

**MINUTES OF MEETING**  
**BETWEEN THE JAPANESE MID-TERM REVIEW TEAM AND THE**  
**AUTHORITIES CONCERNED OF THE REPUBLIC OF BENIN**  
**ON**  
**PROJECT FOR EXTENSION OF INLAND AQUACULTURE**

The Japan International Cooperation Agency (hereinafter referred to as “JICA”) organized the Mid-term Review Team, headed by Mr. Shunji Sugiyama, from September 26 to October 14, 2011, for the purpose of evaluating the progress of the Project for extension of inland aquaculture in the Republic of Benin (hereinafter referred to as “the Project”).

The Joint Evaluation Team (hereinafter referred to as “the Team”), which consists of five members from JICA and three members from the Republic of Benin, was organized. After intensive study and analysis of the activities and achievements of the Project, the Team prepared the Joint Mid-term Review Report (hereinafter referred to as “the Report”).

The Team presented the Report to the Joint Coordinating Committee (hereinafter referred to as “JCC”), that was held on October 13, 2011. JCC examined thoroughly the contents of the Report and took note of the recommendations made in the Report. The subsequent discussion at JCC is described in the Attachment. The Chairman and the members of JCC agreed to report to their respective governments the matters attached hereto.

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**Mr. Shunji SUGIYAMA**  
**Leader, JICA Mid-term Review Team**  
**Japan International Cooperation Agency**

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**Mr. Olivier VIGAN**  
**Secretary General, MAEP**  
**Chairperson of JCC**

**Cotonou**  
**13<sup>th</sup> October 2011**

## ATTACHMENT

After critical review of the Report in the Appendix 1, the JCC confirmed that the Project implementation so far was satisfactory. The JCC discussed several matters as stated below.

### **1. Review of Project Design Matrix**

Based on the recommendations made by the Team, the JCC reviewed the PDM and agreed on the following points;

- With regard to the indicators of the Project objective, it was pointed out that counting the number of farmers itself may not adequately in terms of assessing the qualitative aspects of farmers. It is hence important to ensure that those farmers who have commenced aquaculture with the Project will continue their production after the first harvest. In this connection, it was agreed that additional indicator of the “continuation rate” will be included in the PDM (see the Appendix 2 for details)
- With regard to the activities for the output 4, the Project is now planning various activities, which necessitates reasonable allocation of project resources to each activity. In this regard, it was agreed that the activity 4-2 will not be further pursued since it has not been well accepted by farmers due to social, cultural and economic reasons.

### **2. Coordination between the Department of Fisheries and CeRPA/CeCPA**

The importance of close coordination between the Department of Fisheries and CeRPA/CeCPA in the implementation of the Project was highlighted in the Report. The JCC affirmed that effective coordination between Department of Fisheries and CeRPA/CeCPA will be maintained throughout the Project period under close supervision of MAEP.

### **3. Supporting measures for aquaculture production**

The Project is now striving to verify economic viability of aquaculture production in Benin. During the course, it was found that expensive aquaculture inputs (especially feeds and production equipment) are one of major obstacles. If supports for aquaculture sector from the government (tax exemption for inputs and materials for aquaculture) are implemented as the support for agriculture sector, it would facilitate efficiency for the development of aquaculture.

To address the issue above, the JCC agreed to consider discussing this matter with relevant authorities.

#### **4. Public Investment Programme**

This year, the Public Investment Programme fund was allocated to the Project and it is expected that it will boost the progress of the Project activities. It is recommended that the allocation of this fund be continued to support the Project

#### **5. Request for extension of the Project period**

In the Report, the necessity to confirm if aquaculture production was firmly adopted by ordinary farmers was highlighted. It was also reported that ordinary farmers spent considerable time for preparation of basic aquaculture facilities. These all suggest that the Project may need to spend more time for monitoring farmers' activities and take necessary actions in a responsive manner. The Beninese side expressed a concern that current project period may not be sufficient enough to address the issue above and to produce tangible results. In this connection, the Beninese side requested the Japanese side to consider the extension of the Project period.

Appendix1: Joint Mid-Term Review Report ( P.97 ~ 144 )

Appendix2: Project Design Matrix (Version X)

## Project Design Matrix (PDM)

**Project Title: Project for the Extension of Inland Aquaculture in Benin**

**Project Target Area: Seven (7) provinces in Southern Benin**

**Period: Three (3) years from 2010 to 2013**

**Target Group: Individuals or groups who are interested in inland aquaculture**

**Date of Preparation: August 25 2010, 1<sup>st</sup> CCC**

Project Summary	Objectively Verifiable Indicator	Means of Verification	Important Assumption
<b>Overall Goal:</b> Inland aquaculture is extended in the seven southern target provinces.	Number of aquaculture farmers in the target areas is increased to more than 3,000 by 2020.	Reports from Fishery Department Results of the baseline survey	
<b>Project Purpose:</b> Number of aquaculture farmers is increased in selected communes in the target provinces.	In the selected communes, - More than 300 individuals introduce or re-introduce aquaculture. - More than 300 individuals apply improved aquaculture techniques. - More than 60% of above mentioned farmers continue their operation at least 2 production cycles	Project reports Results of baseline survey Interviews	-
<b>Expected Output:</b> 1. Manuals concerning inland aquaculture technologies and FTF training are prepared.	- More than six (6) training manuals are developed. - Viabilities of more than two (2) aquaculture techniques are proved in the target areas.	Project reports Results of baseline survey Interviews	-Pesticide is not utilized around aquaculture tanks or ponds. -Natural disaster that damages aquaculture does not occur. -Outbreak of serious fish disease does not take place.
2. Core farmers and aquaculture extension officers of CeRPA/ CeCPA become capable of conducting inland aquaculture training.	- More than 50 aquaculture extension staff members are trained on teaching aquaculture techniques, pass final exams, and become qualified to teach the techniques. - More than 15 core farmers are trained on farmer-to-farmer training, pass final exams, and become qualified to conduct the training.		
3. Ordinary farmers acquire basic aquaculture knowledge through farmer-to-farmer (FTF) training.	- More than 50 farmer-to-farmer training sessions are conducted by the core farmers, and more than 900 people participate in the training. - More than 80 % of the participants answer "Satisfactory" in the questionnaire on the farmer-to-farmer training.		
4. The Project proposes to the Department of Fisheries necessary activities to encourage ordinary farmers as well as core farmers to engage in independent and sustainable aquaculture management.	- More than three (3) activities promoting practical and sustainable management of aquaculture are examined.		

<p><b>Activities</b>  1-1 Conduct studies on the current socio-economic and aquaculture situation in the target areas.  1-2 Collect and clarify applicable aquaculture techniques in Benin.  1-3 Develop suitable aquaculture technical packages for Benin through on-farm verification trials.  1-4 Develop manuals for inland aquaculture techniques and farmer-to-farmer training sessions based on the activities 1-1 to 1-3.  1-5 Revise manuals based on the progress of activities.  1-6 Conduct PR activities through seminars and newsletters.</p>	<p><b>Inputs:</b>   <u>Benin</u>   <b>Human resources:</b>  - Project director  - Project manager  - Counterpart (Department of Inland Aquaculture)   <b>Buildings/Facilities</b>  - Project office, storage   <b>Budget</b>  - C/P budget</p>	<p><b>Precondition</b>  -The Government of Benin supports development of inland aquaculture.</p>
<p>2-1 Select target communes and core farmers based on the results of the activity 1-1.  2-2 Conduct Training on inland aquaculture training for core farmers and CeRPA/ CeCPA staff.  2-3 Develop the capacity of core farmers on seed and feed production.  2-4 Improve broodstock management techniques of core farmers.  2-5 Provide technical assistance on sustainable aquaculture management system including feed sales.</p>	<p><u>Japan</u>  - Experts  - Equipment  - Training</p>	
<p>3-1 Help conduct farmer-to-farmer training sessions by core farmers in each commune.  3-2 Provide necessary initial assistance to training participants in starting aquaculture.  3-3 Provide technical assistance for extension officers to conduct on-site follow-up training for core farmers and training participants.</p>		
<p>4-1 Conduct activities to strengthen networks among aquaculture farmers.  4-2 Conduct contract fish farming.  4-3 Conduct any activities useful for the Project.</p>		

**The Joint Mid-term Review Report**  
**on**  
**The Project for the Extension of Inland Aquaculture in Benin**

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**Leader, JICA Mid-term Review Team,**  
**Japan International Cooperation**  
**Agency**

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**Mr. Abbas SAKA**  
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Cotonou  
October, 2011

**The Joint Mid-term Review Team**

## FISCAL YEAR

Fiscal year of the Government of Japan (JFY): April 1 – March 31  
 Fiscal year of the Government of Benin (BFY): January 1 – December 31

## ABBREVIATIONS AND ACRONYMS

BHS	Bac Hors-Sol	Wooden tank culture
CeCPA	Centre Communal pour la Promotion Agricole	Communal center for agricultural promotion
CeRPA	Centre Régional pour la Promotion Agricole	Regional center for agricultural promotion
C/P	Homologues	Counterpart
DAC	Comité de l'Aide au Développement	Development Assistance Committee
DP	Direction des Pêches	Department of Fisheries
FIDA	Fonds International pour le Développement Agricole	International Fund for Agricultural Development
FCR	Taux de Conversion Alimentaire	Feed Conversion Ratio
JCC (CCC)	Comité Conjoint de Coordination	Joint Coordination Committee
JFY	Année fiscale du Gouvernement du Japon	Fiscal Year of the Government of Japan
JICA	Agence Japonaise de Coopération Internationale	Japan International Cooperation Agency
JPY	Yen Japonais	Japanese Yen
MAEP	Ministère de l'Agriculture de l'Elevage et de la Pêche	Ministry of Agriculture, Livestock and Fisheries
MMFEJF	Ministère de la Micro Finance, de l'Emploi des Jeunes et des Femmes	Ministry of Microfinance, Employment, Youth and Women
OECD (OCDE)	Organisation de Coopération et de Développement Economique	Organization for Economic Co-operation and Development
PACODER	Projet de Promotion de l'aquaculture continentale pour le Développement Rural	The Study on the Promotion of Inland Aquaculture for Rural Development
PADA	Programme d'Appui à la Diversification Agricole	Program for Supporting Agricultural Diversification
PADPPA	Programme d'Appui au Développement Participatif de la Pêche Artisanale	Participatory Artisanal Fisheries Development Support Programme
PDM	Cadre logique du projet	Project Design Matrix
PROVAC	Projet de Vulgarisation de l'Aquaculture Continentale en République du Bénin	Project for the extension of inland aquaculture in Benin
PRSP	Plan stratégique pour la réduction de la pauvreté	Poverty Reduction Strategy Paper
PSRSA	Plan stratégique de relance du secteur agricole	Strategy paper for agricultural sector restart
TSPH	Technicien Spécialisé en Production Halieutique	Technician specialized in aquaculture production

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ANNEX II: Project Design Matrix (PDM)

ANNEX III: Achievement of activities

ANNEX IV: Evaluation Grid

ANNEX V: Project Inputs

ANNEX VI: Interview List



## 1. Introduction

### 1.1 Objectives of the Evaluation Study

The mid-term evaluation of the Project was conducted with the following objectives.

- Review degrees of the Project achievements in comparison with the Project’s original plan, and identify the plan’s implementation process.
- Evaluate the Project based on the five criteria of “relevance,” “effectiveness,” “efficiency,” “impact” and “sustainability.”
- Make recommendations regarding actions to be taken by DP, MAEP and JICA.

### 1.2 Methodology of the Evaluation

The collection of data and information was based upon a review of Project-related documents, discussions with Project stakeholders including DP, MAEP officials, representatives of CeRPA, CeCPA, and core farmers, and site visits to aquaculture farmers and private seed production companies.

The collected data and information were analyzed in light of the Project Design Matrix (PDM) prepared at the beginning of the Project, and evaluated in accordance with the five evaluation criteria established by DAC/OECD (see below for descriptions).

**Table 1: Five Criteria for Evaluation**

<b>Evaluation criteria</b>	<b>Descriptions</b>
Relevance	Relevance refers to the validity of the Project Purpose and the Overall Goal in connection with the development policy of the recipient government as well as the needs of beneficiaries.
Effectiveness	Effectiveness refers to the extent to which the expected benefits of the Project have been achieved as planned, and examines if the benefit was brought about as a result of the Project, not of external factors.
Efficiency	Efficiency refers to the productivity of the implementation process, examining if the input of the Project was efficiently converted into the output.
Impact	Impact refers to direct and indirect, positive and negative impacts caused by implementing the Project, including the extent to which the Overall Goal has been attained.
Sustainability	Sustainability refers to the extent to which the Project can be further developed by the recipient country, and the benefits generated by the Project can be sustained under the recipient country’s policies, technology, systems, and financial state.

### 1.3 Joint Evaluation Team Members

The Joint Evaluation Team comprises the following members.

**Table 2: The Member of Japanese Evaluation Team**

<b>Name</b>	<b>Title/Organization</b>
Mr. Shunji SUGIYAMA Team Leader (Japanese Side)	Senior Adviser, JICA Headquarters
Dr. Shunsuke KOSHIO, PhD	Professor, Kagoshima University
Mr. Ken HOMMA	Staff, JICA Senegal Office
Ms. Mana ISHIGAKI	Consultant, IC NET Limited

Mr. Takumi SUNOHARA	Staff, Arid and Semi-Arid Farming Area Division Field Crop Based Farming Group, Rural Development Department, JICA Headquarters
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**Table 3: The Member of Beninese Evaluation Team**

<b>Name</b>	<b>Title/Organization</b>
Mr. SAKA Abbas Team Leader (Beninese Side)	Monitoring and Evaluation Section, Planning and Perspective Department, MAEP
Mr. JOHNSON Ben Césaire	Chief, Monitoring and Evaluation Section, Department of fisheries, MAEP
Mr. AGLINGLO A. Crespin	Resource person, Department of fisheries, MAEP

#### 1.4 Schedule of the evaluation mission

The Team conducted documentary reviews, interviews and site visits between 25 September and 16 October 2011, followed by a series of discussions with the Project team members and the authorities concerned of DP, MAEP, CeRPA/CeCPA, core farmers and ordinary farmers. Detailed schedule is shown in the ANNEXI.

## 2. Project Outline

### 2.1 Background

In the Republic of Benin, annual fishery production reaches 40,000 tons. However, an additional 45,000 tons of fish are imported annually to meet the increasing domestic demand for fish. While the population is growing 3.6% per annum, the national aquaculture sector census in 2008 states that the number of aquaculture farmers in Benin remains 931 accounting for only 159 tons of total annual production. Thus the Government of Benin gave priority to the development of an inland aquaculture strategy. In response to this situation, JICA conducted the Study on the Promotion of Inland Aquaculture for Rural Development (PACODER) from 2007 to 2009, which aimed at formulating the master plan and action plans for developing inland aquaculture. To implement the action plan proposed by the study above, the Government of Benin requested the Government of Japan for technical cooperation, and JICA launched the Project for Extension of Inland Aquaculture in Benin (hereinafter the "Project"), a three-year technical cooperation Project.

### 2.2 Project Summary

The Project started in May 2010 to increase the number of inland aquaculture farmers and improve livelihood of aquaculture farmers through the farmer-to-farmer extension approach. The Project has also helped enhance the management capacity for the Department of Fisheries, MAEP, technical knowledge for CeRPA/CeCPA officers, and seed production technologies for core farmers through the Project activities. The Project made tilapia and catfish its target species, and adopted pond aquaculture and tank aquaculture as its aquaculture systems to disseminate. The Project is scheduled to be completed in May 2013.

### 3. Project Achievements

#### 3.1 Input

##### 3.1.1 Japanese side

###### (1) Expert

Since the commencement of the Project in May 2010, thirteen experts including a third-country one from Egypt have been dispatched in ten technical fields. The list of Japanese and third-country experts is in Annex IV.

###### (2) Equipment provided

By February 2011, machinery and equipment equivalent to JPY 1,637,000 in total were provided. As of September 2011, all equipment is registered in the inventory and maintained properly. The details are in ANNEX V.

###### (3) Training in Japan and a third country

In total, three persons participated in training in Japan. Two of them continued practical training sessions in Cambodia which had a similar JICA Project. Three CeRPA/CeCPA officers and four core farmers attended the third-country training in Egypt. Annex V shows the list of training participants.

###### (4) Local cost borne by the Japanese side

JPY 11,717,000 in total was disbursed in JFY2010. The total amount of JPY 27,078,000 will be disbursed by the end of JFY 2011. The details are shown in ANNEX V

##### 3.1.2 Beninese side

###### (1) Appointment of counterparts

As of September 2011, eight (8) counterparts are assigned to the Project. Appointment of the new Director of DP was made in December 2010, however, no serious impact was identified due to close communication between the JICA experts and the acting Project director.

Apart from the counterparts of the Department of Fisheries, MAEP, the Project is working with CeRPA/CeCPA officers at the province and commune levels. The list of the counterparts is shown in ANNEX V.

###### (2) Local cost borne by the Beninese side

A total of eight counterparts have been involved in the Project. Among them, two persons work full-time for the Project activities. In addition, currently four persons of CeRPA, and fifteen persons of CeCPA are also engaged in the Project activities in the seven target provinces as the collaborating partners.

In 2011, the government of Benin disbursed budget for Project related activities through the Public Investment Program (PIP). 75 million FCFA has been disbursed by the end of BFY third quarters. The details are shown in ANNEX V

#### 3.2 Activity

The progress of activities are shown in ANNEX III

#### 3.3 Output

**Output1: Manuals concerning inland aquaculture technologies and the farmer-to-farmer training are prepared.**

Indicator 1-1: More than six (6) training manuals are developed.

Indicator 1-2: Viabilities of more than two (2) aquaculture techniques are proved in the target areas

In the preparatory stage, the baseline survey was conducted from June to July 2011, aiming to collect basic information in the target areas, update aquaculture information, and identify local needs. Based on the analysis of the baseline survey, the Project selected several topics for the experimental trials in an on-farm condition. Results of the experimental trials were summarized as six draft training manuals. The six draft manuals cover the pond aquaculture (tilapia and catfish), the tank culture (catfish), the seed production (tilapia), the seed production (catfish), the aquaculture feed production, and the farming business management. The draft manuals will be revised reflecting incoming results of on-going experimental trials. These manuals will be finalized by the end of the project.

As of October 2010, more than twenty experimental trials have been conducted. Salient results of experiments include;

- Successful introduction of the mono-sex male tilapia in Benin -Eight core farmers have adopted this technique and producing mono-sex male Tilapia seeds.
- Determination of adequate culture densities for tilapia cultured in non-drainable ponds - It was found that this would help determining the maximum yield according to the pond environment.
- Introduction of happa nets for nursing juvenile tilapia and broodstock management before coupling.
- Development of alternative early food organisms for catfish seed production -expensive imported artemia could be replaced by cultured zooplankton.

There are still a number of the experimental trials that require further efforts to produce meaningful results. These include water quality management for non-drainable ponds and feed development for Tilapia.

As for facilities of experimental trials, all studies are conducted in core farmers' ponds and hatcheries, in which culture conditions are not easily controlled. In order to increase reliability of experimental results, each experimental trial needs to be repeated several times for verification.

**Output 2: Core farmers and aquaculture extension officers of CeRPA/ CeCPA become capable of conducting inland aquaculture training.**

Indicator 2-1: More than 50 aquaculture extension staff members are trained on teaching aquaculture techniques, pass final exams, and become qualified to teach the techniques.

Indicator 2-2: More than 15 core fish farmers are trained on farmer-to-farmer training, pass final exams, and become qualified to conduct the training.

As Output 2 has been focused in the first half of the Project, steady progress was confirmed. In the first step, the Project selected target communes and prospective core farmers. In its efforts to set fair and objective criteria for the selection of target communes and core farmers, the Project discussed the following criteria with the stakeholders in a participatory manner.

**Table 4: Criteria for selection of the target communes**

Primary criteria	Secondary criteria
Priority of aquaculture	Business scale of aquaculture farmers within the province
	Demand for seeds
Presence of the Potential Core farmer (PPC: Potentiels Pisciculteurs Clés)	Presence of the PPC
	Capacity of the potential core farmer
	Evaluation of PPC by CeRPA/ CeCPA
	Distance from CeCPA to PPC
Implementation capacity of CeRPA/CeCPA	Number of CeRPA/CeCPA officers
	Experience of similar project activities
	Technical knowledge

Potential of aquaculture	Natural environment condition
	Capacity of potential ordinary farmers
Socio-economic conditions	Social issues, security issues
	Willingness of the community leaders

**Table 5: Criteria for selection of the core farmer in 2011**

	Criteria
1.	Decision maker for the management
2.	Good condition of road to access aquaculture ponds
3.	Aquaculture is the main source of income
4.	Good management of aquaculture facilities
5.	Receiving less supports from other donors
6.	Enough level of aquaculture facilities
7.	Not far between ponds and a residence
8.	Enough space for construction of training facilities.
9.	Good command of the local language spoken in the commune
10.	Good relationships with TSPH

The Project has conducted training for the 15 core farmers and 22 CeRPA/ CeCPA officers as shown in the Table 6.

**Table 6: The number of participants in the training**

Training	2010	2011	Total number who passed	Achievement rate of the indicator
Date/Duration	21Sep 2010/ 4 days	13 Sep2011 4 days	-	
The number of participants (CeRPA, CeCPA)	13	9	22	44% (Indicator 2-1)
The number of Participants (Core farmers)	8*	7	15	100% (Indicator 2-1)

\* One core farmer for the wooden tank culture was participated in the training, but not counted here because she does not conduct seed production.

As the Project took the strategy of training core famers and CeCPA/CeRPA officers at the same time in order to strengthen partnership between two actors, almost equal number of core farmers and CeRPA/CeCPA officers were trained. This makes relatively low level achievements in terms of training of CeRPA/CeCPA officers at this stage. Where possible, the Project will increase the number of training participants for CeCPA officers (up to 28 persons) who work in non-target communes in the seven target provinces to promote aquaculture techniques as well as to enhance monitoring of trained ordinary farmers who reside outside of target communes.<sup>1</sup>

Although CeRPA/CeCPA officers are not direct counterparts of the project, their activities are closely associated with the project. They provide such services as provision of technical advice for core and ordinary farmers, assistance in farmer-to-farmer training, distribution of seeds and feeds, monitoring of growth and survival of fish cultured, facilitation of access to the microfinance, coordination of voluntary meetings of farmers, and record of monitoring report.

**Output 3: Ordinary fish farmers acquire basic aquaculture knowledge through farmer-to-farmer training.**

<sup>1</sup> Currently the core farmers accept participants from non-target communes upon approval from CeRPA. When participants from outside of the target commune attend at the training, CeCPA officers in the target areas cannot follow up because s/he resides outside of their responsible area.

Indicator 3-1: More than 50 farmer-to-farmer training sessions are conducted by the core farmers, and more than 900 people participate in the training sessions.

Indicator 3-2: More than 80 % of the participants answer "Satisfactory" in the questionnaire on the farmer-to-farmer training sessions.

The key of farmer-to-farmer training approach is that technical training of farmers, which is normally a governmental service, is conducted as an integral part of economic activities of core farmers. In this way, even with the limited human and financial resources, the government can provide effective aquaculture extension services to promote aquaculture production. In this FTF approach, the core farmers train ordinary farmers for aquaculture techniques, who are in return become customers of core farmers by purchasing seeds and feeds from them. An important element of this approach is that core farmers and ordinary farmers are tied with mutual "benefits" either in the form of economic gain or technical gain.

Because there were a large number of training applicants (i.e. high demand for training), an adequate procedure of applicant selection was required. The project discussed with CeRPA/CeCPA officers and the core farmers and came up with fair and objective criteria of applicant selection as seen in the Table 7. In 2011, selection criteria were updated based on the observation made in 2010.

**Table 7: the Selection Criteria of Participants for the FTF training**

	<b>2010: Selection by application form</b>	<b>2011: Selection by scoring</b>
1.	Prioritize women	Application order
2.	Application order	Residence: if applicant lives in the same commune as the core farmer
3.	Consider area balance (different villages within the target commune)	Facilities and status: if applicant have a pond, or land. If applicant have experienced or suspended aquaculture
4.	Balance between experienced aquaculture farmer and inexperienced farmer	Training history: if applicant or family members have participated in the similar trainings
5.	-	Operation cost: if applicant have sufficient operational cost shown in the guideline.
Remarks	Those who are not selected will be automatically participant for the following training.	Women participation and couple participation are encouraged.

After the training for core farmer and CeRPA/CeCPA officers, the first farmer-to-farmer training was conducted in November 2010. By the end of August 2011, in total 14 farmer-to-farmer training sessions were made by the core farmers and 363 people (40.3%) were trained. All nine (9) core farmers who were trained in 2010 conducted farmer-to-farmer training at least once.

As for satisfaction level of the training, all the participants are highly contented with the training contents. However, most of participants requested to extend training duration up to one week, and also to spend more time on practice rather than theoretical lectures. Due to educational level and high illiteracy rate among the training participants, practice is more useful and effective than theories. The Project already came to recognize this issue and extended the training duration from current three days to four days.

**Output 4: The Project proposes to the Department of Fisheries necessary activities to encourage ordinary farmers as well as core farmers to engage in independent and sustainable aquaculture management.**

Indicator 4-1: More than three (3) activities promoting practical and sustainable management of

aquaculture are examined.

To secure sustainability of the Project, it has been considered effective to strengthen networks among farmers. As the activities in the first half of the Project period focused on the training of core farmers and the trial of the farmer-to-farmer training approach, concrete achievement for this output is expected in the latter half of the Project period. Several activities have been planned and in preparation for implementation. These include support for producers' organizations (farmer association, aquaculture cooperative and national union for aquaculture) to strengthen networks among farmers, and to share information on aquaculture techniques and marketing.

The activity of "introduction of contract fish farming" was in the original PDM. This activity was intended to reduce the burden of initial costs and risks for newly started aquaculture farmers. However, the core farmers have expressed their reluctance to adopt this approach because they have already experienced several failure cases in the past.

Another activity in preparation is the introduction of microcredit for wooden tank aquaculture. This activity will be conducted in close cooperation with the Ministry of Microfinance, Youth and Women. It is the Project's intension that this scheme will be made to target specifically women groups, because tank culture provides a good income generating opportunity to women who usually do not own land for aquaculture. After a series of discussions with relevant authorities, the project selected Oueme as a pilot site. So far, 21 women from the area have attended training course on tank culture as well as introductory meetings of microfinance. The Department of Fishery is planning to gradually expand this scheme to other areas after observation of progress in the pilot site.

#### 3.4 Prospects for Achieving the Project Purpose

**Project Purpose: Number of fish farmers is increased in selected communes in the target provinces.**

Indicator 1: More than 300 individuals introduce or re-introduce aquaculture.

Indicator 2: More than 300 individuals apply improved aquaculture techniques.

As for the indicator 1, as of August 2011, 248 farmers who have never engaged in aquaculture or who have stopped aquaculture received training and in total 106 farmers have commenced or resumed aquaculture production, which represent 35.3% of the target number of the indicator 1.

Although it is not required in the PDM, the project also monitors the rate of commencement (the number of individuals who commence aquaculture out of those who participated in the FTF training). According to the data provided by the Project, the commencement rate was 42.7%. This rate is higher than initially projected rate of 33.3%.

Yet, there are a number of farmers who has faced difficulties in taking up aquaculture. Major obstacles are found to be lack of initial cost and land. Although requests for financial support to cover such initial capital has been very high, currently the project does not provide such support as excessive support may lead to easy discontinuation of aquaculture production in the later stage.

In order to increase the commencement rate, the project suggested adding another criterion to see if training applicants have already acquired land and initial capital for aquaculture. According to one core farmer who actually applied these selection criteria, not only increased commencement rate has been observed but also preparation period before commencement of aquaculture has been significantly shortened (many farmers took three to six months for preparation of aquaculture ponds and other facilities after the training).

In the second year, it was observed that capabilities of core farmers were not as good as those trained in the year 2010. Among those core famers, there are some farmers whose skills and will to train ordinary farmers were not very high.

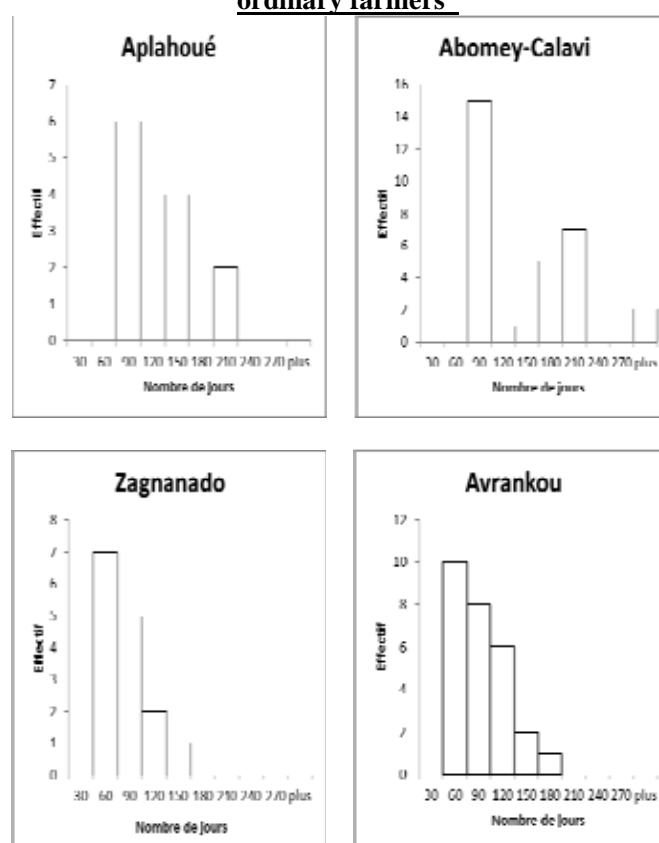
As for the indicator 2, as of August 2011, a total of 115 aquaculture farmers, who are currently engaged in aquaculture, are also participated in the training, out of which at least 85 farmers have adopted improved techniques. This represents 28.3 % of the target number of the indicator 2.

Relatively low level of achievement is due to a lower priority assigned for this target group. Currently the Project limits the number of the participant from this target group in order to give more seats for prospective aquaculture farmers. The Project plans to increase the number of participant from this group in the later stage of the project.

It is noted that not only the number of aquaculture farmers was increased, but also farmers in the eight target communes recorded higher productivity by farmer (336kg/farmer) in comparison to that of non-target communes (237kg/ farmer)

The figures below show the delayed time observed in 4 target communes. It is remarkable that many participants of the training spent considerable time for preparation before starting aquaculture production. The longest preparation time observed was more than 200 days, this illustrates the need for long-term monitoring of the effect of FTF training.

**Figure1: Duration between the training and commencement of aquaculture production among ordinary farmers**



It is also necessary to monitor whether the farmers are using properly the aquaculture techniques taught by the project. The Project has identified some cases of misuse in applying aquaculture techniques by farmers upon their return to their community after the training.



### 3.5 Overall Goal

**Overall Goal: Inland aquaculture is extended in the seven southern target provinces.**

Indicator: Number of aquaculture farmers in the target areas is increased to more than 3,000 by 2020.

The benchmark survey conducted by the Project basing the data collected by CeRPA/CeCPA indicated that total number of aquaculture farms in the seven target provinces has increased gradually from 1,188 in 2009 to 1,331 in 2011. These data are not indicative enough to see the level of achievement of overall goal and it is premature to measure this indicator at this point.

## 4. Verification of the Implementation Process

### 4.1 Communication, decision making and project management

Overall, the Project implementation process has been effective. With regard to decision making bodies of the Project, the CCC meeting was held once and steering committee meetings were held five times as planned. In addition, the counterparts and the Japanese experts have held weekly meetings to increase communication.

Regarding the project management system, no serious issues are identified. It is probably because the Project has strived to formulate an aquaculture extension system that does not depend heavily on the government structure. However, the following issues have emerged through the implementation of the project.

- Currently, two counterparts and one project staff member are in charge of daily coordination and communication with CeRPA/CeCPA and core farmers in communes. Since it is a time-consuming task, they are not always able to spare sufficient time for other duties such as technical experimental trials.
- Management structure of the MAEP (DP, CeRPA and CeCPA) requires obtaining approval from various sections for the project activities (e.g. holding meetings and seminars, or conducting field trips), which sometimes cause delays in the project implementation.
- On the other hand, limited time allowed for the Project activities sometimes urge Beninese counterpart to take immediate actions which often put them in a difficult situation.

### 4.2 Technical transfer

Based on the results of the field observation and interviews with various stakeholders, it is a common understanding that the farmer-to-famer training approach is effective and applicable in Benin. It is also reported that the presence of a trainer (i.e. core farmer) in the proximity of the ordinary farmers ensures easy and convenient access to the necessary aquaculture inputs (seeds and feeds) as well as technical advice. Furthermore, the conduct of training in local language promoted better understanding of training contents. In fact, many of ordinary farmers answered that they visits the core farmer frequently after the training in seeking for seeds, feed, technical advice and equipment for fish control.

On the other hand, the Project observed gradual deterioration of aquaculture technic among ordinary farmers after training. In the target communes, the effectiveness of manuals and/or any written technical information is limited because of the ordinary farmers' low literacy rates. This suggests that periodical exchange of visits between ordinary famers and core farmers and/or CeRPA/CeCPA officers to refresh aquaculture techniques and knowledge is indispensable in order to make ordinary famers technically independent.

Another issue is related to the project management structure. Although CeRPA/CeCPA are involved in the farmer-to-farmer training approach at the commune level, the project senior management counterparts (i.e. DP officers) are not in the position to instruct CeRPA /CeCPA officers to assist in the project activities. Currently no serious problems relating this project management structure has been reported and levels of cooperation received from CeRPA/CeCPA officers have been sufficient. However, there is a potential risk that this “parallel” management structure affects the sustainability of the project.

## 5. Evaluation Results

### Five Evaluation Criteria

#### 5.1 Relevance

The relevance of the Project is high

##### (1) Policy

In the Poverty Reduction Strategy Papers III 2011-15(PRSP-III), the Beninese government gives a priority to inland aquaculture development as an important means of “diversification of agriculture”. The Agriculture Sector Revival Strategic Plan (PSRSA), which is in the process of the cabinet approval, set targets of the reduction of imported frozen fish by 20 %, and increased income of the fish farmers through the sustainable aquaculture development. In “the National Policy of Fisheries and Aquaculture” issued in 2010, development of the fishery and inland aquaculture sectors are seen as means to assure the national food security by reducing import and increasing export.

In this regards, the Project Purpose and the Overall Goal are consistent with relevant policy framework of Benin.

##### (2) Japanese aid policy

Japan has supported the inland aquaculture sector through the Study on the Promotion of Inland Aquaculture for Rural Development in Benin from 2007 to 2009 (PACODER). The Project is also in line with Japan’s country-specific cooperation program for Benin, which gives priorities to agriculture and rural development, and improvement of livelihoods by inland aquaculture development.

##### (3) Target areas and groups

The southern parts of Benin have several favorable conditions to develop inland aquaculture, such as rich water resources, high demand for fish, and large populations. In addition, 90 % of the inland aquaculture production and existing producers are concentrated in these areas. In consideration of the economic, social and natural conditions, these areas are expected to play a leading role for aquaculture development.

#### 5.2 Effectiveness

The effectiveness of the Project is relatively high.

##### (1) The achievement level of the Project Objective

It is relatively high, but the technical package needs further improvement.

With intensive efforts of the Project, selection and training of the core farmers have been conducted faster than the original plan. Most of the conducted experimental trials were reflected in manuals which facilitated technical transfer to the counterparts and stakeholders. Other outcomes are also expected to be achieved in terms of the indicators.

Up to now core farmers have improved their aquaculture technology and developed minimum facilities as the base of extension service. CeRPA/CeCPA officers have also played their roles in coordination, monitoring and technical advice. Thus basic extension systems at the commune level are formed and it is to be verified in the later stage of the project. However, for sustainable

aquaculture, it is important to continue to respond difficulties which core farmers and ordinary farmers have. The major outstanding issues are;

➤ Quality broodstock

There is a concern that the current broodstock of tilapia do not grow faster and bigger enough due to the deterioration of the gene quality. Although the Project considered introducing, so-called “Akossonbo” strain from Ghana, the DP is reluctant to do so because there is no reliable bio-security facility for broodstock management in Benin. Under this situation, the project is going to verify domestic broodstock from a private company in Parakou.

➤ Feed Development

The Project has been trying to improve feed producing capacity of core farmers, and verified recently an acceptable level of FCR for locally produced pellets. However, it would be difficult or take time for all core farmers to achieve similar results. Although imported quality feeds are available at local feed venders, they are very expensive because of trading indirectly via Nigeria. The Project considers other options including import of the compound feed directly from global feed manufacturing companies.

(2) Important assumptions

Important assumptions identified during the project formation period were as follows

- Pesticide is not utilized around aquaculture tanks or ponds.
- Natural disaster that damages aquaculture does not occur.
- Outbreak of serious fish disease does not take place.

Concerning the above, there has been a report of following incidents

- In January 2011, at an aquaculture farm in Oueme province, all fingerlings kept inside a happa net were dead. The suspected cause of death was the use of pesticide in a farm field nearby.
- From March to April 2011, the heavy rain in the southern Benin caused serious flood. Most of core farmers' ponds were inundated and lost cultured fish.
- In January 2011, an outbreak of a tilapia bacteria disease occurred in Pobè commune, Plateau province. This was suspected to have been transmitted from the broodstock purchased from a NGO. The Project advised fish farmers to treat the fish with salt bath, and the damage was confined to a limited area.

It is important to pay due attention to these incidents, because most of small-scale farmers do not have resilience to deal with such incidents. This may affect the achievement of the Project Purpose and the Overall Goal.

### 5.3 Efficiency

The efficiency of the project is high.

(1) Input of the Japanese side

The Japanese experts have been dispatched in a timely and responsive manner. Thus necessary technology transfer has been made. In the second year, the experts on the early feed organisms and gender have been dispatched based on the needs identified in the first-year activities. As a result, concrete steps, such as experimental trials of zooplanktons culture for catfish juveniles and collaboration with MMFEJF on introduction of a microfinance scheme for potential women aquaculture farmers, have been taken.

(2) Input of the Beninese side

Overall, motivation and technical levels of Beninese counterparts are high. As two counterparts work full-time for the activity, smooth coordination and communication among the Project have been

facilitated. Apart from wages of the counterparts, the Benin side disbursed 75 million FCFA, under the Public Investment Program (PIP) in 2011, as a counterpart fund for the Project related activities. Another 25 million will be disbursed by the end of this fiscal year. This budget is basically utilized for equipment, not for Daily Subsistence Allowance (DSA) and other allowances. This budget is expected to spend for supporting core farmers to improve aquaculture facilities and ordinary farmers to commence aquaculture production.

### (3) Training in Japan and third countries

Selected project counterparts, CeRPA/CeCPA officers and core farmers have benefited from a series of training courses in Japan, Cambodia and Egypt, and fed back their improved skills in the Project activities. According to the interview, one core farmer applied advanced techniques learned from the training such as aeration system using available materials in Benin. The other core farmer mentioned that seed production increased nearly three times after the training in Egypt. The project considers sending almost same number of the project counterparts, CeRPA/CeCPA officers and core farmers for overseas training in 2012.

## 5.4 Impact

It is premature to assess the impact at this stage.

The degree of the Project's achievement with regard to the Overall Goal is not fully measurable at this stage. It needs to monitor if ordinary farmers can continue second and third cycles of aquaculture production without external input from the Project. However, based on the observations of several experts and stakeholders, the Overall Goal seems achievable in five to seven years after the end of the Project.

### (1) Prospects for achieving the Overall Goal

The number of aquaculture farmers has increased from 1,188 in 2010 to 1,331 in 2011. In theory, if approximately 200 individuals newly start aquaculture each year, the Overall Goal will be achieved. However, the evaluation team confirmed the importance of monitoring of both the commencement rate (the rate of individuals who actually commence aquaculture out of the farmer-to-farmer training participants) and the continuation rate (the rate of individuals who continue aquaculture production in the second cycle or later out of the farmers who commenced aquaculture). In order to assess the prospects for achieving the Overall Goals accurately, continuation rate needs to be carefully examined as the Project do not support seeds and feeds from the second cycle.

### (2) Other positive ripple effects

In interviews with stakeholders, the following were identified as positive ripple effects from the implementation of the Project.

- Some of the core farmers have formed the association and registered with DPLR/CeRPA/MAEP without any support by the Project. This organization is prospected to promote the aquaculture by networking core farmers with which they can collectively purchase imported compound feeds and/or share customer information.
- For most ordinary farmers, their objectives of aquaculture are income generations. In interviews, some farmers answered profitability of aquaculture is evident and they wish to expand their operation.
- The Project supports wooden tank aquaculture which offers an income opportunity for those people who have no land (especially women). Access to microfinance currently facilitated by the Project also gives women a chance for advance in society.

### (3) Other negative impact

No negative impact has been observed.

## 5.5 Sustainability

The sustainability of the Project is moderate.

### (1) Policy and institutional aspect

As mentioned above, the Government of Benin will continue to support development of inland aquaculture through improvement of aquaculture technologies.

### (2) Organizational capacity

Both the Department of Fisheries and the CeRPA/CeCPA have assigned a certain number of officers for the project. Recent administrative trends of MAEP also indicate the importance of extension services in the commune levels. If these trends continue, the Department of Fisheries, CeRPA/CeCPA may also continue to function in a same manner.

### (3) Financial aspect

Extended application of the farmer-to-farmer training approach may reduce administration cost for aquaculture extension, which contribute sustainability after the project completion. As long as both core farmers and ordinary farmers make benefits through this system, they will continue aquaculture productions.

### (4) Technical aspect

As for the technical aspect, core farmers and CeRPA/CeCPA officers have different technical levels. While a few core farmers are capable of conducting training sessions by themselves, most of them still need technical advice from the Project. In the remaining project period, the Project needs to improve the technical level of core farmers and improve the quality/presentation of manuals to help utilize local resources and help illiterate people understand the techniques.

## 6. Conclusion

During the first half period the project has shown good progress.

Information that indicate the validity of the farmer-to-farmer training approach has been accumulating; it is a promising sign that FTF training approach is taking root in Benin. The core farmers who were trained in the first year are beginning to function as the central actor in the farmer-to-farmer training approach in the commune level. Their services include seeds and feeds distribution, and technical assistance to ordinary farmers.

As for ordinary farmers, while the number of training participants has been increasing gradually, it is premature to assess the implications of this result.

In terms of the extension system, it is confirmed that the CeRPA/CeCPA officers, in collaboration with the Department of Fisheries, play important roles on monitoring, coordination and technical advice for the core and ordinary farmers, which have contributed the smooth implementation of the Project.

From the technical perspective, it is noted that introduction of tilapia mono-sex seeds production, and efficient seeds production techniques with the use of happa nets, shape a practical technical package for the inland aquaculture promotion through the farmer-to-farmer training approach.

However, there are still many technical challenges remained to be addressed including introduction of quality broodstock, improvement of feed processing, water quality management in non-drainable ponds and improvement of farm business management.

To ensure successful achievement of the Project Objective, it is important that the project, the Department of Fisheries together with the CeRPA/CeCPA officers, pay close attentions to the monitoring of the commencement rate and the continuation rate of the ordinary farmers, while it continues to exert due efforts to improve the viable techniques by experimental trials and enhance effectiveness of the farmer-to-farmer training approach.

## 7. Recommendations

### Issues relating to institutional aspect

- (1) Among various roles played by CeRPA/CeCPA extension officers in the Project, one of the most important roles is their monitoring function. Monitoring information on core farmers' activities such as seed/feed production and conduct of FTF training as well as information on ordinary farmers' activities such as progress of aquaculture production are vital for the Project to take timely and adequate management actions. However, the monitoring function at the field level is still very weak. It is hence advised that the Project enhance its monitoring capabilities in terms of protocol, human resource inputs and technical competence.
- (2) Surveys conducted by the Project revealed that status of farm business management (e.g. conduct of simple accounting) among core-farmers and ordinary farmers was generally poor. It is expected that the Project properly address this issue and in doing so, mobilization of CeRPA/CeCPA human resources can be considered (there are business management advisors in each CeRPA/CeCPA such as Agriculture Exploitation Management Advisor and Specialist in Farming Organization).
- (3) CeRPA/CeCPA officers are involved in the FTF Training approach at the commune level and their presence in the field is an asset for the Project. As described in the section 4.2 above, the Project implements its activities in coordination with CeRPA/CeCPA and in the field, DP counterparts and CeRPA/CeCPA officers work together to assist core farmers to promote aquaculture. It is highly recommended that coordination between DP and CeRPA/CeCPA be further strengthened through regular meetings and communication.

### Issues relating to FTF training approach and core farmers

- (4) It is a common understanding among all the stakeholders of the Project that FTF training approach is promising in terms of promoting aquaculture in Benin. It is urged that the Project exert further efforts to develop and establish a viable aquaculture extension system with this FTF training approach.
- (5) In the FTF training approach, core farmers play a central role and hence the quality of core farmers (their skills and will to promote aquaculture in their areas) would inevitably affect the levels of achievements. Therefore, it is adequate that the Project has set clear criteria in the selection of core farmers. This practice should be continued while maintaining the participatory process of reviewing the adequacy of criteria.
- (6) In conducting FTF training, the Project is currently providing technical and financial assistance to core farmers since many of them have not reached such level that they could conduct FTF training independently. In order to facilitate self-reliant operation of FTF training, it is advisable that the Project gradually withdraw such assistance by carefully examining core farmers' capabilities of conducting FTF training.
- (7) In the Project target areas, some core farmers are organized to form groups and started their discussion on such topics as group purchase of feed ingredients and sharing of customer information. Generally speaking, organization and networking of core farmers brings various benefits for sustainable development of aquaculture since collective actions and information exchange often contribute to the improved efficiency of aquaculture production. Such initiatives need to be supported and strengthened by the Project.

- (8) During the field visits, it was observed that farmers appreciate and feel pride of “certificate” delivered at the end of training sessions. It was also reported that “certificates and awards” have already been used by MAEP as a promotion tool in the agriculture sector. In this connection, it is suggested that the Project consider introducing certificates and awards (e.g. certificate of leading core farmers) to encourage quality activities of core farmers

#### **Issues relating to ordinary farmers**

- (9) In Benin, aquaculture is considered as an economic activity. In order to attract more people to commence aquaculture, it is critically important to demonstrate that aquaculture is a “profitable” option to take. At this stage, most of ordinary farmers, who started aquaculture with the Project, are still engaged in their first production (i.e. no harvest has been made) and hence economic aspect of aquaculture production has yet to be proved. It is advised that the Project closely monitor the operation of those farmers and verifies the economic viability of aquaculture production even with the small-scale operation of ordinary farmers.
- (10) Provision of initial capital, which is used for pond construction and acquisition of fingerlings/feeds, is an essential requirement for farmers to commence aquaculture production. It is, however, observed that such capital is not easily attainable for many farmers. In the early trials of FTF training, some farmers did not start aquaculture due to the problem of initial capital. The Project is now testing the effectiveness of FTF training approach; however, when many farmers did not start aquaculture after receiving training, this would make difficult for the Project to thoroughly assess the effectiveness of FTF training approach. For this reason, it is advisable that the Project conduct FTF training with those farmers who are “ready to start aquaculture”. A trial application of selection criteria in choosing FTF training participants has exhibited promising results. It is hence recommended that the Project promotes wider application of adequate selection criteria in choosing FTF training participants. In this way, the rate of training participants to actually start aquaculture production (commencement rate) can be improved.
- (11) As described above, provision of initial capital is a problem in terms of promotion of aquaculture. Once the effectiveness of FTF Training approach has been proven, opportunities of aquaculture should be widely extended to those farmers who have difficulties. In this connection, pilot application of micro-finance scheme in Oueme province is an important trial. It is recommended that the Project enhances collaborative relationship with Ministère de la Micro Finance et de l’Emploi des Jeunes et des Femmes (MMFEJF) and continues to explore the possibilities of viable financing schemes for aquaculture. It is also encouraged that the Project gives priorities to ordinary farmers in utilizing the Public Investment Programme fund.
- (12) For effective promotion of aquaculture in Benin, it is of course important to achieve greater number of farmers to commence aquaculture. However by over-focusing the number of newly started aquaculture farmers, the Project may overlook other important aspect, which is the continuation rate. Even when the Project successfully encourages farmers to commence aquaculture, those farmers may not continue their operation after first harvest if they are not happy with the profitability of the production and/or if they feel farming fish is technically too difficult. For this reason, it is proposed that the Project takes it into consideration this continuation aspect when it monitors the level of the Project objective achievement. It is noted that to effectively monitor and ensure continuous operation of aquaculture production, present project duration may not be sufficient.

#### **Technical issues**

- (13) One of major challenges of the Project is to establish aquaculture techniques that are suited to “non-drainable pond” culture. Main technical issues associated with the use of non-drainable

ponds are i) water quality management and ii) possible presence of “left-over” fish from previous production cycle in the pond. The project has been implementing a number of on-farm experimental trials. Although some useful results have been recorded, it is a nature of on-farm experimental trials that variation of the result would be wide. Further efforts are needed to verify the validity of on-farm experiment results.

- ( 14 ) In this Project, core famers are trained with mono-sex tilapia seed production techniques and this has contributed to the improved production. For breeding mono-sex tilapia, newly hatched fries are fed with hormone treated feed. At this moment, only the Project team members are engaged in the production of hormone treated feed. Since the use of hormone has a potential risk of disturbing natural environment and eco-system, it is strongly recommended that DP maintain strict control over the use of hormone treated feed.
- ( 15 ) Fingerings produced from quality broodstock will grow faster and bigger and hence provision of quality broodstock is a key to economically viable aquaculture. Currently none of core-farmers is equipped with proper facilities to manage broodstock, which hampers the introduction of new broodstock. The project is advised to explore the possibility of introduction and management of broodstock.
- ( 16 ) Among normal expenses for aquaculture production, the cost of feed constitutes the highest proportion and hence the provision of reasonably priced feed is essential in order to ensure economic viability of aquaculture production. The problems concerning aquaculture feed in Benin are i) imported feeds are effective but very expensive because they are imported via third country from the origin, ii) local feeds are cheaper but low quality and small-scale feed production is inefficient. The Project is advised to explore the possibility of other options to address the issue from the point of view that improving profitability of aquaculture production is a primary goal.

#### **Other issues**

- ( 17 ) It is envisaged that significant amount of useful information can be accumulated/extracted from the results of experimental trials as well as the experiences of applying FTF training approach in aquaculture. Such information is highly valuable not only in meeting the national objective of aquaculture development but also as reference information for those countries in the region that also strive to promote aquaculture. It is recommended that the Project disseminate and share such information when opportunities are available.



## ANNEX I: Schedule of the Mid-Term Evaluation

Date	Day	Aquaculture Techniques	Aquaculture Extension/ Organization	Leader/ Evaluation Planning	Evaluation Analysis	Place
		Dr. Shunsuke KOSHIO, Kagoshima University	Mr. Ken HOMMA, JICA Senegal Office	Mr. Shunji SUGIYAMA, Mr. Takumi SUNOHARA, Rural Development Department/JICA	Ms. Mana ISHIGAKI IC net Limited	
25-Sep	Sun				AF238 HANEDA →PARIS AF804PARIS → COTONOU	Cotonou
26-Sep	Mon				Courtesy call at JICA Benin Office, Interview with Expert, Counterpart	Cotonou
27-Sep	Tue				Site Survey: CeRPA Atlantique, Abomey Calavi	Cotonou
28-Sep	Wed				Site Survey : CeRPA Ouéme, Avrankou, Kouti	Cotonou
29-Sep	Thu				Site Survey : Tori-bossito, Aplahoué, Zagnanado	Bohicon
30-Sep	Fri				Site Survey : Zagnanado	Cotonou
1-Oct	Sat				Document preparation	Cotonou
2-Oct	Sun		I5 270 Dakar→ Cotonou (via Bamako)	AF238HANEDA→PARIS AF804PARIS→ COTONOU	Document preparation	Cotonou
3-Oct	Mon				08:30: Meeting at JICA Benin 09:00: Courtesy call at DASOC 10:00: Courtesy call at the Embassy of Japan 11:00: Courtesy call at MAEP 15:00: Courtesy call at Department of Fisheries 16:00: Meeting with the Project Experts	Cotonou
4-Oct	Tue				9:00: Meeting with Joint Evaluation Team Members, Experts, CPs, and JICA PM: Interview with the Project experts, CPs	Cotonou
5-Oct	Wed				Site Visit (Abomey-Calavi, Pobè)	Porto-Nov o
6-Oct	Thu				Site Visit (Adjarra, Porto-Novo)	Cotonou
7-Oct	Fri				AM: Discussion on the evaluation results PM: Meeting with Joint Evaluation Team Members	Cotonou
8-Oct	Sat	ANA 630 KAGOSHIMA→ HANEDA			Preparation of the Draft Evaluation Report and Minutes of CCC	Cotonou

9-Oct	Sun	JAL41 HANEDA→ PARIS AF804 PARIS→ COTONOU	Preparation of the Draft Evaluation Report and Minutes of CCC		Cotonou
10-Oct	Mon	AM: Meeting with the mission members PM : Site Visit (*Abomey-Calavi University)	AM: Meeting with the mission members PM : Meeting with the Joint Evaluation Team (Revise on the Joint Evaluation Report and Minutes of CCC)		Cotonou
11-Oct	Tue	Site Visit (Avrankou, Feed Production BHS Culture)	Meeting with the Joint Evaluation Team (Revise on the Joint Evaluation Report and Miniutes of CCC)		Cotonou
12-Oct	Wed	Meeting with the Joint Evaluation Team (Finalization of the Joint Evaluation Report and Minutes of CCC), Sign on the Joint Evaluation Report			Cotonou
13-Oct	Thu	9:00: Joint Coordination Committee (CCC), Sign on Minutes PM: Prepare summary report for the Embassy of Japan and JICA Benin			Cotonou
14-Oct	Fri	AM : Preparation of documents PM: Report to JICA Benin and the Embassy of Japan AF805 COTONOU→ +1PARIS	AM : Preparation of documents PM: Report to JICA Benin and the Embassy of Japan I5 271 Cotonou→ Dakar(via Bamako)	AM : Preparation of documents PM: Report to JICA Benin and the Embassy of Japan AF805 COTONOU→+1PARIS	
15-Oct	Sat	AF282 PARIS→ +1HANEDA		AF282 PARIS→+1HANEDA	
16-Oct	Sun	JAL 1863 HANEDA →KAGOSHIMA			

## ANNEX II: Project Design Matrix (PDM)

**Project Title:** Project for the Extension of Inland Aquaculture in Benin

**Project Target Area:** Seven (7) provinces in Southern Benin

**Period:** Three (3) years from 2010 to 2013

**Target Group:** Individuals or groups who are interested in inland aquaculture

**Date of Preparation:** August 25 2010, 1<sup>st</sup> CCC

Project Summary	Objectively Verifiable Indicator	Means of Verification	Important Assumption
<b>Overall Goal:</b> Inland aquaculture is extended in the seven southern target provinces.	Number of aquaculture farmers in the target areas is increased to more than 3,000 by 2020.	Reports from Fishery Department Results of the baseline survey	
<b>Project Purpose:</b> Number of aquaculture farmers is increased in selected communes in the target provinces.	In the selected communes, - More than 300 individuals introduce or re-introduce aquaculture. - More than 300 individuals apply improved aquaculture techniques.	Project reports Results of baseline survey Interviews	-
<b>Expected Output:</b> <b>1.</b> Manuals concerning inland aquaculture technologies and FTF training are prepared.	- More than six (6) training manuals are developed. - Viabilities of more than two (2) aquaculture techniques are proved in the target areas.	Project reports Results of baseline survey Interviews	
<b>2.</b> Core farmers and aquaculture extension officers of CeRPA/ CeCPA become capable of conducting inland aquaculture training.	- More than 50 aquaculture extension staff members are trained on teaching aquaculture techniques, pass final exams, and become qualified to teach the techniques. - More than 15 core farmers are trained on farmer-to-farmer training, pass final exams, and become qualified to conduct the training.		
<b>3.</b> Ordinary farmers acquire basic aquaculture knowledge through farmer-to-farmer (FTF) training.	- More than 50 farmer-to-farmer training sessions are conducted by the core farmers, and more than 900 people participate in the training. - More than 80 % of the participants answer "Satisfactory" in the questionnaire on the farmer-to-farmer training.		
<b>4.</b> The Project proposes to the Department of Fisheries necessary activities to encourage ordinary farmers as well as core farmers to engage in independent and sustainable aquaculture management.	- More than three (3) activities promoting practical and sustainable management of aquaculture are examined.		

<p><b>Activities</b>  1-1 Conduct studies on the current socio-economic and aquaculture situation in the target areas.  1-2 Collect and clarify applicable aquaculture techniques in Benin.  1-3 Develop suitable aquaculture technical packages for Benin through on-farm verification trials.  1-4 Develop manuals for inland aquaculture techniques and farmer-to-farmer training sessions based on the activities 1-1 to 1-3.  1-5 Revise manuals based on the progress of activities.  1-6 Conduct PR activities through seminars and newsletters.</p>	<p><b>Inputs:</b></p> <p><b>Benin</b></p> <p><b>Human resources:</b>  - Project director  - Project manager  - Counterpart (Department of Inland Aquaculture)</p> <p><b>Buildings/Facilities</b>  - Project office, storage</p> <p><b>Budget</b>  - C/P budget</p> <p><b>Japan</b>  - Experts  - Equipment  - Training</p>	<p><b>Precondition</b>  -The Government of Benin supports development of inland aquaculture.</p> <p><b>Important Assumption</b>  -Pesticide is not utilized around aquaculture tanks or ponds.</p> <p>-Natural disaster that damages aquaculture does not occur.</p> <p>-Outbreak of serious fish disease does not take place.</p>
<p>2-1 Select target communes and core farmers based on the results of the activity 1-1.  2-2 Conduct Training on inland aquaculture training for core farmers and CeRPA/ CeCPA staff.  2-3 Develop the capacity of core farmers on seed and feed production.  2-4 Improve broodstock management techniques of core farmers.  2-5 Provide technical assistance on sustainable aquaculture management system including feed sales.</p>		
<p>3-1 Help conduct farmer-to-farmer training sessions by core farmers in each commune.  3-2 Provide necessary initial assistance to training participants in starting aquaculture.  3-3 Provide technical assistance for extension officers to conduct on-site follow-up training for core farmers and training participants.</p>		
<p>4-1 Conduct activities to strengthen networks among aquaculture farmers.  4-2 Conduct contract fish farming.  4-3 Conduct any activities useful for the Project.</p>		

### ANNEX III Achievement of activities

Activities		Progress and achievement	Achievement	Reason of delay if any	Future plan
1-1	Conduct studies on current socio-economic and aquaculture situation in the target areas.	Conducted baseline survey in order to collect information of current aquaculture situation and basic data from June to July, 2010. Existing aquaculture, the number of pond, production volume were also collected in collaboration with CeRPA/ CeCPA.	60%		Conduct impact survey in the third year.
1-2.	Collect and clarify applicable aquaculture techniques in Benin.	<p>Outstanding issues for the pond culture and the tank culture are identifies as follows.</p> <ul style="list-style-type: none"> <li>-In the target areas, most of pond cultures are operated in <i>Bafone</i> where water springs naturally from the bottom or dikes of the pond, which makes difficult to drain water.</li> <li>-As for Tilapia, it was confirmed that size of Tilapia broodstock is small because of continuous reproduction without proper seeds production management.</li> <li>-Although some aquaculture farmers introduce the drainable pond or the compound feed, other techniques which are common in other countries have not introduced in Benin. It is important to introduce new technology as well as improve existing technology.</li> <li>-Tank culture has been introducing with assistance of PACODER or PADPAQ which have no technical problems. However, improvement of tank environment and feed development are important to increase Feed Conversion Rate (FCR).</li> </ul>	100%		Additional survey is conducted upon necessity.
1-3.	Develop suitable aquaculture technical packages for Benin through on-farm experimental trials	<p>Due to not any research center is involved in the project, experimental trials are conducted at core farmers' sites. As of September, following topics were verified.</p> <ol style="list-style-type: none"> <li>1. Profitability of Tilapia pond culture</li> <li>2. Introduction of happa nets</li> <li>3. Transportation of seeds</li> <li>4. Production of Tilapia mono-sex seeds</li> <li>5. Appropriate size of the pond for catfish</li> </ol> <p>Following topics have been verified and to be prepared a report</p> <ol style="list-style-type: none"> <li>6. Extinction of fish after harvest</li> <li>7. Pumping out water for the non-drainable pond</li> <li>8. Maintenance of the pond bottom after the harvest</li> <li>9. Managing fish predators/competitors</li> </ol>	40%		<p>Following topics are examined.</p> <ol style="list-style-type: none"> <li>1. Profitability of Catfish tank culture</li> <li>2. Improvement of water management for pond culture</li> <li>3. Introduction of broodstock</li> <li>4. Improvement of water management for catfish tank</li> </ol>

		<p>10. Intermediate breeding for Tilapia  11. Appropriate biomass for Tilapia culture  12. Poly culture of Tilapia and Catfish  13. Profitability of Catfish tank culture</p> <p>Following topics are currently studied</p> <p>14. Low cost aquaculture facility  15. Early food organism for catfish  16. Natural spawning for catfish  17. Improved production of compound feeds  18. Improving nutrition for compound feeds  19. Preservation of feed materials</p>			<p>culture  5. Alternative material for feed development</p>																		
1-4.	Develop manuals for inland aquaculture techniques and farmer-to-farmer trainings based on the activities 1-1 to 1-3	<p>As the results of the verification studies, site surveys and documentary review, following draft manuals are developed.</p> <ol style="list-style-type: none"> <li>1. Pond culture (Tilapia, catfish)</li> <li>2. Tank culture (catfish)</li> <li>3. Tilapia seeds production</li> <li>4. Catfish seeds production</li> <li>5. Feed development</li> <li>6. Aquaculture Farm management</li> </ol> <p>These manuals are utilized at the FTF training or technical advice for core farmers.</p>	40%		Continue updating, and final versions are to be developed in the third year.																		
1-5.	Revise manuals based on the progress of activities.	Necessary revisions are made through the technical assistance or FTF training. More pictures will be inserted in consideration of high illiteracy rate.	40%		ditto																		
1-6.	Conduct PR activities through seminars and newsletters.	<p>The project held a series of open seminars to disseminate activities to the public. In addition to that, project news letters were issued 4 times, posters and</p> <table border="1"> <thead> <tr> <th>Date</th> <th>Theme</th> <th>No. of participants</th> </tr> </thead> <tbody> <tr> <td>12 Jul 10</td> <td>Aquaculture technology in Egypt</td> <td>30</td> </tr> <tr> <td>3 Sep 10</td> <td>Feed Development and evaluation</td> <td>40</td> </tr> <tr> <td>5 Oct 10</td> <td>Aquaculture in Egypt</td> <td>30</td> </tr> <tr> <td>24 May 11</td> <td>Gender and aquaculture in PROVAC</td> <td>30</td> </tr> <tr> <td>21 Jun 11</td> <td>Open seminar</td> <td>96</td> </tr> </tbody> </table>	Date	Theme	No. of participants	12 Jul 10	Aquaculture technology in Egypt	30	3 Sep 10	Feed Development and evaluation	40	5 Oct 10	Aquaculture in Egypt	30	24 May 11	Gender and aquaculture in PROVAC	30	21 Jun 11	Open seminar	96	60%		Continue activities
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		leaflets were also developed and disseminated			
2-1.	Select target communes and core farmers based on the results of the activity 1-1.	As of September, 16 core farmers were selected and trained (2010: 9 persons, 2011:7 persons), thus indicator was already achieved. As to selection of target communes and core farmers, criteria were carefully discussed and scored, after conducting local survey by CeRPA and CeCPA. Balance of area and gender are also considered when several scores are similar.	100%	Less people are qualified as the core farmer.	Reconsider the criteria of selecting core farmers for 2012.
2-2.	Conduct Training of Trainer on inland aquaculture training for core farmers and CeRPA/ CeCPA staff.	As of September 2011, training for core farmers were conducted twice (Sep 2010 and Sep 2011), and one blush-up training was conducted at the Benin Continental Fish. In total 16 core farmers and 22 extension staff have already attended and passed final exams.  Training in third country, Egypt was conducted in May to June 2011, and 7 persons in total (3: CeCPA, 4: core farmers) were attended to improved their technical knowledge and capacity.	60%	Capacity of core farmers 2011 is lower than that of 2010	In the 3rd year, follow up training program for current and new core farmers, and the third country training are also planned.
2-3.	Develop the capacity of core farmers on seed and feed production.	As for seeds production, 8 core farmers trained in 2010 constructed hatcheries and expanding their seeds production scale. One core farmer for the wooden tank culture does not conduct seed production. For feed production, 2 of them (Pobè and Tori-Bossito) are behind to complete facilities. It was also identified that the quality of compound feeds needs to be improved. In this purpose, the special session for feed development was organized during the blush up training in Sep 2011.	60%	No availability of reasonable and qualitative materials for compound feed.	Continue advice on feed development. Consider import of compound feed as the project.
2-4.	Improve broodstock management techniques of core farmers.	Although there is high demand to introduce broodstock from other country, development of facilities and management system are not yet ready. The project is going to verify domestic broodstock from a private company in Parakou.	50%		Continue follow up and monitoring.

2-5.	Provide technical assistance on sustainable aquaculture management system including feed sales	Financial conditions of the core farmers were identified healthy except one. The project introduced the bookkeeping and the stock management system. As of August 2011, 7 out of 9 core farmers started bookkeeping, however most of core farmers did not keep stock management due to difficulties in differentiate feed for livestock and for fish, or filling record by their workers.	50%	Limited production capacity of feed by core farmers needs to be considered.	Continue follow up and monitoring. Modified sheets for stock management will be distributed.
3-1.	Assist in conducting farmer-to-farmer trainings by core farmers in each commune.	By the end of August 2011, 14 times of farmer-to-farmer training has been conducted by the core farmers and 363 persons were trained. All 9 core farmers who were trained in 2011 conducted farmer-to-farmer training at least one time. 40.3% against the indicator was achieved. Other trainings is also planned by respective core farmer in collaboration with CeCPA officers	40%	FTF training is not conducted by initiative of core farmers and CeRPA/CeCPA	Increase the ownership of core farmers by reducing intervention from the project
3-2.	Provide necessary initial assistance to training participants in starting aquaculture.	The project provides input assistants, such as seeds, a part of feed and happa nets to ordinary farmer, based on the guideline for assistance for the ordinary farmers. CeCPA has a role of approval on the status of pond/tank preparation before provision of assistance. As of 20 <sup>th</sup> August, total of 191 (existing farmer: 85, re-start farmer: 11, new farmer: 95) farmers, which accounts for 52.6% of the total training participants received initial assistances from the project.	40%	Many farmers took a time for preparation of the pond after the training.	Continue monitoring on ordinary farmers to improve their difficulties.
3-3.	Provide technical assistance for extension officers to conduct on-site follow-up training for core farmers and training participants.	Due to technical level of core farmers and CeCPA are almost equal, the project provides technical assistance to the core farmers directly, or indirectly through CeRPA/CeCPA officers. The project delegates periodical monitoring to CeCPA officers, and receives monthly monitoring report from CeCPA officers.	50%	Level and capacity of each CeCPA is different	Continue activities
4-1.	Conduct activities to strengthen networks among aquaculture farmers.	Through the survey conducted in the first year, 6 aquaculture unions are identified in the project target areas, however their activities are inactive as seen commonly in Benin. In June 2011, it was confirmed that the core farmers including some ordinary farmers formulated the cooperative, and registered at MAEP. There was no involvement of the project so far, but it may needs to advise on organizational formulation, because two core farmers did not attend the association, nor there were different opinions among the farmers. In another cases, it was found that the core farmers and CeCPA took initiatives to organize follow up meetings in Adjarra, Aplahoué and Zagnanado, with aiming to discuss aquaculture technique and management.	20%	This activity put on focus in latter half of the project as the project concentrated on the training in the first year.	Assist in formulation of network and management of organization



4-2.	Conduct contract fish farming	Introduction of the contract fish farming was planned in PDM. This approach aimed to reduce burden of initial cost and risk for new aquaculture farmers. However, it was difficult to be accepted by the core farmers who had already bad experience of not collecting debt in past.	10%		Discuss during the mid-term evaluation.
4-3.	Conduct any activities useful to the project	The project considers the genders issues, and small scale tank culture of catfish is introduced especially for women without having a land. The project also discussed with FNM and agreed with supporting microfinance for women. ASMAB (Association pour la Solidarité des Marchés du Bénin) was selected as the microfinance institution (IMF). At the moment small groups are formed and application forms are prepared by the small group.	30%		Continue support upon necessity.

## ANNEX IV Evaluation Grid

### I. Verification of Performance

Evaluation Item	Evaluation Questions		Required Information/ data	Results
	Main Questions	Sub-Questions		
Achievement of output	Output1:Manuals concerning inland aquaculture technologies and FTF training are prepared.	Indicator1-1: More than six (6) training manuals are developed.	Status of draft manuals and materials	The six draft manuals have been developed. The manuals cover the pond aquaculture (tilapia and catfish), the tank culture (catfish), the seed development (tilapia and catfish), the feed development for aquaculture, and the farming business management.
		Indicator1-2: Viability inland aquaculture techniques are proved in the target areas.	Verified aquaculture techniques.	More than 20 experimental trials have been conducted. Results of experimental trials are analyzed and are to be reflected into manuals.
			Dissemination level on the ground	<ul style="list-style-type: none"> <li>-Mono sex tilapia seed production technique has been introduced by all core farmers and the technique has been stabilized.</li> <li>-Determination of adequate culture densities for different size of Tilapia fingerling in non-drainable ponds</li> <li>-Adapted use of happa nets in non-drainable ponds</li> <li>-Development of alternative early food organisms for catfish seed production</li> </ul>
		If there are problems, what is the impeding factor?	Factors that impede the achievement	<ul style="list-style-type: none"> <li>-As for facilities of experimental trials, all studies are conducted in core farmers' ponds and hatcheries, which are not under controlled conditions.</li> <li>-Natural spawning techniques for catfish have not been succeeded yet. Natural condition might affect because the same methodology showed 80 % of success rate in Egypt.</li> <li>-Improving Food Conversion Rate (FCR) is important as to get profitability. However, it was found that it is difficult to find reasonable and qualitative feed materials in Benin. The project considers importing compound feed to see effectiveness.</li> </ul>
Does it effect on achievement of the project purpose?	The project promotes profitable aquaculture in considering cost-effectiveness. Even above factors exist, applicable technology package will be presented until the project completes. Therefore, it is prospected to achieve the project purpose.			

	Other indicators to evaluate achievement	PR activities such as Seminar, newsletter	<p>The project held a series of open- seminars to disseminate their activities. Various PR materials such as the project newsletters, posters and leaflets have been distributed.</p> <table border="1" data-bbox="1164 263 1993 454"> <thead> <tr> <th>Date</th> <th>Theme</th> <th>No. of participants</th> </tr> </thead> <tbody> <tr> <td>12 Jul 10</td> <td>Aquaculture technology in Egypt</td> <td>30</td> </tr> <tr> <td>3 Sep 10</td> <td>Feed Development and evaluation</td> <td>40</td> </tr> <tr> <td>5 Oct 10</td> <td>Aquaculture in Egypt</td> <td>30</td> </tr> <tr> <td>24 May 11</td> <td>Gender and aquaculture in the project</td> <td>30</td> </tr> <tr> <td>21 Jun 11</td> <td>Open seminar</td> <td>96</td> </tr> </tbody> </table>	Date	Theme	No. of participants	12 Jul 10	Aquaculture technology in Egypt	30	3 Sep 10	Feed Development and evaluation	40	5 Oct 10	Aquaculture in Egypt	30	24 May 11	Gender and aquaculture in the project	30	21 Jun 11	Open seminar	96			
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Output2: Core farmers and aquaculture extension officers of CeRPA/ CeCPA become capable of conducting inland aquaculture training.	Indicator2-1: More than 50 aquaculture extension staff members are trained on teaching aquaculture techniques, pass final exams, and become qualified to teach the techniques.	Number of training extension workers.	<p>As of September 2011, 2 technical training courses were conducted, and a total of 22 extension officers (2010: 13 CeRPA/CeCPA officer 2011:9 CeRPA/CeCPA officer) have already attended and passed the final exams (44% of achievement)</p> <p>As the Project took the strategy of training core famers and CeCPA/CeRPA officers at the same time in order to strengthen partnership between two actors, almost equal number of core farmers and CeRPA/CeCPA officers were trained. This makes relatively low level achievements in terms of training of CeRPA/CeCPA officers at this stage. Where possible, the Project will increase the number of training participants for CeCPA officers (up to 28 persons) who work in non-target communes in the seven target provinces to promote aquaculture techniques as well as to enhance monitoring of trained ordinary farmers who reside outside of target communes</p>																					
	Indicator:2-2: More than 15 core farmers are trained on farmer-to-farmer training, pass final exams, and become qualified to conduct the training	Selection process of core farmers	<p>As of September, 16 core farmers were selected and trained (2010: 9 persons, 2011:7 persons), thus indicator was already achieved. In the first step, the Project selected target communes and prospective core farmers. In its efforts to set fair and objective criteria for the selection of target communes and core farmers, the Project discussed the following criteria with the stakeholders in a participatory manner.</p> <table border="1" data-bbox="1209 957 1948 1300"> <thead> <tr> <th></th> <th>Criteria</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Decision maker for the management</td> </tr> <tr> <td>2.</td> <td>Good condition of road to access aquaculture ponds</td> </tr> <tr> <td>3.</td> <td>Aquaculture is the main source of income</td> </tr> <tr> <td>4.</td> <td>Good management of aquaculture facilities</td> </tr> <tr> <td>5.</td> <td>Receiving less supports from other donors</td> </tr> <tr> <td>6.</td> <td>Enough level of aquaculture facilities</td> </tr> <tr> <td>7.</td> <td>Not far between ponds and a residence</td> </tr> <tr> <td>8.</td> <td>Enough space for construction of training facilities.</td> </tr> <tr> <td>9.</td> <td>Good command of the local language spoken in the commune</td> </tr> <tr> <td>10.</td> <td>Good relationships with TSPH</td> </tr> </tbody> </table>		Criteria	1.	Decision maker for the management	2.	Good condition of road to access aquaculture ponds	3.	Aquaculture is the main source of income	4.	Good management of aquaculture facilities	5.	Receiving less supports from other donors	6.	Enough level of aquaculture facilities	7.	Not far between ponds and a residence	8.	Enough space for construction of training facilities.	9.	Good command of the local language spoken in the commune	10.
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	Other indicators to evaluate achievement			As for the farm management capacity of the core farmers who selected in 2010, 8 out of 9 farmers showed that their balance of payment were within healthy level. As of August 2011, 7 out of 9 farmers keep a cashbook, however, most of farmers stopped to fill in feed inventory																																																																																				
	Are there any outstanding issues?	Factors that impede the achievement		<p>There are following concerns about core farmers and CeRPA/CeCPA.</p> <ul style="list-style-type: none"> <li>-Because the project requested financial contributions from core farmer to construction of aquaculture facilities, some core farmers took long time to complete construction. 2 persons among 8 core farmers have stopped to construct the feed development facilities.</li> <li>-Some core farmers do not have enough capacity to produce to meet all amounts of feeds and seeds request from ordinary farmers.</li> <li>-Technical and knowledge level of TSPH are almost same as that of core farmers. Involvement of the project expert is necessary to follow up core farmers.</li> <li>-Because price inflation of materials for compound feed, many core farmers request the project to increase price to be paid. Some of them are reluctant to produce feed.</li> </ul>																																																																																				
Output3: Ordinary fish farmers acquire basic aquaculture knowledge through FTF training.	Indicator3-1: More than 50 times of farmer to farmer training courses are conducted by the core farmers and more than 900 persons are participated in the training.	How many times are there training and how many participants are there?		<p>By the end of August 2011, 14 times of farmer to farmer training has been conducted by the core farmers and 363 persons were trained. All 9 core farmers who were trained in 2010 conducted farmer to farmer training at least one time.</p> <table border="1" data-bbox="1149 738 2022 1262"> <thead> <tr> <th>JFY</th> <th></th> <th>FTF Training</th> <th>Date</th> <th>Period (days)</th> <th>No. of participants</th> </tr> </thead> <tbody> <tr> <td rowspan="10">2010</td> <td>1.</td> <td>Adjarra 1</td> <td>17 Nov</td> <td>3</td> <td>22</td> </tr> <tr> <td>2.</td> <td>Avrankou 1</td> <td>23 Nov</td> <td>3</td> <td>21</td> </tr> <tr> <td>3.</td> <td>Kouti 1</td> <td>9 Dec</td> <td>1</td> <td>23</td> </tr> <tr> <td>4.</td> <td>Abome-Calavi 1</td> <td>21 Dec</td> <td>3</td> <td>30</td> </tr> <tr> <td>5.</td> <td>Zagnanado 1</td> <td>12 Jan</td> <td>3</td> <td>32</td> </tr> <tr> <td>6.</td> <td>Kouti 2</td> <td>25 Jan</td> <td>1</td> <td>30</td> </tr> <tr> <td>7.</td> <td>Aplaphoué 1</td> <td>1 Feb</td> <td>3</td> <td>34</td> </tr> <tr> <td>8.</td> <td>Porto-Novo 1</td> <td>15 Feb</td> <td>3</td> <td>27</td> </tr> <tr> <td>9.</td> <td>Avrankou 2</td> <td>31 Mar</td> <td>3</td> <td>22</td> </tr> <tr> <td>10.</td> <td>Abomey-Calavi 2</td> <td>29 Mar</td> <td>3</td> <td>19</td> </tr> <tr> <td rowspan="4">2011</td> <td>11.</td> <td>Adjarra 2</td> <td>10 May</td> <td>3</td> <td>23</td> </tr> <tr> <td>12.</td> <td>Tori Bossito 1</td> <td>14 Jun</td> <td>3</td> <td>24</td> </tr> <tr> <td>13.</td> <td>Pobè 1</td> <td>28 Jun</td> <td>3</td> <td>26</td> </tr> <tr> <td>14.</td> <td>Kouti 3</td> <td>5 Aug</td> <td>1</td> <td>30</td> </tr> <tr> <td colspan="5" style="text-align: center;">Total no of participant</td> <td>363</td> </tr> </tbody> </table>	JFY		FTF Training	Date	Period (days)	No. of participants	2010	1.	Adjarra 1	17 Nov	3	22	2.	Avrankou 1	23 Nov	3	21	3.	Kouti 1	9 Dec	1	23	4.	Abome-Calavi 1	21 Dec	3	30	5.	Zagnanado 1	12 Jan	3	32	6.	Kouti 2	25 Jan	1	30	7.	Aplaphoué 1	1 Feb	3	34	8.	Porto-Novo 1	15 Feb	3	27	9.	Avrankou 2	31 Mar	3	22	10.	Abomey-Calavi 2	29 Mar	3	19	2011	11.	Adjarra 2	10 May	3	23	12.	Tori Bossito 1	14 Jun	3	24	13.	Pobè 1	28 Jun	3	26	14.	Kouti 3	5 Aug	1	30	Total no of participant					363
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	Indicator3-2: More than 80 % of the participants answer "Satisfactory" in the questionnaire on the farmer-to-farmer training.	Satisfaction of training participants	<p>As for satisfaction with the training, all the participants are highly contented with contents of the training. However, most of participants requested to extend training duration up to one week, also spend more time on practice rather than theoretical lecture.</p> <p>Due to educational level and high illiteracy rate among the ordinary farmers, practical training might be useful for the farmers. The Project already recognizes this issue, and duration will be extended to four days from current three days.</p>																					
	Other indicators to evaluate achievement	Ratio of farmers who starts aquaculture out of training participants Selection process	<p>By the end of August 2011, total of 109 farmers were received initial input and started aquaculture. This figure shows that 38.5 % of the commencement rate.</p> <p>It is higher than initially projected rate of 22.3%. However, there are a number of farmers who faced difficulties to commence aquaculture due to lack of initial cost and land.</p> <table border="1"> <thead> <tr> <th></th> <th>2010: Selection by application form</th> <th>2011: Selection by scoring</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Prioritize women</td> <td>Application order</td> </tr> <tr> <td>2.</td> <td>Application order</td> <td>Residence: if applicant lives in the same commune as the core farmer</td> </tr> <tr> <td>3.</td> <td>Consider area balance (different villages within the target commune)</td> <td>Facilities and status: if applicant have a pond, or land. If applicant have experienced or suspended aquaculture</td> </tr> <tr> <td>4.</td> <td>Balance between experienced aquaculture farmer and inexperienced farmer</td> <td>Training history: if applicant or family members have participated in the similar trainings</td> </tr> <tr> <td>5.</td> <td>-</td> <td>Operation cost: if applicant have sufficient operational cost shown in the guideline.</td> </tr> <tr> <td>Remark</td> <td>Those who are not selected will be automatically participant for the following training.</td> <td>Women and participation by a couple are encouraged</td> </tr> </tbody> </table>		2010: Selection by application form	2011: Selection by scoring	1.	Prioritize women	Application order	2.	Application order	Residence: if applicant lives in the same commune as the core farmer	3.	Consider area balance (different villages within the target commune)	Facilities and status: if applicant have a pond, or land. If applicant have experienced or suspended aquaculture	4.	Balance between experienced aquaculture farmer and inexperienced farmer	Training history: if applicant or family members have participated in the similar trainings	5.	-	Operation cost: if applicant have sufficient operational cost shown in the guideline.	Remark	Those who are not selected will be automatically participant for the following training.	Women and participation by a couple are encouraged
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Output4: The Project proposes to the Department of Fisheries necessary	Indicator4-1: More than three (3) activities promoting practical and sustainable management of aquaculture are examined.	Contents of activities	<p>Strengthening of network among farmers has been considered to be effective as to secure sustainability of core farmers. Through the survey in the first year, registrations of six aquaculture unions were identified within the target communes.</p> <p>However, it also found that their activities are rather not active. One of the core farmers in Adjara who were supported by the project launched and registered aquaculture cooperative, which is also facing communication problems.</p>																					

	activities to encourage ordinary farmers as well as core farmers to engage in independent and sustainable aquaculture management.	Other indicators to evaluate achievement		<p>Introduction of microcredit in cooperation with the Ministry of Microfinance, Youth and Women is ongoing.</p> <p>The Project has held discussions with relevant authorities. In Oueme, a pilot site, 21 women have attended training on tank culture as well as introductory meetings of microfinance. The Department of fishery is planning to gradually expand this scheme to other areas after observation of progress in the pilot site.</p>
		If there is a problem, what is the impeding factor?		<p>Contract fish farming was planned in the original PDM. This activity was intended to reduce the burden of initial costs and risks for new aquaculture farmers. However, the core farmers have expressed their reluctance to adopt this approach because they have already experienced several failure cases in the past.</p>
Achievement of project propose	Project propose: Number of aquaculture farmers is increased in selected communes in the target provinces.	More than 300 individuals introduce or re-introduce aquaculture.	Number of aquaculture farmer	<p>As of August 2011, 248 farmers who have never engaged in aquaculture or who have stopped aquaculture received training and in total 106 farmers have commenced or resumed aquaculture production, which represent 35.3% of the target number of the indicator 1. Yet, there are a number of farmers who has faced difficulties in taking up aquaculture. Major obstacles are found to be lack of initial cost and land. Although requests for financial support to cover such initial capital has been very high, currently the project does not provide such support as excessive support may lead to easy discontinuation of aquaculture production in the later stage.</p>
		More than 300 individuals apply improved aquaculture techniques.	Number of aquaculture farmers	<p>As for the indicator 2, as of August 2011, a total of 115 aquaculture farmers, who are currently engaged in aquaculture, are also participated in the training, out of which at least 85 farmers have adopted improved techniques. This represents 28.3 % of the target number of the indicator 2.</p> <p>Relatively low level of achievement is due to a lower priority assigned for this target group. Currently the Project limits the number of the participant from this target group in order to give more seats for prospective aquaculture farmers. The Project plans to increase the number of participant from this group in the later stage of the project.</p>
		If there is a problem, what is the impeding factor?	Factors that impede the achievement	<p>There are a number of farmers who faced difficulties to commence aquaculture due to lack of initial cost and land. Although financial support to cover such initial cost has been requested by farmers, currently the project does not provide such support as excessive support may lead to a low rate of continuation of aquaculture production in the later stage.</p> <p>It is also necessary to monitor whether the farmers are using properly the aquaculture techniques taught by the project. The Project has identified some cases of misuse in applying aquaculture techniques by farmers upon their return to their community after the training.</p> <p>In order to increase the commencement rate, the project suggested adding another</p>

				<p>criterion to see if training applicants have already acquired land and initial capital for aquaculture. According to one core farmer who actually applied this condition, not only increased commencement rate has been observed but also preparation period before commencement of aquaculture has been significantly shortened.</p>
			Does it impede the achievement of the project purpose?	Even current practice rate (30%) it is considered the project can achieve the project purpose.
		Other indicators to evaluate achievement		It is noted that not only the number of aquaculture farmers was increased, but also the production per farmer in the eight target communes was greater (336kg/farmer) than that of non-target communes (237kg/ farmer)
Achievement of overall goals	Overall goals: Inland aquaculture is extended in the seven southern target provinces.	Indicator1: Number of aquaculture farmers in the target areas is increased to more than 3,000 by 2020		The benchmark survey conducted by CeRPA/CeCPA indicated that total number of aquaculture farms in the 7 target provinces has increased gradually from 1,188 in 2010 to 1,311 in 2011. It is premature to assess the achievement of the Overall Goal at this point.

## 2. Verification of Implementation Process

Monitoring Item	Evaluation Questions		Required Information/ data	Results
	Main Questions	Sub-Questions		
Activities and implementation process	Are activities implemented as planned?	Is there any activity that is not implemented although it was planned?	Is there any activity that is not implemented as planned?	1) Fish contract farming (mentioned above) 2) Reasonable feed development 3) Broodstock management
			What is the cause?	1) Mentioned above 2) There is a concern that the current bloodstocks of tilapia do not grow faster and bigger enough due to the deterioration of the gene quality. Although the Project considered introducing, so-called "Akossonbo" strain from Ghana, the DP is reluctant to do so because there is no reliable facility for broodstock management in Benin. Under this situation, the project is going to verify domestic broodstock from a private company in Parakou. 3) Due to difficulties to access reasonable and quality feed materials, development of reasonable feed has been delayed. In spite of repeated trials, acceptable FCR (Feed Conversion Rate) has not been achieved with the feeds made of local materials. Compound feeds, which enable high FCR are imported from Israel and the Netherlands via Nigeria, are available but it is too expensive for farmers to ensure profitability. The project considers other options including import of the compound feeds directly from an origin country.
			If activities are not implemented as planned, do they affect achievement of Outputs?	The project considers various alternatives to control or avoid obstacles, so that it will not affect achievement of the output. For instance, the project considers introducing import compound feed. As for broodstock, the project is going to verify domestic broodstock from a private company in Parakou
		Is there any activity that is implemented although it was not planned?	Reason of implementation	The project supports small-scale catfish tank aquaculture for women without land tenure, and discussed with MMEJF to promote microfinance for women. Agreement with MMEJF was signed to select Oueme province as pilot site and funding institution was also selected. Information on microcredit was provided at FTF training on tank aquaculture in Oueme in 5 <sup>th</sup> Aug, 2011. 21 women attended at the meeting in 13 Aug to discuss and formulate group to access microfinance.



Implementation of Monitoring	Is monitoring implemented appropriately?	Does WG hold frequently and does it utilizes for improve the project management?	No of having CCC or Steering committee meeting	Several meetings have been hold periodically. In total, 1 CCC meeting and 5 steering committees have been organized. CCC: 25th Aug 2010, Steering committee: 1st (18Jun 2010), 2nd (30 Nov 2010), 3rd (22 Feb 2011) , 4th (May 2011) and 5 <sup>th</sup> (Aug 2011) to share information and issues to be improved.
			Does any meeting improve the project management?	Each time before the project experts leave, presentations are made to present achievement of the assignment. This provides opportunities to exchange ideas of difficulties.
		Are there any meetings to monitor project activities?	Frequency of holding meetings	The project team (Benin C/Ps and JICA experts) holds weekly internal meeting to confirm weekly schedule, share information and discuss any issues related to the project.
		Other monitoring activities		The project delegates daily monitoring to CeCPA to visit both core farmer and ordinary farmers who participated in the training. Their monitoring results are summarized by the CeRPA, and then submitted to the project on monthly basis. Although there are difference on ability and ownership among TSPHs, approximately 3days a week are spent for the project related monitoring.
Technology transfer	In there any problem in the method for technology transfers?	Technology adoption	Evaluation of experts	The Project observed gradual deterioration of aquaculture technic among ordinary farmers after training. In the target communes, the effectiveness of manuals and/or any written technical information is limited because of the ordinary farmers' low literacy rates. It should be noted that it takes time for aquaculture farmers to adopt new technologies and acquire knowledge.
Communication among C/Ps	Is there sufficient communication ?	It there sufficient communication within the project, among C/Ps and core farmers?	Recognition of experts and C/P	Currently, two counterparts and one project staff member are in charge of daily coordination and communication with CeRPA/CeCPA and core farmers in communes. This is a time-consuming task that they may not be able to spare sufficient time for addressing the technical issues.  Administrative protocols in the MAEP/DP require lengthy procedure in obtaining approval for various project activities (e.g. holding CCC meetings or seminars and conducting field trips). On the other hand, some of the activities planned by the project urge Beninese counterpart to take immediate action which is sometimes difficult to deal with.
Ownership of stakeholders	Is there strong sense of ownership?	Is the degree of participation of C/P in the project high?	Any example	It seemed that steady tangible progress of the project encourages C/Ps. In the interview, most of detailed information on the activities were answered immediately without referring any reports.
		Is the degree of participation of core farmers in the project	Any example	All core farmers increased their technical knowledge on seeds production and their income. In the interview with core farmers, it was confirmed that some core farmers spend longer time for voluntary monitoring and communication with training

	high?		participants.
	Is the degree of participation of aquaculture farmer in the project high?	Any example	It is difficult to evaluate the participation levels of ordinary farmers, because most of them are still in the first rearing cycle. However, many of them expressed willingness to expand aquaculture gradually.

### 3.5 Evaluation Criteria

Evaluation Item	Evaluation Questions		Required Information/ data	Results
	Main Questions	Sub-Questions		
Relevance	Is overall goal consistent with the national development policy in Benin?		National policy	<p>In the Poverty Reduction Strategy Papers III 2011-15 (PRSP-III), the Beninese government gives a priority to inland aquaculture development as an important means of "diversification of agriculture".</p> <p>"The Agriculture Sector Revival Strategic Plan (ASRSA)", which is in the process of the cabinet approval, set targets of the reduction of imported frozen fish by 20%, and increased income of the fish farmers through the sustainable aquaculture development.</p> <p>In "the National Policy of Fisheries and Aquaculture" issued in 2015, development of the fishery and inland aquaculture sectors are seen as means to assure the national food security by reducing import and increasing export.</p>
	Is the project purpose in line with the needs of the target region and society?		Recognition of Experts and C/Ps	<p>The southern parts of Benin have several favorable conditions to develop inland aquaculture, such as rich water resources, high demand for fish, and large populations.</p> <p>In addition, 90% of the inland aquaculture production and existing producers are concentrated in these areas. In consideration of the economic, social and natural conditions, these areas are expected to play a leading role for aquaculture development.</p>
	Is the overall goal consistent with Japan's foreign aid policy?			<p>Japan has supported the inland aquaculture sector through the Study on the Promotion of Inland Aquaculture for Rural Development in Benin from 2007 to 2009 (PACODER). The Project is also in line with Japan's country-specific cooperation program for Benin, which gives priorities to agriculture and rural development, and improvement of livelihoods by inland aquaculture development.</p>
	Technical advantage	Does Japan have accumulated know-how on the target technology?		<p>Japan has long history of aquaculture of carp and goldfish. Technical knowledge on farmer-to-farmer approach has been extended to Asian countries.</p>
Effectiveness (Prospect)	Distribution of the effects and the burden	Are the benefits of the effect and the burden of the costs fairly distributed?		<p>Selections for extension farmers are made based on criteria, by consultation with CeRPA/CeCPA extension officers who are familiar with local situation.</p> <p>Farmers who participate in the training are advertised to the public by using radio, microphone, and banner. When training applicants are more than acceptable numbers, selection are made in accordance with criteria such as by order, by gender or by couple.</p> <p>The project focuses on small scale tank aquaculture which widens income opportunity</p>

			<p>for people, especially women who have no land tenure or a pond.</p> <p>Although the project supports a part of initial cost for the core farmer and fish aquaculture farmer, contribution is required to secure sustainability of aquaculture.</p>
The environment of the project	Have there any changes in the environment of the project (politics, economy, society) since the ex-ante evaluation?	Policy, Economy and Social trend	<p>When JICA study "PACODER" was completed, demand for catfish was high. However, currently demand of Tilapia is increasing due to escalation of selling price. The project provides technical training both catfish and tilapia in order to accommodate flexible market needs.</p>
Activities of other donor	What synergy effects are possible in cooperation with other donors?		<p>PADPPA funded by IFAD/AfDB was completed in June 2011.</p> <p>PADA financed by WB is in the pipeline.</p> <p>When target areas are overlapped with other donor funded projects, the project consider not concentrate their assistances into the particular persons. Statistics collected by CeRPA/CeCPA within the target 7 provinces are studied to analyze other donors' activities.</p>
Achievement forecast for the project objective	<p>Indicator1 In the target cities, "More than 300 of individual introduce or re-introduced aquaculture.</p> <p>Indicator2. In the target cities, "More than 300 of individuals apply improved aquaculture techniques.</p>		<p>It is relatively high, but the technical package needs further improvement.</p> <p>With intensive efforts of the Project, selection and training of the core farmers have been conducted faster than the original plan. Most of the conducted experimental trials were reflected in manuals which facilitated technical transfer to the counterparts and stakeholders. Other outcomes are also expected to be achieved in terms of the indicators.</p> <p>Up to now core farmers have improved their aquaculture technology and developed minimum facilities as the base of extension service. CeRPA/CeCPA extension officers have also played their roles in coordination, monitoring and technical advice. Thus basic extension systems at the commune level are formed and it is to be verified in the later stage of the project. However, for sustainable aquaculture, it is important to continue to respond difficulties which core farmers and ordinary farmers have.</p>
Factors that promote the achievement of the project objectives	Is there any factors that promote the achievement of the project objectives		<p>Because most of the farmers utilizing communal radio to inform the day of selling fish, more people might recognize aquaculture as a business. This PR will lead to more farmers have interests in aquaculture.</p>
Factors that inhibit the achievement of	Important assumption "The government of Benin support		<p>Due to the objectives of the project are in line with the development policy in Benin such as PRSP III (2011-15), PSRSA or the National Policy of fisheries and aquaculture, the government will be secured the assumption at least until the project</p>

the project objectives	development of inland aquaculture"		completes.	
	Influence from important assumption: Pesticide is not utilized around aquaculture tanks or ponds.		In January 2011, at an aquaculture farm in Oueme province, all fingerlings kept inside a happa net were dead. The suspected cause of death was the use of pesticide in a farm field nearby.	
	Influence from important assumption: Natural disaster to prevent aquaculture does not occur.		From March to April 2011, the heavy rain in the southern Benin caused serious flood. Most of core farmers' ponds were inundated and lost cultured fish.	
	Influence from important assumption: Outbreak of serious fish disease does not take place.		In October 2011, an outbreak of a tilapia bacteria disease occurred. This was suspected to have been transmitted from the broodstock purchased from a NGO. The Project advised fish farmers to treat the fish with salt bath, and the damage was confined to a limited area.	
	Are there any factors that inhibit the achievement of the project objectives?		It is important to pay due attention to these incidents, because most of small-scale farmers do not have financial and technical capabilities to deal with such incidents. This may affect the achievement of the Project Purpose and the Overall Goal.	
	Causal relationship (cause-effect relationship)	Is output sufficient to achieve the project objectives?		In the site survey, it was difficult to analyze if the initial support from the project was condition to commence aquaculture for ordinary farmers. However it is important to observe how many ordinary farmers are able to start with/without financial assistance from the project. It may affect to achieve the overall goal.
Efficiency	Is input from Japanese side appropriate?	Is there any problem in number and timing of experts?	Is input performed as planned? Satisfaction of C/Ps	Japanese expert has been dispatched properly. In the 2nd year new experts in the field of "gender" and "initial feed development" were dispatched. In total 33.7 M/M in JFY2010 was dispatched and 31.47 M/M will be dispatched by the end of JFY2011.
		Is there any problem in quality, quantity and timing of input of equipment	Difference between plan and actual performance	Most of equipment was procured in Benin. Delays in installation of photocopy machine and internet system have lowered efficiency to some extent. No significant obstacles were seen due to close partnership between Benin and Japan.
		Is equipment appropriately maintained and managed?	Any equipment without using	All equipment provided by the project is registered in the inventory recorded and managed carefully. Copy machine, generator and water pump, the project makes contracts for maintenance.
		Is number of trainee, course contents and timing for training in	Number of acceptance, Difference between	Training in Japan: 3 persons in total ( 1: Dep. of fisheries, 1 : C/P, Dep. of fisheries, 1: CeRPA Oueme/Platou) Training in third country (Egypt) : 7 persons in total (3: CeCPA, 4: core farmers)

		Japan and Egypt correct?	plan and actual performance	According to the interview, one core farmer applied advanced techniques learned from the training such as aeration system using available materials in Benin. Almost same number of counterparts, CeRPA/CeCPA officers and core farmers are going to participate in the training abroad in 2012.
		Satisfaction of training in Egypt and Japan? (Timing, Training contents, Period)		The participants who completed the training highly evaluate the training courses. According to the interview, one core farmer applied advanced techniques of Egypt such as aeration system using available materials in Benin. The others also utilize their techniques learned in the training.
		Is output of the training utilized in daily work?		All of them answered that the training improved their technical level, and they adopted and applied in their activities. In the interview, water management, feed control, provision of qualitative feed and aeration system are applied by respective farmers.
	Is input from Benin side appropriate?	Is suitable C/P assigned?	Difference between plan and actual performance	Benin side allocates 8 C/Ps (full time: 2) in total for the project. In the beginning, appointment of project manager was the 1st CCC. In addition, director of fisheries was vacant between June to December 2011, so acting director was in charge of project director.
			Satisfaction of experts	C/Ps of Dep. of fisheries (C/P) are capable and show their ownership to the project. In the other hand, CeRPA/ CeCPA officers show different level of ownership, skill, ability and contribution.
Impact (Prospect)	Overall goals: Inland aquaculture is extended in the southern seven target provinces"	Are there prospects that the Indicator1 "Number of aquaculture farmers within the target areas is increased more than 3,000 by 2020" will be achieved?		Currently total of 1,331 aquaculture farmers exist, therefore the question here is that another 1,669 farmers start aquaculture by 2020 with including another one year of the project period. Still it is too early to prospect, because most of ordinary farmers implementing the 1 <sup>st</sup> cycle of its production. Without monitoring if those ordinary farmers will continue without input assistance from the project, it is difficult to prospect. The other people mentioned that only limited wealthier farmers are afford to invest to prepare pond or tank. Assistance of the partial initial cost by the project contributed on increasing number. However, some of farmers, especially those who re-started aquaculture identified significant difference in production before the training and after the training, bought another seeds by their own cost before they get harvest. It will be possible to achieve the target, if these farmers get enough profit.
	Impact on development policy in Benin	Are there any prospects that the achievement of the overall goal will have an impact on the		Benin government aims to reduce the volume of import of fish (45,000 ton) and diversify agriculture sector through inland aquaculture. In this project, primal focus is put on increasing number of aquaculture farmers which contribute on diversification of the agriculture sector. In addition, if the overall goal achieve its indicator, it might

		development plan of Benin government?		reach at critical mass to boost up private sectors related to aquaculture, which will have an impact to the production as well.
	Impact on cultural and social aspect	Is there any activities giving consideration to gender issues		The project pays attention to women who have no access to land, and introduced a wooden tank culture. Already 36 people started this type of aquaculture in Kouti, Avrankou, and it contributes on cash income for women. They also establish periodical meeting to share information by their own initiatives.
	Impact on technical aspect			The FTF approach, the first trial in Benin, is positively evaluated by CeRPA/CeCPA. One of CeRPA plans to replicate this approach in agriculture and livestock sector.
	Other positive impact	Influence on positive impact on household economics	Is there any influence (positive and negative) on household income of core farmers and aquaculture farmers?	It is noted that not only the number of aquaculture farmers was increased, but also farmers in the eight target communes recorded greater amount of production by farmer (336kg/farmer) in comparison to that of non-target communes (237kg/ farmer) Therefore, contribution on household income might be increasing.
	Other negative impact	Influence on environmental protection	Are there any measures to eliminate these impacts?	Target systems of the project are small scale aquacultures using pond or tank, thus negative impact on environment is limited. As for hormone use for Tilapia mono-sex male, it is only DP is officially approved to control and distributes the hormone feeds. Instructions for proper use are given to the core farmers who treat the feeds.
Sustainability	Policy and Institutional aspects	Will policy continues also after the cooperation finished?	National development strategy and policy	In Benin, there have been a number of project which related inland aquaculture in past. Most of assistances were provision of aquaculture infrastructure and inputs such as investment for cage culture, pond construction, tank facilities, seed or feed, which showed low sustainability. As the project prioritize provision of information, training, and management, ownership for stakeholders might be secured. It is too early to evaluate the outcome, but if the approach is feasible, the main support for inland aquaculture might be shifted from hard investment to soft investment.
	Capacity of collaboration agencies and staff	Rate of job transfer or resignation of the C/P and staff	record of job transfer or resignation	According to CeRPA/CeCPA Oueme, internal discussion was made and those who are involved in the project activities have less chance of job transfer at least until the end of the project.
		Is there sufficient organizational capacity to implement activities for Dep. of Fisheries?	Any issue that Department of fisheries faces	Technical knowledge for C/Ps is fair enough to implement activities. However, only 2 full time officers are not enough to follow all activities requested by the Japanese experts. Tight schedule of the Project activities sometimes urge Beninese counterpart to take immediate actions which often put them in a difficult situation.
			Communication between core farmers and CeRPA/ CeCPA is favorable	Daily communications are made between CeRPA/CeCPA or core farmers though mobile or sometimes internet. Frequent monitoring on site also smoothen communications among them.

		Capacity of conducting monitoring activities	Through the training provided by the project, capacities of target TSPH have been improved and they play important roles of monitoring at commune levels. However, monitoring of ordinary farmers who were participated from outside of the target communes have not conducted properly due to non-responsible areas. The project will conduct training for all CeCPA within the target 7 provinces to secure monitoring in other non-targeted communes.
	Is there sufficient organizational capacity to implement activities for CeRPA, CeCPA?	Any issue that CeRPA, CeCPA face	In case of Oueme province, CeRPA organized internal training for TSPH who were not involved with the project. The project also recognizes the necessity of improving capacity of non-targeted communes. Then, extension mechanism from the target communes to non-targeted commune will also be expected.
		Required number of staff is allocated	As the number of ordinary farmer increases, one TSPH in commune are not able to visit respective farmer's household. In case of Avrankou commune, Oueme province, TSPH saves time by conducting monitoring by 7 areas within a commune. The other mentioned that distance between one ordinary farmer to another is 70km. This large area makes them difficult for frequent monitoring.
		Communication between core farmers and CeRPA/CeCPA is favorable	There are close and good relationship between CeCPA and the core farmers in most communes. The levels of follow up and monitoring for training participants are depending on their personality and willingness.
	Is there sufficient capacity to implement activities for core farmers?	Is there any outstanding issue for core farmers?	Because the project asks financial contributions from the core farmers as to secure sustainability, sometimes there are delays in construction of facilities. Technical level of seed production has been stabilized in a certain degree, but it needs more improvement until the project completes. In the interview with ordinary farmers, some of them answered seeds and feed were not available when they needed.
		Communication between core farmers and farmers is favorable	Overall, there are close and good relationships between the core farmers and ordinary farmers in most communes. The merits for ordinary farmers are that core farmer lives in the same commune and ask any time when they need advice. One ordinary farmer answered that he borrowed equipment from the core farmer when he conducted fish control. Some training participants who do not start aquaculture also mentioned that they are appreciated encouragement by the core farmer and they share aquaculture information.
Financial aspects	Is the budget secured including operating expenses?	Budget	Until 2013, department of fisheries allocates budget as the counterpart fund. As of September 2011, 75 million FCFA has been disbursed by the end of BFY third quarters. Extended application of the farmer-to-farmer approach may reduce administration cost for aquaculture extension, which contribute sustainability after the project completion.



	How high is the probability that the budget of CeRPA/CeCPA will be secured?	Budget	Both the Department of Fisheries and the CeRPA/CeCPA have assigned a certain number of officers for the project. Recent administrative trends of MAEP also indicate the importance of extension services in the commune levels. If these trends continue, the Department of Fisheries, CeRPA/CeCPA may also continue to function in a same manner.
	How to secure initial cost for aquaculture farmer?		Major obstacles are found to be lack of initial cost and land. Although requests for financial support to cover such initial capital has been very high, currently the project does not provide such support as excessive support may lead to easy discontinuation of aquaculture production in the later stage.
Technical aspects	Is equipment appropriately maintained and managed by core farmers?		Most of facilities supported by the project will be utilized and maintained without any problem.
	How high is the possibility that CeRPA, CeCPA can maintain the farmer-to- farmer training?	Will TSPH develop capacity to manage training by themselves?	CeRPA and CeCPA are keys to secure sustainable extension service in Benin. Although their individual capacities have been improved through OJT training, still organizational capacities are not enough to supervise FTF training without involvement of the project
	How high is the possibility that core farmers can maintain the farmer to farmer approach?	Sustainability of FTF training	Although most profitable activity for farmers is seed production, some core farmers still do not fully understand the concept of FTF approach to increase customers by the training. As the results, core farmers cannot provide seeds in time when ordinary farmers request. The other core farmers pointed out that the training cannot be possible without having support of lunch cost and equipment such as PC and LCD projector. By the end of the project, it is recommended to brainstorm how to continue training without equipment and assistance in a sustainable way.
		Development of Manual and Curriculum	Through the verification studies, suitable aquaculture techniques in Benin need to be developed within the project period.

## ANNEX V: Project Inputs

### (1) Japan Side

#### JICA Expert

##### 1<sup>st</sup> year (June 2010 to March 2011)

No.	Duration	Field of Expertise	Name
1.	03 June 2010 to 19 October 2011 09 January 2011 to 9 March 2011	Chief Advisor/ Aquaculture Extension	Dr. Masanori DOI, PhD
2.	05 September 2010 to 03 October 2010 13 January 2011 to 13 March 2011	Deputy Chief Advisor/ Seed Development I	Mr. Goro NEZAKI
3.	03 June 2010 to 2 July 2011	Seed Development II	Mr. Yukiyasu NIWA
4.	04 July 2010 to 15 September 2010	Socio-Economy	Mr. Hiromi TSUBAKI
5.	16 August 2010 to 8 September 2010	Feed Development I	Dr. Saichiro YOKOYAMA. PhD
6.	24 June 2010 to 24 July 2010 16 September 2010 to 06 October 2010 20 January 2011 to 09 February 2011	Feed Development II	Dr. Ismail RADWAN, PhD
7.	25 August 2010 to 05 November 2010	Farm Economy/ Marketing	Mr. Hitonori NANAŌ
8.	01 June 2010 to 27 February 2011	Training/ PR	Mr. Mitsuya YAMAGISHI
9.	20 November 2010 to 19 December 2010	Organizational Formulation	Mr. Masayuki UCHIMURA
10.	01 June 2010 to 30 June 2010	Project Coordination	Ms. Maki SAEKI

##### 2<sup>nd</sup> year (April 2011 to March 2012)

No.	Duration	Field of Expertise	Name
1.	01 May 2010 to 29 June 2011 07 September 2011 to 01 November 2012 (plan) January to February 2012 (49 days)	Chief Advisor/ Aquaculture Extension	Dr. Masanori DOI, PhD
2.	15 June 2011 to 04 October 2011 07 January 2012 to 16 March 2012 (plan)	Deputy Chief Advisor/ Seed Development I	Mr. Goro NEZAKI
3.	05 September 2011 to 24 September 2011 (plan) January 2012 (22 days)	Seed Development II	Dr. Ismail RADWAN, PhD
4.	11 September 2011 to 25 September 2011	Socio-Economy	Mr. Yoshikazu OGINO
5.	16 June 2011 to 9 July 2011	Early Feed Organisms	Mr. Astushi OHNO
6.	16 August 2011 to 8 September 2011	Feed Development I	Dr. Saichiro YOKOYAMA. PhD
7.	19 July 2011 to 21 September 2011 11 January 2011 to 05 March 2011	Farm Economy/ Marketing	Mr. Hitonori NANAŌ
8.	26 April 2011 to 26 July 2011 01 October 2011 to 16 March 2012	Training/ PR	Mr. Mitsuya YAMAGISHI
9.	02 June 2011 to 01 July 2011	Organizational Formulation	Mr. Tomohiro TAMAKI
10.	01 May 2011 to 30 June 2011	Gender	Ms. Mariko HONMA

#### Counterpart Trainings in Japan

No.	Duration	Course	Organization	Name
1.	04 July 2011 to 15 July 2011	Inland Aquaculture Technology	MAEP, Secretary General	Mr. VIGAN Olivier
2.	04 July 2011 to 04 August 2011	Inland Aquaculture Technology	MAEP, Department of Fisheries	Mr. HOUENOU Hippolyte

No.	Duration	Course	Organization	Name
3.	04 July 2011 to 04 August 2011	Inland Aquaculture Technology	CeRPA Oueme/Plateau	Mr. WENON Dossa

#### Counterpart Trainings in Egypt

No.	Duration	Course Title	Organization	Name
1.	04 July 2011 to 04 August 2011	Aquaculture techniques	CeRPA, Extension officer	Mr. AFFOIGNON Kouami John
2.	04 July 2011 to 04 August 2011	Aquaculture techniques	CeRPA, Extension officer	Mr. AKOTOCHEOU Aubin Gaston Gbessou
3.	04 July 2011 to 04 August 2011	Aquaculture techniques	CeRPA, Extension officer	Mr. NOUTAÏ Julien
4.	04 July 2011 to 04 August 2011	Aquaculture techniques	Core Farmer	Ms. FAIZOUN Eugénie
5.	04 July 2011 to 04 August 2011	Aquaculture techniques	Core Farmer	Mr. HOUNOUKON G. D. Jacques
6.	04 July 2011 to 04 August 2011	Aquaculture techniques	Core Farmer	Ms. ADOGONY Gisèle
7.	04 July 2011 to 04 August 2011	Aquaculture techniques	Core Farmer	Mr. KOUCOU Guy

#### Financial Assistance (thousand JPY)

		JFY 2010	JFY 2011
1.	Local staff cost	3,251	4,887
2.	Equipment maintenance cost	585	918
3.	Consumable cost	2,479	2,528
4.	Travel transportation cost	585	1,425
5.	Communication cost	499	1,108
6.	Material and document preparation cost	162	310
7.	Rental cost	438	1,167
8.	Office maintenance cost	117	70
9.	Training cost	2,108	12,764
10.	Miscellaneous cost	1,493	1,907
	Total*	11,717	27,078

\* Figures represent actual amounts for JFY 2010, and the approved amount for JFY 2011.

#### Provision of Equipment

Date of Purchase	Items	Price (thousand JPY)	Condition
June 2010	Digital Camera	52	good
June 2010	Digital Camera	30	good
June 2010	Photo copy machine	994	good
June 2010	Printer	51	good
June 2010	Stabilizer	20	good
June 2010	Personal Computer	82	good
June 2010	Personal Computer	112	good
June 2010	FAX	20	good
July 2010	LCD projector	93	good
February 2011	Generator	105	good
February 2011	Water pump	78	good

## (2) Benin Side

#### Counterpart Fund

PIP (million FCFA)	BFY 2011	BFY 2012	BFY 2013	Total
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Approved amounts	199,2	236,3	206,3	641,80
Disbursed amounts	75.0*	-	-	75.0

\* As of the third quarter.

#### Equipment and Facilities

Classification	Items
Office and Storage Facilities	1. Office equipped with desks, computers, chairs cabinets and telephone 2. Storage Room 3. Meeting Room

#### Project Counterparts (as of 30 September, 2011)

No.	Name	Organization	Designation (Function as the project)	Period of assignment	Training
1	Mr. Degbey Jean-Baptiste	MAEP,	Director of Fisheries Project Director	January 2011 to present	
2	Mr. GNITASSOUN Dénagnon Luc	MAEP	Deputy Director of Fisheries Counterpart	June 2010 to present	
3	Dr. d'ALMEIDA Arsène F.M. (Ph.D.)	MAEP	Chief of inland aquaculture section Project manager	June 2010 to present	
4	Mr. JOHNSON Ben Césaire	MAEP	Chief of Monitoring and Evaluation section Counterpart	June 2010 to present	
5	Mr. DESSOUASSI C. Eugène	MAEP	Aquaculture Section Counterpart	December 2010 to present	
6	Mr. GBETOHO Hippolyte	MAEP	Aquaculture Section Counterpart	June 2010 to present	
7	Mr. IWA Léon	MAEP	Aquaculture Section Counterpart: full-time	June 2010 to present	
8	Mr. HOUENOU Hippolyte	MAEP	Aquaculture Section Counterpart: full-time	June 2010 to present	Japan

## **ANNEX VI: Interview List**

### The Project

Dr. Masanori DOI, PhD	Chief Advisor/ Aquaculture Extension
Mr. Goro NEZAKI	Expert : Food Development
Mr. Mr. Yoshikazu OGINO	Expert : Socio-Economy
Mr. Mitsuya YAMAGISHI	Expert : Training/ PR
Mr. Fakorédé Chango	Local Staff

### Ministry of Foreign Affairs, Department of Asia and Oceania: DASOC

Mr. Jérôme FAYOMI	Director
Mr. Pierre AZONSI	Assistant Director

### Ministry of Agriculture, Livestock and Fisheries : MAEP

Mr. Vigan Olivier	Secretary General
Mr. Dominique AFFOMASSE	Assistant Secretary General

### Department of Fisheries : DP, MAEP

Mr. Jean-Baptiste DEGBEY	Director
Dr. Arsène d'ALMEIDA	Project manager
Mr. Léon IWA	Counterpart
Mr. Hippolyte HOUENOU	Counterpart

### CeRPA

Mr. Noël AÏSSAN	PFH, Atlantique
Mr. Sourou AIHSSOU	Director of Training and Information , Atlantique
Mr. Phillipe FADEGNON	DPAF, Atlantique
Mr. Dossa WENON	PFH, Oueme

### CeCPA

Mr. John AFFOIGNON	TSPH, Abomey-Calavi, Atlantique
Mr. Hilaire ZOSSOU	TSPH, Tori-Bossito, Atlantique
Mr. Aubin AKOTCHEHOU	TSPH, Aplahoué, Couffo
Mr. Rubinex BEHANZIN	TSPH, Zangnanado, Zou
Mr. Julien NOTAI	TSPH, Avrankou, Oueme
Mr. Libérat HOUNSOU	TSPH, Pobè, Plateau
Mr. Gabin KIFFOULY	TSPH, Porto-Novo, Oueme
Mr. Jean-Baptiste ATCHAMOU	TCPH, Adjarra, Oueme
Mr. Codjo AHITOBİ	TSPH, Adjarra, Oume

### Core farmer

Ms. Eugénie FAÏZON	Abomey-Calavi, Atlantique
Mr. Pierre TOZE	Tori-Bossito, Atlantique
Mr. Paul SAGBO	Aplahoué, Couffo
Mr. Jacques HOUNOUKON	Zangnanado, Zou
Mr. Dominique KPOSSOU	Avrankou, Oueme
Ms. Elisabeth AHOBOKPLI	Kouti, Avrankou, Oueme
Mr. Guy KOUCOU	Adjarra, Oueme

### Embassy of Japan

H.E. Mr. Masahiro BAMBA	Ambassador
Mr. Hiroshi USUI	Third Secretary

### JICA Benin Office

Ms. Rumiko YAMAMOTO	Resident representative
Ms. Junko IZUMIYAMA	Project formulation advisor
Mr. Vido Armerl	Local staff

**プロジェクト・デザイン・マトリックス(PDM)改訂前**

プロジェクト名: ベナン国内水面養殖普及プロジェクト

プロジェクト対象地域: 南部7県(リラル、アトランティック、プラトー、ウエメ、モノ、クフォー、ズー)

ターゲットグループ: 対象地域において内水面養殖に興味を有するグループ、人

プロジェクト期間: 3年間(2010年～2013年)

プロジェクト対象魚種: ティラピア・ナマズ

プロジェクト対象養殖形態: 池養殖・タンク養殖

日付 2010年8月25日(第1回CCC時)

プロジェクト要約	指標	指標入手方法	外部条件
<b>上位目標</b> プロジェクト対象南部7県において内水面養殖が普及する。	<ul style="list-style-type: none"> <li>- 2020年までにプロジェクト対象南部7県において養殖家戸数が3,000戸以上になる</li> </ul>	水産局報告書 ベースライン調査結果 (農業センサス)	
<b>プロジェクト目標</b> プロジェクト対象市において養殖家戸数が増加する。	対象市において <ul style="list-style-type: none"> <li>- 養殖を開始する経営体(新規及び再開)が300名以上となる。</li> <li>- 改善された技術を適用する既存養殖家が300名以上となる。</li> </ul>	プロジェクト報告書 ベースライン調査結果 インタビュー調査 (農業センサス)	
<b>成果</b> 1. 内水面養殖技術、農民間研修に関するマニュアルがまとめられる。 2. 内水面養殖研修を実施できる中核養殖家及び CeRPA/CeCPA の水産普及員が養成される。 3. 農民間研修によって一般養殖家が内水面養殖に関する基礎的知識を習得する。 4. プロジェクトから水産局に対し中核養殖家・一般養殖家の自立かつ持続的な養殖事業運営を促進する活動が提案される。	<ul style="list-style-type: none"> <li>- 研修用マニュアル類が6種類以上作成される。</li> <li>- 対象地域で持続可能な内水面養殖技術が2つ以上実証される。</li> <li>- 対象市において養殖技術を指導できる水産普及員が50名以上養成される(理解度テストに合格した者)。</li> <li>- 一般養殖家に対する農民間研修を実施できる中核養殖家が15軒以上養成される(理解度テストに合格した者)。</li> <li>- 中核養殖家による農民間研修が延べ50回以上実施され、900名以上が研修に参加する。</li> <li>- 農民間研修の満足度に関するアンケートにおいて、参加者の8割が「満足」の評価を選択する。</li> <li>- 中核養殖家・一般養殖家による自立かつ持続的な養殖事業運営に資する活動が3つ以上試行される。</li> </ul>	プロジェクト報告書 インタビュー調査 マニュアル	

プロジェクト要約	指 標	指標入手方法	外部条件
<p><b>活動</b></p> <p>1-1. 対象地域の社会・経済調査及び養殖の現状に関する調査を実施する。</p> <p>1-2. ベナン国において適用可能な既存の養殖技術を収集・分析する。</p> <p>1-3. ベナン国に適した養殖技術を実証試験を通じて開発する。</p> <p>1-4. 上記活動の結果を踏まえ、内水面養殖、農民間研修に関するマニュアルを作成する。</p> <p>1-5. 活動の進捗を踏まえ、マニュアルを適宜改訂する。</p> <p>1-6. セミナー開催、ニュースレターの発行などによりプロジェクト活動の広報を行う。</p> <p>2-1. 活動1-1の結果を踏まえ、対象市及び中核養殖家を選定する。</p> <p>2-2. 中核養殖家及び CeRPA/CeCPA 等に対して内水面養殖に関する指導者研修を行う。</p> <p>2-3. 中核養殖家の種苗及び飼料生産に関する能力を強化する。</p> <p>2-4. 中核養殖家に対し親魚管理技術の改善指導を行う。</p> <p>2-5. 中核養殖家に対し飼料販売、種苗販売を含む持続的養殖経営体の構築をめざした指導を行う。</p> <p>3-1. 各市において中核養殖家による農民間研修を実施する。</p> <p>3-2. 研修受講者が養殖を始めるために必要な支援を行う。</p> <p>3-3. 水産普及員が中核養殖家及び研修受講者の訪問技術指導を行う。</p> <p>4-1. 養殖家間のネットワークの確立に資する活動を行う。</p> <p>4-2. 生産請負制度を試行する。</p> <p>4-3. 上記以外で有益と考えられる事業を試行する。</p>	<p><b>Inputs</b></p> <p><u>ベナン側</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</li> <li>- カウンターパート(内水面漁業養殖部職員)</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、専門家及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>- 関連職員にかかる経費</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>- 専門家(養殖、社会経済、餌料開発、種苗生産、研修/普及/組織化、農家経営/マーケティング)</li> <li>- 機材供与(内水面養殖用資機材、事務所用資機材、車両、普及用資機材等)</li> <li>- 研修員受入れ</li> </ul>		<p><b>前提条件</b></p> <ul style="list-style-type: none"> <li>- 内水面養殖振興に関するベナン政府の政策に変更がないこと。</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>- 養殖地周辺で農業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>

**プロジェクト・デザイン・マトリックス(PDM)改訂後仮訳**

プロジェクト名: ベナン国内水面養殖普及プロジェクト  
 プロジェクト対象地域: 南部7県(リトラル、アトランティック、プラトー、ウエメ、モノ、クフォー、ズー)  
 ターゲットグループ: 対象地域において内水面養殖に興味を有するグループ、人  
 プロジェクト期間: 3年間(2010年~2013年)  
 プロジェクト対象魚種: ティラピア・ナマズ  
 プロジェクト対象養殖形態: 池養殖・タンク養殖

日付 2011年10月13日(第2回CCC時)

プロジェクト要約	指 標	指標入手方法	外部条件
上位目標 プロジェクト対象南部7県において内水面養殖が普及する。	- 2020年までにプロジェクト対象南部7県において養殖家戸数が3,000戸以上になる。	水産局報告書 ベースライン調査結果 (農業センサス)	
プロジェクト目標 プロジェクト対象市において養殖家戸数が増加する。	対象市において - 養殖を開始する経営体(新規及び再開)が300名以上となる。 - 改善された技術を適用する既存養殖家が300名以上となる。 - <u>上記の養殖家のうち、60%以上が2つの生産サイクルを継続する。(追加指標)</u>	プロジェクト報告書 ベースライン調査結果 インタビュー調査 (農業センサス)	
成果 1. 内水面養殖技術、農民間研修に関するマニュアルがまとめられる。 2. 内水面養殖研修を実施できる中核養殖家及び CeRPA/CeCPAの水産普及員が養成される。 3. 農民間研修によって一般養殖家が内水面養殖に関する基礎的知識を習得する。 4. プロジェクトから水産局に対し中核養殖家・一般養殖家の自立かつ持続的な養殖事業運営を促進する活動が提案される。	- 研修用マニュアル類が6種類以上作成される。 - <u>対象地域で実効性のある内水面養殖技術が2つ以上実証される。(和文翻訳のみ変更)</u> - 対象市において養殖技術を指導できる水産普及員が50名以上養成される(理解度テストに合格した者)。 - 一般養殖家に対する農民間研修を実施できる中核養殖家が15軒以上養成される(理解度テストに合格した者)。 - 中核養殖家による農民間研修が延べ50回以上実施され、900名以上が研修に参加する。 - 農民間研修の満足度に関するアンケートにおいて、参加者の8割が「満足」の評価を選択する。 - 中核養殖家・一般養殖家による自立かつ持続的な養殖事業運営に資する活動が3つ以上試行される。	プロジェクト報告書 インタビュー調査 マニュアル	



プロジェクト要約	指 標	指標入手方法	外部条件
<p><b>活動</b></p> <p>1-1. 対象地域の社会・経済調査及び養殖の現状に関する調査を実施する。</p> <p>1-2. ベナン国において適用可能な既存の養殖技術を収集・分析する。</p> <p>1-3. ベナン国に適した養殖技術を実証試験を通じて開発する。</p> <p>1-4. 上記活動の結果を踏まえ、内水面養殖、農民間研修に関するマニュアルを作成する。</p> <p>1-5. 活動の進捗を踏まえ、マニュアルを適宜改訂する。</p> <p>1-6. セミナー開催、ニュースレターの発行などによりプロジェクト活動の広報を行う。</p> <p>2-1. 活動1-1の結果を踏まえ、対象市及び中核養殖家を選定する。</p> <p>2-2. 中核養殖家及び CeRPA/CeCPA 等に対して内水面養殖に関する指導者研修を行う。</p> <p>2-3. 中核養殖家の種苗及び飼料生産に関する能力を強化する。</p> <p>2-4. 中核養殖家に対し親魚管理技術の改善指導を行う。</p> <p>2-5. 中核養殖家に対し飼料販売、種苗販売を含む持続的養殖経営体の構築をめざした指導を行う。</p> <p>3-1. 各市において中核養殖家による農民間研修を実施する。</p> <p>3-2. 研修受講者が養殖を始めるために必要な支援を行う。</p> <p>3-3. 水産普及員が中核養殖家及び研修受講者の訪問技術指導を行う。</p> <p>4-1. 養殖家間のネットワークの確立に資する活動を行う。</p> <p>4-2. 生産請負制度を試行する。</p> <p>4-3. 上記以外で有益と考えられる事業を試行する。</p>	<p><b>Inputs</b></p> <p><u>ベナン側</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・マネジャー</li> <li>- カウンターパート(内水面漁業養殖部職員)</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、専門家及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>- 専門家(養殖、社会経済、餌料開発、種苗生産、研修/普及/組織化、農家経営/マーケティング)</li> <li>- 機材供与(内水面養殖用資機材、事務所用資機材、車両、普及用資機材等)</li> <li>- 研修員受入れ</li> </ul>		<p><b>前提条件</b></p> <ul style="list-style-type: none"> <li>- 内水面養殖振興に関するベナン政府の政策に変更がないこと。</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>- 養殖地周辺で農業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>プロジェクト目標達成のための外部条件</p> <p>特になし</p>

5 . 面談議事録

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価			
日 付	2011年9月26日(月)	時 間	10:45~12:00
面談者	所属：水産局、本邦研修参加 名前：Mr. Hippolyte HOUENOU	役 職 連絡先	カウンターパート 9796-3758
<p>質問と回答：</p> <p>中間評価の目的と流れについて説明した後、質問票 (MAEP 用) に基づいて質問。</p> <p>以下、注目すべき点のみ要約</p> <ul style="list-style-type: none"> <li>プロジェクト目標の指標に関して、より多くの既存の養殖家が技術改善をするためにはどのような方策があるのか。</li> </ul> <p>既存の養殖家は応用技術を求めている。2 度目、3 度目に研修を行う際には、研修内容を変えて応用編も指導した方がいいのでは。</p> <ul style="list-style-type: none"> <li><b>CeRPA/CeCPA</b> や中核養殖家との連絡体制や頻度は？ 水産局の担当官 2 名で 7 県を網羅している。全体状況を把握するために担当地域は決めずに、情報を常に共有している。連絡は毎日電話や <b>E-mail</b> でやりとりをしており、十分なコミュニケーションを取っている。</li> <li>今後の活動を向上させるうえで必要なことは何か。 <b>CeCPA</b> が一般養殖家をモニタリングするうえで、<b>pH</b> や <b>DO</b> を測るための計測機材が不足している。これらがあるとモニタリングが容易になる。</li> <li>農民間普及アプローチはベナン国で受け入れられているか。 非常に受け入れられている。養殖農家同士のコンタクトがあるし、現場での実践研修方式が非常に好評である。</li> <li>プロジェクトからの波及効果はみられるか。 今回対象地域ではなく、研修に参加できない農家からも研修参加への高い要望が出されている。</li> <li>本邦研修で学んだことは。それをどのように生かしているか。 養殖戦略開発、リサーチ、共同組合にかかるテーマの研修が有意義であった。日本で先進的な事例を学んだあとにカンボジアで実践研修を行ったため、帰国後は日本とカンボジア両方の事例を出しながら、中核農民に対して技術的な指導を行うことができるようになった。</li> <li>その他プロジェクトについて <b>PROVAC</b> は農業省内でも認知度が高く注目されているプロジェクトである。特に、研修がすべて現場で行われるのが農民にとって好評である。また活動の一つ一つがきちんと計画されている点が、他のプロジェクトと異なる。ただ、一般農民はまだ養殖家としての自立は難しく、技術の定着にはもう少し時間がかかる。</li> </ul>			

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月26日(月)	時間	16:00~18:00
面談者	所属：水産局 名前：Mr. d'ALMEIDA Arsèn F. M	役職	Chief Department of Fishery and Aquaculture
		連絡先	95-058-601

質問と回答：

中間評価の目的と流れについて説明した後、質問票 (MAEP 用) に基づいて質問。

以下、注目すべき点のみ要約

・ プロジェクト進捗に関して

全体的に、すべての活動が計画より前倒しで行われており、指標に対する達成度も高く、一部達成していない活動や成果の指標も、プロジェクト終了時には問題なく達成できる。

・ 投入に関して

社会経済や農家経営など一部の分野で専門性の違いが明確でないのでは。その分野の投入も必要であるが、調査内容に関しては重複している点も多く、1つの専門分野でもよいのでは。今後プロジェクトの後半では、飼料開発と農家経営は重点すべき点だと考えられる。

・ ベナン側の投入について

ベナン側でも2014年までに、以下の計画に基づき予算を申請している。そのうち2011年度については100mil CFCAが承認され、これまでに75milが拠出している(注：この資金で資機材購入ができるということであるが、プロジェクト側に確認すると実際には資金は拠出されていないとのこと)。

2011	2012	2013~14	Total
199.2	276.3	246.3	721.8

(単位 mil CFCA)

・ ホルモンの使用について

ホルモンについては議論があったが、使用量が微量であること、また食用として出荷する前にホルモン不使用の期間を十分設けていることから、安全性には問題がないと農業省で承認を得た。ホルモンの輸入については、水産局が直接行い、ホルモン入りの飼料の提供は水産局だけの管轄としている。また配布にあたっては研修を行い、誤用のないよう対策を取っている。

・ 組織化、マイクロファイナンスについて

マイクロファイナンス省との連携を進めて女性への資金援助を確保している。クチ、アジャラ、アブランク、ポルトノボで資金援助を受けるためのグループが結成されている。この方式が成功すれば、現在、農業省で試行されている農業開発ファンドのように、養殖開発ファンドを新たに作成し、マイクロファイナンス支援を提供できる可能性がある。

・ CeRPA/CeCPA について

CeRPA/CeCPA は研修とモニタリング/報告書の提出が主な活動である。現在はプロジェクトからモニタリング用にバイクのガソリンが供与されているが、この体制をプロジェクト終了後も維持するのは、財政的に困難だと思われる。

・ 持続性について

農民間アプローチは政府の資金援助がなくても持続するよう計画されている。プロジェクト終了後ある程度の期間、政府からもモニタリングは継続するだろうが、やがて農民に委託されるであろう。だからこそプロジェクト期間中に、農民が技術を完全にマスターしなくては継続できない。技術を完全にマスターするには残りの期間は少ないと考える。

・ 親魚の導入

ガーナからの *Akossombo* 種の導入は引き続き検討されている。ガーナをはじめ 6 カ国（ベナン、ブルキナファソ、トーゴ、アイボリーコースト、マリ）で形成された **Volta Basin Authority** が中心になり、共同提案書の作成を進めている。ベナン政府としては、*Akossombo* 種の個人輸入は現在のところ禁止している。

・ プロジェクトの波及効果

2011 年 6 月に開催された大規模なセミナーの効果もあり、注目度が非常に高くなっている。テレビやラジオの取材を受けることもある。また、研修対象以外の地域から、研修の開催を依頼する電話がかかってくることもある。

国外でも注目度が高まってきている。セネガルやザンビアで **PROVAC** の手法を発表した。10 月には、ブルキナファソから視察を受け入れる予定である。

・ コミュニケーション、プロジェクト運営について

すべての関係者とはコミュニケーションを十分にとって進めている。月曜午後のプロジェクト内ミーティングの他、四半期ごとには、各 **CeRPA** から 3 名を招待して、プロジェクト進捗を確認する調整会議を、1 年 1 度は農業省内の一番上位の決定機関として **CCC** を開催している。

日本側のプロジェクトの進行が非常に早く、毎日出張に出ている状態であり、出張許可や承認プロセスが追い付かないこともある。だが、日々活動が進捗していることが感じられ非常に興味深い。

・ プロジェクトの延長の可能性と今後の展望

先にも述べたとおり、農民が行政に頼らず、自立して養殖と研修を継続するためには、ある程度の時間が必要である。残りの 1 年半では、十分に技術が根づく前に終了してしまい、ここまでの努力が消えてしまう可能性が高い。特に一般養殖家は、2 シーズン、3 シーズン目はプロジェクトの支援なしで養殖をすることから、この期間の技術指導が重要である。あと 1 年半あるので、プロジェクトとしてできるだけ努力はするが、プロジェクト期間の延長を検討していただきたい。

ベナン国の漁業生産物の輸入量は 7 万 t に増加し、以前北部では見られなかった魚への嗜好が高くなっている。開発調査時に北部で池の排水管理も可能で、非常にポテンシャルのあった地域があったが、今回のプロジェクトでは南部に限定されている。南部だけでなく北部への普及についても進め、全国展開を図りたい。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月27日(火)	時間	9:45~10:15
面談者	所属: CeRPA 名前: Mr. AISSAN Noel	役職 県	Fishery Promotion Officer Atlantique
入手資料	Point D'execution des activites a mi-parcourt		

質問と回答:

・ 現在 CeRPA として実施している活動は  
担当地域では 2 名の中核養殖家 (注: 箱養殖を含め 3 名) と一般養殖家 73 名へ技術的なアドバイスを  
している。

Commune	一般養殖家数
Abomey-Calavi	49
Tori-Bossiti	24

また研修を実施する際のボランティアの募集、研修のための事前調整会議の開催、MAEP との調整、モニタリングなどを実施している。

・ プロジェクトの波及効果

研修対象地域以外からも、研修の話聞いて参加するようになっている。実際これまでに 25 名が対象市以外からの農民間研修へ参加している。

・ 農民間普及アプローチについて

農民間普及アプローチはベナン国において非常に有効的である。多くの養殖農家が高い興味を示し、実際に技術を向上させることができた。

・ プロジェクト終了後の持続性について

CeRPA は研修実施のための予算がない。現在は、PROVAC が研修教材、昼食代を支払っている。プロジェクトが終了してしまうと同じように持続させるのは困難だと思う。

・ 技術的な課題はあるか

全体では、ナマズのストレス性を用いた種苗生産技術を今後確立していく必要がある。飼料についても安価な飼料開発を継続していく必要がある。中核養殖家が抱える課題としては、種苗や飼料の配布が予定よりも遅れたケースがみられた。予定どおり生産が行えるよう技術改善が必要。また一般養殖家で飼料の保管状況が悪いケースが見られたので、改善が必要である。

・ プロジェクト運営をより向上させるためには

一般養殖家のなかで、研修に参加するものの、池の整備費用が捻出できないために、養殖を開始できない人がかなりいる。PROVAC で一部この費用を支援できればより多くの農民が養殖を開始できるのではないか。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月27日(火)	時間	10:30~12:00
面談者	分類：中核養殖家、第三国研修 名前：Ms. FAIZOUNE Eugénie	県市	Atlantique Abomey-Calavi

質問と回答：

中間評価の目的について説明した後、質問票に基づいて質問。

・ 現在ある施設

孵化場、コンクリート槽、研修場所、素掘り池

以前は素掘り池が数面だけであったが、PROVAC 開始後コンクリート槽、孵化場、研修小屋を拡張した。これらのうち、45万 CFA を PROVAC から支援してもらい整備した。それ以外の施設は自己投資をしている。種苗を購入にくる農家が増えているため、設備の拡張を続けており、先月もコンクリート槽を追加で建設した。研修に参加していない人へも技術指導は行っている。

・ 中核養殖家として実施した活動

これまでに2回の農民間研修を実施した。

実施月	2010年12月	2011年3月	合計	養殖開始者数
参加者数	30名	19名	49名	29名(60%)

研修では、講師として一般養殖農家に指導をした。種苗と飼料の配布を行っている。研修実施後も技術的なアドバイスを継続している。これらの参加者以外にも、研修に参加を希望している近隣住民は多数いる。

・ 実践率について

研修参加者すべてが養殖を開始しているわけではないが、その理由としては土地の所有がない人が多いから、そして池を整備するお金がない人がいるからだと思う。

・ プロジェクトの波及効果

研修に参加していない人でも種苗を購入しに来る人が増えた。現在のところ10名程度いる。また飼料開発をするようになってから、餌を買いに来る人も10名程度いる。これらの人へも技術提供は行っている。今後、地域の養殖家はもっと増えると思う。

・ 農民間研修の内容について

内容については、非常に充実している。期間については、できれば4日の方がよいと思う。収容可能な人数については、1度に30名までは受け入れられる。

・ 飼料の開発について

自分ではイスラエルから輸入したペレットを使用している。一般養殖家へは、ここで作ったものを配布している。餌の価格について、PROVAC から現在250CFA/kg と設定されているが、原材料の高騰によりこれでは賄えないため、価格を上げるよう PROVAC と交渉中である。

・ 収益性について

種苗生産と飼料開発のほかにも、自分でも成魚の販売を行っている。中核養殖家としては、十分利益を上げられる。業者が買いに来るほか、一部はコトヌに持って行っている。現在は1,500CFA/kg で販売しているが、大きなサイズの魚は2,000CFA/kg でも売れると思う。今後は、販売先も開拓していきたい。

・ プロジェクト終了後の持続性について

プロジェクトが終了しても養殖は、必ず継続していく。PROVAC のおかげで、エジプト研修へ参加でき、その成果もあり、自分としては一般養殖家を指導していく自信がある。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月27日(火)	時間	13:00~14:00
面談者	分類：一般養殖家 名前：Mr. Goungo Simon	県市 連絡先	Atrantique Calavi 94-27-46-89

質問と回答：  
中間評価の目的について説明した後、質問。

基礎情報

養殖形態	対象魚	池面数	水源	兼業
池	ティラピア	1	湧水	パパイヤ、羊、メイズ、キャッサバ

・ 養殖を始めた経緯と現況

2006年頃にナイジェリアのミッション団体から養殖のトレーニングを受けナマズ養殖を始めた。3回ほど販売したが、その後中止した。2010年に PROVAC の中核養殖家での研修に参加し、池1面を再度整備して、ティラピア生産を開始した。今月末に初めての収穫の時期を迎えるが、あと1カ月ほど待ち、より大きくして販売をしたい。販売先はコトヌを検討している。

・ 研修内容はどうであったか

非常にわかりやすくてよかった。

・ 養殖を開始して何か変化があったか

日本人専門家をはじめ CeCPA 普及員が度々訪れるようになり、村人から注目されるようになった。養殖や PROVAC のことを伝えたところ、村人たちのなかでも興味をもち始めて、何名かは、研修に参加したいと言っている。

・ 研修参加後の中核養殖家との関係は

非常に良好である。今は不明な点があると中核養殖家へ直接行って技術を習っている。中核養殖家は9kmほど離れているがバイクで行っている。現在飼育中のティラピアの収穫後には中核養殖家から、種苗を購入したいと考えている。餌は、現在は中核養殖家から供与してもらっているのでいいが、今度は餌の開発も習得したいと考えている。そうすれば、自分の畑にある素材で作れると思う。

・ PROVAC が終了後も養殖は継続するか

継続していく。技術も身につけられたし、養殖は利益を生むことを知っている。今は1面だけしか整備していないが、今後、他の池も整備していきたいと考えている。ただ技術的にはやっと理解したばかりなので、PROVAC にもう少し長く技術を教えてほしい（どのくらいの期間が必要かという質問に対しては、あと10年という答えであった）。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月27日(火)	時間	15:15~16:00
面談者	所属：CeCPA、TSPH、第三国研修参加者 名前：Mr. AFFOIGNON Kouami John	県市	Atlantique Abomey-Calavi
<p>質問と回答：</p> <ul style="list-style-type: none"> <li>・ 現在担当している業務について 現在は、中核養殖家の活動支援（種苗生産、飼料開発と農民間研修）、一般養殖農家が種苗を受取る条件となる整備が完了しているかの確認、種苗の受け渡しの支援、一般養殖家への技術支援、モニタリングと報告書の作成を行っている。 現在、モニタリングを担当しているのは 15 軒の一般養殖家で、通常は 2 週間に 1 度は必ず巡回指導を行うようにしている。</li> <li>・ プロジェクト、MAEP、CeRPA とのコミュニケーションはどうか 関係者すべてと頻繁に連絡を取り合っており、常に情報交換ができています。</li> <li>・ PROVAC が終了した後活動は継続していくか 継続していく。エジプト研修にも参加したことから、技術的には十分だと思っている。財政的なことや人材不足は懸念事項としてあるが、状況が許す限り、継続していきたいと考えている。</li> <li>・ 農民間アプローチはベナンにおいて有効か 非常に有効だと考える。特にこれまでは行政担当官が研修を行っていたが、中核養殖家が直接行うことによって一般農民がより理解しやすくなっている。</li> <li>・ CeRPA より飼料開発が課題と聞いたが、あなたの見解は 中核養殖家にはペレット製造用機械がある。技術的には生産可能なレベルだと思うので、あとは実践しながら技術を向上させていけばよいと思う。</li> <li>・ エジプト研修について 非常に有効であった。エジプト研修は実践的であったため、ナマズの種苗生産、雄性化技術、飼料開発など習得した技術は日常業務でも活用している。特に印象に残った点は、親魚の大きさであった。</li> </ul>			



ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月28日(水)	時間	10:00~10:45
面談者	分類：中核養殖家 名前：Mr. SAGBO Paul (通称 Colonel)	県市 連絡先	Zagnanado Aplahoué 97-91-67-35
同行者	CeCPA Aplahoué, 第三国研修 Mr. Akotchou Aubin	連絡先	97-39-73-12

中間評価の目的について説明した後、質問。

・ 現在ある施設と養殖の概要

孵化場、コンクリート槽、研修場所、素掘り池、鶏小屋(混合養殖)、PAMER というベルギーからの支援を受けて、2000年の7月から養殖を開始している。当初は7面の池であった。PROVACからの支援で研修小屋などを建設した。ティラピア生産がメインで、種苗のほかに、成魚の販売も行っている。販売はほぼここで行われる。販売時期になるとラジオや告知板に情報を流し、希望者が買いにくる。

・ 中核養殖家として実施した活動

これまでに1回の農民間研修を実施した。次回の研修は11月ころを予定している。既に何名かが登録している。

実施月	2011年2月	養殖開始者数
参加者数	34名	16名(47%)

・ 実践率について(回答者：CeCPA)

財政的な理由と土地がないという理由から池の建設ができない人がある。開始していない人を最近集めて、理由を調査した。財政的な問題がある人へは、マイクロファイナンスなどを紹介できるが、土地がない人については、助言が見当たらない。

・ プロジェクトの波及効果

自分としては技術が向上した。研修参加者以外にも、他の種苗購買者が1万匹買っていった例もある。

・ 種苗の生産、飼料の配布のキャパシティは十分か(回答者：CeCPA)

現在、更に拡張工事を行っているが、今のところ特段問題はない。種苗が欲しい人は、事前にいつごろまでに必要かを打合せておく。その時期に配布を行う。また予備の種苗は常に1万匹程度いる。

・ 農民間研修の内容と持続性について(回答者：中核養殖家とCeCPA)

内容については、非常に充実している。農民の一人が述べたように、マーケティングのトピックは盛り込んでもよいのではないか。期間については、できれば1週間ぐらいの方がよいと思う。現在は農民間研修になるとPROVACが機材と配布資料を用意してくる。プロジェクトリーダーやパワーポイント機材がないので、もしPROVACが終了してしまうと継続が難しいと思う。

・ 収益性について

中核養殖家としては、十分ある。雄性化技術も非常に面白い。

・ どのくらいの頻度でCeCPAとコミュニケーションを取っているか

すべての活動はCeCPAと一緒にやっている。寝る以外はいつも一緒である。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月28日(水)	時間	10:00-10:45
面談者	分類：中核養殖家 名前：Mr. Toze Pierre	県市 連絡先	Atlantique Tori-Bossito 97-91-67-35
同行者	CeCPA Tori-Bossito Mr. Zossou Hilaire	連絡先	97-39-73-12

中間評価の目的について説明した後、質問。

・ 現在ある施設

孵化場、コンクリート槽、研修場所、素掘り池

PACODER のころから農民間研修を実施している。研修小屋は PACODER の時に支援をもらった。PROVAC からの支援の一部でコンクリート槽を建設した。

・ 中核養殖家として実施した活動

これまでに 1 回の農民間研修を実施した。次回の研修を年内に予定している。既に何名かが登録している。

実施月	2011年6月	養殖開始者数
参加者数	24名	4名(16%)

研修実施後は、あまり技術的なアドバイスはしていない(注：一般農民はコンタクトをしていると述べている)。

・ 実践率について

財政的な理由から池の建設ができない。このあたりの地域は雨期には雨が多く、建設作業ができなというのも要因として挙げられる。

・ プロジェクトの波及効果

以前は 800CFCA/kg で販売していた。現在は 1,500CFCA/kg で販売している。より多くの方が魚を生産するようになれば安く魚を提供できるので良いと思う。個人的にはもっと魚を生産して安くできればよいと思う。(注：どうして安く販売する方がよいのか不明)。

・ 農民間研修の内容について

内容については、非常に充実している。期間については、できれば 1 週間ぐらいの方がよいと思う。

・ 収益性について

中核養殖家としては、十分利益を上げている。だから継続している。今後は、冷却保存などの技術を習いより新鮮な状態で、遠い地域でも販売ができればよい。

・ プロジェクト終了後の持続性について

プロジェクトが終了しても養殖は、継続していく。一般養殖家を指導していただくの技術を得たと思う。今後は施設を拡張してナマズ養殖にも取り組んでいきたい。

・ 農民間普及アプローチは有効か

非常に有効である。技術者に習うよりも、農家同士の言葉の方がわかりやすい。

・ どのくらいの頻度で中核農民、一般農民とコミュニケーションを取っているか

中核養殖家とは週 3 回、一般農民とは 1 週間に 1 度である。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月28日(水)	時間	11:10~11:40
面談者	分類：一般養殖家 名前：Mr. Echou Etienne	県市 連絡先	Atlantique Tori Bossito 68-58-65-94
同行者	CeCPA Tori-Bossito Mr. Zossou Hilaire	連絡先	97-39-73-12

質問と回答：

中間評価の目的について説明した後、質問。

基礎情報

養殖形態	対象魚	池面数	兼業
池	ティラピア	5(うちコンクリート3面を確認)	豚、ウサギ、トウモロコシ、豆、パイナップル、鶏、バナナ

・ 養殖を始めた経緯と現況

2009年からナマズとティラピア養殖を始めた。中核養殖家の Toze 氏に直接情報を聞いて、研修に参加し 8/19 に 500 匹の種苗を供与された。それに加え、自分で購入したので現在 2,350 匹の種苗がいる。前回計測のために 40 匹ほど引き上げたが、翌日斃死していた。最初の収穫は 6 カ月後を予定している。まだ収穫前なのではっきりとは言えないが、養殖は非常に利益になるし、今後養殖をメインにしていきたい。

・ 研修内容はどうかであったか

非常にわかりやすくよかった。1 週間ぐらいの研修になればよいと思う。

・ 種苗・飼料は今後も中核養殖家から購入する予定か

種苗については全雄ティラピアが欲しいので、購入する予定。飼料については、購入することもあると思うが、自分で作ることも考えている。

・ 研修参加後の中核養殖家との関係は

何かあると中核養殖家の所へ直接訪問してアドバイスをもらっている。種苗の購入や飼料を貰う際にも行っている。

・ PROVAC が終了後も養殖は継続するか

継続していく。今は自分の土地ではないが、養殖でお金が得られたら自分の土地を購入して、養殖を続けたいという夢を持っている。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日 付	2011年9月28日(水)	時 間	12:00~12:20
面談者	分類：研修参加後、未開始の農家 名前：Mr. Lalli Victor	県市	Atlantique Tori Bossito
同行者	CeCPA Tori-Bossito Mr. Zossou Hilaire	連絡先	97-39-73-12

質問と回答：

中間評価の目的について説明した後、質問。

・ 研修参加の経緯

1995年から仲間の数人と組織化を形成し、ティラピア養殖を行っていた。組織は継続しなかったが、その時の経験で、養殖は利益になることを知っていたので研修に参加した。

研修の実施については、地域ラジオを聞いて知り、参加を申し込んだ。

・ 研修内容はどうであったか

非常に短かった。また理論中心だった。1週間ぐらいの研修が必要だと思う。特にコンクリート槽を今回初めて目にした。どのようにコンクリート槽で飼育すればよいのか実践形式で学びたい。

・ 養殖を開始できない要因は

水源のある土地を購入して養殖を開始したいが、資金が用意できないため。ティラピア養殖に興味がある。マイクロファイナンスは3万~5万CFCAほどしか融通してくれず、また2週間後から返済を開始しなくてはならない。養殖がこの程度のお金でできるとは思わないので、興味はない。

土地に関してはいくつかの候補地があったので CeCPA に来てもらい条件の一番よい土地を選んだ。できれば今年中に土地を購入できればと思っている。

・ 研修後も中核養殖家や研修参加者とは連絡をとっているか

連絡はとっている。トゼ氏の養殖池へ訪問すると、自分が既に養殖を始めた人間かのようにさまざまな情報をくれるので、励まされている。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月28日(水)	時間	15:40~16:00
面談者	Mr. Amouzou Gaston Mr. Sagbo N'etonique Ms. Sagbo Jamvier Mr. Danhoubo Ekpodjaho Mr. Mawugbe Honore Mr. Apity Roger (研修のみ参加)	分類 県市	一般養殖家 Zagnanado Aprahoé
同行者	・ CeCPA Aplahoué, 第三国研修 Mr. Akotchhou Aubin ・ 中核養殖家 Mr. SAGBO Paul(通称 Colonel)	連絡先	97-39-73-12

インタビューは中核養殖家の研修小屋で行われた。5名ほど回答者がいたため個別インタビューではなく、フォーカスグループ・ディスカッション形式で質問をしました。

- ・ 基礎情報
- ・ 農民間研修は2011年2月
- ・ 回答者6名のうち5名が CeCPA の養殖池を借りて養殖を開始。1名は研修は参加したものの養殖開始には至っていない。
- ・ 回答者6名のうち女性1名が PROVAC 以前にティラピア養殖をしていた。それ以外は新規参加者。

・ 研修実施の情報はどこで入手したか  
中核養殖家から直接情報をもらった(5名)、コミュニケーションの掲示板で情報を知った(1名)

・ どうして養殖を始めようと思ったか。  
ティラピアは旨いし、利益になるから。自分で生産する魚の方が、栄養価が高いから。養鶏よりも技術的には簡単だから。

・ 研修はどうであったか  
内容が濃くてよかったが、今度は1週間ぐらいの研修になればよいと思う。  
コンクリート槽の建設の仕方について実践形式で習いたい。生産したあと、どのように売ればいいのかマーケティングについて習いたい。

・ いつ種苗を入手したか  
2011年5月、6月、7月。7月まで遅れた理由は、池の整備に時間がかかったため。

・ 開始できない理由は何か(男性1名に対して)  
ほかの人は、CeCPAの池を借りることができたが、池の面数が限られており自分は借りることができなかった。自己資金が不足していて整備ができない。今はマイクロファイナンス機関と話をしている段階である。

・ 開始後何か難しいと思った点はあるか  
ティラピアは朝の8時と午後6時と2回餌をやらなくてはいけないが、池まで遠いので、毎日決まった時間に行くのが大変です(この回答者は池まで4kmほど離れている)。

・ 種苗・飼料は今後も中核養殖家から購入する予定か  
種苗も飼料も購入していきたい。

・ 研修参加後の中核養殖家や他の一般養殖家との関係は  
何かあるとまずは CeCPA に連絡して技術的なアドバイスをもらっている。一般養殖家同士も情報交換を絶えず行っている。

・ PROVAC が終了後も養殖を継続するか  
継続していく。

・ 技術的に不安な点はないか

雄化テラピアがあまりに大きくなりすぎて、1 匹の値段が高くなり、この付近の住民の購買能力を超えてしまうのが不安。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月29日(木)	時間	9:30~11:00
面談者	分類: 中核養殖家、第三国研修 名前: Mr. Hounoukon Jacques	県, 市 連絡先	Zou, Zagnanado 97-91-67-35
同伴者	CeCPA Zagnanado Mr. BEHANZIN Rubinxé	連絡先	95-59-03-57

中間評価の目的について説明した後、質問。

・ 中核養殖家として実施した活動

これまでに1回の農民間研修を実施した。エジプト研修に参加したため、今年の前半は研修を実施できなかった。次回の研修は12月に予定している。既に48名が登録している。

実施月	2011年1月	養殖開始者数
参加者数	32名	20名 (62.5%)

・ 実践率について

実践できないものは、土地問題と財政問題である。技術的にはアドバイスができるが CeCPA にも予算がないため、これらを予算的な理由から池の建設ができない。10月に CeCPA と一緒にこれらの人と面談して、200m<sup>2</sup>の池を建設した人を優先的に研修に参加者させようと考えている。これによって実践率が上がるのではないかと考えている。

・ 研修や養殖を行う上で難しい点は

餌料の準備が大変である。今は原料が上がり 350CFCA/kg だがプロジェクトでは 250CFCA/kg でしか購入してくれず赤字になっている。またハパネットの準備に 20万 CFAC、飼料 20名分の用意に 70万 CFCA と現金を準備するのが大変である。

・ 研修後は一般養殖家とも連絡をとっているか

日本人専門家は1~2週間に一度来てアドバイスをくれる。自分自身は、次に日本人専門家が来るまでに必ず状況が改善するように努力をしている。だから自分も新規に始めた養殖家について2~3週間に1度は必ず訪れるようにしている。また、自分が行ったアドバイスを次に来るまでにきちんと行うように指導をしている。

・ プロジェクト終了後の持続性について

自分自信はプロジェクトが終了しても養殖は継続していく。種苗の顧客も何名かいる。より拡張していきたいが、投入資金が限られているのが唯一の悩みである。農民間研修の実施については、食費代が、最低 2,500CFCA/日/人かかるほか、電気代が必要となる。これらのコストを賄うのが難しい。日本人専門家は十分アドバイスをくれている。プロジェクトの持続性を確保するためにベナン国政府に輸入配合飼料の一部を補助してほしい。そうすれば、多くの一般農民もより養殖から利益を得ることができると思う。

・ エジプト研修後に適用し始めた技術は何か

エジプト研修では水温の計測、魚の計測と重量に基づいた飼料計算が重要であることを学んだ。これらの技術は帰国後使っている。また電動エアレーション施設を見学してきた。電動ではコストがかかるので重量式のエアレーションシステムを自分で考案し、試行してみた。エジプト人専門家が来た時に褒めてくれたのでよかった。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月29日(木)	時間	11:30~12:00
面談者	分類：一般養殖家 名前：OUSSOU KENALY	連絡先 県、市	95-84-79-37 Zou, Zagnanado
同伴者	CeCPA Zagnanado Mr. BEHANZIN Rubinxé	連絡先	95-59-03-57

質問と回答：

中間評価の目的について説明した後、質問。

基礎情報

養殖形態	対象魚	池面数	兼業
池	ティラピア +ナマズ	3面	パームヤシ、トウモロコシ

- ・ 養殖を始めた経緯と現況  
2010年から近所の養殖家を見様見似で始めた。どのような餌がよいかもわからず、パパイヤを餌としていたが全然育たなかった。中核養殖家の Jacques 氏に直接情報を聞いて、研修に参加し2月と3月に合計200匹のナマズを貰った。
- ・ 研修内容はどうか  
非常にわかりやすくてよかった。餌のやり方、よい種苗の見分け方などがわかった。
- ・ 種苗・飼料は今後も中核養殖家から購入する予定か  
既にティラピアは自前で購入した。ペレット飼料についても、購入したくて連絡したがジャック氏からまだ準備ができていないと言われた。今は村外から粉の配合飼料を300CFAC/kgで購入している。今後、あと2面掘る予定で、また種苗を購入したい。
- ・ 研修参加後の中核養殖家との関係は  
何かあると中核養殖家のところへ直接訪問してアドバイスをもらっている。計測の際に必要な網などの機材も貸してもらった。
- ・ PROVAC が終了後も養殖は継続するか  
継続していく。今はパームヤシが主要な収入源だが1年に1回しか収穫できない。養殖は1年間に2回できるので、養殖が今後メインになっていくと思う。



ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月29日(木)	時間	12:30~12:50
面談者	分類: 研修参加後、未開始の農家 名前: Mr. Aiholinge Rogaten	県、市	Zou, Zagnanado
同伴者	CeCPA Zagnanado Mr. BEHANZIN Rubinxe	連絡先	95-59-03-57

質問と回答:

中間評価の目的について説明した後、質問。

コンクリート槽 (中 2 面、小 3 面) と素掘り池 (小 1 面)

・ 研修参加の経緯

公共の告知板にて研修があることを知り申し込んだ。

・ 研修内容はどうであったか

研修期間は適切であった。内容についても非常に良かった。

・ 養殖を開始できない要因は

井戸が敷地内にあり、研修参加後にコンクリートタンクを作ろうと考えた。中核養殖家のコンクリート槽を測って作り始めた。井戸水は 26m あり深いので、汲み上げるためのポンプも購入した。中核養殖家が来てくれた時に、アドバイスをもらい、素掘り池も掘った。ただ、電気とポンプをつなぐため、家から 300 m 先の電源から引く必要があるが、10 万 CFCA かかりその資金がだせない。

・ 研修後も中核養殖家や研修参加者とは連絡をとっているか

他の研修参加者とはとっていないが、中核養殖家とはよくとっている。アドバイスのほか、いくつかの資材も提供してくれた。いつも励ましに来てくれるので、早く養殖を開始できたらと思う。この土地はすべて養殖に使ってもいいと思い準備をしてきた。ただ今は具体的にいつから開始できるとは言えない。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月30日(金)	時間	9:10~10:15
面談者	所属: CeRPA、本邦研修参加 名前: Mr.WENON DOOSA	役職 県	Fishery Promotion Officer Oueme

質問と回答:

・ 現在 CeRPA として実施している活動は  
担当地域では PROVAC モニタリング委員長としてモニタリングや養殖にかかる技術アドバイスをを行っている。PROVAC が開催する各種会議への参加、中核養殖家選定等を行っている。ウエメ・プラトー県で、2010 年には 4 名の中核養殖家が選定されている。このほか、中核養殖家研修、農民間研修への参加、そしてこれらの活動の報告書の作成と結果をまとめて PROVAC に提出している。

・ PROVAC の活動は業務量の何割程度を占めているか  
約 60% だと思う。PROVAC の活動のなかには、もともと政府が行っていた業務と重なる点も多い。残りの 40% 程度で、他の養殖システム (生簀養殖、ペン生簀) の普及やモニタリングを行っている。

・ PROVAC からはどのような支援があったか  
ベナン国内での各種の研修、個人的には本邦研修にも参加した。その他コンピュータ、カメラ、研修用機材など。

・ プロジェクトの波及効果  
半期モニタリングでも確認されたが、プロジェクト開始後、この地域での養殖生産高が大幅に増加した。プロジェクトの貢献は、CeRPA の組織内でも認識されている。プロジェクトに関する要望は、何でも上司に伝えることができるし、上司も優先して配慮してくれる。例えば、モニタリングのための車の使用は、すぐに許可してくれるようになった。

また、この CeRPA 担当地域内の 14 市のうち、PROVAC は 4 市しか対象地域となっていない。他の市からの要望が非常に高かったため、CeRPA の予算で、PROVAC 対象地域の CeCPA が他の 10 コミュニティの CeCPA への研修を既に 2 回行っている。ただ予算の都合上、実践式ではなく理論の講義しかできなかった。さらに、エジプト研修に参加した CeCPA が作成した報告書が CeRPA 内で高く評価され、この報告書に基づく情報交換/研修を来年に実施する予定である (予算がないため今年度は実施できないとのこと)。

・ 農民間普及アプローチの有効性と今後の持続性について  
農民間普及アプローチはベナンにおいて非常に有効的である。一般養殖家に教える中核養殖家が、地元にならざるが故に一番のポイント。プロジェクト終了後についても研修は続けていく。またプロジェクトの支援がなくなったとしても、養殖農家は今後増加していくと思う。

・ 日本・カンボジア研修について  
日本では特に水管理システムと養殖組合について学んだ。カンボジアでは飼料開発と種苗生産の実践研修が役に立った。特に飼料開発の技術は、帰国後使い始めている。トウモロコシの芯を使用し、配合飼料を浮かせる方法である。コペンスの代わりに使用し販売も開始した。プランクトンを湧かせる技術も実践中である。日本の事例は先進的すぎて、実践することろまでは至っていない。

・ プロジェクト内で今後改善すべき課題はあるか  
農民の中には研修参加後、金銭的な問題があって養殖を開始できない人がいる。特に女性からそのような声を聞く。CeRPA としては貸付のための資金はなく、技術的なアドバイスしかできない。また、一般養殖家が求めたタイミングで種苗をわたせない中核養殖家がいるため、今後改善していく必要がある。

・ CeRPA では異動はどのくらいの頻度であるのか  
プロジェクトが開始される時に MAEP と CeRPA との話し合いがあり、PROVAC から何らかの支援を享受した場合その公務員は、プロジェクト期間は異動をしないという契約書 (覚書?) を交わした。プロジェクト期間内は、異動の可能性は低い。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月30日(金)	時間	10:50~11:30
面談者	分類: 中核養殖家 名前: Mr. KPOSSOU Dominique	県市 連絡先	Oueme Avrankou 90-95-45-44
同伴者	CeCPA Avrankou、第三国研修 Mr. Notai Julien	連絡先	97-31-46-18

中間評価の目的について説明した後、質問。

・ 養殖を始めた経緯と現在の施設

2005年6月にナマズ養殖から開始した。当時は100 m<sup>2</sup>の1面だけであった。現在は18面の素掘り池、4つのコンクリート槽、研修小屋、高架水タンク、井戸がある。PACODERのころからJICAとの協力体制ができており、農民間研修もそのころから既に実施している。CeCPAも当時から一緒に働いている。

・ 中核養殖家として実施した活動

これまでに2回の農民間研修を実施した。次回の研修は11月に予定している。

実施月	2011年11月	2011年5月	養殖開始者数
参加者数	21名	22名	30名 (69.7%)

・ 実践率について

養殖を開始していない研修参加者とも連絡をとっている。実践できないものは土地問題や財政問題。家族の問題である。先週もコンタクトをとっていたうちの1人で、これまではワーカーの作業が遅れていると言っていたが、実はお金の問題で作業が進んでいないことがわかった。

・ 研修や養殖を行ううえで難しい点は

餌料の準備が大変である。魚粉の入手が特に困難である。Porto-Novoで購入しているが、配合飼料を生産すると375CFCA/kgでありプロジェクトが支払う代金では赤字となっている。

また、顧客によっては種苗を15gで売ってくれといわれるが、十分なインフラがないため困難である。今後大きなコンクリート槽を建設する予定はあるものの、水質があまりよくないため心配である。

雄性化ティラピアは1サイクルが終わったところである。これまで周辺の顧客は、雄性ティラピアのメリットがわからず、雄雌混合の種苗への需要が多かった。今回の収穫の結果、生産性については大きな違いがわかったので、今後は雄性化ティラピアが売れていくと思う。

・ 研修後モニタリングはどの程度行っているか (CeCPA 向け)

中核養殖家には、1~2回/週来ており情報共有をしている。一般養殖家については、2週間に1度は回るようにしている。ただ既に30名が養殖を開始しており、1人で一軒一軒回るの難しくなっている。担当地域は7つのエリアに分けられるため、その区分ごとに一般養殖家を1カ所に集めて、技術的なアドバイスを行っている。特に相談が多いのは魚の計測 (Fish Control) に関する点である。要望がある際には個別に訪問している。

・ プロジェクト終了後の持続性について

自分はプロジェクトが終了しても養殖は継続していく。ただ電気がないので、プロジェクターを使った研修はできないし、プロジェクターもない。PROVACは各種研修や施設の整備などを十分支援してきた。今後、ベナン国政府への要望として、養殖関連機材の免税措置などを支援してほしい。これらの機材が高く、十分な設備投資ができない。

・ ティラピア・ナマズの混養やティラピアの適正飼育密度についての実証試験を行っていた。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月30日(金)	時間	11:45~12:10
面談者	分類: 中核養殖家、ナマズ箱養殖 名前: Ms. AHOBOKPLI Elisabeth	県市村	Oueme Avrankou Kouti
同伴者	CeCPA Avrankou 第三国研修 Mr. Notai Julien	連絡先	97-31-46-18

中間評価の目的について説明した後、質問。

・ 養殖開始と研修参加のきっかけ

弟が PACODER の箱養殖の研修に参加しており、情報を聞きながらナマズ養殖を自分で始めた。特に当時はこの地域で魚を入手することが難しく、冷凍された魚を食べるのには抵抗があった。種苗はゴトヌ氏(飼料屋)から購入していた。ただ、餌のやり方がわからずナマズが餌をまったく食べずに成長が悪かった。今回は、CeCPA から研修があることを直接聞いて、2010年11月の研修に参加をした。

・ ナマズ養殖の状況

箱1つから開始したが今は3箱持っている。これまでに1箱は3回収穫があった。その他の2つの箱は2回収穫を行った。販売価格は1,300/kgで、時期がくるとラジオで情報を流し、家で直接販売する。他にもウサギの飼育、鶏の飼育をやっており、ナマズ養殖は所得の約25%を占める。労働量はそれ程多くない。1週間に1度水を買って交換している。あとは餌やりぐらいである。

(販売価格、販売時期、投入額等、記録をつけていた)

・ 中核養殖家として実施した活動

これまでに3回の農民間研修を実施した。次は12月に開催予定である。

実施月	2011年12月	2011年1月	2011年8月	養殖開始者数
参加者数	24名	30名	35名	53名(59.5%)

・ 実践率について

養殖を開始していない研修参加者とも連絡を取っている。実践できないものは土地問題や財政問題。家族の問題である。先週もコンタクトを取っていたうちの1人で、これまではワーカーの作業が遅れていると言っていた人が、実はお金の問題で作業が進んでいないことがわかった。

・ 研修後一般養殖家とコミュニケーションはとっているか

2週間に一度、ナマズ養殖を始めた人たちに集ってもらい、技術向上のための情報交換をしている。(別途、プロジェクトから、この会議議事録を入手) 特に難しいのは給餌の問題で、みんなでよいアイデアを出し合っている。

・ プロジェクト終了後の持続性について

プロジェクトが終了しても養殖は継続していく。女性にとってナマズの箱養殖は簡単でよいと思う。これからもナマズ養殖を始めたいという人には直接研修できる。

・ プロジェクト開始後何か変化があったか。

大勢の人が自宅に来てくれるようになった。前は箱ナマズ養殖について信じていなかった人も、信じて、多くの人が始めたいと言ってくれている。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年9月30日(金)	時間	12:15~12:50
面談者	分類：一般ナマズ箱養殖 名前：Ms. AGASSOUNON Eriyomi	県市村	Oueme Avrankou Kouti
同伴者	CeCPA Avrankou 第三国研修 Mr. Notai Julien	連絡先	97-31-46-18

中間評価の目的について説明した後、質問。

- ・ 養殖開始と研修参加のきっかけ  
いつも買っていた魚の行商人から研修のことを聞いて参加した。2011年の1月に参加して、翌月2月12日から養殖を開始した。
- ・ ナマズ養殖の状況  
箱1つから開始したが今は3箱持っている。最初の100匹の種苗と餌はドミニク氏から貰った。その後、ドミニク氏からナマズの種苗を購入しようと思ったが、その時に種苗がなかったため、ゴドヌ氏から購入している。餌もコペンスを1,200CFCA/kgでゴドヌ氏から購入している。これまでに2回収穫があった。1匹300~360グラムを3匹1,300CFCAで売った。需要があるので、今後は1,500/kgで売りたい。
- ・ 持続性について  
今後、もう1つ箱を増やしてみようと考えている。利益が出るかは1年間やってみて考えてみようと思う。今は始めたばかりなので利益が出るかはまだ言えない。女性にとっても維持しやすいと思う（販売価格、販売時期、投入額等の記録をつけていた）。
- ・ 中核養殖家とのコミュニケーションについて  
彼女は近所なので、ほぼ毎日会って情報を聞いている。2週間に1度はナマズ箱養殖の会合があり、月に1度はこの地域の養殖（池+箱）農家会議に参加している。
- ・ 箱養殖を行ううえで難しい点は  
多くの女性が箱養殖を開始したいと言っているが初期投資の10万CFCAが準備できない人が多い。プロジェクトは種苗と餌は支援してくれるが、箱がないと養殖を開始できないので、プロジェクトでも支援してほしいと思う。
- ・ マイクロファイナンスの進捗具合は（CeCPA向け）  
MMFJFと議論の後、マイクロファイナンスをしてくれる組織がASMABに決定した。今は3名の小グループを形成し、申請の準備を進めているところである。申請にはまず銀行口座を開設し、3万CFCAを積み立てる。また2枚の写真と、審査用の書類を作成する必要がある。審査が通って資金を借りるまでには2カ月程かかる。この一連のプロセスはCeCPAが支援をしている。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価			
日付	2011年10月4日(火)	時間	15:00~16:10
	役職	名前	
面談者	総括/養殖普及 社会経済 研修/広報	土居正典 (敬省略) 萩野芳一 山岸光哉	
合同評価団:	Chef Service Suivi Evaluation Direction des Pêches, MAEP Cellule Suivi Evaluation DPP/MAEP Responsable Composante PADPPA 団長 養殖技術 評価分析 調査計画	Mr. JOHNSON Ben Césaire  Mr. SAKA Abbas Mr. AGLINGLO A. Crespin 杉山俊士 本間謙 石垣真奈 春原拓海	
質問と回答:			
<ul style="list-style-type: none"> <li>プロジェクトのマネジメント状況はいかがか。 良好である。日本人専門家とベナン C/P は常に連絡を密にとりながら業務にあたっている。毎週月曜日の午後は、会議をもち、水産局長、プロジェクトマネージャーも出席して日常的な活動の進捗を確認している。おおむね良好であるものの、出張の決裁が遅れる、JCC の際の承認事項への署名や確認が遅れるなどがある。</li> <li>現在実施中の活動のなかで予定になかった活動はあるか。 まず「ジェンダー専門家」を追加で投入した。ナマズの箱養殖を導入する際に、女性の視点が必要になったため。ジェンダー一般ではなく養殖におけるジェンダー分野に特化して、分析をした結果、女性は土地所有権がないということがわかった。そのため箱養殖を推進した。また池養殖であっても女性の役割が重要視され、夫婦の研修参加を促した。 さらに関連して小規模融資・青年・女性雇用省との連携もできた。今は研修を受けた女性達が登録を待っている。さらに、「初期餌料開発」専門家の追加投入もした。これはナマズの幼生の餌の開発だが、これまで輸入アルテミアに頼っていたが価格が高騰したため、代替案として動物性プランクトンの培養を行った。実証試験レベルではよい結果が出ており、今後実用化を行う。</li> <li>プロジェクト目標の指標は達成可能か？ 指標の達成を見据えて今後活動を実施すれば可能である。ただし、最重要なのは、数ではなく質であると考えている。養殖農家の中には、技術の吸収が遅く、指導してもすぐには技術を活用できない人もいる。これらの人々の技術定着を念頭にフォローアップ研修などを実施する場合、達成状況が限られることもある。現在の指標と、技術の定着を両方行うためには、今後一般養殖家が 2 サイクル目、3 サイクル目を継続していくことが必要である。モニタリングのためには、現在のプロジェクト期間では足りないため、延長の希望をしたい。</li> <li>中核養殖家と PROVAC は契約を締結して研修を行ってもらっているのか 契約ではない。種苗生産施設の一部には支援を出したが、業務委託をしているわけではない。種苗配布の際に酸素を注入するための酸素ポンプについては貸出しており、これに関しては貸出覚書を交わした。</li> <li>CeRPA/CeCPA は 21 名しか訓練していないということだが、これは 50 名の指標に対してやや遅れているのでは。 特段そうは思わない。プロジェクトは昨年開始され、まずは中核養殖家の選定を行い、中核養殖家施設として必要な種苗生産施設の建設などを実施した。その後中核養殖農家と CeRPA/CeCPA を同時に研修した。中核養殖家は 1 コミュニティに 1 つの計算で訓練しているため、中核養殖家とほぼ同等+CeRPA の人数程度しかいないのは妥当だと思う。今後、中核養殖家の数が増加すれば CeCPA も自動的に増えていく。</li> </ul>			

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価			
日付	2011年10月4日(火)	時間	16:20~17:30
面談者	Project Director Project Manager Counterpart Counterpart	Mr. Degbey Jean-Baptiste Dr. Dr. d'ALMEIDA Arsène F.M. (Ph.D.) Mr. IWA Léon Mr. HOUENOU Hippolyte	
合同評価団:	Chef Service Suivi Evaluation Direction des Pêches, MAEP Cellule Suivi Evaluation DPP/MAEP Responsable Composante PADPPA 総括 養殖普及/組織化 評価分析 計画管理	Mr. JOHNSON Ben Césaire  Mr. SAKA Abbas Mr. AGLINGLO A. Crespin 杉山俊士 (敬省略) 本間謙 石垣真奈 春原拓海	
質問と回答:			
<p>・ CeRPA/CeCPA は水産局と並列な立場であると認識しているが普及員への指示系統はどうなっているのか。 水産局も CeRPA/CeCPA も農業省次官の下に位置づけられている。CeRPA/CeCPA は地方で行う業務を管轄している。水産局が地方で業務を行う場合、次官へ申請をし、次官から CeRPA/CeCPA に指示をしてもらう必要がある。CeRPA の中では Fishery Promotion Officer がおり、水産局としては、彼と緊密に連絡をとりながら業務を進めている。</p> <p>・ 水産行政アドバイザーの必要性和役割について 有効であった。当地には難波専門家がいたが、彼が実施していた活動はすべて PROVAC にとって有効であった。また水産局と JICA をつなげる役割として非常に重要であった。JICA には後任の要請を行ったが、語学等の面で、人材確保が難しかった。また PROVAC が終了するまでには派遣をしていただきたい。</p> <p>・ サイト視察のなかで、多くの研修を受けた人が養殖を開始できずにおり、プロジェクトでサポートしてほしいということであったが、プロジェクトとしてはどう思うか。 多くの人が養殖を開始できなかった理由としては、CeRPA/CeCPA が研修参加者へのクライテリアを順守していなかったことだと思う。Adjara 市では研修実施前に CeCPA が参加者を面談し、さらには実際に目視して、池建設などの準備ができた人を優先的に、研修参加者として受け入れている。また小規模融資・青年・女性雇用省との連携により、Adjara 市クチ村の箱養殖を開始する女性をはじめ、他の地域でも融資の話が進んでいる。これらのパイロット地域での成功が認められたら、養殖ファンドとして大きな予算を得ることができる。</p> <p>・ 中核養殖家がこれまでに得た養殖技術は何か 雄性化種苗生産技術、ナマズの人工産卵誘発による種苗生産技術。これら技術に関しては、ベナン国の人々は以前ナイジェリアに行ってお金を支払ってまで、研修を受けていた。これらの技術がベナン国内に根づいたことは大きく評価できる。ナマズの半自然産卵技術も行っている。また、農家経営についても生産高や投入額を記載した帳簿を向上している。これによっていくら利益があったかを把握できるようになった。</p> <p>・ 指標の達成を念頭に置いたとき、残りのプロジェクト期間についてはどのように考えるか。 3 年間では十分な活動ができないと考える。池の準備については、自助努力を促しているため、多くの農民は、資金集めや建設などで、研修後にかなりの時間を費やしている。その結果、養殖を開始するのが遅れている。生産サイクルも 2 回、3 回と検証が必要なため、プロジェクト延長をお願いしたい。</p>			

- ・ 中核養殖家による研修の持続性は可能だと考えるか。予算がないので継続できないというコメントを数多く聞いたが。

中核養殖家の多くが現在の施設を改修して、養殖センターにしたいという希望を持っている。養殖センターにして、研修希望者（一般農家）からお金を徴収すればよいと考えている。民間でも、研修費を徴収している NGO 等がある。

- ・ 活動の作業量はいかがか。特に日常的に業務を共にしている C/P からの意見は。

非常に多忙である。研修をやるといっても、研修自体のロジだけではなく、その直後から種苗や飼料の配布を念頭に生産準備も同時に行っている。C/P の数を増やしてほしいと考えている。また、専門家の滞在期間は短く、帰国後に C/P が担当業務を継続している。全体としてプロジェクトは、指標達成のためのコミットが高く、そのプレッシャーがベナン国側にもある。ほぼ毎日 C/P は出張があるため、局長も出張承認のサインをするのが日課になっている。

- ・ C/P や専門家の出張を減らすために、代替の研修トレーナの要請ができないのか。

既に農民間研修は中核養殖家によって行われている。また CeRPA/CeCPA が最大限支援し、その後のモニタリングも行っているがそれでも業務量が追い付かないのが現状。

- ・ 組織化は行っているのか

既に行われている。中核養殖家同士が集まってできた **Association** もあるし一般養殖農家同士で集まる組織もある。それぞれ技術向上のための意見交換などを行っている。また、それらは **MAEP** 本省にて正式な組織としての登録も行われている。

- ・ CCC は想定どおり開催されているのか

開催されている。まず実施担当者レベルのプロジェクト調整会議を 3 カ月ごとに行っている。これまで確実に開催されている。そして年 1 回の CCC を開催している。これは昨年 1 度行い、来週が 2 度目になる。前回は招待状を送付するのが遅れて、多くの参加者が集まらなかった。CCC については農業省次官が担当するのが通常で、**Oueme/Platoau** の CeRPA 所長が今回の移動で次官に就任した。PROVAC 活動を十分知っており、PROVAC としてはありがたい。



ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年10月5日(水)	時間	15:00~17:00
面談者	分類: 中核養殖家 名前: Mr. ONODJE Kotchikpa (不在)、POBE FISH FARM	県市 連絡先	PLATEAU Pobe 97-51-62-28
	分類: CeCPA Pobe、 名前: Mr. HOUNSOU Liberat	連絡先	94-03-24-09
同伴者	合同評価調査団、PROVAC		

中間評価の目的について説明した後、質問。当日、中核養殖家の Onodje 氏は不在であったため CeCPA の水産普及員 Mr. HOUNSOU Liberat が回答

・ 養殖を始めた経緯と現在の施設

2007年8月に2面の池から開始した。当時はティラピアとナマズ養殖をしていたが種苗生産は行っていなかった。プロジェクト開始後に池を拡張し現在は22面の池を有している。コンクリート槽、研修小屋等の施設がある。水の確保が問題で、井戸を地下60mまで試削したが水が出なかった。また掘削を試みる予定である。

・ 中核養殖家として実施した活動

これまでに1回の農民間研修を実施した。このうち4名が池養殖を始めている。3名がナマズで、1名がティラピア養殖を開始している。

実施月	2011年6月	養殖開始者数
参加者数	26名	4名(15.3%)

・ 研修や養殖を行ううえで難しい点は

この土地は雨が非常に多いため、雨期の研修は非常に難しい。11月~3月と8月は、研修ができない(注: 視察当日も雨が降っており、池までの道は相当ぬかるんでいた)。

・ 研修後モニタリングはどの程度行っているか (CeCPA 向け)

以前は10名の養殖家であったが、現在は26名を担当している。中核養殖家は2回/週、一般養殖家へは1回/週を行っている。技術指導の内容は餌料のタイミングや稚魚の定期計測に関することが多い。ただし、自分の担当範囲が広く、1つの村から別の村まで70kmも離れている場所もある。移動距離がかなりあるため頻繁なモニタリングを行えない。

・ モニタリングのための予算は確保されているか。(CeCPA 向け)

CeCPA の予算として4万FCFA、PROVACからは1万5,000FCFAのガソリン代が支給されている。

・ CeCPA の内部で異動はあるのか (CeCPA 向け)

2007年から契約ベースでの業務を開始した。現在もまだ正職員ではないが、おそらく正職員として雇用されるであろう。プロジェクトとCeCPAの取り決めで、プロジェクト期間中の異動はないことになっている。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年10月6日(木)	時間	8:30~09:15
面談者	分類: 一般養殖家 名前: Mr. AFFOGNON Omer (不在)	県市	Oueme Porto-Novo
	CeCPA Porto-Novo, Mr. AHITOB I Codjo	連絡先	90-96-78-39
同行者	合同評価調査団、PROVAC		

質問と回答:

基礎情報

養殖形態	対象魚	池面数	水源	兼業
池	ティラピア	5	湧水	音楽

・ 養殖を始めた経緯と現況

本業はミュージシャンであり、巡業しながらグループで演奏をしている。この養殖もグループでやっている。Mr. AFFOGNONOのみ研修に参加し、本格的に養殖を開始した。敷地内には竹製の小屋などが何棟か建設中であり、この敷地と建物を活用し文化センターとして観光客を呼びたい計画がある。その際の食事の提供にもティラピアを使用できたらよいと考えている。当初は2面しかなかったが、現在は5面にまで拡大している。

池の建設資金や投入資金は、音楽からの収益を用いて行っている。どこからも借入はしていない。

・ 養殖を行ううえでの難しさは何か

洪水が多いことである。できるだけ土手を高くはしたが、昨年と今年は洪水被害があった。そのほかには捕食生物の被害がある。蛇、鳥、カエルなど外敵が多くいる。盗難被害はない。

・ PROVACが終了後も養殖は継続するか

継続していこうと考えている。技術も身につけられたし、養殖は利益が得られそうなので、池も拡張し種苗の追加購入もした。まだ収穫はしていないが上手くできそうな気がする。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年10月6日(木)	時間	9:30~10:15
面談者	分類：一般養殖家、ナマズの箱養殖 名前：Ms. AHOUANGONOU Conforte	県市	Oueme Porto-Novo
	CeCPA Porto-Novo、 Mr. AHITOB I Codjo	連絡先	90-96-78-39

同伴者 合同評価調査団、PROVAC

中間評価の目的について説明した後、質問。

養殖形態	対象魚	箱数	水源	兼業
箱養殖	ナマズ	1	井戸	小規模ビジネス

・ 養殖を始めた経緯と現在の施設

2011年2月に研修に参加した、その後2011年3月から近所の女性10名と一緒にナマズの箱養殖を開始した。木製の箱養殖タンクを購入するのに10万FCFA支払った。既に一度収穫があり、その時は47kgの収穫があった。餌はコペンスをあげており、箱代と餌代の資金を借りながら養殖を継続している。

・ 養殖を行ううえで難しい点は

餌のやり方が難しい。グループで集まって問題点を解決している。また、お金を借りたいが資金へのアクセスが難しい。

・ 養殖は利益になるか？

1年ぐらい養殖を継続してから利益については判断したい。今は餌代や箱代などがかかっており、あまり利益にはならない。資金を借りることができるなら、もっと箱の数を増やしていきたいが、今は無理である。販売価格や、餌料購入費はノートに記録をしている。

・ (CeCPA向け) どのくらいの頻度でモニタリングを行っているか。

7月に異動になってAdjarraからPort-Novoへ来ており、現在は15名の一般養殖家を担当している。1週間に1度は巡回するようにしている。餌料や種苗の追加注文の確認等を行っている。稚魚配布した翌日にも必ず行くようにしている。毎月の稚魚の計測の際にも、技術指導を行っている。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年10月6日(木)	時間	10:45~11:30
面談者	分類：一般養殖家 名前：Mr. LOKOSSOU Justine	県市	Oueme Adjarra
	CeCPA Adjarra Mr. KIFFOULY Gabin	連絡先	97-77-15-25

同伴者 合同評価調査団、PROVAC

中間評価の目的について説明した後、質問。

養殖形態	対象魚	池面数	水源	兼業
池	ティラピアと ナマズ	3	湧水	パームヤシ(2ha)、ウサギ

- ・ 養殖を始めた経緯と現在の施設  
2010年11月にラジオで研修の情報を聞き参加した。新しい商売を探していたところで、養殖がいいと思った。最初は1面から始めたが、徐々に拡大しており、現在4面目を作成中である。父親がパームヤシのプランテーションを経営しており、その作業員が10名ほどいる。その労働力を使って、養殖の餌やりなども行っている。池建設の資金は父親から出してもらった。
- ・ 養殖を行ううえで難しい点は  
鳥や蛇などの捕食者がいるのが難しい。ただ研修でいろいろ教えてもらったし、中核養殖家も池建設の際や、稚魚を入れる際にもいろいろと指導してくれるので、それほど難しいとは思わない。
- ・ (CeCPA向け) プロジェクトに関連してどのような活動を行っているか。  
農民間研修の支援、池の建設が終了した一般養殖家を訪問し、整備状況の確認、稚魚を配布した養殖家のモニタリング、餌料の追加注文の確認等を行っている。一般養殖家へは1週間に一度の巡回できるようにしている。
- ・ (CeCPA向け) 今度どのような点をプロジェクトは改善していけばよいか。  
コペンスなどの配合肥料が非常に高く、一般養殖家にとっては支出が難しい。この辺、免税処置などを支援してもらえるとよいのではないか。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年10月6日(木)	時間	11:45~12:15
面談者	分類：一般養殖家 名前：Mr. AHOUNOU Gabriel	縣市	Oueme Adjarra
	CeCPA Adjarra Mr. KIFFOULY Gabin	連絡先	97-77-15-25
同伴者	合同評価調査団、PROVAC		

中間評価の目的について説明した後、質問。

養殖形態	対象魚	池面数	水源	兼業
池	ティラピア	5	湧水	ブタ、ニワトリ、ホロホロチョウ、ヤギ、七面鳥、トラック所有

- ・ 養殖を始めた経緯と現在の施設

2006年池2面から養殖を開始した。トラックを所有しており運搬業を営んでいる。以前は運転手として仕事をしていたので養殖池は他人に任せていた。2010年12月に中核養殖家のところで研修に参加し、その後池も5面に拡大し、本格的に養殖を行っている。現在、トラックの運転は他人に任せ、自分は養殖をメインに行っている。2011年9月に初の収穫があった。1,200FCFA/kgで販売した。

- ・ 養殖を行ううえで難しい点は追加の投入資金を捻出するのが難しい。

- ・ 中核養殖家とのコミュニケーションはどのようにしているのか

様子を見に度々中核養殖家が訪問してくれる。何か用事がある場合は、自分から中核養殖農家を訪ねることもある。同じコミュニティなのでいつでも行ける。CeCPAよりかは中核養殖家の方がより密な関係性である。

- ・ プロジェクトからどのような支援があればよいか。

研修内容は十分であったが、今後、応用編の研修があるとよい。また現在は500匹の稚魚と140Kgの餌料支援しかないが、支援をそれぞれ2倍の量にしてもらえるとありがたい。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年10月6日(金)	時間	14:30~16:30
面談者	分類: 中核養殖家、第三国研修参加 名前: Mr. KOUCOU Guy (Benin Continental Fish)	県市 連絡先	Oueme Adjarra 97-83-57-89
	CeCPA Adjarra Mr. KIFFOULY Gabin	連絡先	97-31-46-18
同伴者	合同評価調査団、PROVAC		

中間評価の目的について説明した後、質問。

・ 養殖を始めた経緯と現在の施設

もともとは学校で生物の教師であった。その後、2007年に自力で養殖を開始した。2008年に大洪水があり8つの池からほとんどの魚が逃げたため養殖をやめた。その後、知り合いからのアドバイスもありティラピア養殖を始めたが、雄雌混養であったため、大きくならず再生産ばかり繰り返してしまい、難しかった。2010年の6月になり PROVAC と出会い、養殖家として大きく変わった。多くの実証試験をこの場所でやったこともあり、いろいろな技術を吸収することができた。また、PROVACによって高架水タンク、コンクリートタンク建設のための支援の一部をいただいた。

現在は、1カ月に9万匹のティラピア種苗を行えるようになった。ナマズの半自然種苗も可能となった。アルテミアの代わりに動物性プランクトンの培養による稚魚飼育も成功した。これにより稚魚の斃死率は下がり、生産コストも下げることができた。

・ 中核養殖家として実施した活動

これまでに2回の農民間研修を実施した。次回の研修は11月に予定している。

実施月	2011年11月	2011年5月	養殖開始者数
参加者数	22名	23名	23名(51%)

その他、農民間研修の参加者には無料で稚魚計測のための道具を一般養殖家に貸し出している。1回目には女性が2名、2回目は女性参加者がいなかった。プロジェクトのねらいはよく理解できるので、次回の研修では、女性参加者を15名程度になればよい。そのためには、水産普及員の広報支援が必要だと思ふ。

・ 実践率について

養殖を開始していない研修参加者の中で一番の問題は、養殖を開始するための土地がないことである。最近になって、土地を持っている人や池の準備ができている人を優先して、研修に参加させることにした。その結果2回目の研修参加者は短期間のうちに多くの人が養殖を開始できている。今後も研修参加前には、準備状況を確認していきたい。

・ エジプト研修で学んだことは。

親魚管理の大切さを学んだ。また親魚の中でも、最善の状態の親魚を選ぶ技術を学んだ。また種苗生産の効率が3倍に増加した。研修前は5,000匹/水槽が研修後には1万5,000匹/水槽になった。

・ プロジェクト終了後の持続性について

自分はプロジェクトが終了しても養殖は継続していくし、研修も自分でできると思う。次回からでも自分だけでできるとは思うが、PROVACから承認されるのであればやっていきたい。

・ 養殖組合の目的と活動内容は

養殖の利益を上げるためには、投入にかかる金額を少なく多くの種苗を販売することである。組合の目的としては、大量の種苗の注文にも対応しているため、組合員で融通し合える。また高価な飼料輸入でも組合員によって大量に購入すればリスク分散と価格の減少が可能である。

組合員のうち会計などのマネジメントは女性にお願いすることによって、透明性のある管理をされている。組合員になるための基準としては、**200 m<sup>2</sup>**の池**5**面以上を有している中核養殖家などいくつかの基準を作成している。最初は養殖組合に懐疑的であった人も、エジプト研修などを通じて、組合に参加したいと表明し始めている。一般組合員と発起人である管理人を区別しているので、のちに参加表明があった人には、一般組合員として参加してもらうこととした。

ベナン国内水面養殖普及プロジェクト (PROVAC) 中間評価

日付	2011年10月7日(金)	時間	9:00~11:00
	役職	名前	
	Chef Service Suivi Evaluation Direction des Pêches, MAEP Cellule Suivi Evaluation DPP/MAEP Responsable Composante PADPPA 団長 養殖技術 評価分析 調査計画	Mr. JOHNSON Ben Césaire Mr. SAKA Abbas Mr. AGLINGLO A. Crespin 杉山俊士 本間謙 石垣真奈 春原拓海	

水、木曜日に実施したサイト視察に関し、調査団内で所感・気づきの点を共有・協議した。主な発言内容は以下のとおり。

CeRPA・CeCPAの普及員(TSPH)の役割について

- ・全体的にTSPHはよく働いており、中核養殖家を支援するうえで重要な役割を果たしている。(Crespin)
- ・一般農家は経営能力が不十分である。彼等へ指導するためにTSPHの農家経営の指導能力を向上させる必要がある。また、一般農家の経営状況などをモニタリングするため、モニタリングペーパーを作成・提出する必要がある(SAKA)
- ・経営能力については、「農家経営」の日本人専門家が既に投入され、指導を行っている。モニタリングペーパーについても、プロジェクトの取り組みで提出させている(石垣)
- ・CeRPA・CeCPAの体制は、昔と比べると良くなった。TSPHの燃料費は水産局から拠出され、さらに、多くの普及員を新規で契約雇用し、人数が多くなった。なお、CeRPAの予算計画は、CeRPAの局長(Director General)に権限が移譲されている。養殖担当課のTSPHが円滑に活動を進めるためには、局長の理解・協力が必要である。(本間)
- ・水産局はカウンターパートファンド(Public Investment Programme: PIP)という予算を保持しており、プロジェクトの事業費として拠出できる。(Johnson)

中核養殖家と農民間研修について

- ・中核養殖家は全体的によくやっていると思うが、施設が不十分であると思う。(Crespin)
- ・現在の体制では1つの市に1人の中核養殖家が配置されているが、一般農家の増加を図るためには、1市当たりの中核養殖家の人数を増やすべきである。(SAKA)
- ・持続的な種苗・飼料生産が行われるためには、理解レベルの低い中核・一般養殖家をむやみに増やすよりも、厳選した養殖家を支援する方が適当と考える。(杉山)
- ・農民間研修が持続的に実施されるためには、研修セミナーの実施に際してはあまり費用をかけずに低投入であることが望まれるが、一般農家に対する宿泊代・昼食代等は中核養殖家が出してもらえばよいと思う。(Crespin)
- ・アブランク市の中核養殖家(Benin Continental Fish)では、ほかの中核養殖家とのAssociationを結成していたが、技術の交換などの相互補助が可能となり、非常に効果的である。(Saka)
- ・ある中核養殖家は、エジプト研修で取得した研修修了書を誇らしげに家に飾っていた。養殖家のモチベーションの面から、優れた養殖家に対して農業省から賞状を手交する制度があってもいいのでは(例:「Best Aquaculture Award」)(杉山)

一般農家について

- ・アジャラ市でタンク養殖を実施している女性は、マイクロファイナンスを利用していた。マイクロファイナンスの利用は促進していくべき。(Saka)
- ・マイクロファイナンスは融資を受けた2週間後から返済を始めなければならない。養殖の生産サイクル(最短で9カ月)では、難しい。(Crespin)
- ・農民間研修を受講したあと、多くの一般農家が池の準備等で時間を費やし、養殖の開始時期が遅れている。今後、農民間研修の対象者は、池の準備など環境整備が終えて、すぐにでも養殖を開始できる一般農家に絞るべきである(Saka)



技術的な問題について

- ・排水できない池での養殖は水管理等の問題がある。排水可能な池を保持する養殖家を積極的に取り込むべきだと思う（Crespin）

