese experts effectively took initiative for implementation of 3 types of small-scale aquaculture and conducting of trainings for local DoF staff and farmers. Through the verification, appropriate small-scale aquaculture types were identified for the target townships. And, trainings for local DoF staff and pilot farmers developed their capacities to introduce and manage small-scale aquaculture.

On the other hand, Inputs from Myanmar side such as allocation of C/Ps, sharing of the local cost, and provision of facilities (the project office) have been fully utilized in the project activities. Allocation of C/Ps, especially in the project office was effective to implement the project activities. And also, local DoF staff in the five target areas visited target farmers frequently, to monitor and supervise their small-scale aquaculture. These activities contributed to promotion of small-scale aquaculture in the target townships. Consequently, the Project has achieved all the Outputs.



### (2) Project Management

In JCC, Japanese and Myanmar sides have shared information on the progress of the Project, and discussed issues which arose. On the other hand, relationship between Japanese expert team and Myanmar C/Ps in the project activities has been kept well. Understanding between Japanese and Myanmar sides has been kept well, which contributed to smooth management of the Project.



#### 5.4 Impact

Impact of the Project is analyzed from possibility of achieving Overall Goal, and positive and negative impacts to outsiders of the Project. To achieve the Overall Goal of the Project, further expansion of small-scale aquaculture is necessary. In order to do so, several issues should be properly addressed including institutional arrangement of DoF. On the other hand, some positive impacts are observed along the project activities.

##### (1) Expectation of Achieving Overall Goal of the Project

The number of farmers for small-scale aquaculture has been increasing year by year. For 2012-2013 year, more than 160 farmers are expected to implement small-scale aquaculture. Especially, rice-cum-fish culture will have potential to increase. In order to achieve the Overall Goal of the Project, further expansion of small-scale aquaculture is necessary.

However, several issues arise to reach the Overall Goal. Firstly, pilot farmers and encouraged farmers have been assisted by the Project as fish seed, feed and necessary equipment, etc. It is not clear whether those farmers can continue small-scale aquaculture even after the completion of the project support. From technical point of view, in order to reduce cost borne by the farmers, integrated farming should be promoted in cooperation with other government organizations. Secondly, core farmers in Yea Kyi in Ayeyawady and Paan in Kayin still need technical support to adapt seed production and FTF extension. Those core farmers can firmly adapt the skill and the technology by receiving continues support. Thirdly, in order to expand the project activities in an efficient and effective manner, it is indispensable to prepare operational plan indicating goals, approaches, activities, budget and other resources required, and timeframe. And finally, institutional arrangement would be required to establish appropriate organizational structure and to allocate personnel, budget, etc. Therefore, Overall Goal can be achieved if the issues mentioned above are properly addressed.

##### (2) Positive and Negative Impacts

From a viewpoint of impact of the Project, positive impact is observed along the project activities and none of negative impact is found.

###### a) Positive impact

- The verification study on rice-cum-fish culture by DoF and CARTC-MAS showed positive effect of introducing aquaculture into paddy field. According to the study, introduction of rice-cum-fish culture had effect to increase number of rice tillers/hill, it contributed to increase of total rice yield. And also, rice-cum-fish culture gives the way to more environmentally friendly rice-based system, which reduces the use of fertilizer and pesticide.
- Result of the verification study has been incorporated into the handbook for extension officers/workers in Ministry of Agriculture and Irrigation.





- Recently, 12 farmers are going to start small-scale aquaculture by their own initiative with support from local DoF office in Yea Kyi township, motivated by the activities of the Project.
- DoF has started promotion of common carp seed production on the farmer's level, motivated by the project activities.

b) Negative impact

- None.

### 5.5 Sustainability

Sustainability of the outcome of the Project is expected to be fair at this moment. Regarding policy and institutional aspect, sustainability of the project outcome will be kept. However, concerning organizational and financial aspect, further efforts of DoF are necessary. And then, regarding technical aspect, some core farmers still need to have capacity building to implement FTF extension.

(1) Policy and Institutional Aspect

The outcome of the Project will be sustained in the policy and institutional aspect by Fisheries policy and Rural Development and Poverty Alleviation Program of the Government of Myanmar. Fisheries policy of Government of Myanmar has guided to secure and sustain fish food produces, to support the livelihood of the farmers and rural people, and to expand freshwater aquaculture. Also, Rural Development and Poverty Alleviation Program has been implemented by the government to reduce poverty and to enhance food security of rural sector.

(2) Organizational and Financial Aspect

Local DoF offices in each township have participated in the project activity, but the Project has not supported their operational cost. Therefore, those local DoF offices would be able to continue the activity inherited from the Project, such as monitoring and technical guidance to the farmers.

However, pilot farmers and encouraged farmers have been assisted by the Project with fish seed, feed and necessary equipment, etc. It is not clear whether those farmers can continue small-scale aquaculture even after the completion of the project support. Therefore, follow-up by DoF is necessary to keep implementation of small-scale aquaculture by those farmers. And also, further extension of small-scale aquaculture requires further efforts by DoF. Those are establishment of appropriate organizational structure, allocation of personnel and budget, formulation of operational plan, and etc. However, it is not clear DoF will deal with to maintain the project outcome comprehensively.

### (3) Technical Aspect

Local DoF staff in each township continues the role of monitoring and technical guidance to the farmers after the Project ends. According to the result of the interview, motivations of those staff are very high. Technical guidelines and manuals regarding small-scale aquaculture would help them to maintain their capacity.

The verification proved appropriate small-scale aquaculture types in target townships, which are simple with low cost, and easily adaptable by the target farmers. Therefore, core farmers and pilot farmer could continue aquaculture technically. And, the core farmers in Pyay and Letpandan will keep the role of seed producers supplying fish seed to other farmers with technical guidance of DoF due to economic incentives. On the other hand, the core farmers in Yae Kyi and Paan have implemented FTF extension, but it is necessary further to reach a sufficient level.

## 6. Conclusion

As described in the previous part, all the three Outputs have been achieved or will be achieved, and Project Purpose has already been achieved. In this regard, the Project has been implemented appropriately with positive results. However, there remains uncertainty concerning achievement of Overall Goal of the Project.

The evaluation results based on the five criteria indicate the same situation from other point of view. While relevance, effectiveness and efficiency of the Project are considered to be high, the Project cast some uncertainties in the future in terms of impact and sustainability.

In order to guarantee the sustainability and promote the impact of the project activities, there are issues to be tackled by DoF such as; establishment and consolidation of extension system of small-scale aquaculture including institutional arrangement of DoF, preparation of operational plan for the areas of expansion of small-scale aquaculture, verification of small-scale aquaculture without the project's support, intensive support for the core farmers, etc.

It is expected that these issues are properly addressed by DoF in a timely manner so that the activities developed by the Project be continued, further developed and expanded nationwide in the future.

## 7. Recommendations and Lessons Learnt

### 7.1 Recommendations

#### (1) To Establish and Consolidate Extension System of Small-scale Aquaculture

Until now, the Japanese experts dispatched and C/Ps assigned for the Project have worked enthusiastically, and, thus, the Project has achieved the Project Purpose during the implemented period. However, in order to achieve the Overall Goal of the Project, it is indispensable that DoF





keeps and develops by its own effort the project activities such as support to core farmers, recruitment of new farmers, and coordination/implementation of farmer's trainings through extension system.

In addition, it is required to consolidate the system through institutional arrangement such as determination of a responsible unit and person in charge, appointment of necessary personnel to guide and coordinate overall activities, and allocation of budget, in order to promote small-scale aquaculture nationwide including in the Central Dry Zone.

(2) To Make Operational Plan of Small-scale Aquaculture Extension

DoF should prepare multi-year operational plan of small-scale aquaculture extension in the targeted townships by setting up a goal and target in terms of the number of farmers engaged in small-scale aquaculture and core farmers, etc, in order to facilitate resource allocation for the extension in such townships. The operational plan should be based on small-scale aquaculture potential such as existence of small-scale ponds, water volume, fish price, and socio-economic conditions of farmers, and include, among others, goals, approaches, activities, budget and other resources required and timeframe.

Subsequently, it would be necessary to prepare the plan for other townships with support from DoF central office and/or Region/State office, prior to extending small-scale aquaculture in the townships.

(3) To Verify Sustainability of Small-scale Aquaculture

Until now, farmers are developing small-scale aquaculture with the project's assistance such as fish seeds, feeds, and necessary equipment, etc. In this connection, it is needed to verify whether small-scale aquaculture farmers can continue their activities even after the completion of the Project. Therefore, verification of small-scale aquaculture is essential to check sustainability of the project activities by introducing monitoring period without any assistance by the Project to farmers except for technical advice.

Furthermore, in consideration of future extension of the small-scale aquaculture in wider areas, it is recommended to shorten the period of providing inputs support by DoF to farmers in order to promote aquaculture with more rapid manner.



(4) To Consider Application of Anthropological Knowledge in Designing Project Activities

Project activities should reflect and respect socio-economic situation as well as cultural background including value system, of beneficiary farmers. In this regard, the Project has taken into consideration such aspects during the implementation period. However, in order to fit more adequately the intervention of the Project to local values, which may directly generate social incentives for the activities, it should be considered that planning of the activities for small-scale



aquaculture extension uses more intensively knowledge from anthropologist especially in Kayin State.

(5) To Conduct an Endline Survey

In order to confirm the results of the project intervention, an endline survey should be conducted based on information of the baseline survey.

Furthermore, as the activities developed by the Project have multiple dimensions of impacts such as nutritional improvement of children, and strengthening of community cohesion, in addition to livelihood improvement, an evaluation system including such dimensions should be incorporated into the design of the activities in the future.

(6) To Continue Support to Those Fish Farmers to Ensure Technology Adaptation

It is essential to continue providing support to those fish farmers that have been assisted by the Project even after the Project ends so that the farmers can firmly adapt the technology learned and continue to engage in the small-scale aquaculture in a sustainable manner. Such support shall place emphasis on skills enhancement of the core farmers especially those located in Yea Kyi in Ayeyawady and Paan in Kayin in terms of seed production technology and FTF extension system. In this way, grow-out farmers will also benefit from the capacitated core-farmers through adequate advice and guidance on improved fish farming techniques such as poly culture system, predator control, water quality assessment, kinds of feed, feeding techniques, water retention methods, etc.

(7) To Promote Integrated Farming

Small-scale aquaculture is considered as part of integrated farming system, including rice-cum-fish culture and chicken/pig rearing near or above the fishpond. It is recommended for DoF to promote such integrated farming among the small-scale farmers to contribute to their improved livelihood, in collaboration with other relevant government agencies such as LBVD under Ministry of Livestock and Fisheries and Ministry of Agriculture and Irrigation.

In particular, those rice-cum-fish farmers of Letpandan, Bago shall be further monitored and supported by DoF together with MAS in order to ensure their sustained rice-cum-fish culture. Moreover, those farmers who are willing to initiate the rice-cum-fish culture practice shall be provided with proper extension services by those concerned agencies in collaboration with the core farmers of the Project.



(8) To Consider Additional Supports from Japan

In consideration of the above mentioned aspects, considerable efforts are needed for DoF to consolidate and expand the small-scale aquaculture in the target areas and nationwide. In this regard, additional assistance from Japanese side should be considered to support DoF's efforts.



## 7.2 Lessons Learned

### (1) Consideration of Anthropological Aspects

Observed during site visits is a community system where farmers donate money to monasteries, churches, elderly people, and social welfare from the income of fish seed production and aquaculture, and participating villagers support aquaculture activities without any payment; a situation different from usual perceptions of economic incentive mechanism. Accordingly, in order to have the activities more fitted to the local conditions and to obtain better results, it is desirable to adopt a point of view from anthropology for further understanding of target areas and sustaining project activities.

### (2) Significance of a Verification Study

Under the cooperation with the Project, a verification study on the rice-cum-fish culture was conducted by DoF and CARTC/MAS and it demonstrated positive results such as low-input requirement, technical adaptability and enhancement of rice productivity. Because of such verification, MAS prepared a handbook for agriculture extension officers that included an explanation of contribution by the rice-cum-fish culture to rice productivity improvement.

### (3) Capacity Development of DoF Local Officers

One of the contributing factors to the smooth implementation of the Project is the active participation of the local DOF officers in those activities such as selection, training and monitoring of pilot farmers, capacity development of core farmers and promotion of FTF extension. Capability of those local officers of DoF was enhanced by the Project through the Training of Trainers (TOT) conducted in the first year and further strengthened through monitoring activities. Thus, they eventually have been functioning as local extension agents. Therefore, it is noted that capacity development of the local officers has been the key to the effective extension system.



## Schedule of Terminal Evaluation

DAY	Date	Activity
1	29 Feb (Wed)	Arrive at YGN by TG 305 (Member of Evaluation Analysis)
2	1 Mar (Thu)	08:30 Arrival meeting at JICA office 10:00 Meeting with DoF officials, Interview with SAEP counterparts
3	2 Mar (Fri)	Field visit to SAEP project sites (Bago Region)
4	3 Mar (Sat)	Field visit to SAEP project sites (Bago Region)
5	4 Mar (Sun)	Field visit to SAEP project sites (Ayeyawady Region)
6	5 Mar (Mon)	Interview with SAEP counterparts and experts
7	6 Mar (Tue)	Interview with SAEP counterparts and experts / Documentation
8	7 Mar (Wed)	Arrive at YGN by TG 305 (Other Japanese members)
9	8 Mar (Thu)	11:30 Meeting at JICA office 14:00 Meeting with officials concerned on SAEP (Yangon)
10	9 Mar (Fri)	Field visit to SAEP project sites (Kayin State)
11	10 Mar (Sat)	Field visit to SAEP project sites (Kayin State)
12	11 Mar (Sun)	Field visit to SAEP project sites (Bago Region)
13	12 Mar (Mon)	Meeting in Joint Evaluation Team (Japan and Myanmar)
14	13 Mar (Tue)	07:00 Move Yangon to Nay Pyi Taw by car 14:00 Meeting with DG (U KhinKo Lay) and officials of DoF Report preparation
15	14 Mar (Wed)	a.m. Submission of draft reports and M/M Meeting with DG and officials of DoF p.m. Report preparation
16	15 Mar (Thu)	10:00 Joint Coordinating Committee (JCC) Meeting Signing of Meeting Minutes (M/M) 13:00 Move Nay Pyi Taw to Yangon by car
17	16 Mar (Fri)	10:00 or 11:00 Report back meeting at JICA office 14:00 Reporting to Embassy of Japan Departure Yangon to Bangkok by TG 306




**Project Design Matrix (PDM)**

Project Name: Small-scale Aquaculture Extension for Promotion of Livelihood of Rural Communities in Myanmar Project

Target Area: Five (5) target townships from Ayeyarwady and Bago Divisions and Kayin State

Target Group: Farmers in the target townships with land for aquaculture such as pond and/or rice-field

Beneficiaries: Staff of Department of Fisheries (DoF), Ministry of Livestock and Fisheries,

Target Farmers (a. core farmers, b. pilot farmers, c. farmers in the target townships)

Duration: June 8, 2009 – June 7, 2012 (3 years)

Date: 3/November/2009 Version: 2

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><b>Overall Goal</b> Small-scale aquaculture for improvement of livelihood is disseminated in Ayeyarwady and Bago Divisions, Kayin State, and extended in other less developed areas.</p>	<ul style="list-style-type: none"> <li>- Number of farmers who are implementing small-scale aquaculture in the target areas become more than 300 farmers.</li> <li>- Farmers in the other townships adjacent to the target townships start implementing small-scale aquaculture.</li> </ul>	DoF's report	
<p><b>Project Purpose</b> Number of the farmers who are implementing small-scale aquaculture for the improvement of their livelihood is increased in the target townships.</p>	Number of small-scale aquaculture farmers/ groups that newly started aquaculture through the project activity become more than 100	Project report Interview survey	
<p><b>Outputs</b></p> <ol style="list-style-type: none"> <li>1. Necessary conditions and techniques on the small-scale aquaculture promotion for farmers in the target townships are clarified.</li> <li>2. Extension systems of the small-scale aquaculture for the farmers in the target townships are strengthened.</li> <li>3. "Pilot farmers" and "core farmers" are selected in the target townships and "farmer to farmer" extension approach is practiced by them.</li> </ol>	<ul style="list-style-type: none"> <li>- More than 10 kinds of booklets and manuals to be used for training activities of the Project are prepared</li> <li>- Technical and economic feasibilities are verified for more than two (2) small-scale aquaculture methods in target area.</li> <li>- Monthly monitoring and periodical technical assistance are carried out by DOF staff stationed at local offices in the five target townships.</li> <li>- Guideline/program of FTF training is prepared.</li> <li>- More than four (4) core farmers who can provide aquaculture training for farmers are established.</li> <li>- More than 15 trainings aiming at small-scale aquaculture extension are carried out in cooperation with core farmers (FTF trainings)</li> </ul>	Project report Interview survey Manuals	

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><b>Activities</b></p> <p>1-1. Necessary conditions and procedures to start small scale aquaculture are clarified.</p> <p>1-2. Appropriate aquaculture techniques for each target area are clarified.</p> <p>1-3. Manuals for the small-scale aquaculture promotion for DoF staff and farmers are prepared.</p> <p>2-1. Training courses for DoF staff and farmers are implemented.</p> <p>2-2. Farmer support system by DoF in each target township is established.</p> <p>2-3. Extension system among farmers, "farmer to farmer" approach, is established.</p> <p>3-1. Pilot farmers are selected and provided necessary inputs for fish production and extension of aquaculture.</p> <p>3-2. Core farmers are selected and provided necessary input for seed production and extension.</p> <p>3-3. "Farmer to farmer" approach is practiced by the pilot farmers and core farmers under the guidance and support of DoF.</p>	<p><b>Inputs</b></p> <p><u>Myanmar Side</u></p> <ul style="list-style-type: none"> <li>- Administrative Personnel and counterparts               <ul style="list-style-type: none"> <li>Project Director (Director General, DoF)</li> <li>Project Manager (assigned by DG)</li> <li>Counterpart personnel (assigned by DG)</li> <li>Relevant fishery officers in the target areas</li> </ul> </li> <li>- Facilities:               <ul style="list-style-type: none"> <li>Land, office space and necessary facilities in DoF for the Japanese experts and related staff members</li> <li>Rooms and space necessary for installation and storage of the equipment</li> <li>Other facilities mutually agreed upon as necessary</li> </ul> </li> <li>- Local costs:               <ul style="list-style-type: none"> <li>Expenditure for counterparts</li> <li>Water and electricity charges necessary for operation and maintenance of the facilities</li> </ul> </li> <li>- Tax exemption measure</li> <li>Support relating to import of equipment</li> </ul> <p><u>Japanese Side</u></p> <ul style="list-style-type: none"> <li>- Dispatch of experts:               <ul style="list-style-type: none"> <li>Two (2) long term experts (chief adviser/extension policy, and coordinator/small-scale aquaculture technology)</li> <li>Short term experts (in necessity for implementation of the Project within the framework of the Project; such as experts in fish seed production, freshwater aquaculture techniques, socio-economic survey for target villages and etc.)</li> </ul> </li> <li>- Provision of equipment:               <ul style="list-style-type: none"> <li>Machinery, equipment, vehicles, and other extension materials necessary for the effective implementation of the Project within budgetary limitations.</li> </ul> </li> <li>- Provision of training course in Japan, in the third countries, or in Myanmar:</li> </ul>		<p><b>Pre-conditions</b></p> <ul style="list-style-type: none"> <li>- Government of Myanmar allows small-scale aquaculture activities in the target areas.</li> <li>- Agrichemicals are not intensively used near to the sites of rice- field fish culture.</li> <li>- Natural disasters do not attack the target areas.</li> <li>- Serious fish diseases do not break out.</li> </ul>

## List of Interviewees

1. Ayeyarwady Region
  - 1) Yae Kyi Township
 

U Mg Mg ;	Township Officer
U Kyeu Htaig ;	Township Office Staff
U Kyau Min Lwin ;	Township Office Staff
Daw Nyo Nyo San ;	Core Farmer
U Hla Htwe ;	Pilot Farmer
U Aye Min ;	Pilot Farmer
  - 2) Kyaung Kone Township
 

U Kyaw Kyaw Nyunt ;	Township Officer
U Aang Khaing Soe ;	Township Office Staff
Daw Thaung Shin ;	Pilot Farmer
U Khin Soe ;	Pilot Farmer
U Tin Hlaing ;	Pilot Farmer
U Mg Mg Myinl ;	Pilot Farmer
2. Bago Region
  - 1) Letpandan Township
 

U Mr. Li Than Naing ;	Oak Pho Station Officer
U Zaw Min Lwin ;	Township Office Staff
U Mr. Tin Mg Swe ;	Deputy officer of township of MoAI
U Win Khaing ;	Core farmer
U Tin Win ;	Pilot farmer
  - 2) Pyay Township
 

U Sein Myint ;	District Fishery Officer
U Ye Naing ;	Core Farmer
3. Kayin State Township
  - 1) Paan Township
 

U Maung Tin ;	Core Farmer
Daw Mal Pyint;	Core Farmer






## List of Inputs from Japan and Myanmar sides

## 1. List of Japanese Inputs

## 1-1 Assignment of Experts

## 【Long-term expert】

Name	Assignment	Period
Mr. Shingo Takahashi	Chief Advisor/Extension Policy	2009.06.09~2010.06.08
Mr. Atomu Furusawa	Coordinator/Small-scale Aquaculture Technology	2009.06.08~2010.06.07

## 【Short-term expert】

Name	Assignment	Period
Mr. Masanori Doi	Rural Socio-Economic Research	2009.07.26~2009.09.07
Mr. Atsumu Terai	Technical Adviser on Aquaculture & Extension	2009.08.09~2009.12.20
	Freshwater Fish Seed Production (1)	2010.07.07~2010.09.03
	Freshwater Fish Seed Production (2)	2011.07.26~2010.10.26
Mr. Yoshimi Fujioka	Extension for Small-scale Aquaculture Technique	2010.08.02~2010.09.01
Mr. Satoshi Chikami	Case-study on Small Scale Aquaculture Extension	2011.11.06~2011.12.16

## 1-2 List of participants in Training in Japan

Name of Training course	Duration	Name of Participant	
1. Counterpart Study Program on Inland water Fisheries Community Development	2009.07.05~ 2009.08.01	1	U Tin Htut (Fishery Officer)
		2	U Win Myint (Shwebo District Officer)
		3	U Saw Pun Smit (Deputy Officer, Kayin State)
2. Fish Disease Prevention and Hygienic Handling of Culture Fish	2009.08.31~ 2009.11.08	1	U Kyaw Soe (Fishery Officer)
3. Counterpart Study Program on Inland water Fisheries Community Development	2010.08.22~ 2010.09.18	1	U Thein Oo (Kyaungkone Township Officer)
		2	U Soe Thein (YaeKyi Township Officer)
		3	Daw Myat Khaing Mar (Deputy Fishery Officer, Main Office, DoF)
4. Fish Disease Prevention and Hygienic Handling of Culture Fish	2010.09.07~ 2010.11.13	1	U Zaw Lin Tun (Assistant Fishery Officer)
5. Workshop on Fisheries Management and Technology	2010.09.18~ 2010.10.02	1	U Khin Ko Lay (Director General)
		2	U Win Myint Maung (Director, Head of Fish Inspection and Quality Control)
		3	U Zaw Moe Hlaing (Deputy Director, Directorate of Livestock and Fisheries)
6. Gender Mainstreaming in Fishing	2011.01.22~	1	Daw War War Phoo (Assistant Fishery)



Community Development	2011.03.09		Officer,Head of Office, Aquaculture Div.)
7. Planning for Fisheries Community Development	2011.07.10~ 2011.09.29	1	U Maung Soe (Deputy Assistant Fishery Officer, Laidaukkan Fishery Station)
8. Counterpart Study Program on Inland water Fisheries Community Development	2011.10.30~ 2011.11.26	1	Theint Theint Moe (Deputy Fishery Officer,Main Office, DoF)
		2	Aye Thandar Lwin (Assistant Fishery Officer, Thaketa, Yangon, DoF)
		3	Mi Mi Khine (Assistant Fishery Officer, Hlawga Fishery Station, DoF)
9. Gender Mainstreaming in Fishing Community Development	2012.1.22~ 2011.3.7	1	Zi Za Wah (Deputy Assistant Fishery Officer, Yangon Regional Office)
		Total	17

1-3 Providing of Equipment (for local DoF offices)

No.	Item	Number
JFY 2009 (June 2009 – Mar. 2010) ; 4,076,00 JPY		
1	Motorcycle	14
2	Tractor	5
JFY 2010 (Apr.2010 to Mar.2011) ; 3,000,000 JPY		
3	Generator	14
4	Water Pump	11
5	Grass cutter	20
6	Digital camera	5
7	Motorcycle	3
JFY 2010 (Apr. 2010 to Mar.2011) ; 3,697,000 JPY		
8	Motorcycle	3
9	Water Pump	7
10	Air Compressor	7
11	Grass cutter	12
12	Motor (single)	8
13	Fish net for seed	7
14	Fish net for fish	7
Total 10,773,000 JPY		123

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## 2. List of Myanmar Inputs

### 2-1 Counterpart Personnel

Department of Fishery, Ministry of Livelihood and Fishery

Name	Role in the Project (Position in DoF)	Reference
U Khin Ko Lay	Project Director (Director General)	Successor from previous DG
U Khin Maung Soe	Project Manager (Head of Research and Development Section)	Not changed
Daw Yin Yin Moe	Project Coordinator (Chief of the International Relation Section)	Not changed
U Kyaw Soe	Technical Counterpart (Officer)	Not changed
U Tin Htut	Technical Counterpart (Officer)	Not changed
U Kyaw Moe Aung	Technical Counterpart (Officer)	Not changed
Daw Kay Khine Tint	Assistant (Officer)	Not changed
Daw Kyi Kyi Ohn	Assistant (Officer)	Not changed

### 2-2 Necessary Facilities and budget for the operation of the Project

DoF has provided an office space and other necessary facilities for JICA Experts in Yangon city. Then, DoF has spent necessary cost for the operation of the Project. Those are for salary of Counterpart personnel, allowance for the project activity of local DoF staff and utility cost for the Project office as well as hatcheries.



## List of Training in Myanmar

FY	Date	Course Title	Object	Township/State/Region	Participant	No. of Participants
2009	1-Jul-09	General aquaculture training course	To provide basic and general technique to start aquaculture	Yae Kyi/ Aveyarwaddy	Pilot farmers	70
	9-Jul-09	General aquaculture training course	Ditto	Pyay/ Bago	Pilot farmers	46
	11-Jul-09	General aquaculture training course	Ditto	Letpandan/ Bago	Pilot farmers	36
	16-Jul-09	General aquaculture training course	Ditto	Paan/ Kayin	Pilot farmers	28
	4-Aug-09	Book-keeping training course	To provide basic knowledge of book-keeping for daily aquaculture activities and financial balances, etc.	Pyay/ Bago	Pilot farmers	35
	6-Aug-09	Book-keeping training course	Ditto	Letpandan/ Bago	Pilot farmers	19
	11-Aug-09	Book-keeping training course	Ditto	Yae Kyi/ Aveyarwaddy	Pilot farmers	56
	25-Nov-09	Trainers' training course	To provide general technique and monitoring techniques in knowledge and practice for fisheries officer	Gyogone/ Yangon	DoF officer	47
	27-Nov-09	Review workshop 2009	To review the results of the pilot studies and feedback to the next pilot activities	Paan/ Kayin	Pilot farmers	40
	10-Mar-10	Review workshop 2009	Ditto	Yae Kyi/ Aveyarwaddy	Pilot farmers	40
	17-Mar-10	Review workshop 2009	Ditto	Pyay/ Bago	Pilot farmers	31
	24-Mar-10	Review workshop 2009	Ditto	Letpandan/ Bago	Pilot farmers	50
	2010	9-Jun-10	General aquaculture training course	To provide basic and general technique to start aquaculture (book-keeping course included)	Yae Kyi/ Aveyarwaddy	Pilot and supportive farmers
14-Jun-10		General aquaculture training course	Ditto	Paan/ Kayin	Pilot and supportive farmers	44
18-Jun-10		General aquaculture training course	Ditto	Pyay/ Bago	Pilot and supportive farmers	36
20-Jun-10		General aquaculture training course	Ditto	Letpandan/ Bago	Pilot and supportive farmers	45
20-Jun-10		Seed production training	To provide basic technique of seed production in knowledge and practice for core farmers	Letpandan/ Bago	core farmers	2
27-Jun-10		Seed production training	Ditto	Pantanaw/ Aveyarwaddy	core farmers	1
8-Jul-10		Seed production training	Ditto	Paan/ Kayin	core farmers and pilot farmers	13
21-Jul-10		Seed production training	Ditto	Pyay/ Bago	core farmers	2
13-Jul-10		Seed production training	Ditto	Pyay/ Bago	core farmers	2
16-Mar-11		Review workshop 2010	To review the results of the pilot studies and feedback to the next pilot activities	Yae Kyi/ Aveyarwaddy	Pilot farmers	30
23-Mar-11		Review workshop 2010	Ditto	Paan/ Kayin	Pilot farmers	30
18-May-11		Review workshop 2010	Ditto	Pyay/ Bago	Pilot farmers	39
2011		19-May-11	Review workshop 2010	Ditto	Letpandan/ Bago	Pilot farmers
	15-Jun-11	General aquaculture training course	To provide basic and general technique to start aquaculture (book-keeping course included)	Yae Kyi/ Aveyarwaddy	Pilot and supportive farmers	35
	22-Jun-11	General aquaculture training course	Ditto	Paan/ Bago	Pilot and supportive farmers	34
	23-Jun-11	General aquaculture training course	Ditto	Letpandan/ Bago	Pilot and supportive farmers	32
	29-Jun-11	General aquaculture training course	Ditto	Paan/ Kayin	Pilot and supportive farmers	55
	19-Aug-11	Review workshop on Rice fish culture in Letpandan T/S, Bago	To review the results of the pilot studies and feedback to the next activities	Letpandan/ Bago	Supportive farmers	52
	(planned)	Review workshop 2011	To review the results of the pilot studies and feedback to the next pilot activities	Yae Kyi/ Aveyarwaddy	Pilot and supportive farmers	
	(planned)	Review workshop 2011	To review the results of the pilot studies and feedback to the next pilot activities	Pyay/ Bago	Pilot and supportive farmers	
	(planned)	Review workshop 2011	To review the results of the pilot studies and feedback to the next pilot activities	Letpandan/ Bago	Pilot and supportive farmers	
	(planned)	Review workshop 2011	To review the results of the pilot studies and feedback to the next pilot activities	Paan/ Kayin	Pilot and supportive farmers	
Total						1024

## 1. Number of Pilot Farmers for year 2011-2012 season

Division/ State	Township	Individual/Group		Total	Culture style			Total
		Individual	Community /School		Pond	Paddy	Cage	
Ayeyarwaddy	Yae Kyi	5	3	8	4	2	2	8
	Kyaung Kone	6	0	6	6	0	0	6
Bago	Letpandan	9	6	15	11	4	0	15
	Pyay	23	2	25	15	10	0	25
Kayin	Pa-an	15	6	21	20	2	0	22
<b>Total</b>		<b>58</b>	<b>17</b>	<b>75</b>	<b>56</b>	<b>18</b>	<b>2</b>	<b>76</b>

Summer Rice-fish culture in Letpandan Township

Region/Township	Gway taüt kwinn	Thike war chaung	Ma gyi kwinn
Bago Letpandan	17	37	25
<b>Total</b>	<b>79</b>		

$$76+79-4=150$$

<4 farmers are duplicated between them.>

## 2. Number of Pilot Farmers for year 2012-2013 season

Division/ State	Township	Individual/Group		Total	Culture style			Total
		Individual	Community /School		Pond	Paddy	Cage	
Ayeyarwaddy	Yae Kyi	5	3	8	4	2	2	8
	Kyaung Kone	6	0	6	6	0	0	6
Bago	Letpandan	9	7	16	16	below	0	16
	Pyay	33	2	35	24	11	0	35
Kayin	Pa-an	16	6	22	22	0	0	22
<b>Total</b>		<b>69</b>	<b>18</b>	<b>87</b>	<b>72</b>	<b>13</b>	<b>2</b>	<b>87</b>

Rice-fish culture in Letpandan Township

Region/Township	Gway taüt kwinn	Thike war chaung	Ma gyi kwinn
Bago Letpandan	16	40	28
<b>Total</b>	<b>84</b>		



## Result of Evaluation Grid of the Project for Small-scale Aquaculture Extension for Promotion of Livelihood of Rural Communities in Myanmar

## A. Actual Project Achievement and Project Implementation Process

Evaluation Criteria	Evaluation Questions		Information/Indicators	Result	
	Questions (as subject)	Sub-questions			
1. Project Achievement	1-1 Achievement of Overall Goal "Small-scale aquaculture for improvement of livelihood is disseminated in Ayeyarwady and Bago Divisions, Kayin State, and extended in other less developed areas."	1-1-1 Is the indicator for Overall Goal will be fulfilled?	Indicators for Overall Goal are followings: 1. Number of farmers who are implementing small-scale aquaculture in the target areas become more than 300 farmers. 2. Farmers in the other townships adjacent to the target townships start implementing small-scale aquaculture.	Number of farmers who implementing small-scale aquaculture in the target area will be increasing year by year. Regarding pond culture, there is no data for availability of possible place to be pond. But, there is potential for rice-cum-fish culture to increase number of farmers. It is likely to be nearly 300 farmers practicing small-scale aquaculture in future.  In order to promote small-scale aquaculture in the other townships, strategic approach by DoF would be necessary, such as dissemination of outcome of the Project, capacity building of those local DoF staffs, technical guidance to farmers, and etc.	
		1-2 Achievement of Project Purpose "Number of the farmers who are implementing small-scale aquaculture for the improvement of their livelihood is increased in the target townships."	1-2-1 Is the indicator for Project Purpose will be fulfilled?	Indicators for Project Purpose are followings: Number of small-scale aquaculture farmers/ groups that newly started aquaculture through the project activity become more than 100.	Totally 75 farmers in target townships have participated into the verification studies. And, another 79 farmers joined the verification study for rice paddy fish culture of dry season in Letpandan. Consequently, 150 farmers have practiced small-scale aquaculture in the target townships, which deduct duplication of counting.
	1-3 Production of Outputs	1-3-1 Has Output 1 "Necessary conditions and techniques on the small-scale aquaculture promotion for farmers in the target townships are clarified." been produced?	Indicators for Output 1 are followings: 1-1. More than 10 kinds of booklets and manuals to be used for training activities of the Project are prepared. 1-2. Technical and economic feasibilities are verified for more than two (2) small-scale aquaculture methods in target area.	Totally, 10 kinds of technical manuals and guidelinas have been prepared by the Project in order strengthen the local DoF officer and farmers in target townships.  The Project introduced three methods: pond culture, rice paddy fish culture and cage culture. The Project identified that pond culture and rice paddy fish culture would be appropriate for target townships through the verification studies.	
		1-3-2 Has Output 2 "Extension systems of the small-scale aquaculture for the farmers in the target townships are strengthened." been produced?	Indicator for Output 2 is following: 2-1. Monthly monitoring and periodical technical assistance are carried out by DOF staff stationed at local offices in the five target townships. 2-2. Guideline/program of FTF training is prepared.	Since the second year of the Project, monthly monitoring has been conducted by local DoF staffs in each township. Those DoF staffs have visited monthly to target farmers, collecting monitoring sheet and sending it to the Project office.  "Guideline for Farmer to Farmer (FTF) Aquaculture Extension Approaches" was made by the Project in August 2010.	
		1-3-3 Has Output 3 "Pilot farmers' and 'core farmers' are selected in the target townships and 'farmer to farmer' extension approach is practiced by them." been produced?	Indicator for Output 3 is following: 3-1. More than four (4) core farmers who can provide aquaculture training for farmers are established. 3-2. More than 15 trainings aiming at small-scale aquaculture extension are carried out in cooperation with core farmers (FTF trainings)	Core farmers in Pyay, Letpandan and Paan (2) have implemented FTF extension in cooperation with local DoF staffs, which include aquaculture training for farmers.  In Pyay and Letpandan, core farmer took initiative to organize General aquaculture training for 4 times, and Review Workshop for 3 times. And also, a core farmer in Paan has cooperated with organize General aquaculture training and Review Workshop for 4 times. In addition, other Review Workshop is planned in Letpandan for 4 times.	
		1-4 Actual Inputs	1-4-1 Japanese inputs	① Experts	Totally, 6 experts have been assigned and dispatched for the Project. Those experts are in the fields of 1) Chief Adviser/Extension Policy, 2) Coordinator/Small-scale Aquaculture Technology, 3) Rural Socio Economic Research, 4) Technical Advisor on Aquaculture and Extension, 5) Freshwater Fish Seed Production, 6) Extension for Small-scale Aquaculture Technique and 7) Case-study on Small-scale Aquaculture Extension.
				② Local staffs	One driver has been employed by the Project team as a local staff.
			③ Local expenditure — a) Organizing seminar/training course and etc. in activities b) Equipment and facilities	The operational expenditure which excludes the cost of equipment by Japanese side was 17,212,000 JPY for JFY 2009 and JFY 2010. Also, the expenditure for JFY 2011 is 7,065,000 JPY. Total operational expenditure for the Project by this time is 24,777,000 JPY. And also, equipment for the Project activity was provided such as motorcycle, tractor, water pump, generator, grass cutter and etc. Total cost of providing equipment is 10,773,000 JPY.	
			④ Training course in Japan, Third country training	Since the Project is implemented, totally 17 counterparts participated in 9 trainings courses in Japan.	
		1-4-2 Myanmar inputs	① Allocation of Counterparts and staffs	In the Project activity, totally, 8 members have assigned as Counterparts of the Project from DoF. They are Project Director, Project Manager, Project Coordinator and 3 Technical staffs. And, 2 project staffs (Secretary) are allocated.	
	② Local expenditure		Myanmar side has spent necessary cost for the operation of the Project. These are for salary of Counterpart personnel, allowance for the project activity of local DoF staff and utility cost for the Project office as well as hatcheries.		
	③ Facilities		DoF has provided an office space and other necessary facilities for JICA Experts in Yangon city.		

2. Project Implementation Process	2-1 Appropriateness of the implementation process	2-1-1 Activities which were implemented along with the plan	Points and remarks concerned from planning to actual implementation	Almost all the planned activities required were implemented as scheduled with some of minor modifications according to the responding for actual condition.
		2-1-2 Appropriateness of technical transfer from Experts/Project staff to Counterparts/Concerned personnel	Progress of capacity and accumulation of knowledge of Myanmar CrPs	Technical transfer from Experts/Project staff to Counterparts/Concerned personnel were appropriately done in the project activities.
		2-1-3 Degree of involvement of Counterparts into the Project activities	Degree of involvement and collaboration of Counterparts and related institution into the Project	Japanese expert team and Myanmar counterpart personnel regularly and irregularly meet in the project activities. Japanese expert team have often visited the office of DoF to discuss implementation of several activities, to report the condition of target farmers in each townships and to make decisions on the Project.
	2-2 Project Management	2-2-1 Function of Monitoring system of the Project	Monitoring plan and results (to show that monitoring and evaluation system was established and functioned well)	The Project has been implemented along PO. And also, in target townships, the local DoF staffs started to conduct monthly monitoring along the monitoring plan by their own since the second year of the Project.
		2-2-2 Communication between Expert/Project staff and Counterparts regarding project activities	Frequency of communication between Japanese experts and Myanmar counterparts	Relationship between Japanese expert teams and Myanmar counterparts in the project activities has been kept well. Mutual understanding between Japanese and Myanmar sides has been kept well, which contributed smooth management of the Project.
		2-2-3 Decision making and its process regarding project management	Number of organized committee to manage the Project between Myanmar and Japan sides	Joint Coordinating Committee (JCC) was organized at national level to manage the Project. In JCC Japanese and Myanmar sides supervise and review overall progress of the Project and discussed issue arises. JCC was held three times since commencement of the Project.
		2-2-4 Cooperation with other organization	Coordination and cooperation with other organizations in the Project activities	The Project collaborated with Myanmar Agricultural Services to conduct the verification study of positive effect of introducing aquaculture into paddy field.
	2-3 Others	2-3-1 Important assumption and/or problems which affect project activities	Important assumption such as Government policies and/or any unexpected factor which affect the Project activities	None.



## Result of Evaluation Grid of the Project for Small-scale Aquaculture Extension for Promotion of Livelihood of Rural Communities in Myanmar

## B. Analysis on Five evaluation criteria

Evaluation Criteria	Evaluation Questions		Information/Indicators	Result	
	Questions (as subject)	Sub-questions			
3. Relevance	3-1 Coincidence and appropriateness of Overall goal and Project purpose to National development policy and regional needs in Myanmar	3-1-1 Are Overall goal and Project purpose coincided with Development policy in Myanmar?	Coincidence with National development policy in Myanmar	Fisheries policy of Government of Myanmar has guided to secure and sustain fish food produces and supports to the livelihood of the farmers and rural people. Also, Rural Development Program by the government in order to reduce poverty and improve livelihoods has taken place by all means including increase food producing sectors such as livestock, fisheries and agriculture crop production.	
		3-1-2 Are Overall goal and Project purpose coincided with needs in the target areas?	Coincidence with needs in targeted area	Local needs of target areas are focusing to increase fish through the implement of small-scale aquaculture, that producing more fish from paddy fields, small village ponds and cages. Every farmer aware of that fulfillment for food security is increasing.	
	3-2 Appropriateness as Japanese ODA	3-2-1 Is the Project appropriate as Japanese ODA and JICA technical assistance?	Coincidence with Japanese ODA policy and JICA country assistant plan	The Project has been implemented along on the policy of Japanese Official Development Assistance (ODA). And, strategy of JICA for Myanmar focuses on Humanity issues, in which Agriculture and rural developments, support for social weakness and support for minority group as well as refugees are important sector. The Project has been implemented along on those three sectors.	
		3-2-2 Does the Project represent technical advantage of Japan in this field?	Comparison with other donor projects/programs	No donor has supported for small-scale aquaculture in this area.	
	3-3 Relevance of project design	3-3-1 Appropriateness of composition between Overall goal, Project purpose, Outputs and Activities	Comparison between plan and present achievement	Each Outputs and Project Purpose has already been achieved. Therefore, the of the Project has been implemented along on the plan.	
		3-3-2 Appropriateness of selection of target area and groups	Comparison between planned target group and area and present situation	Target group and target area have not been changed since the commencement of the Project. Selection of the target areas was appropriate.	
4. Effectiveness (expected) (See the Project Achievement table for the Italic)	4-1 Degree of achievement of Project Purpose	4-1-1 Is achievement of project purpose expected as originally planned?	See Project Achievement	As the result of the verification studies, the Project identified pond culture and rice cum fish culture are appropriate method for target farmers other than cage culture which require initial cost. On the other hand, the local DoF staff in target townships was trained to conduct monitoring and to give technical guidance to of target farmers. Consequently, 150 farmers have practiced small-scale aquaculture in the target townships since the commencement of the Project. Therefore, the indicator for Project Purpose has already been fulfilled, and then Project Purpose has been achieved.	
		4-1-2 Are there any inhibiting factors to achieve project purpose?	See Project Achievement	Since the Project started, none of serious external and internal factors effects the Project to achieve its purpose, except there is total constraint to combat rice paddy into fish pond which has hindered promotion of pond culture.	
	4-2 Was the project design appropriate to achieve the project purpose?	4-2-1 Were Outputs appropriate enough to achieve Project Purpose?	See Project Achievement	Outputs were appropriate to achieve the Project Purpose. For introducing small-scale aquaculture by farmer in the target townships, the Project consist of three Outputs, those are 1) clarification of condition and techniques on the small-scale aquaculture, 2) Strengthening of extension system among farmer, and 3) Selection of "Pilot farmers" and "core farmers" to extend small-scale aquaculture between farmers. These components are appropriate to introduce small-scale aquaculture by farmer in the target townships.	
		4-2-2 Is important assumption still available and/or satisfied in the future?	Change of external condition for the project, etc.	Important assumption is not stated in FOM, but pre-condition was fulfilled prior to start the Project.	
	5. Efficiency (See the Project Achievement table for the Italic)	5-1 Degree of achievement of Outputs	5-1-1 Are achievement of Outputs as originally planned?	See Project Achievement	Outputs were achieved as originally planned. But, regarding the capacity of core farmers in Yaa Kyi and Pann have been still limited.
			5-1-2 Are there any inhibiting factors to achieve Outputs?	See Project Achievement	Since the Project started, none of serious external and internal factors effects the Project to achieve its purpose.
5-2 Efficiency of Activities	5-2-1 Were Activities appropriate to produce Outputs?	See Project Achievement	See Project Achievement	Activities for each Outputs have been fully implemented. Especially, training of pilot farmers was well utilized to conduct the verification studies. Also, training of the local DoF staff in target townships was effective to conduct monitoring and to give technical guidance to of target farmers.	
				5-3-1 Are Japanese inputs appropriate?	① Assignment of Experts (number, timing, field) ② Provision of equipment (variety, number, timing) ③ Acceptance of trainees in Japan (timing, number, contactability of the training) ④ Expenses for local cost such as conducting training seminar, workshop, and etc. ⑤ Utilization of National staffs for project activities
	5-3-2 Are Myanmar inputs appropriate?	See Project Achievement	See Project Achievement	Inputs from Myanmar side such as allocation of counterparts, sharing the local cost, and providing facilities (the project office) have been fully utilized in the project activities. Allocation of counterparts, especially in the project office has been effective to implement the project activities. And also, local DoF staffs in five target areas have visited target farmers frequently, to monitor and supervise their small-scale aquaculture. These activities have contributed promotion of small-scale aquaculture in the target townships.	
				5-3-3 How are the degree of utilization of inputs?	1) Personnel 2) Equipment and facilities
	5-3-4 Is the project management appropriate?	See Project Achievement	See Project Achievement	In JCC, Japanese and Myanmar sides have shared the progress of the Project, and they discussed issues arose for it. The Project has been smoothly managed through JCC. On the other hand, relationship between Japanese expert teams and Myanmar counterparts in the project activities has been kept well. Therefore, mutual understanding between Japanese and Myanmar sides has been kept well, which contributed smooth management of the Project.	

6. Impact (See the Project Achievement table for the details)	6-1 Impacts of the Project for the long term and other fields	6-1-1 Will Overall Goal be estimated to be achieved? Any inhibited factor arise?	See Project Achievement	The number of farmer for small-scale aquaculture has been increasing year by year. As final verification study by the Project for 2012-2013 year, more than 160 farmers have been expected to implement small-scale aquaculture. Rice-cum-fish culture will have potential to increase. Reaching to Overall Goal of the Project, maintaining of the project outcome and expansion of small-scale aquaculture are necessary. However, several issues arise to reach the Overall Goal. Firstly, Pilot farmers and other farmers have been assisted by the Project as seed fish, feed and necessary equipment, etc. It is not clear whether those farmers can continue small-scale aquaculture even after the completion of the project support. Secondly, core farmers in Yea Kyi, Ayeyarwaddy and Paan still need technical support to adapt seed production and FTF extension. Those core farmers can firmly adapt the skill and the technology by providing continuous support. And, finally, it is not clear DoF will deal with those issues. Organizational arrangement of DoF would be required such as setting up of
		6-1-2 Will the project outcome be able to affect any impact to formulate policy in Myanmar?	Related government policy/plan, etc.	Fishery Policy of Government of Myanmar for 2011 has mentioned introduction of aquaculture. However, such emphasis come from the effect of the Project is not clear.
		6-1-3 Are there any positive situation produced by the Project?	Positive impact, if any.	1) The verification study on paddy cum fish culture by DoF and MAS showed positive effect of introducing aquaculture into paddy field. According to the study, introduction of rice cum fish culture had effect to increase number of rice tillers/seeds, it contribute to expansion of total rice yield. And also, rice cum fish culture gives the way to more environmentally friendly rice-based system, which reducing the use of fertilizer and pesticide. 2) Result of the verification study has been incorporated into the handbook for extension officers/workers in Ministry of Agriculture and Irrigation. 3) Recently, 12 farmers are going to start small-scale aquaculture by support from local DoF office in Yea Kyi township. 4) DoF has started promotion of common carp seed production at the farmer's level.
		6-1-4 Are there any negative situation produced by the Project?	Negative impact, if any.	None.
7. Sustainability (expected)	7-1 Sustainability of the Project effects	7-1-1 Are there any possibility that policies and institution will be fulfilled for sustaining of the Project outcome at National and/or Local levels?	Present and future aspect of policy and institution among National and/or local government regarding livelihood of farmers in target area	The outcome of the Project will be sustained in the policy and institutional aspect by Fisheries policy and Rural Development Program of Government of Myanmar. Fisheries policy of Government of Myanmar has guided to secure and sustain fish food produces and supports to the livelihood of the farmers and rural people. And, Rural Development Program by the government in order to reduce poverty and improve livelihoods has taken place by all means including increase food producing sectors such as livestock, fisheries and agriculture crop production.
		7-1-2 Are there any possibility that DoF will deal with necessary arrangement on budgets and operation to utilize project outcome?	Organizational arrangement of DoF on budgets and operation	Local DoF offices in each township have participated in the project activity, but the Project has not supported their operational cost. Therefore, those local DoF offices would be able to continue the activity inherited from the Project such as monitoring and technical guidance to the farmers. However, pilot farmers and other farmers have been assisted by the Project as seed fish, feed and necessary equipment, etc. It is not clear whether those farmers can continue small-scale aquaculture even after the completion of the project support. Therefore, follow-up by DoF will be necessary to keep implementation of small-scale aquaculture by those farmers. And also, operation and extension of small-scale aquaculture in the target townships require organizational arrangement of DoF. Those are setting up of appropriate unit, allocation of personnel and budget, formulation of operational plan and etc. However, it is not clear how DoF will deal with it to maintain the project outcome comprehensively.
		7-1-3 Are there any possibility that counterparts in DoF and target farmers will maintain transferred technologies and/or approaches from the Project?	Maintenance of transferred technologies by Myanmar counterparts and/or farmers	Local DoF staffs in each township continue the role of monitoring and technical guidance to the farmers after the Project ended. According to the result of the interview, motivations of those staffs are very high. Technical guidelines and manuals regarding small-scale aquaculture would help them to maintain their capacity. The verification studies proved appropriate small-aquaculture methods in target townships, which are simple and low cost than easily adapted by target farmers. Therefore, core farmers and pilot farmer could continue aquaculture technically. And, core farmers in Pyaw and Latpandan will keep the role of seed producers to supply seed fish to other farmers with technical guidance due to economic incentives. On the other hand, core farmers in Yea Kyi and Paan have implemented FTF extension, but they have not sufficiently functioned as seed producer yet.



**プロジェクト・デザイン・マトリックス(PDM)**

プロジェクト名: ミャンマー国小規模養殖普及による住民の生計向上事業  
 プロジェクト対象管区: イラワジ管区、バゴー管区およびカレン州の対象 5 市町区  
 ターゲットグループ: 対象地域において小規模養殖のための水田あるいは池を所有する農家  
 裨益者: 中央および地方水産局職員、対象農家(中核農家、パイロット農家、パイロット事業周辺農家)  
 プロジェクト期間: 3 年間(2009 年 6 月 8 日～2012 年 6 月 7 日)

日付:2009 年 11 月 3 日 Version 2

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<b>上位目標</b> イラワジ、バゴー管区およびカレン州 3 地域において住民の動物性タンパク質摂取量の向上及び農家の生計向上を目指した小規模養殖が広く実施される。	<ul style="list-style-type: none"> <li>- 対象 3 地域において小規模養殖を実施している農家戸数が 300 戸以上になる</li> <li>- 対象 3 地域 5 市町区に隣接する地区で小規模養殖が実施されるようになる。</li> </ul>	水産局報告書	
<b>プロジェクト目標</b> イラワジ、バゴー管区およびカレン州 3 地域におけるプロジェクト対象 5 市町区で小規模養殖を実施している農家戸数が増加する。	対象 5 市町区において小規模養殖を実施している農家戸数が 100 戸以上になる。	プロジェクト報告書 インタビュー調査	
<b>成果</b> 1. 対象市町区の農民が小規模養殖を開始するために必要な制度的、技術的な事項が明確になり、マニュアルにまとめられる。  2. 対象市町区の農民への小規模養殖普及に関わる支援体制が強化される。  3. 対象市町区での農民間普及活動の中心となるパイロット農家及び中核農家が選定され、農民間普及が開始される。	<ul style="list-style-type: none"> <li>- 研修用テキスト、マニュアル類が 10 種類以上作成される。</li> <li>- 対象地域で持続可能な小規模養殖技術が 2 つ以上実証される。</li> <li>- 対象 5 市町区において DOF の地方事務所による巡回指導・モニタリングが毎月定期的に行われている。</li> <li>- Farmer-to-farmer (FTF)研修のガイドライン/プログラムが作成される。</li> <li>- 一般農家に対する養殖研修を実施できるコアファーマーが 4 軒以上育成される。</li> <li>- コアファーマーを中心とした養殖普及研修が延べ 15 回以上実施される。</li> </ul>	プロジェクト報告書 インタビュー調査 マニュアル	

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><b>活動</b></p> <p>1-1. 小規模養殖開始に必要な条件と手続きを明らかにする。</p> <p>1-2. 対象 3 地域に適合した小規模養殖技術を明らかにする。</p> <p>1-3. 水産局職員と農家のための小規模養殖普及マニュアルを作る。</p> <p>2-1. 農家及び、水産局職員のための研修を実施する。</p> <p>2-2. 対象市町区で水産局が農家への支援体制を構築する。</p> <p>2-3. 農民から農民への普及手法を構築する。</p> <p>3-1. 農家の中からパイロット農家を選定し、養殖と普及に必要な資機材を投入する。</p> <p>3-2. パイロット農家の中から中核農家を選定し、種苗生産と普及に必要な資機材を投入する。</p> <p>3-3. パイロット農家および中核農家が、水産局の指導と支援のもとで小規模養殖を実践し、「農民から農民への普及手法」による普及を行う。</p>	<p><b>Inputs</b></p> <p><u>ミャンマー側</u></p> <p>人員配置:</p> <ul style="list-style-type: none"> <li>- プロジェクト・ディレクター(水産局長)</li> <li>- プロジェクト・マネージャー(水産局 研究開発課長)</li> <li>- プロジェクト・コーディネーター(水産局 研究開発課 国際担当)</li> <li>- カウンターパート(水産局・対象地域機関担当者)</li> </ul> <p>施設・建物:</p> <ul style="list-style-type: none"> <li>- プロジェクト活動に必要な土地、専門家および関連人員の執務室</li> <li>- 資機材設置施設</li> <li>- 必要に応じ両国でと合意したその他の諸施設</li> </ul> <p>管理運営費:</p> <ul style="list-style-type: none"> <li>- 関連職員に係わる経費</li> <li>- 光熱費など基本的プロジェクト運営費用</li> </ul> <p><u>日本側:</u></p> <ul style="list-style-type: none"> <li>- 長期専門家(2名 チーフアドバイザー/普及政策、および業務調整/養殖技術)</li> <li>- 短期専門家(種苗生産、淡水養殖、社会・経済調査等)</li> <li>- 機材供与(小規模養殖用資機材、事務所用資機材、車両、普及用資機材等)</li> <li>- 研修員受入れ(本邦研修、第三国研修、国内研修等)</li> </ul>		<p><b>前提条件</b></p> <ul style="list-style-type: none"> <li>- 稲田での養殖実施(稲田の掘削も含め)の方針に変更がないこと</li> </ul> <p><b>成果達成のための外部条件</b></p> <ul style="list-style-type: none"> <li>- 小規模養殖地周辺で農薬が使用されないこと</li> <li>- 養殖を妨げる災害が起こらないこと</li> <li>- 深刻な魚病が発生しないこと</li> </ul> <p><b>プロジェクト目標達成のための外部条件</b></p> <p>特になし</p>

### **Project Design Matrix (PDM)**

Project Name: Small-scale Aquaculture Extension for Promotion of Livelihood of Rural Communities in Myanmar Project

Target Area: Five (5) target townships from Ayeyarwady and Bago Divisions and Kayin State

Target Group: Farmers in the target townships with land for aquaculture such as pond and/or rice-field

Beneficiaries: Staff of Department of Fisheries (DoF), Ministry of Livestock and Fisheries,

Target Farmers (a. core farmers, b. pilot farmers, c. farmers in the target townships)

Duration: June 8, 2009 – June 7, 2012 (3 years)

Date: 3/November/2009 Version: 2

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><b>Overall Goal</b> Small-scale aquaculture for improvement of livelihood is disseminated in Ayeyarwady and Bago Divisions, Kayin State, and extended in other less developed areas.</p>	<ul style="list-style-type: none"> <li>- Number of farmers who are implementing small-scale aquaculture in the target areas become more than 300 farmers.</li> <li>- Farmers in the other townships adjacent to the target townships start implementing small-scale aquaculture.</li> </ul>	DoF's report	
<p><b>Project Purpose</b> Number of the farmers who are implementing small-scale aquaculture for the improvement of their livelihood is increased in the target townships.</p>	Number of small-scale aquaculture farmers/ groups that newly started aquaculture through the project activity become more than 100	Project report Interview survey	
<p><b>Outputs</b></p> <ol style="list-style-type: none"> <li>1. Necessary conditions and techniques on the small-scale aquaculture promotion for farmers in the target townships are clarified.</li> <li>2. Extension systems of the small-scale aquaculture for the farmers in the target townships are strengthened.</li> <li>3. "Pilot farmers" and "core farmers" are selected in the target townships and "farmer to farmer" extension approach is practiced by them.</li> </ol>	<ul style="list-style-type: none"> <li>- More than 10 kinds of booklets and manuals to be used for training activities of the Project are prepared</li> <li>- Technical and economic feasibilities are verified for more than two (2) small-scale aquaculture methods in target area.</li> <li>- Monthly monitoring and periodical technical assistance are carried out by DOF staff stationed at local offices in the five target townships.</li> <li>- Guideline/program of FTF training is prepared.</li> <li>- More than four (4) core farmers who can provide aquaculture training for farmers are established.</li> <li>- More than 15 trainings aiming at small-scale aquaculture extension are carried out in cooperation with core farmers (FTF trainings)</li> </ul>	Project report Interview survey Manuals	

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><b>Activities</b></p> <p>1-1. Necessary conditions and procedures to start small scale aquaculture are clarified.</p> <p>1-2. Appropriate aquaculture techniques for each target area are clarified.</p> <p>1-3. Manuals for the small-scale aquaculture promotion for DoF staff and farmers are prepared.</p> <p>2-1. Training courses for DoF staff and farmers are implemented.</p> <p>2-2. Farmer support system by DoF in each target township is established.</p> <p>2-3. Extension system among farmers, “farmer to farmer” approach, is established.</p> <p>3-1. Pilot farmers are selected and provided necessary inputs for fish production and extension of aquaculture.</p> <p>3-2. Core farmers are selected and provided necessary input for seed production and extension.</p> <p>3-3. “Farmer to farmer” approach is practiced by the pilot farmers and core farmers under the guidance and support of DoF.</p>	<p><b>Inputs</b></p> <p><u>Myanmar Side</u></p> <ul style="list-style-type: none"> <li>- Administrative Personnel and counterparts               <ul style="list-style-type: none"> <li>Project Director (Director General, DoF)</li> <li>Project Manager (assigned by DG)</li> <li>Counterpart personnel (assigned by DG)</li> <li>Relevant fishery officers in the target areas</li> </ul> </li> <li>- Facilities:               <ul style="list-style-type: none"> <li>Land, office space and necessary facilities in DoF for the Japanese experts and related staff members</li> <li>Rooms and space necessary for installation and storage of the equipment</li> <li>Other facilities mutually agreed upon as necessary</li> </ul> </li> <li>- Local costs:               <ul style="list-style-type: none"> <li>Expenditure for counterparts</li> <li>Water and electricity charges necessary for operation and maintenance of the facilities</li> </ul> </li> <li>- Tax exemption measure</li> <li>- Support relating to import of equipment</li> </ul> <p><u>Japanese Side</u></p> <ul style="list-style-type: none"> <li>- Dispatch of experts:               <ul style="list-style-type: none"> <li>Two (2) long term experts (chief adviser/extension policy, and coordinator/small-scale aquaculture technology)</li> <li>Short term experts (in necessity for implementation of the Project within the framework of the Project; such as experts in fish seed production, freshwater aquaculture techniques, socio-economic survey for target villages and etc.)</li> </ul> </li> <li>- Provision of equipment:               <ul style="list-style-type: none"> <li>Machinery, equipment, vehicles, and other extension materials necessary for the effective implementation of the Project within budgetary limitations.</li> </ul> </li> <li>- Provision of training course in Japan, in the third countries, or in Myanmar:</li> </ul>		<p><b>Pre-conditions</b></p> <ul style="list-style-type: none"> <li>- Government of Myanmar allows small-scale aquaculture activities in the target areas.</li> <li>- Agrichemicals are not intensively used near to the sites of rice- field fish culture.</li> <li>- Natural disasters do not attack the target areas.</li> <li>- Serious fish diseases do not break out.</li> </ul>

## ミャンマー国小規模養殖普及による住民の生計向上プロジェクト終了時評価調査用評価グリップ

## A. プロジェクトの実績及び実施プロセスの検証

評価項目	評価設問		情報／指標	データ取得先	データ取得方法
	大項目	小項目			
1. プロジェクトの実績	1-1 上位目標の達成予測:「イラワジ、バゴー管区およびカレン州 3地域において住民の動物性タンパク質摂取量の向上及び農家の生計向上を目指した小規模養殖が広く実施される。」	1-1-1 上位目標の達成指標は満たされる可能性はあるか？	上位目標の達成指標は以下の通り。 1. 対象3地域において小規模養殖を実施している農家戸数が300戸以上になる。 2. 対象3地域5市町区に隣接する地区で小規模養殖が実施されるようになる。	プロジェクト文書、政府や水産局の公的文書、関係者へのインタビュー	文献調査、インタビュー、質問票等の実施
				プロジェクト文書、政府や水産局の公的文書、関係者へのインタビュー	文献調査、インタビュー、質問票等の実施
	1-2 プロジェクト目標の達成度:「イラワジ、バゴー管区およびカレン州 3地域におけるプロジェクト対象5市町区で小規模養殖を実施している農家戸数が増加する。」	1-2-1 プロジェクト目標の達成指標は満たされるか？	プロジェクト目標の達成指標は以下の通り。 対象5市町区において小規模養殖を実施している農家戸数が100戸以上になる。	プロジェクト文書、政府や水産局の公的文書、政府関係者や農家へのインタビュー	文献調査、インタビュー、質問票等の実施
	1-3 各成果の達成状況	1-3-1 成果1「対象市町区の農民が小規模養殖を開始するために必要な制度的、技術的な事項が明確になり、マニュアルにまとめられる。」は達成されているか？	成果1の指標は以下の通り。 1-1 - 研修用テキスト、マニュアル類が10種類以上作成される。	プロジェクト文書、政府関係者、JICA専門家、カウンターパートへのインタビュー	文献調査、インタビュー、質問票等の実施
			1-2 - 対象地域で持続可能な小規模養殖技術が2つ以上実証される。	プロジェクト文書、政府関係者、JICA専門家、カウンターパートへのインタビュー	文献調査、インタビュー、質問票等の実施
		1-3-2 成果2「対象市町区の農民への小規模養殖普及に関わる支援体制が強化される。」は達成されているか？	成果2の指標は以下の通り。 2-1 対象5市町区においてDOFの地方事務所による巡回指導・モニタリングが毎月定期的実施されている。	プロジェクト文書、政府関係者、JICA専門家、カウンターパートへのインタビュー	文献調査、インタビュー、質問票等の実施
			2-2 - Farmer-to-farmer (FTF) 研修のガイドライン/プログラムが作成される。	プロジェクト文書、政府関係者、JICA専門家、カウンターパート、対象農家へのインタビュー	文献調査、インタビュー、質問票等の実施
		1-3-3 成果3「対象市町区での農民間普及活動の中心となるパイロット農家及び中核農家が選定され、農民間普及が開始される。」は達成されているか？	成果3の指標は以下のとおり。 3-1 一般農家に対する養殖研修を実施できるコアファーマーが4軒以上育成される。	プロジェクト文書、政府関係者、JICA専門家、カウンターパート、対象農家へのインタビュー	文献調査、インタビュー、質問票等の実施
			3-2 - コアファーマーを中心とした養殖普及研修が延べ15回以上実施される。	プロジェクト文書、政府関係者、JICA専門家、カウンターパート、対象農家へのインタビュー	文献調査、インタビュー、質問票等の実施

Achievement

1-4 投入実績	1-4-1 日本側投入	①専門家の配置	プロジェクト文書、政府関係者、JICA専門家、カウンターパートへのインタビュー	文献調査、インタビュー、質問票等の実施		
		②現地スタッフの雇用	プロジェクト文書、政府関係者、JICA専門家、カウンターパートへのインタビュー	文献調査、インタビュー、質問票等の実施		
		③ 現地業務費支出 a) セミナー、現地研修等の開催と実施 b) 機材供与、施設の整備	プロジェクト文書、政府関係者、JICA専門家、カウンターパートへのインタビュー	文献調査、インタビュー、質問票等の実施		
		④本邦研修、第三国研修の実施	プロジェクト文書、政府関係者、JICA専門家、カウンターパートへのインタビュー	文献調査、インタビュー、質問票等の実施		
	1-4-2 ミャンマー側投入	①カウンターパート等の配置	プロジェクト文書、政府関係者、JICA専門家、カウンターパートへのインタビュー	文献調査、インタビュー、質問票等の実施		
		②ローカルコスト負担	プロジェクト文書、政府関係者、JICA専門家、カウンターパートへのインタビュー	文献調査、インタビュー、質問票等の実施		
		③ 施設等の提供	プロジェクト文書、政府関係者、JICA専門家、カウンターパートへのインタビュー	文献調査、インタビュー、質問票等の実施		
	2. プロジェクト実施プロセス	2-1 実施プロセスの適正度	2-1-1 計画に則った活動の実施	計画と実際の実施状況に係る状況の比較	プロジェクト文書、政府関係者、JICA専門家、カウンターパートへのインタビュー	文献調査、インタビュー、質問票等の実施
			2-1-2 活動における日本人専門家の活動や技術移転の適切度	カウンターパート側の能力向上状況と日本側専門家の関わり	プロジェクト文書、政府関係者、JICA専門家、カウンターパートへのインタビュー	文献調査、インタビュー、質問票等の実施
			2-1-3 実施機関やカウンターパートのプロジェクトへの関与度合い	プロジェクトの実施におけるカウンターパートや関連機関の関与の度合い	プロジェクト文書、政府や水産局の公的文書、政府関係者へのインタビュー	文献調査、インタビュー、質問票等の実施
2-2 プロジェクトマネジメント		2-2-1 モニタリング・システムの有無とその機能	プロジェクト活動のモニタリング計画と現状	プロジェクト文書、政府や水産局の公的文書、政府関係者へのインタビュー	文献調査、インタビュー、質問票等の実施	
		2-2-2 活動における日本専門家及び関係者とトルコ側カウンターパートとの関係性	日本側専門家とミャンマー側カウンターパートのコミュニケーションの頻度やその状況	プロジェクト文書、政府や水産局の公的文書、関係者へのインタビュー	文献調査、インタビュー、質問票等の実施	
		2-2-3 プロジェクトの管理における意思決定状況	プロジェクトの意思決定に係るミャンマーと日本側による会合等の実施状況	プロジェクト文書、政府や水産局の公的文書、関係者へのインタビュー	文献調査、インタビュー、質問票等の実施	
		2-2-4 他組織、機関との協力関係	プロジェクト活動における、その他の機関や組織との調整や協力状況	プロジェクト文書、政府や水産局の公的文書、政府関係者へのインタビュー	文献調査、インタビュー、質問票等の実施	
2-3 その他		2-3-1 その他、プロジェクトの活動における阻害要因、対象地の特殊性等	プロジェクトの運営に関わる、政府政策や予想外の状況の発生などの外部要因の有無	プロジェクト文書、政府関係者、JICA専門家、カウンターパートへのインタビュー	文献調査、インタビュー、質問票等の実施	

ミャンマー国小規模養殖普及による住民の生計向上プロジェクト終了時評価調査用評価グリッド

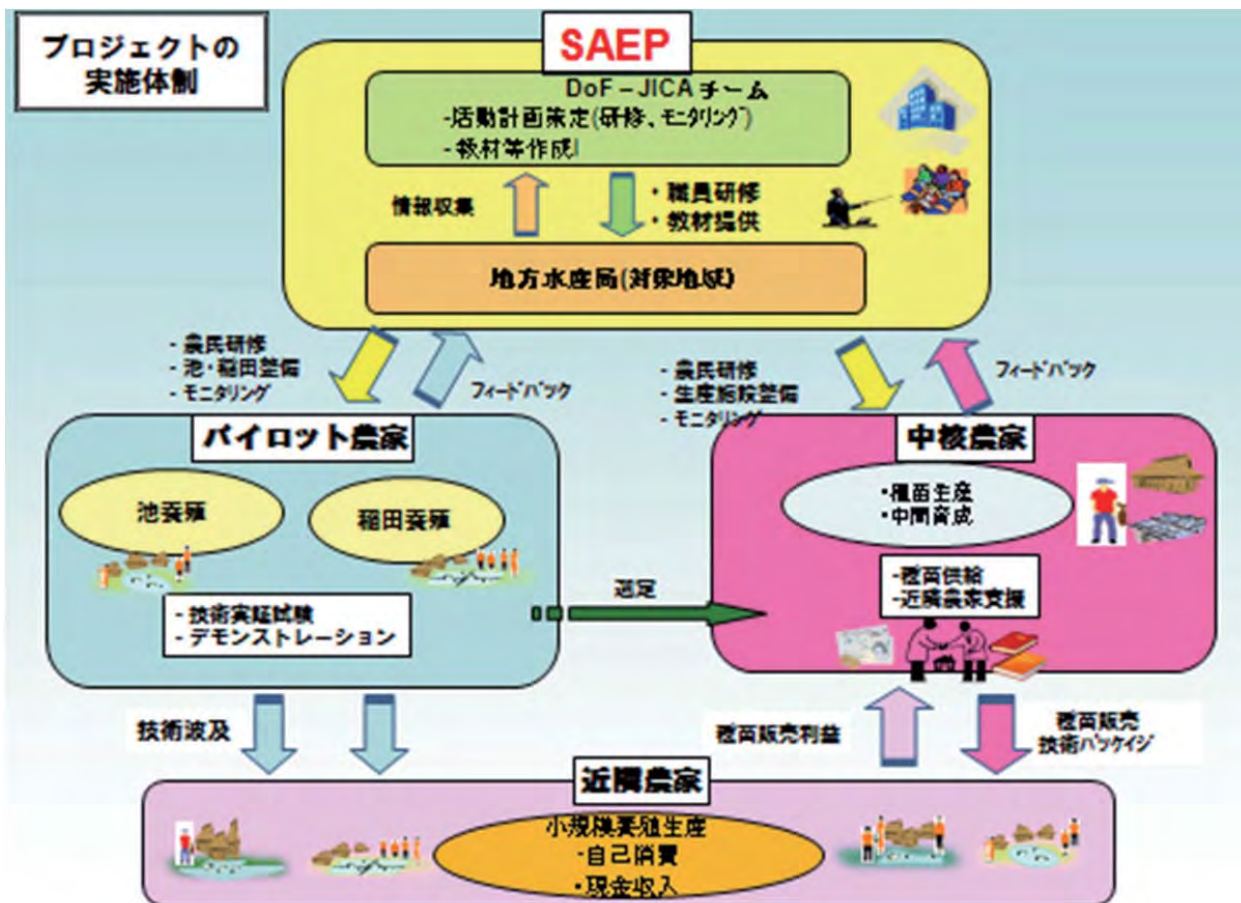
B. 評価5項目の検証

評価項目	評価設問		情報／指標	データ取得先	データ取得方法
	大項目	小項目			
3. 妥当性	3-1 上位目標及びプロジェクト目標等とミャンマーの国家政策や、対象地域のニーズ等との整合性	3-1-1 上位目標及びプロジェクト目標はミャンマー政府の政策と合致しているか。	ミャンマー政府開発政策等との一致や整合性の確保	プロジェクト文書、政府や水産局の公的文書、政府関係者や農家へのインタビュー	文献調査、インタビュー、質問票等の実施
		3-1-2 上位目標及びプロジェクト目標は対象地域のニーズと合致しているか。	対象地域のニーズとの合致	プロジェクト文書、政府や水産局の公的文書、政府関係者や農家へのインタビュー	文献調査、インタビュー、質問票等の実施
	3-2 日本の政府開発援助としての適格性	3-2-1 プロジェクトは日本の政府開発援助及びJICAの技術協力事業として適切か。	日本政府ODA政策とJICAの技術協力計画等との一致	プロジェクト文書、政府や水産局の公的文書、政府関係者や農家へのインタビュー	文献調査、インタビュー、質問票等の実施
		3-2-2 プロジェクトの実施に関し、日本の技術の優位性はあるのか	他ドナーの事業やプログラムとの比較	プロジェクト文書、政府や水産局の公的文書、政府関係者や農家へのインタビュー	文献調査、インタビュー、質問票等の実施
	3-3 プロジェクトデザインの適切度	3-3-1 プロジェクト目標の達成において、活動の種類、実施順位等、成果の構成等、適切にデザインされていたか。	ログフレームやプロジェクト形成時の状況	PDM、PO、プロジェクト文書、JICA専門家やカウンターパートへのインタビュー	文献調査、インタビュー、質問票等の実施
		3-3-2 対象地域の選定は適切であったか。	計画時における対象地域と現状の比較	プロジェクト文書、政府や水産局の公的文書、政府関係者や農家へのインタビュー	文献調査、インタビュー、質問票等の実施
4. 有効性 (斜体字についてはプロジェクトの実績の項参照)	4-1 プロジェクト目標の達成状況	4-1-1 投入、活動、アウトプットの実績の状況を鑑みて、プロジェクト目標達成の見込みはあるのか。	プロジェクトの実績の項参照	プロジェクト文書、JICA専門家やカウンターパート、農家へのインタビュー	文献調査、インタビュー、質問票等の実施
		4-1-2 プロジェクト目標の達成を阻害する要因はあるか。	プロジェクトの実績の項参照	プロジェクト文書、JICA専門家やカウンターパート、農家へのインタビュー	文献調査、インタビュー、質問票等の実施
	4-2 プロジェクト目標を達成におけるプロジェクトデザインの適正度	4-2-1 アウトプットはプロジェクト目標を達成するために十分であるか。	プロジェクトの実績の項参照	プロジェクト文書、JICA専門家やカウンターパート、農家へのインタビュー	文献調査、インタビュー、質問票等の実施
		4-2-2 プロジェクトの外部条件は現時点でも正しいか、今後とも満たされる可能性はあるのか。	外部要因の変化等	プロジェクト文書、政府や水産局の公的文書、政府関係者や農家へのインタビュー	文献調査、インタビュー、質問票等の実施

5. 効率性 (斜体字についてはプロジェクトの実績の項参照)	5-1 アウトプットの達成度	5-1-1 アウトプットの達成度は適切か(実績と目標との比較)。	プロジェクトの実績の項参照	プロジェクト文書、JICA専門家やカウンターパート、農家へのインタビュー	文献調査、インタビュー、質問票等の実施	
		5-1-2 アウトプット達成を阻害した要因はあるのか。	プロジェクトの実績の項参照	プロジェクト文書、JICA専門家やカウンターパート、農家へのインタビュー	文献調査、インタビュー、質問票等の実施	
	5-2 活動の効率性の確保	5-2-1 活動はアウトプットを算出するために十分な活動であったか。	プロジェクトの実績の項参照	プロジェクト文書、JICA専門家やカウンターパート、農家へのインタビュー	文献調査、インタビュー、質問票等の実施	
		5-3 アウトプットを生産するための投入の適正度(投入時期、投入量及び質)	5-3-1 日本側の投入は適切であったか。	①専門家の配置(人数、時期、分野) ②機材供与(種類、数、時期) ③本邦研修の実施(時期、人数、研修内容) ④現地業務費の支出状況(現地研修、セミナー、ワークショップの実施等) ⑤現地スタッフの活用	プロジェクト文書、JICA専門家やカウンターパート、農家へのインタビュー	文献調査、インタビュー、質問票等の実施
			5-3-2 ミャンマー側の投入は適切であったか。	①カウンターパートの配置(人数、時期、分野) ②ローカルコストの負担状況 ③機材や施設の提供	プロジェクト文書、JICA専門家やカウンターパート、農家へのインタビュー	文献調査、インタビュー、質問票等の実施
			5-3-3 投入は十分に活用されたか。	1) 人材、2) 資器材と施設、3) 現地業務費他	プロジェクト文書、JICA専門家やカウンターパート、農家へのインタビュー	文献調査、インタビュー、質問票等の実施
			5-3-4 プロジェクトは効率的に運営されたか。	プロジェクトの実績の項参照	プロジェクト文書、JICA専門家やカウンターパート、農家へのインタビュー	文献調査、インタビュー、質問票等の実施
6. インパクト (斜体字についてはプロジェクトの実績の項参照)	6-1 プロジェクト実施による長期的及び他分野におけるインパクト		6-1-1 上位目標は達成見込みか、また、阻害要因はあるのか。	プロジェクトの実績の項参照	プロジェクト文書、政府や水産局の公的文書、政府関係者や農家へのインタビュー	文献調査、インタビュー、質問票等の実施
6-1-2 プロジェクト活動実施機関に対するインパクト(政府機関間の関係性の向上、業務の効率化等)はあったか。		関連する政府政策、プログラム等	プロジェクト文書、政府や水産局の公的文書、政府関係者や農家へのインタビュー	文献調査、インタビュー、質問票等の実施		
6-1-3 プロジェクトの実施による予期しないポジティブなインパクトはあるのか。		予期しなかったポジティブ・インパクト	プロジェクト文書、JICA専門家やカウンターパート、農家へのインタビュー	文献調査、インタビュー、質問票等の実施		
6-1-4 プロジェクトの実施による予期しないネガティブなインパクトはあるのか。		予期しなかったネガティブ・インパクト	プロジェクト文書、JICA専門家やカウンターパート、農家へのインタビュー	文献調査、インタビュー、質問票等の実施		
7. 持続性(見込み)	7-1 プロジェクト効果の持続性の確保	7-1-1 中央政府及び地方政府において、プロジェクトの効果を持続していくための政策や制度的な措置はなされるのか。	対象分野や地域における政府政策の現状と今後の方針等	プロジェクト文書、JICA専門家やカウンターパート、農家へのインタビュー	文献調査、インタビュー、質問票等の実施	
		7-1-2 DoFは、プロジェクトの効果を持続していくための財政的な措置や組織体制の充実はなされるのか。	DoFにおける組織及び財政状況	プロジェクト文書、政府や水産局の公的文書、政府関係者へのインタビュー	文献調査、インタビュー、質問票等の実施	
		7-1-3 DoFのカウンターパートや、中核農家は、プロジェクトで移転された技術や知識を維持していくと思われるか。	DoFカウンターパートや中核農家の技術レベル等	プロジェクト文書、JICA専門家やカウンターパート、農家へのインタビュー	文献調査、インタビュー、質問票等の実施	



4. プロジェクト実施体制図



5. プロジェクト活動実績総括表

活動項目	活動の実施状況
<p><b>成果1：対象市町区の農民が小規模養殖を開始するために必要な制度的、技術的な事項が明確になり、マニュアルにまとめられる。</b></p>	
<p>1-1:小規模養殖開始に必要な条件と手続きを明らかにする。</p>	<ul style="list-style-type: none"> <li>・ 2009年8月、プロジェクト対象地域のベースライン（社会・経済状況）調査が実施された。調査では、調査者が、対象村を直接、巡回訪問し、農家に対する質問票、及び聞き取り方式による情報の収集・蓄積が行なわれた。調査結果は「社会・経済調査報告書」として取り纏められ、また、調査結果はプロジェクトPDMの指標設定の判断材料として活用された。（第一回JCCにおいて、PDMはよってVersion-2として承認された。）</li> <li>・ 対象地域での養殖業の実態、公共孵化場（ステーション）の活動状況調査が実施され、調査データが蓄積された。</li> <li>・ 農家が養殖を開始するのに必要な制度的根拠や実際の手続方法は、（水産局、農業灌漑局、土地管理局等の複数の機関が関係し煩雑となっていることから、これらの機関の関係者に対するインタビュー調査が実施され、情報の収集・整理が行われた。そして、実際の申請書式やその申請フローを分かり易く取り纏められ、マニュアルに反映された。</li> </ul>
<p>1-2：対象3地域に適合した小規模養殖技術を明らかにする。</p>	<p>(1) 養殖実証試験</p> <ul style="list-style-type: none"> <li>・ 対象サイトで選定された農家を対象に、養殖の方法（池中、稻田、生簀）、魚種、放養密度、投餌方法、育成期間などについて、適切な養殖技術の実証を行うことを目的として、養殖実証試験が実施されることとなり、水産局との調整を経て養殖実証試験の実施計画が作成された。</li> <li>・ 実証試験支援農家は、選定基準に基づいて選定され、プロジェクトの研修計画に沿って一般養殖研修を受講した。研修では養殖に関わる全般的な知識の他に、給餌方法や日々の記録、帳簿付け等の実地訓練が行われた。また池の状況（面積、水深、水質等）に応じて、放養する種苗の数や種類、施肥の量や時期などの目安を示した表が、夫々の農家に応じ作成・配布され、個々の農家はこれを参考にして養殖作業を進めた。</li> <li>・ 第1年次（2009年－2010年期）の養殖実証試験は、開始時期がプロジェクトの開始時期（2009年6月）と重なっていたことから、計画案作成及び、パイロット農家の選定基準の策定には、前個別専門家活動実績を基に、暫定的に作成された計画案を基に運用した。これにより、第1年次（2009年）は対象地域から計31のパイロット農家／コミュニティーを選定し小規模養殖の技術実証試験が実施された。</li> <li>・ 第2年次（2010年－2011年期）は新たな実施計画案を策定の上、新たに36の農家／コミュニティー（一般支援農家）を選定し、計64農家／コミュニティーによって養殖実証試験（池中養殖、稻田養殖、生簀養殖）が実施された。（一年目の農家のうち3件は継続せず。）</li> <li>・ 第3年次（2011年－2012年期）は更に一般支援農家が加わり、計74戸の農家がプロジェクトの直接モニタリング対象農家として養殖実証試験を行っている。上記農家</li> </ul>

	<p>に加え、2年目のシーズンからはバゴ管区、ラパタンタウンシップの村民が乾期の灌漑用水を利用した“稲田養殖”に興味を示し、第2年次のシーズン（2011年1月から5月）には約140エーカー（約56ヘクタール）、農家数77戸が乾期稲田養殖を実施した。</p> <ul style="list-style-type: none"> <li>次期（2012年－2013年期）は、前期からの継続農家に新規参入の農家を加え実証試験を実施することとなっており、稲田養殖の稲田の準備（溝の造成等）が進められている。</li> </ul> <p>(2) 中核農家による種苗生産</p> <ul style="list-style-type: none"> <li>第1年次に養殖実証試験を行ったパイロット農家／コミュニティーの中から、特に熱心で意欲があり、村での人望、種苗供給地点として地理的潜在性の高い地域の農家を中核農家（種苗生産農家）として選定された。選定に当たっては、選定基準を明確にし、透明性が確保された。</li> <li>第1年次終了時に3農家（パイ、ラパタン、パアン）、さらに第2年次終了時には2農家（イエジ、パアン各1農家追加）が、将来的に地域の養殖普及を担う役割になりうる存在（中核農家候補）として選定された。選定された農家に対して、種苗生産技術の実地研修が実施された。夫々の中核農家は状況（経験の度合い、利用出来る土地や施設の状況、近隣の養殖普及度合い）に応じて、OJT形式で種苗生産を実践している。</li> <li>第2年次終了時に選定された、パアンのコミュニティーは、種苗の販売ではなく、コミュニティーの中核として情報発信、技術伝達を通じた養殖普及を行う存在として、位置づけられた。</li> </ul>
<p>1-3: 水産局職員と農家のための小規模養殖普及マニュアルを作る。</p>	<ul style="list-style-type: none"> <li>小規模養殖普及に関わる研修用の普及・技術マニュアルが、既存のマニュアル（前個別専門家及び、水産局作成）を整理・統合する形で、プロジェクトとしての改訂版が作成された。改定に際して、全ての内容の再検証が行われ、多くの現場情報や制度面の情報が追加された。また、同マニュアルは、一般の農家が理解しやすいように、漫画によるストーリー展開による内容になっている。</li> <li>短期専門家により、種苗生産技術にかかわるマニュアル類、小規模種苗生産施設の建設・運用にかかわるマニュアル、生産施設の運営モデル（採算モデル）、普及ガイドライン・教材、プロジェクトのケーススタディー集等が作成された。加えて、研修用のパワーポイント、動画資料、小冊子、リーフレット等が作成された。これらマニュアル等は、実証試験結果や、モニタリング／レビューワークショップからの情報を基に、適宜、内容の追加と見直しが行われた。</li> </ul>
<p><b>成果2：対象市町区の農民への小規模養殖普及に関わる支援体制が強化される。</b></p>	
<p>2-1：農家及び、水産局職員のための研修を実施する。</p>	<p>(1) 一般養殖研修</p> <ul style="list-style-type: none"> <li>事前に検討された研修実施計画書及び研修シラバスに従い、各年次の最初に、パイロット農家を対象とする一般養殖研修が実施された。研修コースでは、小規模養殖の基本と実践知識が教えられ、受講者はパイロット農家として、各サイトで実証試験に従事することが目的とされた。</li> </ul> <p>(2) 水産局職員研修</p> <ul style="list-style-type: none"> <li>2009年11月にヤンゴンにおいて、中央・地方水産局職員47人に対して養殖技術講師養成研修（Trainer's Training）が開催された。養殖技術全般にかかわる内容の</li> </ul>

	<p>ほかに、パイロット農家に対する定期モニタリングや農家からの相談に対応するための実用的な技術やデータ収集についての講義・実習が行われた。</p> <ul style="list-style-type: none"> <li>第2年次は、関係職員に対する研修として、プロジェクトチームの地方巡回、モニタリングの機会を利用し、適宜現場での指導（オンザジョブ・トレーニング：OJT）が継続的に実施された。</li> </ul> <p>(3) パイロット農家の総括研修（レビュー・ワークショップ）</p> <ul style="list-style-type: none"> <li>2010年3月、第1年次のパイロット事業の総括として「レビュー・ワークショップ」が各対象地域で開催された。参加したパイロット農家は、地域の水産局担当職員と共同で“ワーキングシート”を作成した。同シートは、活動概要、メンバー紹介（コミュニティによる養殖の場合）、活動目的、池の管理計画、活動収支表、将来計画が取りまとめられ全体で発表された。加えて、活動を通して得たさまざまな経験（失敗例や成功事例）が披露され、参加者間で共有されて次シーズンの活動にフィードバックされた。</li> </ul> <p>(4) 中核農家に対する種苗生産・養殖技術研修</p> <ul style="list-style-type: none"> <li>第2年次の初め（2010年3月）以降、パイロット農家の中から選定された中核農家を対象に、種苗生産と中間育成の実地研修が、順次、実施された。同実施研修は、種苗生産シーズン（6～7月）に、近隣の水産局ステーションに中核農家が滞在し実践的な種苗生産技術を習得する形態で行なわれた。ステーションでの研修後は、次のステップとして、ステーションの技術スタッフが中核農家を訪問し、実際の施設形態／形状に応じた生産手法や作業工程をより実践的に指導した。</li> <li>パアンでは、短期専門家が一定期間滞在し、随時アドバイスを行いながら実地研修が行なわれた。主な研修内容は、親魚の選別から採卵・孵化管理までの一連の作業、孵化仔魚から種苗サイズ（1～3インチ）までの育成技術等である。</li> <li>中核農家が生産した種苗はその年、もしくは次のシーズンの実証試験用の養殖種苗として農家に配布しているほか、その他の近隣農家にも個人的に販売を始めている中核農家もあり、自立的に養殖普及を担う存在となりつつある。</li> </ul>
<p>2-2: 対象市町 区で水産局 が農家への 支援体制を 構築する。</p>	<ul style="list-style-type: none"> <li>各農家への技術指導、情報交換を目的としたモニタリング計画が策定され、担当地域の水産局職員と共にパイロット農家／中核農家に対して定期的な巡回指導、モニタリングが実施された。対象農家に対して、給餌量や施肥の量、投入タイミングの目安を記載した表に加えて、池や魚の様子など日々の活動で気付いた事を記載してもらう情報記載シートが配布され、モニタリングの際にプロジェクト側との情報共有が図れるようにされている。</li> <li>第2年次以降、各担当地域の水産局職員は、プロジェクトによる能力開発の結果、定期モニタリング計画に沿って、単独で農家を訪問し、モニタリングと巡回指導が出来るようになった。その際には、モニタリングチェックシートに沿って情報を記入した上で、プロジェクト事務所に連絡（FAX送信）するようにしている。</li> </ul>
<p>2-3: 農民から 農民への普 及手法を構 築する。</p>	<ul style="list-style-type: none"> <li>養殖普及研修のガイドライン（第1版）が、2010年8月作成された。</li> <li>同ガイドラインを基に、中核農家に対し研修の企画・実施方法、農家の選定方法などの指導が行われた。中核農家は、農民間普及（FTF: Farmer to Farmer）の担い手となることが期待されるため、一般養殖研修やレビュー・ワークショップ開催にお</li> </ul>



	<p>いて、同農家が中心となって行われるよう、側面的な支援（普及手法のアドバイスや教材等の提供）がなされ、中核農家の主体性の醸成が図られた。</p> <ul style="list-style-type: none"> <li>・ 中核農家の活動を通して得られた経験や改善点をケーススタディーとして取り纏め、普及用の資料として、「養殖10か条集」等の作成が継続的に行われた。</li> </ul>
<p><b>成果3：対象市町区での農民間普及活動の中心となるパイロット農家及び中核農家が選定され、農民間普及が開始される。</b></p>	
<p>3-1：農家の中からパイロット農家を選定し、養殖と普及に必要な資機材を投入する。</p>	<ul style="list-style-type: none"> <li>・ 第1年次の養殖実証試験が、プロジェクトの開始時期(6月)と重なっていたことから、実証試験計画及びパイロット農家選定基準は、前個別専門家の活動の際に示されていた基準が暫定的に使用された。(その後確定版が策定された。)</li> <li>・ パイロット農家は、自然条件、経済条件、養殖に対する意欲、周辺農家及び地方水産局との良好な関係等が、選定基準とされた。同選定基準は、水産局職員との協議を通じて、複数の農家／コミュニティの中から、基準を満たす農家をパイロット農家を選定された。</li> <li>・ パイロット農家には、養殖実証試験に係るデータの蓄積とその報告が求められるため、同農家に対して、以下のような内容の合意文書（Management Plan）に署名の上、状況に応じ、池の修繕費用の補助、種苗、飼料等の支給が行われた。</li> </ul> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>1. プロジェクトの義務；</p> <p>(ア) 養殖池の補修、田圃の溝の造成等に対する資金補助</p> <p>(イ) 種苗、餌の配布</p> <p>(ウ) 研修の実施による養殖技術、経営等の情報提供</p> <p>(エ) 巡回モニタリングによる技術、経営指導</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>2. パイロット農家の義務</p> <p>(ア) 計画に沿った魚への給餌</p> <p>(イ) 毎日の養殖記録（餌、池の状況、天候等）の更新</p> <p>(ウ) 養殖記録の保存、巡回時の情報の提供</p> <p>(エ) プロジェクトおよび地方水産局とのコミュニケーションの維持</p> <p>(オ) プロジェクトや他地域からの訪問など、プロジェクトが必要とする活動に際しての便宜</p> <p>(カ) 収穫時の利益の一部を翌年の投入に回す（池中養殖・生簀養殖）</p> </div> <ul style="list-style-type: none"> <li>・ 第2年次以降の農家（一般支援農家）に対しても、パイロット農家同様、合意文書に署名の上、モニタリングの対象とした。</li> </ul>
<p>3-2:パイロット農家の中から中核農家を選定し、種苗生産と普及に必要な資機材を</p>	<ul style="list-style-type: none"> <li>・ 第1年次及び第2年次に養殖実証試験（パイロット及び一般支援農家）を実施した農家の中から、特に意欲があり、また、将来の種苗、養殖情報の供給者として、地理的条件や他の農家、地方水産局との関係が良好な農家が、中核農家として選定された。</li> <li>・ 第1年次の養殖シーズンを実施する中で各農家の状況を検討し、シーズン終了後、3つのパイロット農家が、先ず、中核農家として選定された。これらの中核農家のうち、保有する施設や資機材、周辺の種苗のニーズの現状、農家の技術レベルに応</li> </ul>

<p>投入する。</p>	<p>じて、採卵からの種苗生産を行う農家と、孵化仔魚からの種苗生産を行う農家が設定され、両者に対して必要な技術指導が行われた。</p> <ul style="list-style-type: none"> <li>第2年次のシーズン後は、新たに2つの農家を、将来的な中核農家候補としてとらえ、今後の養殖普及の拠点となるために必要な技術および運営指導が行われた。</li> <li>これら中核農家に対しては、以下のような内容の合意文書（Management Plan）に署名の上、必要に応じ、施設建設（小規模種苗生産施設）、種苗生産／中間育成に必要な資機材等の投入が行われた。</li> </ul> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>中核農家の義務；</p> <p>（ア）養殖普及に携わる意識の維持</p> <p>（イ）生産した種苗の一部の地域への還元</p> </div>
<p>3-3:パイロット農家および中核農家が、水産局の指導と支援のもとで小規模養殖を実践し、「農民から農民への普及手法」による普及を行う。</p>	<ul style="list-style-type: none"> <li>「農民から農民への普及手法」による普及（FTF）を促進するために、マニュアル、リーフレット、ポスター等の研修・普及用の教材が作成され、中核農家やパイロット農家に配布された。</li> <li>第2年次以降、中核農家が、養殖に興味を持つ近隣農家に対する研修（一般養殖研修）や技術指導が行えるよう、同農家への側面支援（教材等の供与等）が行われた。</li> <li>ピーとレパタンの中核農家は、研修講師を務める技術レベルに達しており、かつ、養殖実証試験用の種苗供給も含め、自身の施設で種苗生産を行い、近在の農家や民間養魚場に売り出すようになった。（第2年次のシーズンに新たに選定された36の農家は中核農家により、リクルートされたものといわれる。）</li> </ul>

