MINUTES OF MEETING
BETWEEN
THE JAPANESE EVALUATION TEAM AND THE FISHERIES ADMINISTRATION OF
MINITISRY OF AGRICULTURE, FORESTRY AND FISHERIES
OF THE ROYAL GOVERNMENT OF CAMBODIA
ON THE JAPANESE TECHNICAL COOPERATION FOR
THE FRESHWATER AQUACULTURE IMPROVEMENT AND EXTENSION PROJECT
IN THE KINGDOM OF CAMBODIA

The Japanese Evaluation Team (hereinafter referred to as "the Japanese Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. YONEDA Kazuhiro, Resident Representative of JICA Cambodia Office, conducted the mid-term evaluation study from December 9, 2007 to December 20, 2007 for the Freshwater Aquaculture Improvement & Extension Project in Cambodia (hereinafter referred to as "the Project").

The Cambodian Evaluation Team (hereinafter referred to as "the Cambodian Team") was organized by the Royal Government of Cambodia and headed by Mr. Thor Sensereivorth, Director of Planning and Accounting Division, Fisheries Administration (FiA) of Ministry of Agriculture, Forestry and Fisheries (MAFF).

For the mid-term evaluation of the Project, the Japanese Team and the Cambodian Team formed the Joint Evaluation Team (hereinafter referred to as "the Team"). After conducting study and analysis of the activities and achievements of the Project, the Team prepared the Joint Evaluation Report (hereinafter referred to as "the Report") and presented its results to the authorities concerned.

The Chairman and the members of the Joint Coordinating Committee accepted the Report and agreed to recommend to the respective governments the matters referred to the Report attached hereto.

Phnom Penh, December 20, 2007

Mr. YONEDA Kazuhiro
Leader of the Japanese Evaluation Team
Japan International Cooperation Agency
Japan

Mr. LAO Thuok
Director General, Fisheries Administration,
Ministry of Agriculture, Forestry and Fisheries
The Kingdom of Cambodia

JOINT EVALUATION REPORT

ON

THE FRESHWATER AQUACULTURE IMPROVEMENT AND EXTENSION PROJECT

IN CAMBODIA

Phnom Penh, December 20, 2007

Mr. YONEDA Kazuhiro
Leader
Japanese Evaluation Team
Japan International Cooperation Agency
JAPAN

Mr. Thor Sensereivorth
Leader
Cambodian Evaluation Team
Fisheries Administration,
Ministry of Agriculture, Forestry and Fisheries
The Kingdom of CAMBODIA

CONTENTS

1. Evaluation of the Project

1.1 Objectives of Evaluation

The mid-term Evaluation Team for the Freshwater Aquaculture Improvement and Extension Project (hereinafter referred as the Project) has been dispatched for the following purposes:

(1) To examine the contents of the current Project Design Matrix (PDM),

(2) To conduct a joint study and a series of discussion with the concerned authorities of Cambodian government in order;

a) to gather necessary information to verify the outcomes of the project inputs for the project until now (include the expectancy after the project evaluation), and

b) to assess the progress, overall effects and strategies by Five Evaluation Criteria; Relevance, Effectiveness, Efficiency, Impact and Sustainability.

(3) To discuss the necessary measures to be taken for the smooth implementation of the Project, if any.

1.2 Methodology

(1) Joint Evaluation

The Project is evaluated by the Cambodian and Japanese team (hereafter referred to as "the Joint Evaluation Team") in accordance with the R/D, the PDM and the PO. The activities included report analysis, field survey, and interview with the FiA staffs, the seed producing farmers, Japanese experts and other concerned personnel in the Project based on the five Evaluation Criteria. The Joint Evaluation Team was composed of 2 members from the Cambodian side and 4 members from the Japanese side who were not involved in the Project activities.

(2) Five Evaluation Criteria

1) Relevance

Relevance refers to the validity of the Project Purpose and the Overall Goal in connection with the development policy of the Cambodian government as well as the needs of beneficiaries.

2) Effectiveness

Effectiveness refers to the extent to which the expected benefits of the Project have been achieved as planned. It also examines whether these benefits have been brought about as a result of the Project.

3) Efficiency

Efficiency refers to the productivity of the implementation process. It examines

whether the inputs of the Project have been efficiently converted into outputs.

4) Impact

Impact refers to direct and indirect, positive and negative impacts caused by the implementation of the Project, including the extent to which the Overall Goal has been attained.

5) Sustainability

Sustainability refers to the extent to which the Project can be further developed by the Cambodia, and the extent to which the benefits generated by the Project can be sustained under national policies, technology, systems and financial state.

1.3 Members of the Joint Evaluation Team

See ANNEX 1

1.4 Schedule of Evaluation

See ANNEX 2

2. Outline of the Project

2.1 Background of the Project

Agriculture Productivity in Cambodia still remains low due to perpetual natural disasters such as floods and droughts, limiting rural farmer's income sources and sometimes causing nutrition deficiency. Under such circumstances, improvement of livelihood as well as nutritional conditions of people in rural areas is considered as an urgent issue to be addressed. Because of this, there is high expectation for freshwater aquaculture among rural farmers to be part of their farming system and additional sources of protein and cash income.

Royal Government of Cambodia (RGC) made a request to the Government of Japan for technical assistance to improve and extend the freshwater aquaculture activities in the rural area.

In response to the request, JICA dispatched 2 batches of the Project Design Team and signed the Record of Discussions in December 23, 2004.

2.2 Objectives of the Project

The Project Purpose is "Small-scale aquaculture technologies are extended largely in target areas". The framework of the Project is shown in the revised PDM (proposed) through the mid-term evaluation (See ANNEX 3).

2.3 Proposed revision of PDM

It was planned that some indicators in the original PDM are going to be set based on the baseline survey under the Project. And also it becomes necessary to change some words for more appropriate ones. Therefore, the Joint Evaluation Team proposes revision of PDM and main part of revision is described in the following table. This mid-term evaluation has been done based on the revised PDM.

Table: Main part of proposed revision of PDM

Item	Original version	Proposed revision	Reason of change
Project Period	5 years from the arrival date of the first JICA expert(s) that is planned February 2005	5 years from 28 February 2005 to 27 February 2010	To describe exact dates of commencement and termination of the Project
Target group	Small-scale farmers, extension staff at provincial level, poorest farmers without land	Small-scale farmers, extension staff at provincial level, poor farmers	There are very few poorest landless farmers in rural area.
Indicator of the Overall Goal	Aquaculture production of target villages is increased by ( ) times.	Aquaculture production of target provinces is increased by 1.5 times.	The target area of the Project is four provinces. Numerical target should be decided.
Indicator of the Output 2	Small-scale aquaculture technologies suitable for local conditions are developed and its extension manual is prepared	Small-scale aquaculture technologies suitable for local conditions are developed and its extension materials are prepared	Because several kinds of materials for extension have been developed under the Project.
Output 3	Aquaculture-related activities to benefit the poorest landless farmers are promoted.	Aquaculture-related activities to benefit the poor farmers are promoted.	There are very few poorest landless farmers in rural area.
Indicator of the Output 3	Stock enhancement activities are undertaken in 20 community ponds	Stock enhancement activities are undertaken in 20 fish refuge ponds	To change more appropriate word which is using by the Project.
Indicator of the Output 4	・2,400 small-scale farmers carry out aquaculture by themselves. ・( ) farmer's groups carry out group activities.	・Seed producing farmers conduct farmer to farmer training at least once a year by their initiative. ・Meetings of the network in each target province are held 3 times a year. ・Joint meeting of the network for all target provinces is held at least once a year.	To focus important activities that should be done by the seed producing farmers and their network.
Means of verification of the Overall Goal	Post project monitoring report	Statistical data of the Fisheries Administration	To use data published annually at the Fisheries Administration
Important Assumption for achieving the Overall Goal		Natural disasters such as extraordinary drought and flood do not take place.	New
Activity for the Output 4		Provide support necessary for strengthening the core fish farmer's network	New and important activity in the remaining period of the Project

3. Achievements of the Project

3.1 Inputs

3.1.1 Inputs by the Japanese side

(1) Dispatch of experts

1) Long-stay type and short-term Japanese experts

Long-stay type Japanese experts have been dispatched in the 3 fields, i.e. Chief advisor/ Extension Administration, Aquaculture Improvement and Extension, and Coordinator/ Rural Development. Short-term Japanese experts dispatched in the fields of Broodstock Management/Seed Production, Fish Refuge Pond Management, Feed Development, Gender Mainstreaming, Baseline Support, and Facility Design, etc. (Total man-month up to end of Japanese fiscal year (end of March 2008) will be 134.6M/M) Details see ANNEX 4.

2) Third country experts

Third country experts from India, Indonesia, Nepal and Vietnam have been dispatched in the fields of Training Development, Small-scale Hatchery, Giant Freshwater Prawn Seed Production and Culture, Broodstock Quality Management, and Pangasius Seed Production, etc. (Total man-month up to end of Japanese fiscal year will be 9.5M/M) Details see ANNEX 4.

(2) Equipment provision

Vehicles, equipments for technical development, office and extension activities have been provided and the facilities and equipment such as fish ponds, water intake and discharge system, and hatchery and wet laboratory, etc., for Bati Fish Seed Production and Research Center also have been provided. Total expenditure for such equipment provision is 36,864 thousand yen by the end of Japanese fiscal year 2006. Details see ANNEX 5.

(3) Acceptance of training (Training in Japan, and Training and Study Tour in Asian countries)

6 counterpart personnel have participated in the training in Japan. In total, 50 counterpart personnel including the seed producing farmers have participated in the third country trainings or the study tours in Indonesia, Philippines, Thailand, and Vietnam. 12 more persons including counterpart staff and core fish farmers are going to participate in the training in Indonesia in January 2008. Details see ANNEX 6.

(4) Local Cost Borne by Japanese Side

Following amount of local cost was borne by Japanese side for the implementation of the project activities. Details see ANNEX 7.

(Unit: Yen)	JFY2004 Actual	JFY2005 Actual	JFY2006 Actual	JFY2007 Contract	Total
Local cost	2,531,635	31,740,873	30,457,445	43,410,007	108,139,960

JFY: Japanese Fiscal Year is from April to March next year.

3.1.2 Input by Cambodian side

(1) Assignment of counterpart personnel

Currently 39 persons are assigned as counterpart personnel. 14 persons belong to the aquaculture office of the Fisheries Administration, 5 persons of the Bati Fish Seed Production and Research Center, and 20 persons of the target four provincial fisheries offices. Details see ANNEX 8.

3.2 Activities

Please see ANNEX 9.

3.3 Outputs

3.3.1 Output 1: Seed producing farmers are trained among existing small-scale fish farmers by improving their aquaculture technologies.

The Output 1 is already achieved as mentioned below.

Indicator: 20 seed producing farmers are developed and produce seeds by themselves.

A seed producing farmer in four target communes in each target provinces has been selected in 2005 and 2006 respectively. That is to say, 32 new seed producing farmers (4 communes x 4 provinces x 2 years) in these two years. These 32 new farmers have started seed production and their production activities are going well in general. In the same way, 16 new seed producing farmers have been selected and trained in 2007. Therefore, in total 48 new seed producing farmers have been developed and started seed production by themselves. Number of seed producing farmers is already exceeded the target number (20 seed producing farmers) and this indicator is achieved already.

Objective of this Output is to develop new seed producing farmers. For such purpose, it is required that they become able to produce seeds steadily in terms of technology and management. There is information that all of developed seed producing farmers in 2005 and 2006 have applied technologies learned at the training courses appropriately and quantities of their seed productions are vary widely. It seems that they required to have more experiences on seed production in order to become capable core fish farmers not only as independent seed

producing farmers but also as leading farmers who can take a role as leader for not only supply of fingerlings but also exchange of information among fish farmers.

3.3.2 Output 2: Small-scale aquaculture technologies and its extension methods are improved.

The Output 2 is achieved mostly as mentioned below.

Indicator (revised indicator): Small-scale aquaculture technologies suitable for local conditions are developed and its extension materials are prepared.

The results of improvement of technologies on broodstock management, seed production, and grow out at the Bati Fish Seed Production and Research Center, and the results of on farm experiments at the farmers have been compiled and produced a package of small-scale aquaculture technologies. Based on this technical package, an aquaculture technical booklet, poster, and illustrated poster for fish refuge pond management have been produced incorporating a lot of illustrations in order that farmers can understand easily. The booklet has been utilized for the training courses for the selected farmers by the Project, for the farmer to farmer trainings and farmers outside of the target provinces.

Besides of the Aquaculture Technical Booklet, a narrative technical video on techniques of small-scale aquaculture (grow out) is produced. A video on techniques of seed production is under preparation. This video will be produced in 2008. Therefore, it is safe to say that this indicator is achieved mostly.

3.3.3 Output 3: Aquaculture-related activities to benefit the poor farmers are promoted.

The Output 3 will be achieved by the end of the Project.

Indicator (revised indicator): Stock enhancement activities are undertaken in 20 fish refuge ponds.

Promotion activities on fish refuge pond management have been conducting 4 sites every year. Numbers of the fish refuge ponds established from 2005 to 2007 and to be established in 2008 and 2009 are as follows.

Year	Number of the fish refuge ponds
2005	4
2006	4
2007	3 (collaborated with WFP) +3 (under preparation)
2008	4 (planned)
2009	4 (planned)
Total	22 (planned)

Remark: WFP= World Food Programme

Activities on construction of canals (fish pathway), establishment of 11 fish refuge pond management committees, stocking of fingerlings, etc. have been completed as of December 2007. In total, 22 fish refuge ponds will be established and fishing activities will be promoted by the year 2009. Therefore, this indicator will be achieved by the end of the Project.

In addition, it is reported that quantity of fish catch is increased after establishment of fish refuge pond and number of fish species is also increased. Community people understand and interested in the active participation to the activities of fish refuge pond management.

3.3.4 Output 4: An aquaculture extension network in rural area is developed.

The Output 4 will be achieved by the end of the Project.

Indicator 4-1 (revised indicator): Seed producing farmers conduct farmer to farmer training at least once a year by their initiative.

The seed producing farmers, who were selected and trained under the Project, also received training of trainer (TOT) and started the farmer to farmer trainings from the year 2006. Participants to the farmer to farmer trainings are 479 farmers in 2006 and 960 farmers in 2007. From the year 2008, each seed producing farmer including 12 advanced seed producing farmers who were trained by the AIT (Asian Institute of Technology) project, in total 60 seed producing farmers, will conduct the farmer to farmer trainings for 60 small-scale farmers annually. Therefore, 3,600 new fish farmers will be developed in 2008 and 2009 respectively. It is expected that the seed producing farmers will further strengthen their skills as trainer through providing trainings and conduct extension activities by their initiative with technical assistance by the Aquaculture Office and the provincial fisheries offices as well.

Indicator 4-2 and 4-3 (revised indicator): 4-2 Meetings of the network in each target province are held 3 times a year. 4-3 Joint meeting of the network for all target provinces is held at least once a year.

The seed producing farmers are leading farmers (core fish farmers) for the small-scale fish farmers. 48 seed producing farmers have been developed by the year 2007, and under the 48 seed producing farmers with 12 seed producing farmers established by AIT project, around 3,300 small-scale farmers are engaged in aquaculture.

One of the most importance issues in the remaining period of the Project is to support establishment of a network which will be managed by the seed producing farmers' initiative. A workshop was held for organizing this network in September 2007. All 48 seed producing farmers and 12 advanced seed producing farmers participated in the workshop. In this occasion, a basic framework of the network organization was decided and also the committee members for the network organization for each province were selected. It is planned that the provincial level meetings of the network will be held 3 times a year and the meeting for all 4 provinces will be held once a year from now on. Main objective of establishment of the network is to create practical cooperative relationship among the seed producing farmers in terms of the fingerlings sale, lend and borrow of broodstocks and funds for investment for facilities and operation, exchanges of the information concerned (technical information, etc). By establishing this network, it is expected that this network takes roles as intermediary between the Fisheries Administration/ provincial extension officers and small-scale fish farmers, and also main implementation organization for the farmer to farmer trainings after the completion of the Project.

3.4 Prospect to achieve the Project Purpose

Project Purpose: Small-scale aquaculture technologies are extended largely in target provinces.

The Project Purpose will be achieved in the very near future.

Indicator: Number of small-scale fish farmers is increased from existing 2,000 households to 4,400 households.

The number of small-scale fish farmers already trained in the target provinces and planned number of new farmers who will be trained in 2008 and 2009 through farmer to farmer training are as follows.

Year	Selected and trained farmers (Household)			Farmers trained through farmer to farmer training (household)	Total of new farmers trained in each year	Total of new farmers
	New	Existing	Sub-total	New		
2005	320	320	640	-	320	320
2006	320	320	640	479	799	1,119
2007	320	320	640	960	1,280	2,399
2008	0	0	0	3,600	3,600	5,999
2009	0	0	0	3,600	3,600	9,599
Total	960	960	1,920	8,639	9,599	-

Total increase of new farmers trained is around 2,400 household as of end of the year 2007. Adding number of existing fish farmers (2,000 households), the total number of the small-scale fish farmers is increased around 2,400. Therefore, the indicator of the Project purpose will be achieved in the very near future. As mentioned already, most of new farmers who trained through farmer to farmer training have ponds usable for aquaculture. On the other hand, some of new farmers, who will be trained in the years 2008 and 2009, might not have suitable ponds for aquaculture and necessary fund for initial investment. However, considering the planned number of new farmers to be trained in 2008 and 2009, it is anticipated that the number of small-scale fish farmers will reach at very large number by the end of the Project.

4. Evaluation

4.1 Relevance

Relevance of the Project is high.

Cambodia is rich in inland fisheries resources and freshwater fish provides around 75% of animal protein intake for Cambodian people. The target provinces are located southern part of Cambodia and have some distance from the main stream of Mekong river, therefore, quantity of catch of wild fish is scarce in these provinces. Furthermore, due to lack of irrigation facilities, productivity of agriculture is low. Accordingly, peoples' interest for the small-scale aquaculture using rice fields, waterways, and ponds in this area is increasing as protein source and cash income source.

One of the major goals of the National Strategic Development Plan (2006-2010) is development of the agriculture sector and enhancement of agricultural production/productivity. In regard to the aquaculture sector, importance was given to the promotion of aquaculture development through fish pond and rice field fish culture, training and establishment of fish hatchery and seed producing network. Therefore, the Project is relevant to the policies of the Royal Government of Cambodia.

One of the priority areas of the Japan's assistance policy to Cambodia is "Realization

of Sustainable Economic Growth and a Stable Society". Within this area, development of fisheries sector is one of important issues for agriculture and rural development and poverty reduction. Therefore, this project is in conformity with the priority assistance policy of Japan.

Basic extension strategies on aquaculture technologies of the Project are improvement and extension of freshwater aquaculture technologies through selection and training of fish seed producing farmers as core fish farmers and development of aquaculture extension network, which provide seeds and technical information from the trained seed producing farmers to small-scale farmers. For such purpose, capacity development for the aquaculture extension officers in the target provinces, the seed producing farmers and small-scale farmers has been carried out through technical training at the Bati Fish Seed Production and Research Center and at farmers' fields, etc. Significant outputs on the freshwater aquaculture improvement and extension have been produced by implementing this project. Therefore, the project approach was selected adequately.

One of the objectives of the Project is establishment of following mechanism. The seed producing farmers who are trained under the Project play the roles in distributing seeds and technical information to small-scale fish farmers, and conducting farmer to farmer trainings as core fish farmer. And thus, freshwater aquaculture is extended widely by initiative of the seed producing farmers. It is expected that aquaculture will be extended to farmers surroundings of the seed producing farmers in short-term period and will be extended to country-wide in long-term period through the farmer's seed producing network

4.2 Effectiveness

Effectiveness of the Project is high.

Although there are remaining activities should be done, 2 outputs out of 4 outputs of the Project are achieved already and the Project Purpose is almost achieved. Significant number of the seed producing farmers has been developed and they are expanding their seed production capacity year by year. And the target number of the small-scale fish farmers was already developed mostly and a very large number of small-scale fish farmers will be developed by the end of the Project.

4.3 Efficiency

Efficiency of the Project is high.

Inputs by Japanese side and Cambodia side have been made appropriate mostly. Following are factors promoted to secure the efficiency of the Project and a hampering factor.

(1) Concentration of the dispatch of Japanese experts in the first half of the project period brought the following effects and good efficiency of the Project.

1) Capacity of the counterparts has been improved though conduction of trainings and collaborative activities under the Project.
2) A package of simple techniques on aquaculture was produced at the early stage of the Project.
3) Support of inputs to the small-scale fish farmers and the seed producing farmers (core fish farmers) has been carried out efficiently.
4) Capacity of the seed producing farmers has been strengthened by the efforts of the counterparts and good understanding and cooperation have been obtained for farmer to farmer training from the seed producing farmers.
5) Implementation of the farmer participated workshops, visits to the advanced fish farmers, mutual visits among fish farmers helped fish farmers' smooth understanding on practical aquaculture technologies. As a result, each seed producing farmer was able to produce 100,000 fingerlings on average in the first year. This quantity is 5 times larger than the first production of the seed producing farmers who were trained by the AIT project.

(2) Other factors promoted

1) In the case of the seed producing farmers of the AIT project, they are doing their activity independently. On the other hand, the seed producing farmers' participation to the same training course at the Bati Fish Seed Production and Research Center and participation to the same study tour made basis of information exchange among the seed producing farmers of the Project. This enabled smooth acceptance on establishment of the seed producing farmer's network.
2) Inputs by Japanese side, such as dispatch of Japanese experts, third country experts, and study tours, have been made flexibly in accordance with needs of Cambodian side.

(3) Factor negatively influenced

Because it takes certain period for agreeing annual contract between the consulting company of the Project and JICA, it was difficult to dispatch Japanese experts in the early months of the new Japanese fiscal year, especially from April to June in 2005. This brought delay of implementation of the project activities and made negative effect on efficiency of the Project.

4.4 Impacts

The Overall Goal will be achieved within several years after the completion of the Project and several impacts of the Project are observed.

4.4.1 Prospect of achieving the Overall Goal

Overall Goal: Aquaculture production in target provinces is increased.

It is safe to say that the Overall Goal will be achieved within several years after the completion of the Project.

Indicator (revised indicator): Aquaculture production of target provinces is increased by 1.5 times.

According o the Agricultural Statistics of the Ministry of Agriculture, Forestry and Fisheries, the aquaculture production in target provinces in 2004 was 1, 390 tons in total. This amount of production is the data before this project started and basis of comparison. (Target of production increase is around 700 tons which equivalent about 50% of 1,390 tons) Following table shows aquaculture production in each target province from 2004 to 2006.

(Unit: ton)

	Kampot	Kompong Speu	Prey Veng	Takeo	Total in 4 provinces
2004	25	40	510	815	1,390
2005	50	110	600	800	1,560
2006	90	163	845	950	2,048

(Source: Agricultural Statistics of Ministry of Agriculture, Forestry and Fisheries, and Data of the Fisheries Administration)

Estimation of aquaculture production by the new fish farmers trained under the Project is as follows.

Year	Production ($kg/100m^2$)	Average surface area of pond (m^2/household)	Number of new fish farmers (household)	Estimated production (ton)	Estimated production (assumption: 80% of farmers start and continue fish culture) (ton)
2005	24.8	$224m^2$	640	36	28
2006	36.4	$224m^2$	1,759	143	115
2007	50.0	$224m^2$	3,359	376	301
2008	50.0	$224m^2$	6,959	779	624
2009	50.0	$224m^2$	10,559	1,183	946

Remark: Data of the years 2005 and 2006 is the results of sample survey. Figures from the year 2007 are estimated ones.

Because the new fish farmers, who selected and trained under the Project, have own ponds usable for aquaculture, they could start aquaculture activity immediately after the participation to the training of the Project. On the other hand, some of new farmers, who will

be trained through farmer to farmer trainings from the year 2008, might not have pond suitable for aquaculture. Aquaculture production is influenced whether new fish farmers can start aquaculture activity immediately after the participation to training. Assuming 80% of new farmers start immediately and continue aquaculture activity, 1.5 times of production increase (increase of 700 tons) can be achieved by the end of the Project. If the ratio becomes less than 80%, the Overall Goal will be achieved within several years after the completion of the Project, because the farmer to farmer training will be continued by the initiative of the seed producing farmers.

4.4.2 Influence of the Project on animal protein intake and nutrition improvement

According to the results of the socio-economic impact and farmers' assessment survey conducted this year (2007), fish farmers become able to eat their cultured fish from their ponds mainly in dry season instead buying fish from local market. However, there is no significant change on the quantity of fish consumption between the year 2005 and the year 2007. The calculated average fish consumptions per person per day are 87g in wet season and 75g in dry season. These amounts are lower than the national requirement, which is 200-250g per person per day. In other word, impact on improvement of nutrition is not confirmed yet.

On the other hand, it is observed reducing pressure of fishing from wild or save time of catching fish from wild and reduce of purchase of fish from market during dry season.

4.4.3 Contribution on livelihood improvement (income increase)

According to the results the above mentioned survey, income of the small-scale fish farmers has been increased significantly.

Table: Comparison of income of household of a part of the small-scale fish farmers selected by the Project. (The surveys were carried in 2005 and 2007 in four target provinces.)

(Unit: US dollar)

Description	In 2005 Average income of the small-scale fish farmers selected by the Project (327 households)	In 2007 Average income of the small-scale fish farmers selected by the Project (283 households)	Increase (times)	Increase (US dollar)
Rice farming	321	357	1.1	36
Animal rising	139	204	1.5	65
Vegetable growing	62	109	1.8	48
Fish culture	53	204	3.9	151
Laborer	137	420	3.1	283
Remittance	19	203	10.6	184
Others	63	326	5.1	263
Total	794	1,824	2.3	1,030

Total household income increased 2.3 times. Incomes from labor, remittance and fish culture contributed to such significant income increase. Therefore, it can be said that fish culture is one of the important factors contributed to improvement of livelihood of the small-scale fish farmers.

4.4.4 Other impacts

Following several impacts are observed.

1) The opportunity to participate to the small-scale fish culture techniques and the seed production techniques have been provided for provincial fisheries extension officers in other provinces. In total, 23 officers from 9 provinces have been participated in the training courses up to now. Also some students and staff of NGOs were accepted for the training courses of the Project. In such manner, the results of the Project have been extended in country-wide.
2) A 7 days seed production technique training course organized by the project counterpart staff for two selected farmers under the ECOSORN/EU project in Bantey Meanchey province.
3) 16 selected farmers under the DFID/ DANIDA supported project were participated in the 7 days training course on fish seed production techniques organized by the project counterparts and a core farmer of the Project.
4) Many visitors including government officers, NGOs, farmers, and commune council members visited some of the seed producing farmers of the Project to get their aquaculture experiences and see production facilities.
5) There is an example that a seed producing farmer provided training on fish culture for 200 farmers accepting the request of a NGO (CARE International). Two-days training courses for 50 farmers have been carried out 4 times. The outcomes of the Project were also extended through this kind of the farmer to farmer trainings.
6) Support for introduction of small-scale fish culture has been provided for the other JICA assisted project (Capacity Building for the Forestry Sector Phase II) and it is reported that the target people is interesting in fish culture because of its simple techniques and easiness to start.
7) An aquaculture project will be started next year with the assistance of Spanish Agency for International Cooperation in two provinces (Kratie and Stung Treng) and fisheries officer working in those two provinces will participate to the same kind of training courses which the Project developed.
8) Some seed producing farmers provided fingerlings for releasing into public water bodies.

4.5 Sustainability

Political sustainability of the Project and organization sustainability of the Fisheries Administration will be secured. Due to budgetary constraints of the Cambodian government, it is very important to establish a framework of aquaculture extension network managed by the initiative of the seed producing farmers in order to secure technical and financial sustainability of aquaculture extension which is not influenced by the financial situation of the government.

(1) Political aspect

As mentioned already, promotion of aquaculture development through fish pond and rice field fish culture, training and establishment of fish hatchery is one of the important issues within the policies of the Royal Government of Cambodia. Therefore, political sustainability of the Project will be secured.

(2) Organizational and financial aspect

Officers of the headquarters of the Fisheries Administration, Bati Fish Seed Production and Research Center, and Provincial Fisheries Offices of the target provinces are participating as counterpart. With organizational reform, the provincial fisheries offices become under the direct control of the headquarters of Fisheries Administration. This enabled to carry out more effective aquaculture extension activities and enhanced organizational capacity. Not only capacity of the counterparts of the Project and also provincial aquaculture extension officers of other provinces participated in the capacity development activities. Therefore, the Fisheries Administration has appropriate capability to extend and develop further the outcomes of the Project. However, considering budgetary constraint of the government, it seems difficult for the Fisheries Administration in extending the outcomes of the Project to other provinces outside of target provinces.

Accordingly, it is important to establish a framework which is not influenced by the governmental budget and enables extension of aquaculture techniques with initiative of fish farmers, especially by seed producing farmers. Therefore, focused project activities in the remaining period of the Project are the activities for output 4 "An aquaculture extension network in rural area is developed".

(3) Technical aspect

1) Fisheries Administration

Technical knowledge and experiences of the counterparts (headquarters of the Fisheries Administration, Bati Fish Seed Production and Research Center, and provincial

fisheries offices) are enhanced steadily, and those technical knowledge and experiences will become established at the Fisheries Administration.

2) The seed producing farmers and the small-scale fish farmers

There is high possibility that the necessary techniques will be established at the seed producing farmers and small-scale fish farmers, because the aquaculture techniques introduced by the Project is simple, packaged, and low cost. It is expected that the seed producing farmers and small-scale fish farmers aquaculture techniques will be improved further by exchanging techniques and experiences through farmer seed producing network and experiences of fish farmers. 48 seed producing farmers and around 3,300 small-scale fish farmers have been developed under the Project. From now, it is necessary to monitor developed seed producing farmers and small-scale fish farmers whether they can continue fish culture and farmer to farmer trainings by themselves. If some technical and operational problems are identified, appropriate advises should be given to them by the Fisheries Administration.

5. Conclusion

The relevance, effectiveness and efficiency of the Project are high and several positive impacts of the Project are observed. 48 seed producing farmers have been developed as core fish farmer. More than 900 existing fish farmers have been strengthened their technical capacity and nearly 2,400 small-scale farmers have become fish farmers newly. It is expected that 7200 small-scale farmers will become fish farmers by the end of the Project. It is reported that quantity of fish catch is increased by establishing fish refuge pond and there are active participation of communities to manage fish refuge ponds. The Overall Goal will be achieved in the near future. Therefore, the progress and degree of the achievement of the Project are remarkable and it is expected that freshwater aquaculture will improve and extend further in the target provinces by the end of the Project.

Political sustainability and organization sustainability of the Fisheries Administration will be secured. In order to secure technical and financial sustainability, strengthening of the aquaculture extension network of the seed producing farmers is most important activity in the remaining period of the Project.

6. Recommendations

6-1 Recommendation to the Joint Coordinating Committee of the Project

As mentioned in "2.3 Proposed revision of PDM", the Joint Evaluation Team recommends the revision of the original PDM which was attached the Minutes of Meeting signed December 23, 2004.

6-2 Recommendation for the project activities in the remaining period of the Project

(1) The project activities should focus on the strengthening of the aquaculture extension network. Conceptual structure for aquaculture extension network (proposed) is described in ANNEX 10.

(2) According to the results of the socio-economic impact and farmers' assessment of the freshwater aquaculture development survey conducted in 2007, technical difficulties reported by the fish farmers are stunted fish, death of fish due to polluted water, fish loss due to wild fish predation, poaching, fish loss due to wild bird predation, high water turbidity rate, lack of water supply/source, small pond size, etc. It is recommended to distribute appropriate technical information, which reduces above problems, to small-scale fish farmers through seed producing farmers.

6-3 Recommendation to the Cambodian government

According to the evaluation results, the Project is on right track to conduct aquaculture extension activities because of the capacity building provided by the Project. However capacity of the aquaculture extension officers and core fish farmers still need to be improved. In this light, it is recommended that the Fisheries Administration seeks financial resources from other development partners and/or from national budget for this future capacity building and further extension activity.

6-4 Recommendation to the Japanese government

According to the 4.3 (3) mentioned, it is recommended that Japanese expert be dispatched at the beginning of new fiscal year (April) so that the implementation of the project activities can be conducted timely.

LIST OF ANNEXES

ANNEX 1 List of the Joint Evaluation Team Members

(1) Japanese member

No.	Title	Name	Position
1	Team Leader	Mr. Kazuhiro YONEDA	Resident Representative, JICA Cambodia
2	Vice Team Leader/ Aquaculture Extension Planning	Mr. Hideki TOMOBE	Group Leader, 1st Group, Dept. of Rural Development, JICA
3	Planning Management	Ms. Tomoko TANAKA	Assistant Resident Representative, JICA Cambodia
4	Evaluation and Analysis	Mr. Isao DOJUN	Sub-section Chief, Rural Development, International Project Department, Chuo Kaihatsu Corporation

(2) Cambodian member

No.	Name	Position
1	Mr. Thor Sensereivorth	Director of Planning and Accounting Division, Fisheries Administration, Ministry of Agriculture, Forestry and Fisheries
2	Mr. Lieng Sopha	Deputy Director, Inland Fisheries Research and Development Institute (IFeDI), Fisheries Administration, Ministry of Agriculture, Forestry and Fisheries

ANNEX 2 Schedule of the Mid-Term Evaluation

Date			Schedule.
Dec	9	Sun	Arrival to Cambodia ✈
	10	Mon	Meeting at JICA Cambodia Office Meeting with the Project Experts
	11	Tue	Field survey in Bati Fish Seed Production and Research Center, Prey Veng Province
	12	Wed	Field survey in Takeo Province
	13	Thu	Interviews to C/Ps Documentation
	14	Fri	Meeting within Evaluation Team Confirmation to DOF/AO on Draft Planning for indicators of PDM, Achievement & Evaluation Grid
	15	Sat	Arrangement of project document & materials
	16	Sun	ditto
	17	Mon	Meeting with DOF/AO on Studied Draft report including Jp Expert Meeting within Evaluation Team
	18	Tue	Report writing Arrival of Deputy Team Leader, Mr. Tomobe
	19	Wed	Final Meeting with DOF/AO, on the contents of Minutes of Meeting Mid-term report to JICA Cambodia Office
	20	Thu	Project Site Observation in Takeo Province Signing of M/M
	21	Fri	Report to Embassy of Japan Departure to Japan ✈
	22	Sat	Arrival to Japan

ANNEX 3 Project Design Matrix (Original and Revised)

(1) Original Version

Project Name: Freshwater Aquaculture Improvement and Extension Project in Cambodia

Target Area: Four Provinces (Prey Veng, Takeo, Kompong Speu, Kampot)

Project Period: 5 years from the arrival date of the first JICA expert(s) that is planned February 2005

Target group: Small-scale farmers, extension staff at provincial level, poorest farmers without land

Date: December 2004

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall goals Aquaculture production in target areas is increased.	Aquaculture production of target villages is increased by ( ) times.	• Post project monitoring report	
Project Purpose Small-scale aquaculture technologies are extended largely in target areas.	• Number of small-scale fish farmers is increased from existing 2000 households to 4400 households.	• Project monitoring reports	• Price of cultured fishes is not largely declined
Outputs 1. Seed producing farmers are trained among existing small-scale fish farmers by improving their aquaculture technologies.	• 20 seed producing farmers are developed and produce seeds by themselves	• Project monitoring reports	• Outbreak of serious fish disease does not occur.
2. Small-scale aquaculture technologies and its extension methods are improved.	• Small-scale aquaculture technologies suitable for local conditions are developed and its extension manual is prepared	• Technical reports/manuals	• Natural disasters such as extraordinary drought and flood do not take place.
3. Aquaculture-related activities to benefit the poorest landless farmers are promoted.	• Stock enhancement activities are undertaken in 20 community ponds	• Project monitoring reports	
4. An aquaculture extension network in rural area is developed	• 2,400 small-scale farmers carry out aquaculture by themselves. • ( ) farmer's groups carry out group activities.	• Project monitoring reports	

Activities	Input		
1.1 Review the result of foregoing projects of similar type, analyze current situation and identify problems in rural aquaculture of target provinces 1.2 Select model villages to train seed producing farmers based on the baseline survey result. 1.3 Select candidate seed producing farmers in the course of extension activities on the nursing and grow-out technologies extended towards small-scale fish farmers of model villages in cooperation with local extension staff 1.4 Train seed producing farmers in cooperation with local extension staff through extension activities and intensive training for the candidate farmers on the broodstock management, pond management, nursery operation, marketing, etc. 2.1 Train local extension staff on the aquaculture technologies and extension methods. 2.2 Strengthen small-scale experimental facilities to support technical improvement. 2.3 Compare and examine small-scale aquaculture technologies suitable for local conditions in the small-scale experimental facilities. 3.1 Undertake stock enhancement activities through release of breeders and seeds in the community ponds. 3.2 Arrange management scheme for the community ponds 4.1 Prepare a farmer-based aquaculture extension program in cooperation with the seed producing farmers and the local extension staff. 4.2 Train small-scale fish farmers through training and extension activities conducted principally by seed producing farmers, utilizing improved technologies by the Project. 4.3 Encourage grouping of small-scale fish farmers through distribution of seeds, aquaculture-related material and technical information in the rural area. 4.4 Incorporate aquaculture into school activities 4.5 Prepare farmer-based aquaculture extension programs for the target provinces by summarize case studies of small-scale aquaculture activities.	[Japanese side] (Total: about JPY 550,000,000) a) Experts: (Long-term 3 persons) Chief Advisor/Extension Administration, Aquaculture Technology Improvement and Extension, Rural Development/Coordinator (Short-term) Broodstock Management/Seed Production, Participatory Planning, Feed Development, Community Pond Management, Gender Mainstreaming, Marketing of Cultured Fishes, Facility Design, Tendering Support/Supervision of Construction, etc. b) Equipment provision Vehicles and various aquaculture equipment, as per necessity c) Acceptance of trainees Two to three trainees will be accepted in Japan or the third countries per year. d) Operation cost	[Cambodia side] a) Counterparts (Local society) New seed production farmers, community pond management organization (person) (Government) Necessary number of counterparts and administrative staff are assigned from the Department of Fisheries, Provincial Fishery Offices and the Bati Fish Seed Production and Research Center b) Facilities and equipment Basic facilities and equipment necessary for the Project including offices, meeting rooms, training rooms, laboratories and fish ponds	

Note: The indicators related to aquaculture production and the number of farmers' group will be set based on the baseline survey.

(2) Revised Version 1 (proposed)

Project Name: Freshwater Aquaculture Improvement and Extension Project in Cambodia

Target Area: Four Provinces (Prey Veng, Takeo, Kompong Speu, Kampot)

Project Period: 5 years from 28 February 2005 to 27 February 2010

Target group: Small-scale farmers, extension staff at provincial level, poor farmers

Date of Revision: 20 December 2007

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall goals Aquaculture production in target provinces is increased.	Aquaculture production of target provinces is increased by 1.5 times.	• Statistical data of the Fisheries Administration	
Project Purpose Small-scale aquaculture technologies are extended largely in target provinces.	• Number of small-scale fish farmers is increased from existing 2,000 households to 4,400 households.	• Project monitoring reports	• Price of cultured fishes is not largely declined • Natural disasters such as extraordinary drought and flood do not take place.
Outputs			
1. Seed producing farmers are trained among existing small-scale fish farmers by improving their aquaculture technologies.	• 20 seed producing farmers are developed and produce seeds by themselves	• Project monitoring reports	• Outbreak of serious fish disease does not occur. • Natural disasters such as extraordinary drought and flood do not take place.
2. Small-scale aquaculture technologies and its extension methods are improved.	• Small-scale aquaculture technologies suitable for local conditions are developed and its extension materials are prepared	• Technical reports/manuals	
3. Aquaculture-related activities to benefit the poor farmers are promoted.	• Stock enhancement activities are undertaken in 20 fish refuge ponds	• Project monitoring reports	
4. An aquaculture extension network in rural area is developed	• Seed producing farmers conduct farmer to farmer training at least once a year by their initiative. • Meetings of the network in each target province are held 3 times a year. • Joint meeting of the network for all target provinces is held at least once a year.	• Project monitoring reports • Project monitoring reports • Project monitoring reports	

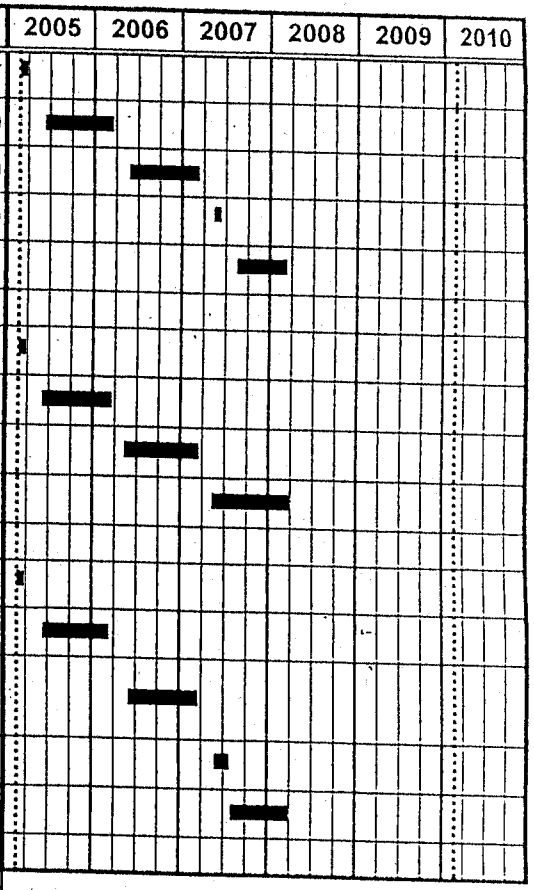
Activities	Input		
1.1 Review the result of foregoing projects of similar type, analyze current situation and identify problems in rural aquaculture of target provinces 1.2 Select model villages to train seed producing farmers based on the baseline survey result. 1.3 Select candidate seed producing farmers in the course of extension activities on the nursing and grow-out technologies extended towards small-scale fish farmers of model villages in cooperation with local extension staff 1.4 Train seed producing farmers in cooperation with local extension staff through extension activities and intensive training for the candidate farmers on the broodstock management, pond management, nursery operation, marketing, etc. 2.1 Train local extension staff on the aquaculture technologies and extension methods. 2.2 Strengthen small-scale experimental facilities to support technical improvement. 2.3 Compare and examine small-scale aquaculture technologies suitable for local conditions in the small-scale experimental facilities. 3.1 Undertake stock enhancement activities through release of breeders and seeds in the community ponds. 3.2 Arrange management scheme for the fish refuge ponds 4.1 Prepare a farmer-based aquaculture extension program in cooperation with the seed producing farmers and the local extension staff. 4.2 Train small-scale fish farmers through training and extension activities conducted principally by seed producing farmers, utilizing improved technologies by the Project. 4.3 Encourage grouping of small-scale fish farmers through distribution of seeds, aquaculture-related material and technical information in the rural area. 4.4 Incorporate aquaculture into school activities 4.5 Prepare farmer-based aquaculture extension programs for the target provinces by summarize case studies of small-scale aquaculture activities. 4.6 Provide support necessary for strengthening the core fish farmer's network	[Japanese side] (Total: about JPY 550,000,000) e) Experts: (Long-term 3 persons) Chief Advisor/Extension Administration, Aquaculture Technology Improvement and Extension, Rural Development/Coordinator (Short-term) Broodstock Management/Seed Production, Participatory Planning, Feed Development, Community Pond Management, Gender Mainstreaming, Marketing of Cultured Fishes, Facility Design, Tendering Support/Supervision of Construction, etc. f) Equipment provision Vehicles and various aquaculture equipment, as per necessity g) Acceptance of trainees Two to three trainees will be accepted in Japan or the third countries per year. h) Operation cost	[Cambodia side] a) Counterparts (Local society) New seed production farmers, community pond management organization (person) (Government) Necessary number of counterparts and administrative staff are assigned from the Department of Fisheries, Provincial Fishery Offices and the Bati Fish Seed Production and Research Center b) Facilities and equipment Basic facilities and equipment necessary for the Project including offices, meeting rooms, training rooms, laboratories and fish ponds	

Note: Core fish farmers: Fish seed producing farmers who became trainers for fish farmers.

ANNEX 4 Dispatch of Japanes Experts and Third Country Experts

1. Long-stay type Japanese Experts

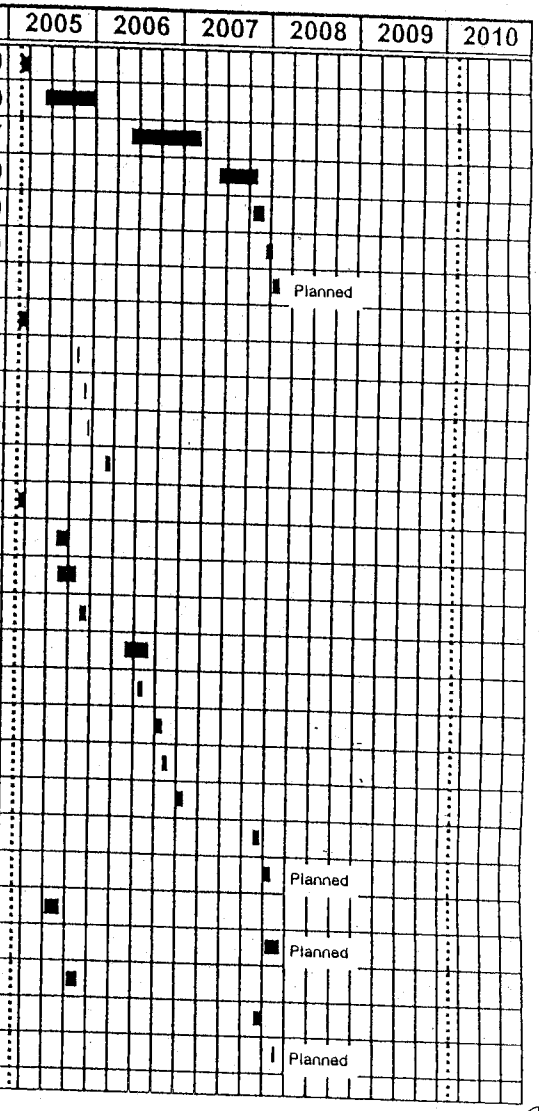
No.	Name	Field	JFY	Period	Days	M/M
1-1	Mr. Satoshi Chikami	Chief Advisor/ Extension Administration	2004	2005.02.28 - 2005.03.31	32	1.07
1-2	Mr. Satoshi Chikami	Chief Advisor/ Extension Administration	2005	2005.06.20 - 2006.03.22	276	9.20
1-3	Mr. Satoshi Chikami	Chief Advisor/ Extension Administration	2006	2006.05.23 - 2007.03.21	303	10.10
1-4	Mr. Yoshitetsu Nukiyama	Chief Advisor/ Extension Administration	2007	2007.05.26 - 2006.06.24	30	1.00
1-5	Mr. Yoshitetsu Nukiyama	Chief Advisor/ Extension Administration	2007	2007.08.15 - 2008.03.16	214	7.13
2-1	Dr. Kenzo Utsugi	Aquaculture Improvement and Extension	2004	2005.03.02 - 2005.03.31	30	1.00
2-2	Dr. Kenzo Utsugi	Aquaculture Improvement and Extension	2005	2005.06.27 - 2006.03.18	265	8.83
2-3	Dr. Kenzo Utsugi	Aquaculture Improvement and Extension	2006	2006.05.23 - 2007.03.21	303	10.10
2-4	Dr. Kenzo Utsugi	Aquaculture Improvement and Extension	2007	2007.05.16 - 2008.03.30	319	10.63
3-1	Ms. Mineko Sato	Coordinator/ Rural Development	2004	2005.02.28 - 2005.03.31	32	1.07
3-2	Ms. Mineko Sato	Coordinator/ Rural Development	2005	2005.06.20 - 2006.03.08	262	8.73
3-3	Mr. Akira Maekawa/ Mr.Tetsuo Yamashita	Coordinator/ Rural Development	2006	2006.06.21 - 2007.03.27	280	9.33
3-4	Dr. Kasumi Ito	Coordinator/ Rural Development	2007	2007.05.23 - 2007.07.21	60	2.00
3-5	Mr. Hitoshi Iriyama	Coordinator/ Rural Development	2007	2007.07.22 - 2008.03.30	252	8.40
				Total		88.60



Remark: JFY is Japanese Fiscal Year (from April to March of next year)
M/M: Man Month

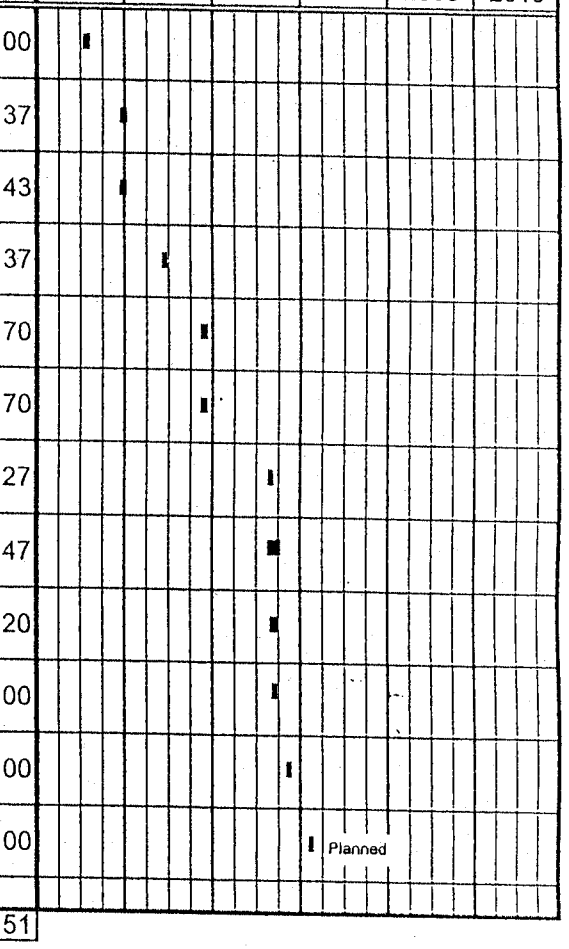
2. Short-term Japanese Experts

No.	Name	Field	JFY	Period	Days	M/M
1-1	Dr. Shiro Hara	Broodstock Management/ Seed Production	2004	2005.03.02 - 2005.03.31	30	1.00
1-2	Dr. Shiro Hara	Broodstock Management/ Seed Production	2005	2005.06.20 - 2005.12.31	195	6.50
1-3	Dr. Shiro Hara	Broodstock Management/ Seed Production	2006	2006.05.23 - 2007.03.17	299	9.97
1-4	Dr. Shiro Hara	Broodstock Management/ Seed Production	2007	2007.05.26 - 2007.10.13	141	4.70
1-5	Dr. Shiro Hara	Broodstock Management/ Seed Production	2007	2007.10.24 - 2007.12.04	42	1.40
1-6	Dr. Shiro Hara	Broodstock Management/ Seed Production	2007	2007.12.09 - 2008.01.04	27	0.90
1-7	Dr. Shiro Hara	Broodstock Management/ Seed Production	2007	2008.01.dd - 2008.02.dd	20	0.67
2-1	Mr. Soichi Takai	Facility Design	2004	2005.03.02 - 2005.03.25	24	0.80
2-2	Mr. Soichi Takai	Facility Improvement	2005	2005.10.06 - 2005.10.14	9	0.30
2-3	Mr. Soichi Takai	Facility Improvement	2005	2005.11.23 - 2005.12.09	17	0.57
2-4	Mr. Soichi Takai	Facility Improvement	2005	2005.12.15 - 2005.12.21	7	0.23
2-5	Mr. Soichi Takai	Facility Improvement	2005	2006.03.04 - 2006.03.10	7	0.23
3-1	Mr. Akira Maekawa	Baseline Survey	2004	2005.03.14 - 2005.03.27	14	0.47
3-2	Ms. Aya Yamaguchi	Baseline Survey	2005	2005.07.18 - 2005.08.31	45	1.50
4-1	Dr. Masanori Doi	Fish Refugee Pond Management	2005	2005.07.23 - 2005.09.30	70	2.33
4-2	Dr. Masanori Doi	Fish Refugee Pond Management	2005	2005.11.24 - 2005.12.23	30	1.00
4-3	Dr. Masanori Doi	Fish Refugee Pond Management	2006	2006.06.08 - 2006.08.24	78	2.60
4-4	Mr. Soichi Takai	Fish Refugee Pond Management	2006	2006.07.11 - 2006.07.20	10	0.33
4-5	Dr. Masanori Doi	Fish Refugee Pond Management	2006	2006.10.05 - 2006.10.25	21	0.70
4-6	Mr. Soichi Takai	Fish Refugee Pond Management	2006	2006.11.08 - 2006.11.22	15	0.50
4-7	Dr. Masanori Doi	Fish Refugee Pond Management	2006	2007.01.18 - 2007.02.07	21	0.70
4-8	Dr. Masanori Doi	Fish Refugee Pond Management	2007	2007.12.05 - 2007.12.24	21	0.70
4-9	Mr. Akira Maekawa	Fish Refugee Pond Management	2007	2008.01.03 - 2007.01.23	21	0.70
5-1	Mr. Osamu Yamada	Feed Development	2005	2005.07.18 - 2005.09.15	60	2.00
5-2	Mr. Osamu Yamada	Feed Development	2006	2007.01.16 - 2007.03.16	60	2.00
6-1	Ms. Aya Yamaguchi	Gender Mainstreaming	2005	2005.10.07 - 2005.11.30	55	1.83
6-2	Ms. Aya Yamaguchi	Gender Mainstreaming	2007	2007.11.29 - 2007.12.28	30	1.00
7-1	Dr. Kunihiko Hukusyo	Sminar Support/Manual drawing	2007	2008. 02.dd - 2008.02.dd	12	0.40
				Total		46.03



3. Third-country Experts

No.	Name	Field	JFY	Period	Days	M/M
1	Mr. Kamal Phuyal (Nepal)	Participatory Workshop	2005	2005.09.10 - 2005.10.09	30	1.00
2	Dr. Nguyen Thanh Phuong (Vietnam)	Feasibility Study of Giant Freshwater Prawn Seed Production and Culture	2005	2005.12.26 - 2006.01.05	11	0.37
3	Dr. Tran Ngoc Hai (Vietnam)	Feasibility Study of Giant Freshwater Prawn Seed Production and Culture	2005	2005.12.26 - 2006.01.07	13	0.43
4	Mr. Maskur (Indonesia)	Broodstock Quality Management	2006	2006.08.21 - 2006. 08.31	11	0.37
5	Mr. Utomo Bambang (Indonesia)	Aquaculture Training Development	2006	2006.11.12 - 2006.12.02	21	0.70
6	Mr. Odang Carman (Indonesia)	Small-scale Hatchery Development	2006	2006.11.12 - 2006.12.02	21	0.70
7	Mr. Maskur (Indonesia)	Broodstock Quality Management	2007	2007.08.21 - 2007.08.28	8	0.27
8	Mr. Minid Hamid (Indonesia)	Pangasius Seed Production	2007	2007.08.21- 2007.10.03	44	1.47
9	Mr. Tran Ngoe Hai (Vietnam)	Giant Freshwater Prawn Seed Production and Culture	2007	2007.08.27 - 2007.10.01	36	1.20
10	Mr. Sanjay K. Das (India)	Small-scale Hatchery Design & Rural Fish Seed Production	2007	2007.09.01 - 2007.09.30	30	1.00
11	Mr. Kamal Phuyal (Nepal)	participatory Planning and Evaluation	2007	2007.10.15 - 2007.11.13	30	1.00
12	M.C. Nandeesha (India)	Training Development	2007	2008.01.dd - 2008.02.dd	30	1.00
				Total		9.51



ANNEX 5 Provision of Equipment by Japanese Side

(1) Major equipment and cost

Year	Major equipment	Cost in Japanese Yen	Amount converted to US dollar
JFY2004	Equipments use for extension activities, technical development and office.	1,843,000	US$16,000.00
JFY2005	4WD Vehicle 2 cars	5,000,000	US$43,500.00
	Equipments use for extension activities, technical development and office.	12,990,000	US$113,000.00
JFY2006	Mini-bus 1 car	2,726,000	US$23,700.00
	Pick-up Truck 1 car	2,291,000	US$20,000.00
	Equipments use for extension activities, technical development and office	2,031,000	US$17.70
Total		26,881,000	US$216,217.70

(2) Expenditure for Infrastructure Development

JFY2005	Bati Fish Seed Production Research Center - Water intake and discharge system - Fishponds and dike renovation - Deep well - Hatchery and Wet laboratory - Feed preparation facilities, and so on.	20,000,000	US$ 174,000

JFY: Japanese Fiscal Year (from April to March of next year)

ANNEX 6 Counterpart Training in Japan and Third Countries

(1) Training in Japan

No.	Name	Organization and Position	Title of training Course	Period of training		Remarks
				From	To	
1	Mr. Nao Thuok	Director General, Fisheries Administration (FiA)	Observation Tour on Fisheries	2005.08.29	2005.09.10	
2	Mr. Ouch Lang	Officer, Aquaculture Office, FiA	Training on Freshwater Fish Seed Production	2006.03.29	2006.07.01	
3	Mr. Eng Cheasan	Deputy Director, FiA	Observation Tour on Fisheries	2006.10.09	2006.10.27	
4	Mr. Hav Viseth	Chief, Aquaculture Office, FiA	Observation Tour on Fisheries	2006.10.09	2006.10.27	
5	Mr. Haing Leap	Deputy Chief, Aquaculture Office, FiA	Training on Freshwater Fish Seed Production	2007.03.31	2007.06.30	
6	Mr. Ouk Hak	Officer, Takeo Provincial Fisheries Office (extension officer)	Training on Freshwater Fish Seed Production	2007.03.31	2007.06.30	

(2) Training and Study Tour in Asian Countries

1) Philippnes

1	Mr. Hav Viseth	Chief, Aquaculture Office, FiA	Freshwater Aquaculture technique (Study Tour)	2005.10.19	2005.10.27	
2	Mr. Sam Narith	Officer, Aquaculture Office, FiA	Freshwater Aquaculture technique (Study Tour)	2005.10.19	2005.10.27	
3	Mr. Pol Mimosa	Officer, Aquaculture Office, FiA	Freshwater Aquaculture technique (Study Tour)	2005.10.19	2005.10.27	
4	Mr. Ouk Hak	Officer, Takeo Provincial Fisheries Office (extension officer)	Freshwater Aquaculture technique (Study Tour)	2005.10.19	2005.10.27	
5	Mr. Phon Pech	Officer, Kampong Speu Provincial Fisheries Office (extension officer)	Freshwater Aquaculture technique (Study Tour)	2005.10.19	2005.10.27	
6	Mr. Chan Samnang	Officer, Prey Veng Provincial Fisheries Office (extension officer)	Freshwater Aquaculture technique (Study Tour)	2005.10.19	2005.10.27	
7	Mr. Sar Sorin	Officer, Kampot Provincial Fisheries Office (extension officer)	Freshwater Aquaculture technique (Study Tour)	2005.10.19	2005.10.27	

2) Tailand

1	Mr. Chin Da	Deputy Chief, Aquaculture Office, FIA	Freshwater Aquaculture technique (Study Tour)	2005.11.21	2005.11.30	
2	Mr. Ouch Lang	Officer, Aquaculture Office, FiA	Freshwater Aquaculture technique (Study Tour)	2005.11.21	2005.11.30	
3	Mr.Meas Sareth	Officer, Takeo Provincial Fisheries Office (extension officer)	Freshwater Aquaculture technique (Study Tour)	2005.11.21	2005.11.30	
4	Mr. Seng Sam Oeun	Deputy Chief, Prey Veng Provincial Fisheries Office (extension officer)	Freshwater Aquaculture technique (Study Tour)	2005.11.21	2005.11.30	
5	Mr. Pheun Phalla	Officer, Kampot Provincial Fisheries Office (extension officer)	Freshwater Aquaculture technique (Study Tour)	2005.11.21	2005.11.30	
6	Ms. Chhim Chantha	Officer, Kampong Speu Provincial Fisheries Office (extension officer)	Freshwater Aquaculture technique (Study Tour)	2005.11.21	2005.11.30	
7	Ms. Hun Sotheary	Officer, Takeo Provincial Fisheries Office (extension officer)	Freshwater Aquaculture technique (Study Tour)	2005.11.21	2005.11.30	
8	Mr. Uy Chhou	Seed Producing Farmer in Prey Veng Province	Freshwater Aquaculture technique (Study Tour)	2005.11.21	2005.11.30	
9	Mr. Prum Vath	Seed Producing Farmer in Takeo Province	Freshwater Aquaculture technique (Study Tour)	2005.11.21	2005.11.30	
10	Mr. Keo Nim	Seed Producing Farmer in Kampong Speu Province	Freshwater Aquaculture technique (Study Tour)	2005.11.21	2005.11.30	

3) Veitnam

No.	Name	Organization and Position	Title of training Course	Period of training		Remarks
				From	To	
1	Mr. Haing Leap	Deputy Chief, Aquaculture Office, FiA	Giant Freshwater Prawn Seed production (Training)	2006.02.26	2006.04.22	
2	Mr. Sam Narith	Officer, Aquaculture Office, FiA	Giant Freshwater Prawn Seed production (Training)	2006.02.26	2006.04.22	
3	Mr. Ngan Heng	Director, Bati Fish Seed Production and Research Center	Giant Freshwater Prawn Seed production (Training)	2006.02.26	2006.04.22	
4	Mr. Prum Vath	Seed Producing Farmer in Takeo Province	Giant Freshwater Prawn Seed production (Training)	2006.02.26	2006.04.22	
5	Mr. Vin Cheoun	Seed Producing Farmer in Takeo Province	Giant Freshwater Prawn Seed production (Training)	2006.02.26	2006.04.22	
6	Mr. Chin Da	Deputy Chief, Aquaculture Office, FiA	Mekong Indigenous Species Seed Production and Culture (Study Tour)	2006.07.02	2006.07.13	
7	Mr. Ouk Hak	Officer, Kampong Speu Provincial Fisheries Office (extension officer)	Mekong Indigenous Species Seed Production and Culture (Study Tour)	2006.07.02	2006.07.13	
8	Mr. Chan Samnang	Officer, Prey Veng Provincial Fisheries Office (extension officer)	Mekong Indigenous Species Seed Production and Culture (Study Tour)	2006.07.02	2006.07.13	
9	Mr. Prum Vath	Seed Producing Farmer in Takeo Province	Mekong Indigenous Species Seed Production and Culture (Study Tour)	2006.07.02	2006.07.13	
10	Mr. Sam Hak	Seed Producing Farmer in Takeo Province	Mekong Indigenous Species Seed Production and Culture (Study Tour)	2006.07.02	2006.07.13	
11	Mr. Long Yuos	Seed Producing Farmer in Takeo Province	Mekong Indigenous Species Seed Production and Culture (Study Tour)	2006.07.02	2006.07.13	
12	Mr. Pheng Vy	Seed Producing Farmer in Prey Veng Province	Mekong Indigenous Species Seed Production and Culture (Study Tour)	2006.07.02	2006.07.13	
13	Mr. Dol Ly	Seed Producing Farmer in Kampong Speu Province	Mekong Indigenous Species Seed Production and Culture (Study Tour)	2006.07.02	2006.07.13	
14	Mr. Moeng Mean	Seed Producing Farmer in Kampot Province	Mekong Indigenous Species Seed Production and Culture (Study Tour)	2006.07.02	2006.07.13	
15	Mr. Hav Viseth	Chief, Aquaculture Office, FiA	Mekong Freshwater Aquaculture technique (Study Tour)	2007.02.25	2007.03.03	
16	Mr. Chin Da	Deputy Chief, Aquaculture Office, FiA	Mekong Freshwater Aquaculture technique (Study Tour)	2007.02.25	2007.03.03	
17	Ms. Tun Ketputhearith	Deputy Chief, Technical Extension Office, FiA	Mekong Freshwater Aquaculture technique (Study Tour)	2007.02.25	2007.03.03	
18	Mr. Men Hon	Seed Producing Farmer in Takeo Province	Mekong Freshwater Aquaculture technique (Study Tour)	2007.02.25	2007.03.03	
19	Mr. Kith Lonh	Seed Producing Farmer in Prey Veng Province	Mekong Freshwater Aquaculture technique (Study Tour)	2007.02.25	2007.03.03	
20	Mr. Dy Sophy	Seed Producing Farmer in Kampong Speu Province	Mekong Freshwater Aquaculture technique (Study Tour)	2007.02.25	2007.03.03	
21	Mr. Phoeng Rin	Seed Producing Farmer in Kampot Province	Mekong Freshwater Aquaculture technique (Study Tour)	2007.02.25	2007.03.03	
22	Mr. Ouch Lang	Officer, Aquaculture Office, FiA	Mekong Freshwater Aquaculture technique (Study Tour) & Giant Freshwater Prawn Seed production (Training)	2007.02.25 2007.03.04	2007.03.03 2007.04.12	
23	Mr. Kim Sophea	Officer, Aquaculture Office, FiA	Mekong Freshwater Aquaculture technique (Study Tour) & Giant Freshwater Prawn Seed production (Training)	2007.02.25 2007.03.04	2007.03.03 2007.04.12	
24	Mr. Khiev Sam	Seed Producing Farmer in Takeo Province	Mekong Freshwater Aquaculture technique (Study Tour) & Giant Freshwater Prawn Seed production (Training)	2007.02.25 2007.03.04	2007.03.03 2007.04.12	
25	Mr. Long Yuos	Seed Producing Farmer in Takeo Province	Mekong Freshwater Aquaculture technique (Study Tour) & Giant Freshwater Prawn Seed production (Training)	2007.02.25 2007.03.04	2007.03.03 2007.04.12	
26	Mr. Ly Sophal	Seed Producing Farmer in Prey Veng Province	Mekong Freshwater Aquaculture technique (Study Tour) & Giant Freshwater Prawn Seed production (Training)	2007.02.25 2007.03.04	2007.03.03 2007.04.12	

4) Indonesia

No.	Name	Organization and Position	Title of training Course	Period of training		Remarks
				From	To	
1	Mr. Hav Viseth	Chief, Aquaculture Office, FiA	Advanced Freshwater Aquaculture extension	2006.11.27	2006.12.06	
2	Mr. Chin Da	Deputy Chief, Aquaculture Office, FiA	Advanced Freshwater Aquaculture extension	2006.11.27	2006.12.06	
3	Mr. Lack Bunthy	Officer, Aquaculture Office, FiA	Advanced Freshwater Aquaculture extension	2006.11.27	2006.12.06	
4	Mr. Ouk Hak	Officer, Takeo Provincial Fisheries Office (extension officer)	Advanced Freshwater Aquaculture extension	2006.11.27	2006.12.06	
5	Mr. Phon Pech	Officer, Kampong Speu Provincial Fisheries Office (extension officer)	Advanced Freshwater Aquaculture extension	2006.11.27	2006.12.06	
6	Mr, Ngin Sok	Officer, Prey Veng Provincial Fisheries Office (extension officer)	Advanced Freshwater Aquaculture extension	2006.11.27	2006.12.06	
7	Mr. King Sophany	Officer, Kampot Provincial Fisheries Office (extension officer)	Advanced Freshwater Aquaculture extension	2006.11.27	2006.12.06	
8	Mr. Sam Narith	Officer, Aquaculture Office, FiA	Pangasius Seed Production	2008.01.15	2008.02.13	(Planned)
9	Mr. Ros Narin	Officer, Bati Fish Seed Production and Research Center	Pangasius Seed Production	2008.01.15	2008.02.13	(Planned)
10	Mr. Phon Pech	Officer, Kampong Speu Provincial Fisheries Office (extension officer)	Pangasius Seed Production	2008.01.15	2008.02.13	(Planned)
11	Mr. Khiev Sam	Seed Producing Farmer in Takeo Province	Pangasius Seed Production	2008.01.15	2008.02.13	(Planned)
12	Mr. Heng Ken	Seed Producing Farmer in Kampong Speu Province	Pangasius Seed Production	2008.01.15	2008.02.13	(Planned)
13	Mr. Ouch Lang	Officer, Aquaculture Office, FiA	Tilapia Breeding	2008.01.15	2008.01.29	(Planned)
14	Mr. Savin Hang	Officer, Aquaculture Office, FiA	Tilapia Breeding	2008.01.15	2008.01.29	(Planned)
15	Mr. Lach Bunthy	Officer, Aquaculture Office, FiA	Tilapia Breeding	2008.01.15	2008.01.29	(Planned)
16	Mr. Kheav Sambok	Officer, Kampong Speu Provincial Fisheries Office (extension officer)	Tilapia Breeding	2008.01.15	2008.01.29	(Planned)
17	Mrs. Sep Thy	Seed Producing Farmer in Kampot Province	Tilapia Breeding	2008.01.15	2008.01.29	(Planned)
18	Mr. Ly Sophal	Seed Producing Farmer in Prey Veng Province	Tilapia Breeding	2008.01.15	2008.01.29	(Planned)
19	Mr. Men Hon	Seed Producing Farmer in Takeo Province	Tilapia Breeding	2008.01.15	2008.01.29	(Planned)

(3) Other kinds of training (out of the framework of the Project)

1	Mr. Sar Sorin	Officer, Kampot Provincial Fisheries Office (extension officer)	JICA third country group training course "Participatory approach for extension project" in Philippines	2006.02.14	2006.02.22	
2	Mr. Kim Sophea	Officer, Aquaculture Office, FiA	Tilapia Breeding in Singapore	2006.02.19	2006.03.04	

ANNEX 7 Local Cost Borne by Japanese Side

(Unit: Yen)

	Category	JFY2004 Actual	JFY2005 Actual	JFY2006 Actual	JFY2007 Contract	Total
1)	Employment Cost	110,921	1,977,135	1,764,838	3,583,172	7,436,066
2)	Equipment Maintenance Cost	0	8,453	241,041	265,132	514,626
3)	Consumables Cost	1,254,694	2,137,368	1,688,997	1,613,000	6,694,059
4)	Travel Transportation Cost	0	7,065,555	7,018,976	5,184,602	19,269,133
5)	Communication Cost	165,432	636,862	679,964	592,529	2,074,787
6)	Materials and Document Preparation Cost	306,012	703,425	1,348,018	2,931,760	5,289,215
7)	Cost for Car Rental and Fuel	273,761	4,057,758	2,593,921	1,904,792	8,830,232
8)	Cost for Electricity and Water	0	200,058	812,363	880,383	1,892,804
9)	Cost for Securing Human Resources	318,700	4,125,884	4,917,315	6,762,252	16,124,151
10)	Local Training Cost	0	3,402,128	4,121,511	6,755,000	14,278,639
11)	Third Country Training Cost	0	0	0	6,385,571	6,385,571
12)	Miscellaneous Cost	2,115	3,827,247	4,166,501	3,664,814	11,660,677
13)	Cost for Equipment Transportation	80,000	845,000	0	0	925,000
14)	Cost for Local Consultant Employment	0	2,675,000	1,056,000	2,816,000	6,547,000
15)	Meeting Expense	20,000	79,000	48,000	71,000	218,000
Total		2,531,635	31,740,873	30,457,445	43,410,007	108,139,960

Remark: JPY is Japanese Fiscal Year (from April to March of next year)

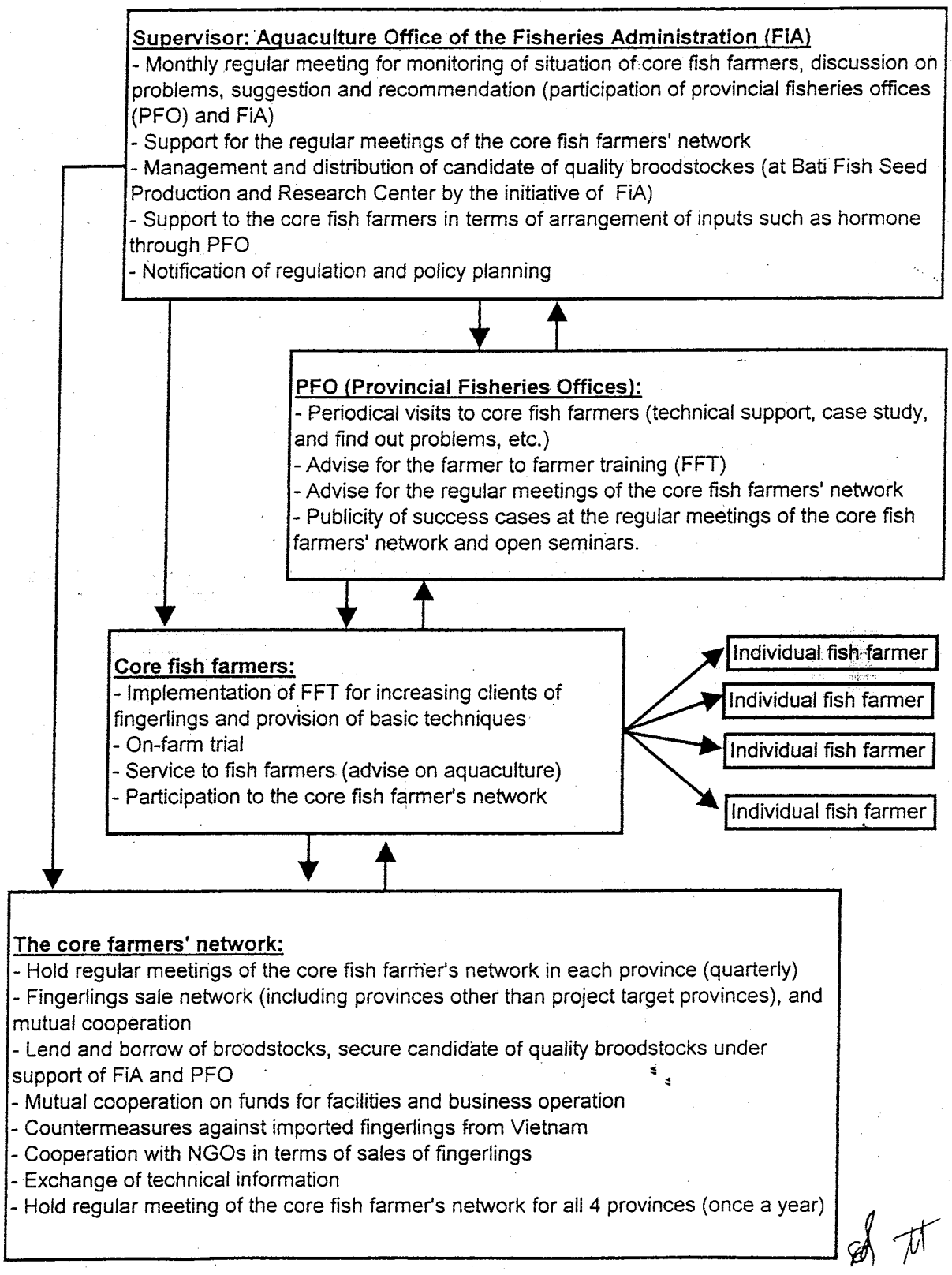
ANNEX 8 Assignment of the Counterpart Personnel by Cambodia Side

No	Name	Office	Position	Period of Assignment		2005	2006	2007	2008	2009	2010	Remarks (Training)
				From	To							
1	H.E. Nao Thuok	Fisheries Administration (FiA)	Director General	Jun 22, 2005	at present							Japan
2	Mr. Hav Viseth	Aquaculture Office, (FiA)	Chief	Jun 22, 2005	at present							Philippines, Japan, Indonesia, and Vietnam
3	Mr. Chin Da	Aquaculture Office, (FiA)	Deputy Chief	Jun 22, 2005	at present							Tailand, Vietnam, Indonesia, and Vietnam
4	Mr. Haing Leap	Aquaculture Office, (FiA)	Deputy Chief	Jun 22, 2005	at present							Vietnam and Japan
5	Mr. Ouch Lang	Aquaculture Office, (FiA)	Officer	Jun 22, 2005	at present							Thailand, Japan, Vienam, and Indodnesia (planned)
6	Mr. Pol Mimosa	Aquaculture Office, (FiA)	Officer	Jun 22, 2005	at present							Philippines
7	Mr. Sam Narith	Aquaculture Office, (FiA)	Officer	Jun 22, 2005	at present							Philippines, Vietnam, and Indonesia (planned)
8	Mr. Kim Sophea	Aquaculture Office, (FiA)	Officer	Jun 22, 2005	at present							Vietnam
9	Mrs. Chhy Savry	Aquaculture Office, (FiA)	Officer	Jun 22, 2005	at present							
10	Mrs. Sar Hokseng	Aquaculture Office, (FiA)	Officer	Jun 22, 2005	at present							
11	Mrs. Ker Phalla	Aquaculture Office, (FiA)	Officer	Jun 22, 2005	at present							
12	Mr. Hem Than	Aquaculture Office, (FiA)	Officer	Jun 22, 2005	at present							
13	Mr. Lach Bunthy	Aquaculture Office, (FiA)	Officer	Jun 22, 2005	at present							Indonesia and Indinesia (planned)
14	Ms. Tun Ketputhearith	Aquaculture Office, (FiA)	Officer	Jun 22, 2005	at present							Vietnam
15	Mr. Seng SamOeun	Prey Veng Provincial Fisheries Office	Deputy Chief	Jun 22, 2005	at present							Thailand
16	Mr. Chan SamNang	Prey Veng Provincial Fisheries Office	Officer	Jun 22, 2005	at present							Philippines and Vietnam
17	Mr. Ngin Sok	Prey Veng Provincial Fisheries Office	Officer	Jun 22, 2005	at present							Indonesia
18	Mr. Kan Bonvarun	Prey Veng Provincial Fisheries Office	Officer	Jun 22, 2005	at present							
19	Mr. Lieng Sarin	Prey Veng Provincial Fisheries Office	Officer	Aug 05, 2007	at present							
20	Mr. Ouk Hak	Takeo Provincial Fisheries Office	Officer	Jun 22, 2005	at present							Philippines, Vietnam, Indonesia, and Japan
21	Ms. Hun Sotheary	Takeo Provincial Fisheries Office	Officer	Jun 22, 2005	at present							Thailand
22	Mr. Meas Sareth	Takeo Provincial Fisheries Office	Officer	Jun 22, 2005	at present							Thailand
23	Mr. Sao Kosal	Takeo Provincial Fisheries Office	Officer	Jun 22, 2005	at present							
24	Mr. Hong Chathon	Takeo Provincial Fisheries Office	Officer	Jul 01, 2006	at present							
25	Mr. Sar Sorin	Kampot Provincial Fisheries Office	Officer	Jun 22, 2005	at present							Philippines
26	Mr. Pheun Phalla	Kampot Provincial Fisheries Office	Officer	Jun 22, 2005	at present							Thailand
27	Mr. King Sophany	Kampot Provincial Fisheries Office	Officer	Jun 22, 2005	at present							Indonesia
28	Mr. Ly Seyha	Kampot Provincial Fisheries Office	Officer	Jun 22, 2005	at present							
29	Mr. In Savan	Kampot Provincial Fisheries Office	Officer	Jul 01, 2006	at present							
30	Mr. Phon Pech	Kampong Speu Povincial Fisheries Office	Officer	Jun 22, 2005	at present							Philippines, Indonesia, and Indonesia (planned)
31	Mrs. Chhim Chantha	Kampong Speu Povincial Fisheries Office	Officer	Jun 22, 2005	at present							Thalland
32	Mr. You SamOn	Kampong Speu Povincial Fisheries Office	Officer	Jun 22, 2005	at present							
33	Mr. Kheav Sambok	Kampong Speu Povincial Fisheries Office	Officer	Jun 22, 2005	at present							Indonesia (planned)
34	Mr. In Savuth	Kampong Speu Povincial Fisheries Office	Officer	Sep 01, 2006	at present							
35	Mr. Ngan Heng	Bati Fish Seed Production and Research Center	Director	Jun 22, 2005	at present							Vietnam
36	Mr. Ros Narin	Bati Fish Seed Production and Research Center	Officer	Jun 22, 2005	at present							Indonesia (planned)
37	Mr. Huy Rithea	Bati Fish Seed Production and Research Center	Officer	Jun 22, 2005	at present							
38	Mr. Sim Peara	Bati Fish Seed Production and Research Center	Officer	May 17, 2007	at present							
39	Mr. Try Heng	Bati Fish Seed Production and Research Center	Officer	Jun 01, 2007	at present							

ANNEX 9 Achievement of Activities the Project

Plan of Activities according to PO									Progress of Activities		Final Achievement (Future plan)
Contents of Item		Implemented period									
Title	Activities	1st Year	2nd year	3rd year	4th year	5th year	6th year		Results of Activities	Outcome of Activities	
OUTPUT 1: Seed producing farmers are trained among as existing small-scale fish farmers by improving their aquaculture technologies	1.1 Review the results of foregoing projects of similar type, analyze current situation and identify problems in rural aquaculture of target provinces	✓							Reviewed the results of foregoing projects of similar type.	Integrated in the plan of activities and also utilized for a baseline survey.	Built up a base for the effective cooperation with other donor agencies.
	1.2 Select target communes to train seed producing farmers (16 communes)		✓	✓	✓				Selected 4communes from each target province every year.	Totally 48 communes were selected by JFY2007.	To continued to follow up and monitor the fish farmer's activities in 48 selected communes
	1.3 Select candidate seed producing farmers in the course of extension activities on grow-out technologies extended towards small-scale fish farmers of target communes in cooperation with local extension staff		✓	✓	✓				Selected seed producing farmers among experienced fish farmers in target commune.	Totally 48 seed producing farmers (or core-farmer) were selected by JFY 2007.	To follow up the 48 seed producing farmers as the core farmers in the target areas.
	1.4 Train seed producing farmers in cooperation with local extension staff through extension activities and intensive training for the candidate farmers on the broodstock management, pond management, hatchery operation, marketing, etc.		✓	✓	✓				Provided Technical training, technical assistance and necessary inputs of Hatchery Operation for Core-farmers	Totally 36 core-farmers were started the Hatchery operation by JFY 2007 and 16 farmers were under preparation at present	To strengthen the foundation of core-farmer through the farmers-based extension activities.
OUTPUT 2: Small-scale aquaculture technologies and its extension methods are improved	2.1 Train local extension staff on the aquaculture technologies and extension methods		✓	✓	✓				Provided intensive and on-the –job training in aquaculture activities for local extension staff.	60 local extension staffs in target provinces were conducting their extension work adequately.	Follow up the extension approach to make more focus on the farmer initiative activities.
	2.1 Strengthen small-scale experimental facilities to support technical improvement		✓						Renovated and improved Bati Fish Seed Production Research Center.	Fully utilized the Center for technology improvement of the Project	To monitor the facilities of the Center operated by FiA.
	2.3 Compare and examine small-scale aquaculture technologies suitable for local conditions in the small-scale experimental facilities		✓	✓	✓				Technological improvement activities were undertaken at Bati Center and farms of core-farmer.	Basic Technological Package for Small-scale aquaculture was developed.	To continuous verifiable trials by the initiative of farmers-based activities.
OUTPUT 3: Aquaculture-related activities to benefit the poorest landless farmers are promoted	3.1 Undertake stock enhancement activities through release of breeders and seeds in the community pond		✓	✓	✓				Selected proper community ponds and assisted the community in the implementation of fish refuge pond management.	Total of 11 community ponds were selected and managed by farmers living there until now.	Continued to implement the activities for next 2.5 years.(total of more than 20 ponds)
	3.2 Arrange management scheme for the community ponds		✓	✓	✓				Facilitated active participation of the stakeholders and measured the effect of the stock enhancement activities	Refuge pond management were mostly organized well by local management group.	Continue to carry out the activities and examine the effect of the stock enhancement.
OUTPUT 4: Aquaculture extension networks are established in rural areas	4.1 Prepare farmer-to-farmer extension program in cooperation with seed producing farmers and local extension staff			✓	✓				Implemented the training of trainer (TOT) for new seed-producing farmers.	40 seed producing farmers were trained as trainers in the TOT.	Continue to implement TOT for new seed-producing farmers of 2007.(totally 60 trainers)
	4.2 Train small-scale fish farmers through training and extension program in cooperation with the seed-producing farmers, utilizing technologies improved by the project			✓	✓				Hold 48 times of farmer to farmer training for last 2 years.	Total of 1,479 small-scale fish farmers were trained by core-farmers.	Make more effort to expand the scale of farmer to farmer training.
	4.3 Encourage grouping of small-scale fish farmers through distribution of seeds, aquaculture related equipment and technical information in the rural area		✓	✓	✓				32 core-farmers were existed in the target rural area.	32 groups were promoting better delivery of extension work, and 16 groups are under preparation.	Increase the member of small-scale fish farmers among each group.
	4.4 Incorporate aquaculture into school activities			✓	✓				Provided technical training, inputs for fish-culture in total of 18 school pond.	Effects of school activities are still under investigation.	Decrease the number of target school, and conduct on impact study of school activities.
	4.5 Prepare farmer-based aquaculture extension programs for the target provinces by summarizing case studies of small-scale aquaculture activities				✓				Farmers-based extension strategies have been studied using Farmers net-work system.	Prepared workshop on net-working system to organize by core-farmer in JFY2007.	Follow-up and monitor to farmer-based organization including case study.

Annex 10 Conceptual structure for aquaculture extension network to be established by the end of the Project (proposed)
(Promotion of farmer to farmer extension and support to fish farmers by the Fisheries Administration)



ANNEX 11. Evaluation Grid: Freshwater Aquaculture Improvement and Extension Project in Cambodia Mid-term Evaluation

1. Evaluation Grid

Evaluation criterion	Evaluation Question		Information/ data required	Results
	Main Question	Sub Question		
Relevance	Are the Project Purpose and Overall Goal relevant to the needs of the target area and society?	Are needs of promotion of freshwater aquaculture high?	・Information about the needs of the target area and society	Cambodia is rich in inland fisheries resources and 85% of annual total catch of fish (approximately from 250,000 to 400,000 tons per year) is catch of inland fisheries. It is said that freshwater fish provides around 75% of animal protein intake for Cambodian people. Prey Veng, Takeo, Kompong Speu, Kampot provinces are located southern part of Cambodia and have some distance from the main stream of Mekong river, therefore, quantity of catch of wild fish is scarce in these provinces. Furthermore, due to lack of irrigation facilities, productivity of agriculture is low. Accordingly, peoples' interest for the small-scale aquaculture using rice fields, waterways, and ponds in this area is increasing as protein source and cash income source. Therefore, the aims of this project are relevant to the needs of the target areas and farmers.
	Is the project in line with the needs of the target group?	(Remarks: Target groups are small-scale farmers, extension staff at provincial level, and poorest farmers without land.)	・Information about the needs and opinions of persons concerned	Main objectives of the Project is the extension of aquaculture that is possible to carried out parallel to the rice cultivation by small-scale farmers in the target four provinces in order to contribute diversification of their livelihood and nutrition improvement.. Main obstacles on aquaculture extension were lack of information, knowledge and techniques on aquaculture, and difficulty in obtaining fish seeds (fingerlings). Therefore, there was need to extend a package of appropriate aquaculture techniques that can be accepted easily by small-scale farmers and can be done with low cost.
	Are the aims of Project relevant to the National Development Plan of Cambodia?	Importance of freshwater aquaculture within the National Development Plan of Cambodia	・Political status or importance ・Opinions of persons concerned	One of the priority issues of the Rectangular Strategy of the Royal Government of Cambodia is to strengthen the Agricultural Sector, and one of the major goals of the National Strategic Development Plan (2006-2010) is development of the agriculture sector and enhancement of agricultural production/productivity. Development of the agricultural sector is considered important for poverty reduction and sustainable economic development. Main purpose of the Agricultural Sector Strategic Development Plan (2006-2010) is poverty reduction and economic development though agricultural sector development. In regard to the aquaculture sector, importance was given to the promotion of aquaculture development through fish pond and rice field fish culture, training and establishment of fish and seed producing network. Promotion of aquaculture is one of the important issues within the national development plan of Cambodia and the policy of agricultural sector, therefore, this project is relevant to the policies of the Royal Government of Cambodia.
	Conformity to ODA policy of Japan.	Conformity of priority assistance subjects of Japanese Government.	・Priority assistance subjects of Japanese Government to Cambodia	One of the priority areas of the Japan's assistance policy to Cambodia is "Realization of Sustainable Economic Growth and a Stable Society". Within this area, development of fisheries sector is one of important issues for agriculture and rural development and poverty reduction. Country-wise project implementation plan of JICA also mentions importance of agriculture and rural development. Therefore, this project is in conformity with the priority assistance policy of Japan.

Suitability as a means	Were the project approach and the target areas adequately selected?	・Opinions of persons concerned	Basic extension strategies on aquaculture technologies of the Project are improvement and extension of freshwater aquaculture technologies through selection and training of fish seed producing farmers as core fish farmers and development of aquaculture extension network, which provide seeds and technical information from the trained fish seed producing farmers to small-scale farmers. For such purpose, capacity development for the aquaculture extension officers in the target provinces, the seed producing farmers and small-scale farmers has been carried out through technical training at the Bati Fish Seed Production and Research Center and at farmers' fields, etc. At the same time, several activities, such as the improvement of aquaculture technologies, farmer to farmer trainings at farmers' field, community participated management of fish refuge ponds, and incorporation of aquaculture into school, have been carried out. Significant outputs on the freshwater aquaculture improvement and extension have been produced by implementing this project. Therefore, the project approach was selected adequately. In regard to the selection of the target areas, targeted four provinces have comparatively good access to water for aquaculture and good road access, and then extension activity can be carried out easily. Therefore, the target areas were also selected adequately.
	Are the selection of the target group and its scale appropriate? (small-scale farmers, extension staff at provincial level, and poorest farmers without land)	・Opinions of persons concerned	Considering the following aspects, selection of the target groups (small-scale farmers and extension staff at provincial revel) was appropriate. 1) Communes that majority of people are categorized economically poor farmers were selected and also poor farmers were selected as target farmer. 2) As a result of the organizational reform, provincial fisheries offices become under the control of the Fisheries Administration. 3) Coordination between the aquaculture office of the Fisheries Administration and the provincial aquaculture officers became smooth and made possible smooth implementation of the extension activities to farmers. 4) Staff of the aquaculture office and provincial aquaculture extension officers had already basic capacity and experiences by participating other donor's project which was previously implemented. 5) In some provinces of target provinces, as a result of implementation of the other donor's project, a foundation of aquaculture had been built, especially in seed producing farmers as core fish farmers. 6) 48 seed producing farmers and around 3,300 aquaculture farmers have been developed under the Project However, it is appropriate to change one the target groups from "poorest landless farmers " to "poor farmers", because there is very few landless farmers in the target provinces.
	Are there any ripple effects beyond the target group?	・Opinions of persons concerned	One of the objectives of the Project is establishment of following mechanism. The seed producing farmers who are trained under the Project play the roles in distributing seeds and technical information to small-scale fish farmers, and conducting farmer to farmer trainings as core fish farmer. And thus, freshwater aquaculture is extended widely by initiative of the seed producing farmers. It is expected that aquaculture will be extended to farmers surroundings of the seed producing farmers in short-term period and will be extended to country-wide in long-term period through the farmer's seed producing network

		Are the benefits of the effect and the burden of the costs fairly distributed?	・Opinions of persons concerned	Selection of the target communes and farmers have been conducted using the selection criteria made and the information collected by the base line survey, cooperation between the aquaculture office of the Fisheries Administration and the provincial fisheries offices, understanding of local community. Therefore, it seems that the benefits of effect can be distributed fairly. In addition, the seed producing farmers supported by the Project should be return initial investment by fingerlings. In such manner, fair distribution of the project benefit is considered.

Evaluation criterion	Evaluation Question		Information/ data required	Results
	Main Question	Sub Question		
Effective-ness	Will the Project Purpose be Achieved? (Small-scale aquaculture technologies are extended largely in target areas.)	(See the Table of Achievement)	(See the Table of Achievement)	(See the Table of Achievement)
	Contribution of Outputs to achieve Project Purpose.	Were the Outputs enough to achieve the Project Purpose? Were its no wonder in the logic that "the Project Purpose would be achieved if all the Outputs were achieved?"	・Opinions of persons concerned	Development and extension of appropriate technologies for the target areas, creation of seed producing farmers as core fish farmer, training for small-scale farmers, establishment of fish refuge pond management groups, and creation of aquaculture extension network are important issues for extending technologies on small-scale aquaculture in the target area, and outputs from those activities contribute to achieving the Project Purpose.
	Influence of Important Assumption described in PDM	1) Outbreak of serious fish disease does not occur. 2) Natural disasters such as extraordinary drought and flood do not take place.	・Opinions of persons concerned	So far there is no information about the outbreak of serious fish diseases and sever drought or flood, which make extreme damage on aquaculture, has not occurred.
	Factors promoted to achieve the Project Purpose.	Other factors influenced.	・Information of implementation process ・Opinions of persons concerned	No other factor promoted was identified.
	Factors hampered to achieve the Project Purpose.	Other factors influenced.	・Opinions of persons concerned	No other factor hampered was identified.

<table>
<tr><th>Evaluation criterion</th><th colspan="2">Evaluation Question</th><th>Information/ data required</th><th>Results</th></tr>
<tr><th></th><th>Main Question</th><th>Sub Question</th><th></th><th></th></tr>
<tr><td rowspan="3">Efficiency</td><td>Achievement of Outputs</td><td>(See the Table of Achievement)</td><td>(See the Table of Achievement)</td><td>(See the Table of Achievement)</td></tr>
<tr><td rowspan="3">Were quality, quantity and timing of Inputs to the Project appropriate compared to outputs achieved by the Project?</td><td>Appropriateness about number, specialty, capability, duration, timing of dispatch of Experts.</td><td>・Record of dispatch of Experts
・Opinions of persons concerned</td><td>Long-stay type Japanese experts have been dispatched in the 3 fields, i.e. Chief advisor/ Extension Administration, Aquaculture Improvement and Extension, and Coordinator/ Rural Development. Short-term Japanese experts dispatched in the fields of Broodstock Management/Seed Production, Fish Refuge Pond Management, Feed Development, Gender Mainstreaming, Baseline Support, and Facility Design, etc. (Total man-month up to end of Japanese fiscal year (end of March 2008) will be 134.6M/M)
Third country experts from India, Indonesia, Nepal and Vietnam have been dispatched in the fields of Training Development, Small-scale Hatchery, Giant Freshwater Prawn Seed Production and Culture, Broodstock Quality Management, and Pangasius Seed Production, etc. (Total man-month up to end of Japanese fiscal year will be 9.5M/M)
It seems appropriate about dispatch of experts in terms of number, specialty, capability, timing of dispatch and duration. Especially, concentrated dispatches of Japanese experts in the early stage of the project period brought higher achievement of the Outputs and higher efficiency of the Project.</td></tr>
<tr><td>Appropriateness about kind, quantity and timing of provision of equipment.</td><td>・Record of procurement of equipment, Situation of use of equipment
・Opinions of persons concerned</td><td>Vehicles, equipments for technical development, office and extension activities have been provided and the facilities and equipment such as fish ponds, water intake and discharge system, and hatchery and wet laboratory, etc., for Bati Fish Seed Production and Research Center also have been provided. Expenditures for such equipment provision by the Japanese fiscal year (JFY) are as follows. As of end of JFY 2006, 36,864 thousand yen was spent.
(Unit: thousand yen)
<table>
<tr><th></th><th>JFY2004</th><th>JFY2005</th><th>JFY2006</th><th>JFY2007</th><th>Total</th></tr>
<tr><td>Equipment provision</td><td>1,843</td><td>17,990</td><td>7,048</td><td>Unfixed</td><td>26,881</td></tr>
<tr><td>Facility improvement at Bati Fish Seed Production and Research Center</td><td>-</td><td>20,000</td><td>-</td><td>-</td><td>20,000</td></tr>
<tr><td>Total</td><td>1,843</td><td>37,990</td><td>7,048</td><td>Unfixed</td><td>46,881</td></tr>
</table>
Counterparts have opinion that Important and necessary equipment has been provided. It seems that the equipment provision was appropriate.</td></tr>
<tr><td>Appropriateness of trainings in Japan and in Asian countries (number of persons, training contents, and timing etc.)</td><td>・Record of trainings</td><td>6 counterpart personnel have participated in the training in Japan. In total, 50 counterpart personnel including the seed producing farmers have participated in the third country trainings or the study tours in Indonesia, Philippines, Thailand, and Vietnam. 12 more persons including counterpart staff and core fish farmers are going to participate in the training in Indonesia in January 2008. According to the opinions of the person participated in the third country trainings and the study tours, contents of training are very useful for them, and duration and timing were very appropriate.</td></tr>
</table>

	Appropriateness about number, capability and timing of assignment of C/Ps.	・Record of assignment of C/Ps ・Opinions of persons concerned	Currently 39 persons are assigned as counterpart personnel. 14 persons belong to the aquaculture office in the Fisheries Administration, 5 persons of the Bati Fish Seed Production and Research Center, and 20 persons of four provincial fisheries offices. Those counterparts have good capacity suitable for implementing the project activities.
	Appropriateness about size and convenience of office space etc. utilized for the Project.	・Situation of office space etc utilized by the Project. ・Opinions of persons concerned	The office space for the Japanese experts is appropriate in terms of size and convenience.
	Appropriateness about budget allocated by Cambodian side	・Budget allocated by Cambodian side to the Project	Due to the budgetary constraints of the Cambodian government, there is no budget allocation for the project activities by Cambodian side other than cost for utilities (water, electricity, and salary etc.)
Utilization of inputs	Utilization of equipment provided under the Project	・Situation of utilization of equipment	Equipment provided under the Project is utilizing effectively in general.
Were there any other necessary activities that should have been involved in to produce the project outputs? Or were there any unnecessary activities?	Activities that should have been involved in	・Opinions of persons concerned	There is no specific activity that should be included as project activity.
	Unnecessary activities	・Opinions of persons concerned	There was no unnecessary activity.
Factors influenced on efficiency of the Project.	Stability of C/Ps engaged in the Project	・Compare planned assignment of C/Ps and present assignment of C/Ps	There is no change of counterpart personnel and the stability of them is good.

		Other factors influenced.	・Opinions of persons concerned	(A) Concentration of the dispatch of Japanese experts in the first half of the project period brought the following effects and good efficiency of the Project. 1) Capacity of the counterparts has been improved though conduction of trainings and collaborative activities under the Project. 2) A package of simple techniques on aquaculture was produced at the early stage of the Project. 3) Support of inputs to the small-scale fish farmers and the seed producing farmers (core fish farmers) has been carried out efficiently. 4) Capacity of the seed producing farmers has been strengthened by the efforts of the counterparts and good understanding and cooperation have been obtained for farmer to farmer training from the seed producing farmers. 5) Implementation of the farmer participated workshops, visits to the advanced fish farmers, mutual visits among fish farmers helped fish farmers' smooth understanding on practical aquaculture technologies. As a result, each seed producing farmer was able to produce 100,000 fingerlings on average in the first year. This quantity is 5 times larger than the first production of the seed producing farmers who were trained by the AIT project. (B) Other factors promoted 1) In the case of the seed producing farmers of the AIT project, they are doing their activity independently. On the other hand, the seed producing farmers' participation to the same training course at the Bati Fish Seed Production and Research Center and participation to the same study tour made basis of information exchange among the seed producing farmers of the Project. This enabled smooth acceptance on establishment of the seed producing farmer's network. 2) Inputs by Japanese side, such as dispatch of Japanese experts, third country experts, and study tours, have been made flexibly in accordance with needs of Cambodian side. (C) Factor negatively influenced Because it takes certain period for agreeing annual contract between the consulting company of the Project and JICA, it was difficult to dispatch Japanese experts in the early months of the new Japanese fiscal year, especially from April to June in 2005. This brought delay of implementation of the project activities and made negative effect on efficiency of the Project.

Evaluation criterion	Evaluation Question		Information/ data required	Results
	Main Question	Sub Question		
Impact	Is there expectation of achievement of Overall Goal in future? "Aquaculture production in target areas is increased."	(See the Table of Achievement)	(See the Table of Achievement)	(See the Table of Achievement)
	Important assumption for achieving the Overall Goal	Will price of cultured fishes go down greatly in future?	・Opinions of persons concerned	It is estimated that more than half of cultured fishes are used for family consumption and the remaining amount of fish selling to local market. Therefore, there is no indication that the price of cultured fishes will go down at present.
	Influence of the Project to C/Ps	Motivation for working and confidence	・Opinions of persons concerned	Counterparts of the project are working actively with cooperative manner. They positively incorporate the matters learned in the contents of the training courses. Most of the activities with the seed producing farmers and other small-scale fish farmers, for example preparation of various kinds of trainings, have been conducted with the initiative of the counterparts.
	Social influence	Degree of influence of the Project on opportunity to have protein and improvement of nutrition	・Opinions of persons concerned	According to the results of the socio-economic impact and farmers' assessment survey conducted this year (2007), fish farmers become able to eat their cultured fish from their ponds mainly in dry season instead buying fish from market. However, there is no significant change on the quantity of fish consumption between the year 2005 and the year 2007. The calculated average fish consumptions per person per day are 87g in wet season and 75g in dry season. These amounts are lower than the national requirement, which is 200-250g per person per day. In other word, impact on improvement of nutrition is not confirmed yet. On the other hand, it is observed reducing pressure of fishing from wild or save time of hunting fish from wild and reduce of purchase of fish from market during dry season.

Degree of contribution on livelihood improvement	・Opinions of persons concerned	According to the results the above mentioned survey, income of the small-scale fish farmers has been increased significantly. Comparison of income of household of a part of the small-scale fish farmers selected by the Project. (The surveys were carried in 2005 and 2007 in four target provinces.)

(Unit: US dollar)

Description	In 2005 Average income of the small-scale fish farmers selected by the Project (327 households)	In 2007 Average income of the small-scale fish farmers selected by the Project (283 households)	Increase (times)	Increase (US dollar)
Rice farming	321	357	1.1	36
Animal rising	139	204	1.5	65
Vegetable growing	62	109	1.8	48
Fish culture	53	204	3.9	151
Laborer	137	420	3.1	283
Remittance	19	203	10.6	184
Others	63	326	5.1	263
Total	794	1,824	2.3	1,030

Total household income increased 2.3 times. Incomes from labor, remittance and fish culture contributed to such significant income increase. Therefore, it can be said that fish culture is one of the important factors contributed to improvement of livelihood of the small-scale fish farmers.

Other positive and negative impacts of the Project.	Other positive/ negative effects/ impact	・Opinions of persons concerned	(1) The opportunity to participate to the small-scale fish culture techniques and the seed production techniques have been provided for provincial aquaculture extension officers in other provinces. In total, 23 officers from 9 provinces have been participated in the training courses up to now. Also some students and staff of NGOs were accepted for the training courses of the Project. In such manner, the results of the Project have been extended in country-wide. (2) A 7 days seed production technique training course organized by the project counterpart staff for two selected farmers under the ECOSORN/EU project in Bantey Meanchey province. (3) 16 selected farmers under the DFID/ DANIDA supported project were participated in the 7 days training course on fish seed production techniques organized by the project counterparts and a core farmer of the Project. (4) Many visitors including government officers, NGOs, farmers, and commune council members visited some of the seed producing farmers of the Project to get their aquaculture experiences and see production facilities. (5) There is an example that a seed producing farmer provided training on fish culture for 200 farmers accepting the request of a NGO (CARE International). Two-days training courses for 50 farmers have been carried out 4 times. The outcomes of the Project were also extended through this kind of the farmer to farmer trainings. Also this seed producing farmer could supply fingerlings to these farmers who live in outside of the target communes. (6) Support for introduction of small-scale fish culture has been provided for the other JICA assisted project (Capacity Building for the Forestry Sector Phase II) and it is reported that the target people is interesting in fish culture because of its simple techniques and easiness to start (7) An aquaculture project will be started next year with the assistance of Spanish Agency for International Cooperation in two provinces (Kratie and Stung Treng) and fisheries officer working in those two provinces will participate to the same kind of training courses which the Project developed. (8) Some seed producing farmers provided fingerlings for releasing into public water bodies.

Evaluation criterion	Evaluation Question		Information/ data required	Results
	Main Question	Sub Question		
Sustain-ability	Importance of freshwater aquaculture in National Development Plan and other related policies.		・National Development Plan and other related policies	As mentioned already, promotion of aquaculture development through fish pond and rice field fish culture, training and establishment of fish hatchery is one of the important issues within the policies of the Royal Government of Cambodia. Therefore, political sustainability of the Project will be secured.

Importance and recognition of the Project at the Fisheries Administration		・Opinions of persons concerned	The Minister of Agriculture, Forestry and Fisheries visited seed producing farmers of the Project and has high interest on promotion of freshwater aquaculture. Information on the progress and results of the Project is shared in the Fisheries Administration at the regular meetings that the managerial officers of headquarters participate. Therefore, the Fisheries Administration well recognizes the good outcomes of the Project.
Does Fisheries Administration have capability to utilize and develop further the outcomes of the Project?	Can Fisheries Administration extend the outcomes of the Project to wider area in the Project targeted areas and other provinces institutionally after the completion of the Project? 1) Organizationally 2) Financially	・Opinions of persons concerned	Officers of the headquarters of the Fisheries Administration, Bati Fish Seed Production and Research Center, and the Provincial Fisheries Offices of the target provinces are participating as counterpart. With organizational reform, the provincial fisheries offices become under the direct control of the headquarters of Fisheries Administration. This enabled to carry out more effective aquaculture extension activities and enhanced organizational capacity. Not only capacity of the counterparts of the Project and also provincial aquaculture extension officers of other provinces participated in the capacity development activities. Therefore, the Fisheries Administration has appropriate capability to extend and develop further the outcomes of the Project. However, considering budgetary constraint of the government, it seems difficult for the Fisheries Administration in extending the outcomes of the Project to other provinces outside of target provinces. Accordingly, it is important to establish a framework which is not influenced by the governmental budget and enables extension of aquaculture techniques with initiative of fish farmers, especially by seed producing farmers. Therefore, focused project activities in the remaining period of the Project are the activities for output 4 "An aquaculture extension network in rural area is developed". A workshop was held for organizing this network in September 2007. All 48 seed producing farmers and 12 advanced seed producing farmers participated in the workshop. In this occasion, a basic framework of the network organization was decided and also the committee members for the network organization for each province were selected. It is expected that this network function takes roles as intermediary between the Fisheries Administration/ provincial aquaculture extension officers and small-scale fish farmers, and also main implementation organization for the farmer to farmer trainings after the completion of the Project. In regard to the financial aspect of the network, collection of fund for operation of this network is under discussion and possible methods are the collection of member fees or capital funds. It may be considered usage of repayment the initial investment funds which were provided to the seed producing farmers. In this way, it is expected that the network will be established ensuring technical and financial sustainability.
Will techniques transferred by the Project become	Technical level of C/Ps (Fisheries Administration, Provincial Fisheries offices)	・Opinions of persons concerned	Technical knowledge and experiences of the counterparts (headquarters of the Fisheries Administration, Bati Fish Seed Production and Research Center, and provincial fisheries offices) are enhanced steadily, and those technical knowledge and experiences will become established at the Fisheries Administration.

established?	Technical level of seed producing farmers and small-scale fish farmers. Establishment of their techniques on aquaculture and profitability.	・Opinions of persons concerned	There is high possibility that the necessary techniques will be established at the seed producing farmers and small-scale fish farmers, because the aquaculture techniques introduced by the Project is simple, packaged, and low cost. It is expected that the seed producing farmers and small-scale fish farmers aquaculture techniques will be improved further by exchanging techniques and experiences through farmer seed producing network and experiences of fish farmers. 48 seed producing farmers and around 3,300 small-scale fish farmers have been developed under the Project. From now, it is necessary to monitor developed seed producing farmers and small-scale fish farmers whether they can continue fish culture and farmer to farmer trainings by themselves. If some technical and operational problems are identified, appropriate advises should be given to them by the Fisheries Administration.
	1) Are the techniques transferred applicable in other areas and other provinces? 2) Does the project contain a mechanism for transfer and dissemination of techniques from the farmers trained under the Project (seed producing farmers) to other new fish farmers? 3) Will such mechanism function well and be established in future? (Sustainability of the aquaculture extension networks)	・Opinions of persons concerned	(1) Because the aquaculture technical package, which was improved under the Project, is low cost technique and using feeds from farm resources available, these techniques are applicable in other provinces in Cambodia. (2) Establishment of a technical transfer and extension mechanism from the seed producing farmers to small-scale farmers, such as establishment of fingerling supply system, promotion and introduction of fish culture to new farmers for obtaining more clients who purchase fingerlings, has been started to implement and it is going to be developed further. (3) If the above mentioned mechanism and the farmers' network are established firmly, technical sustainability at farmers' level will be secured.
Is equipment procured under the Project maintained well? Will equipment be maintained well after the completion of the Project?		・Opinions of persons concerned	Equipment and facilities of the Bati Fish Seed Production and Research Center were improved by the Project. Equipment and facilities were utilized for the improvement of aquaculture technologies by the Project. However, the technology improvement activities by the Project will be terminated by the first quarter in 2008. After then, the Bati center utilizes those equipment and facilities by her self. During the stay of Japanese expert at Bati center, Japanese side provided necessary budget for utilization and maintenance of those equipment and facilities. Appropriate utilization and maintenance of those equipment and facilities are one of the concerns, because the budget available for the Bati center is limited. It is expected that the Fisheries Administration takes appropriate budgetary measure for this aspect.
What are major factors that facilitated or hampered the sustainability, or could facilitate or hamper in future?		・Opinions of persons concerned	No other factor is identified.

2. Implementation Process

Evaluation Question			Results
	Main Question	Sub Question	
	Were there any modification of project plan, implementation structure for accomplishing initial target of the Project?	Were there any problems on progress of implementation? How those problems solved?	There is no particular big change on the project plan or the project implementation structure.
	Appropriateness of methodology of technical transfer	Were there any problems on methodology of technical transfer? If available, what kinds of problems. How those problems solved?	It seems that methodology of technical transfer is appropriate. Technical transfer from Japanese experts/ third country experts to Cambodia counterparts and also from the counterparts to fish farmers has been carried out smoothly.
	Ownership of Cambodian side	1) Appropriateness of allocation of C/Ps 2) Allocation of budget	As mentioned already, 39 persons are assigned as counterpart personnel. 14 persons belong to the aquaculture office in the Fisheries Administration, 5 persons of the Bati Fish Seed Production and Research Center, and 20 persons of four provincial fisheries offices. Assignment of counterparts is appropriate because those counterparts have good capacity suitable for implementing the project activities. In regard to allocation of budget, due to financial difficulty of the government, budget allocation for the project activities is limited.
	Project management system	Have JCC meetings been held at appropriate timing with appropriate themes.	JCC meetings have been held 3 times (9 September 2005, 6 March 2006, and 9 March 2007). Frequency is once a year and this frequency is as planned. At the JCC meeting, explanation on the results of the project activities in the past one year and the plan of activities for next one year has been done, and discussions were done. The records of JCC meeting were made. Therefore, JCC meetings have been held appropriately.
		Periodical or regular meetings among Cambodian counterparts and Japanese experts functioned well?	There is not specific regular meeting among Cambodian counterparts and Japanese experts. However, discussions on the Project have been done between counterparts and Japanese experts, when necessary. In addition, the Aquaculture Office of the Fisheries Administration holds the monthly meeting and the activities and the results of the Project are presented at the meeting.
		Appropriateness of monitoring system	Semiannual reports and annual reports have been made and monitored data has been complied in those reports.
		Appropriateness of communication between Japanese experts and C/Ps	There is very good communication between the counterparts and Japanese experts and there is good relationship of mutual trust. Because the counterparts have interested in the project activities and positive in obtaining updated knowledge and techniques
		Relationship among the Project, JICA Cambodia office and JICA headquarters	There is good cooperative relationship between JICA Cambodia office and the Project.

3. Table of achievement (Achievement of the Overall Goal, Project Purpose and Outputs at the time of evaluation)

	Items		Information/ data required (Indicators)	Results
	Main items	Sub items		
Achieve-ment	Prospect to achieve the Overall Goal (Aquaculture production in target provinces is increased.)		Aquaculture production of target provinces is increased by 1.5 times.	According o the Agricultural Statistics of the Ministry of Agriculture, Forestry and Fisheries, the aquaculture production in target provinces in 2004 was 1, 390 tons in total. This amount of production is the data before this project started and basis of comparison. (Target of production increase is around 700 tons which equivalent about 50% of 1,390 tons) Following table shows aquaculture production in each target province from 2004 to 2006.

	Kampot	Kompong Speu	Prey Veng	Takeo	Total in 4 provinces
2004	25	40	510	815	1,390
2005	50	110	600	800	1,560
2006	90	163	845	950	2,048

(Source: Agricultural Statistics of Ministry of Agriculture, Forestry and Fisheries, and Data of the Fisheries Administration)

Estimation of aquaculture production by the new fish farmers trained under the Project is as follows.

Year	Production (kg/100m2)	Average surface area of pond (m2/household)	Number of new fish farmers (household)	Estimated production (ton)	Estimated production (assumption: 80% of farmers start and continue fish culture) (ton)
2005	24.8	224m2	640	36	28
2006	36.4	224m2	1,759	143	115
2007	50.0	224m2	3,359	376	301
2008	50.0	224m2	6,959	779	624
2009	50.0	224m2	10,559	1,183	946

Remark: Data of the years 2005 and 2006 is the results of sample survey. Figures from the year 2007 are estimated ones.

Because the new fish farmers, who selected and trained under the Project, have own ponds usable for aquaculture, they could start aquaculture activity immediately after the participation to the training of the Project. On the other hand, some of new farmers, who will be trained through farmer to farmer trainings from the year 2008, might not have pond suitable for aquaculture. Aquaculture production is influenced whether new fish farmers can start aquaculture activity immediately after the participation to training. Assuming 80% of new farmers start immediately and continue aquaculture activity, 1.5 times of production increase (increase of 700 tons) can be achieved by the end of the Project. If the ratio becomes less than 80%, the Overall Goal will be achieved within several years after the completion of the Project, because the farmer to farmer training will be continued by the initiative of the seed producing farmers.

<table>
<tr><th colspan="2">Items</th><th>Information/ data required (Indicators)</th><th>Results</th></tr>
<tr><th>Main items</th><th>Sub items</th><th></th><th></th></tr>
<tr><td>Prospect to achieve the Project Purpose (Small-scale aquaculture technologies are extended largely in target provinces)</td><td></td><td>Number of small-scale fish farmers is increased from existing 2,000 households to 4,400 households.</td><td>The number of small-scale fish farmers already trained in the target provinces and planned number of new farmers who will be trained in 2008 and 2009 through farmer to farmer training are as follows.
<table>
<tr><th rowspan="2">Year</th><th colspan="3">Selected and trained farmers (Household)</th><th>Farmers trained through farmer to farmer training (household)</th><th rowspan="2">Total of new farmers trained in each year</th><th rowspan="2">Total of new farmers</th></tr>
<tr><th>New</th><th>Existing</th><th>Sub-total</th><th>New</th></tr>
<tr><td>2005</td><td>320</td><td>320</td><td>640</td><td>-</td><td>320</td><td>320</td></tr>
<tr><td>2006</td><td>320</td><td>320</td><td>640</td><td>479</td><td>799</td><td>1,119</td></tr>
<tr><td>2007</td><td>320</td><td>320</td><td>640</td><td>960</td><td>1,280</td><td>2,399</td></tr>
<tr><td>2008</td><td>0</td><td>0</td><td>0</td><td>3,600</td><td>3,600</td><td>5,999</td></tr>
<tr><td>2009</td><td>0</td><td>0</td><td>0</td><td>3,600</td><td>3,600</td><td>9,599</td></tr>
<tr><td>Total</td><td>960</td><td>960</td><td>1,920</td><td>8,639</td><td>9,599</td><td>-</td></tr>
</table>
Total increase of new farmers trained is around 2,400 household as of end of the year 2007. Adding number of existing fish farmers (2,000 households), the total number of the small-scale fish farmers is increased around 2,400. Therefore, the indicator of the Project purpose will be achieved in the near future. As mentioned already, most of new farmers who trained through farmer to farmer training have ponds usable for aquaculture. On the other hand, some of new farmers, who will be trained in the years 2008 and 2009, might not have suitable ponds for aquaculture and necessary fund for initial investment. However, considering the planned number of new farmers trained in 2008 and 2009, It is anticipated that the number of small-scale fish farmers will reach at very large number by the end of the Project.</td></tr>
<tr><td>Are Outputs producing as planned?</td><td>1. Seed producing farmers are trained among existing small-scale fish farmers by improving their aquaculture technologies</td><td>20 seed producing farmers are developed and produce seeds by themselves</td><td>A seed producing farmer in four target communes in each target provinces has been selected in 2005 and 2006 respectively. That is to say, 32 new seed producing farmers (4 communes x 4 provinces x 2 years) in these two years. These 32 new farmers have started seed production and their production activities are going well in general. In the same way, 16 new seed producing farmers have been selected and trained in 2007. Therefore, in total 48 new seed producing farmers have been developed and started seed production by themselves. Number of seed producing farmers is already exceeded the target number (20 seed producing farmers) and this indicator is achieved already.
Objective of this Output is to develop new seed producing farmers. For such purpose, it is required that they become able to produce seeds steadily in terms of technology and management. There is information that all developed seed producing farmers in 2005 and 2006 have applied technologies learned at the training courses appropriately and quantities of their seed productions are vary widely. It seem that they required to have more experiences on seed production in order to become capable seed producing farmers not only as independent seed producing farmers but also as leading farmers who can take a role as leader for not only supply of fingerlings but also exchange of information among fish farmers.</td></tr>
</table>

<table>
<tr><th colspan="2">Items</th><th>Information/ data required (Indicators)</th><th>Results</th></tr>
<tr><th>Main items</th><th>Sub items</th><th></th><th></th></tr>
<tr><td></td><td>2. Small-scale aquaculture technologies and its extension methods are improved.</td><td>Small-scale aquaculture technologies suitable for local conditions are developed and its extension materials are prepared</td><td>The results of improvement of technologies on broodstock management, seed production, and grow out at the Bati Fish Seed Production and Research Center, and the results of on farm experiments at the farmers have been compiled and produced a package of small-scale aquaculture technologies. Based on this technical package, an aquaculture technical booklet, poster, and illustrated poster for fish refuge pond management have been produced incorporating a lot of illustrations in order that farmers can understand easily. The aquaculture technical booklet has been utilized for the training courses for the selected farmers by the Project, for the farmer to farmer trainings and farmers outside of the target provinces. Therefore, this indicator is achieved already.
Besides of the Aquaculture Technical Booklet, a video on techniques of small-scale aquaculture (grow out) is produced (completed) and a video of techniques on seed production is under preparation. The video on techniques on seed production will be produced in 2008.</td></tr>
<tr><td></td><td>3. Aquaculture-related activities to benefit the poor farmers are promoted.</td><td>Stock enhancement activities are undertaken in 20 fish refuge ponds</td><td>Promotion activities on fish refuge pond management have been conducting 4 sites every year. Numbers of the fish refuge ponds established from 2005 to 2007and to be established in 2008 and 2009 are as follows.

<table><tr><th>Year</th><th>Number of the fish refuge ponds</th></tr><tr><td>2005</td><td>4</td></tr><tr><td>2006</td><td>4</td></tr><tr><td>2007</td><td>3 (collaborated with WFP) +3 (under preparation)</td></tr><tr><td>2008</td><td>4 (planned)</td></tr><tr><td>2009</td><td>4 (planned)</td></tr><tr><td>Total</td><td>22 (planned)</td></tr></table>Remark: WFP= World Food Programme

Activities on construction of canals (fish pathway), establishment of 11 fish refuge pond management committees, stocking of fingerlings, etc. have been completed as of December 2007. In total, 22 fish refuge ponds will be established and fish activities will be promoted by the year 2009. Therefore, this indicator will be achieved by the end of the Project.</td></tr>
<tr><td></td><td>4. An aquaculture extension network in rural area is developed</td><td>1) Seed producing farmers conduct farmer to farmer training at least once a year by their initiative. (proposed new indicator)</td><td>1) Seed producing farmers conduct farmer to farmer training at least once a year by their initiative.

The seed producing farmers, who were selected and trained under the Project, also received training of trainer (TOT) and started the farmer to farmer trainings from the year 2006. Participants to the farmer to farmer trainings are 479 farmers in 2006 and 960 farmers in 2007. From the year 2008, each seed producing farmer including 12 advanced seed producing farmers who were trained by the AIT (Asian Institute of Technology) project, in total 60 seed producing farmers, will conduct the farmer to farmer trainings for 60 small-scale farmers annually. Therefore, 3,600 new fish farmers will be developed in 2008 and 2009 respectively. It is expected that the seed producing farmers will further strengthen their skills as trainer through providing trainings and conduct extension activities by their initiative with technical assistance by the Aquaculture Office and the provincial fisheries offices as well.</td></tr>
</table>

	Items		Information/ data required (Indicators)	Results
	Main items	Sub items		
			2) Meetings of the network in each target province are held 3 times a year. (proposed new indicator) 3) Joint meeting of the network for all target provinces is held at least once a year. (proposed new indicator)	2) Meetings of the network in each target province are held 3 times a year. 3) Joint meeting of the network for all target provinces is held at least once a year. The seed producing farmers are leading farmers (core fish farmers) for the small-scale fish farmers. 48 seed producing farmers have been developed by the year 2007, and under the 48 seed producing farmers with 12 seed producing farmers established by AIT project, around 3,300 small-scale farmers are engaged in aquaculture. One of the most importance issues in the remaining period of the Project is to support establishment of a network which will be managed by the seed producing farmers' initiative. A workshop was held for organizing this network in September 2007. All 48 seed producing farmers and 12 advanced seed producing farmers participated in the workshop. In this occasion, a basic framework of the network organization was decided and also the committee members for the network organization for each province were selected. It is planned that the provincial level meetings of the network will be held 3 times a year and the meeting for all 4 provinces will be held once a year from now on. Main objective of establishment of the network is to create practical cooperative relationship among the seed producing farmers in terms of the fingerlings sale, lend and borrow of broodstocks and funds for investment for facilities and operation, exchanges of the information concerned (technical information, etc). By establishing this network, it is expected that this network takes roles as intermediary between the Fisheries Administration/ provincial aquaculture extension officers and small-scale fish farmers, and also main implementation organization for the farmer to farmer trainings after the completion of the Project.

付属資料４　評価グリッド：　カンボジア国淡水養殖改善・普及計画　中間評価調査

1. 評価グリッド

5項目 その他	評価設問 大項目	評価設問 小項目	必要なデータ	調査結果
妥当性	プロジェクト目標及び上位目標は、対象地域・社会のニーズに合致しているか。	淡水養殖振興のニーズは、高いか	対象地域・社会のニーズに関する情報	カンボジア国は、内水面漁業資源に恵まれ、同国の年間総漁獲量約 40 万トンのうちの 85%が内水面域からの水揚げである。そして、カンボジア人の摂取する動物性タンパク質の 75%は、淡水魚からと言われている。本プロジェクトの対象地域である、カンボジア南部のプレイヴェン州、タケオ州、カンポット州、カンポンスプー州は、メコン川本流からやや離れており天然漁獲される魚が不足している地域であり、また、灌漑施設整備が不十分でことなどのため農業生産性が低い。そのため、タンパク供給源及び現金収入源として、水田、水路、ため池を利用した小規模養殖に対する関心が高まっている地域である。したがって、本プロジェクトの目的は、プロジェクト対象地域や農民のニーズと合致している。
	ターゲット・グループのニーズに合致しているか。	（注：ターゲット・グループは､小規模農家、州レベルの普及員、土地なし最貧農民）	ニーズに関する情報や関係者の意見	本プロジェクトは、対象 4 州の農家の生計の多角化と栄養改善に寄与するために、稲作と並行して実施可能な養殖を農家に広く普及させることを主眼としている。養殖に関する知識・情報、技術不足、種苗の入手の困難性が普及のネックとなっており、小規模農家に受け入れられる、低コストで適正技術をパッケージ化した養殖技術の普及展開が求められていた
	本プロジェクトが目指す効果は、カンボジア国の開発政策等に合致しているか。	国家開発計画の中で淡水養殖が優先課題として位置付けられているか。	政策面での位置付け 関係者の意見	カンボジア政府の四辺形戦略の優先課題の一つは、農業分野の強化であり、また、2006～2010 年国家戦略開発計画の主要目標の一つは、農業セクター開発と農業の生産・生産性の向上である。農業セクターの振興は、貧困削減と持続的経済開発のために重要視されている。農業セクター戦略開発計画（2006～2010）の目標は、「農業セクター開発を通じた貧困削減と経済成長」であり、養殖分野では、養殖池や稲田養殖、研修、村落における種苗場建設を通じた養殖開発推進の必要性が示されている。したがって、淡水養殖振興は、国家政策並びに農業セクター政策の中で優先課題として位置づけられており、カンボジア国の政策との整合性がある。
	日本の援助政策・国別事業実施計画との整合性はあるか。	対カンボジア国援助方針との整合性はあるか。	我が国のカンボジア国に対する協力重点分野	我が国の対カンボジア国援助方針の重点分野の一つは、「持続的経済成長と安定した社会の実現であり、この分野の中で、農業・農村開発支援等貧困対策の一環として水産分野の開発が含まれている。JICA 国別事業実施計画においても同様に、農業・農村開発が重点分野の一つとなっている。したがって、本プロジェクトは、我が国の援助方針との整合性がある。
	手段としての適切性	プロジェクトのアプローチ、対象地域の選択は適切であったか。	関係者の意見	本プロジェクトの養殖技術普及戦略の基本は、農村地域で中核農家となりうる種苗生産農家を選定・育成し、その中核農家から一般農家に、種苗供給や技術情報伝達が行われるという体制を構築することで、淡水養殖技術の改善・普及を図ろうとするものである。そのために、水産局の地域普及員や種苗生産農家、一般農家への技術研修等を通じた能力強化を図ってきている。また、平行して、養殖技術の改善、農民間研修、住民参加型の共有池管理、養殖の学校教育への取り込みなどのアプローチを取っている。本プロジェクト実施により、淡水養殖技術改善・普

				及において大きな成果を上げつつあり、これらのアプローチは、適切なものであると考えられる。　また、対象 4 州は、比較的水の確保が容易な地域とされ、また比較的道路アクセスが容易で、普及活動を行いやすい場所であり、対象地域の選定においても適切であったと言える。
		ターゲット・グループ（小規模農家、州レベルの普及員、貧困農民）の選定及びその規模は適正だったか。	関係者の意見	以下の点を勘案すると、ターゲット・グループ（小規模農家、州レベルの普及員など）の選定は適切であったと言える。 1) 経済的に貧困な農民が多いコミューンが選ばれ、また貧困農民がターゲットとして選定されたこと。 2) 組織改編にともない、州水産事務所が、水産局の直轄組織となったことと。 3) 水産局養殖課と州水産事務所との調整・連携がスムーズになり、農民への普及活動を円滑に展開することが可能となったこと。 4) 先行ドナーのプロジェクト実施により、養殖課職員や州水産事務所の養殖普及員は、養殖普及のための基礎的能力や経験をすでに有していたこと。 5) また、一部の州では、先行ドナーのプロジェクト実施の成果として、種苗生産農家を核とする養殖基盤が地域に根付きつつある状況にあったこと。 6) これまでに本プロジェクトによって、48 戸の種苗生産農家と約 3,300 戸の一般養殖農家が育成されていること。 なお、カンボジア国には、土地なし農民はほとんど存在しないので、ターゲット・グループから外すことが適切である。
		ターゲット・グループ以外への波及性はあるか。	関係者の意見	本プロジェクトでは、中核農家となる種苗生産農家を育成し、その中核農家が一般養殖農家への種苗配布、技術情報伝達、農民間研修の実施主体としての役割を持たせ、中核農家を中心に淡水養殖技術の普及が図られるようなメカニズムの構築を図っている。短期的には、種苗生産農家周辺への淡水養殖の波及、そして将来的には、種苗生産農家間ネットワーク組織を通じた、全国的な養殖振興の波及が期待される。
		効果の受益や費用の負担が公平に分配されるか。	関係者の意見	対象地区および農民の選定は、ベースライン調査結果の情報を基に、水産局養殖課及び地域普及員の C/Ps の協力しつつ、地域住民の理解を経て、選定基準に基づき行われており、効果の受益は公平に分配されていると考えられる。また、本プロジェクトでは、選定された種苗生産農家は、その初期費用を親魚で返済する方法もとっており、裨益が偏らないような工夫も施されている。

5項目	評価設問		必要なデータ	調査結果
	大項目	小項目		
有効性	プロジェクト目標は、達成される見通しか？（対象地域において、小規模養殖技術が広く普及する。）	（達成度表のとおり）	（達成度表のとおり）	（達成度表のとおり）
	プロジェクトのアウトプットはプロジェクト目標の達成に貢献しているか。	アウトプットは、プロジェクト目標を達成するために十分であったかどうか。「アウトプットがすべて達成されればプロジェクト目標は達成されるだろう」という論理に無理はなかったか。	・関係者の意見	対象地域において、小規模養殖技術が広く普及するためには、地域に適した養殖技術の開発・導入、中核となる種苗生産農家の育成、一般養殖農家の育成、共有池管理グループの育成、養殖普及ネットワークの構築は、いずれも重要な事項であり、プロジェクト目標達成に寄与するアウトプットである。
	外部条件の影響	①深刻な魚病が発生しない。 ②極度の旱魃や洪水などの自然災害が影響を及ぼさない。	・関係者からの情報	これまでにところ、深刻な魚病の発生についての報告はない。また、養殖に極度の悪影響を及ぼす干魃や洪水は発生していない。
	プロジェクト以外に貢献した要因はあるか。		・実施プロセスの情報 ・関係者の意見	特になし
	プロジェクト目標達成を阻害した要因はあるか。		・関係者の意見	特になし

5項目	評価設問		必要なデータ	調査結果
	大項目	小項目		
効率性	アウトプットは達成されているか。	（達成度表のとおり）	（達成度表のとおり）	（達成度表のとおり）

<table>
<tr><td rowspan="6">達成されたアウトプットからみて、投入の質・量・タイミングは適切か。</td><td>専門家派遣の人数、専門分野・能力、派遣のタイミング・期間は適切か。</td><td>・派遣実績
・関係者の意見</td><td>滞在型専門家としては、チーフアドバイザー/普及行政、養殖技術改良普及、村落開発/業務調整の3分野で派遣されている。短期専門家としては、親魚養成/種苗生産、共有池管理、餌料開発、ジェンダー主流化、ベースライン調査、施設設計などの分野で派遣された。(2007年度末までの合計M/Mは、134.6である)
この他、第三国専門家として、研修開発、小規模種苗生産施設、淡水エビ養殖、親魚品質管理等の分野で、インドネシア、ベトナム、インド、ネパールからの専門家を受け入れた。(2007年度末までの合計M/Mは、9.5である)
専門家派遣の人数、専門分野・能力、派遣のタイミング・期間は、適切と考えられ、特に本プロジェクトでは、プロジェクトの早い時期に日本人専門家の投入を集中させたことにより、アウトプットの達成度が高まり、効率性を高めた。</td></tr>
<tr><td>供与機材の種類、量、供与時期は適切か。</td><td>・機材供与実績、利用状況
・関係者の意見</td><td>車輌、試験研究用機材、事務用機材、普及活動用機材が供与され、また、バティ種苗生産研究センターの施設（池、給排水、孵化場など）が整備された。その費用は、下表のとおりである。2006 年度までの合計で、36,864 千円である。
（単位：千円）<table><tr><td></td><td>JFY2004</td><td>JFY2005</td><td>JFY2006</td><td>JFY2007</td><td>計</td></tr><tr><td>機材供与</td><td>1,843</td><td>17,990</td><td>7,048</td><td>未定</td><td>26,881</td></tr><tr><td>基盤整備</td><td>-</td><td>20,000</td><td>-</td><td>-</td><td>20,000</td></tr><tr><td>計</td><td>1,843</td><td>37,990</td><td>7,048</td><td>未定</td><td>46,881</td></tr></table>カウンターパートは、重要かつ必要な機材が供与されたという意見を述べている。機材供与は、概ね適切であったと言える。</td></tr>
<tr><td>研修員受け入れの人数、内容、時期などは適切か（本邦研修およびアジア地域へのスタディーツアー）</td><td>・研修受け入れ実績</td><td>本邦研修には、6 人が参加した。フィリピン、ベトナム、タイ、インドネシアにおける第三国研修やスタディーツアーには、延べ50人（カウンターパートの他に、種苗生産農家も含まれる）が参加した（中間評価時点）。今後、2007年度末までにさらに12名（カウンターパート及び種苗生産農家）が、第三国研修に参加する予定である。
第三国研修やスタディーツアーの参加者によれば、研修内容は参加者にとって非常に有用であり、研修期間やタイミングも非常に適切であった。</td></tr>
<tr><td>カウンターパートの人数、配置のタイミング、能力は適切か。</td><td>・C/Ps配置状況
・関係者の意見</td><td>現在、39名のカウンターパートが配置されている。水産局養殖課で14名、バティ種苗生産研究センターで5名、4州の水産事務所の普及員が計20名である。その配置は、適切であると考えられる。　カウンターパートは、比較的高い能力を有しており、プロジェクト活動を進める上で適切であった。</td></tr>
<tr><td>事務室等の規模、利便性は適切か。</td><td>・事務室等の現状
・関係者の意見</td><td>専門家用の事務所は、その規模、利便性において適切なものである。</td></tr>
<tr><td>カンボジア側のプロジェクト予算は適切な規模か。</td><td>・相手側コスト負担実績</td><td>カンボジア国政府の予算的制約から、光熱費やカウンターパートの給与といった経費以外では、本プロジェクトの活動に対するカンボジア側予算の支出はなく、主として日本側の予算支出により、活動が進められている。</td></tr>
<tr><td>投入は十分活用</td><td>供与機材等は有効に利用</td><td>・供与機材利用</td><td>供与機材は、概ね有効に活用されている。</td></tr>
</table>

	されているか	されているか	状況	
	活動内容はアウトプットを生むのに適切だったか	不要な活動はなかったか	・関係者の意見	特になし
		必要なのに予定していなかった活動はなかったか	・関係者の意見	特になし
	効率性を阻害した要因はあるか。	C/Ps の定着度は、良好か。	・C/Ps の当初の配置と現状との比較	カウンターパートの異動は見られず、定着度は良好である。
		その他の阻害要因はあるか。	・関係者の意見	本プロジェクトを請け負っているコンサルタント会社と JICA 間で、毎年、業務実施契約が結ばれている。契約締結について合意するまで時間を要することがあり、特に、2005 年の会計年度初期の 4 月から 6 月まで日本人専門家を派遣することが困難であった。プロジェクト活動実施に必要な予算の執行が遅れたことが、プロジェクト活動の開始の遅れと、効率性低下の影響をもたらした。
	効率性における貢献要因	貢献要因		A. 本プロジェクトでは、プロジェクトの早い時期に日本人専門家の投入を集中させた。そのことにより以下の点で効果があり、効率性を高めた。 (1) 水産局及び州養殖普及員への研修・連携活動を通しカウンターパート人材が訓練・育成されたこと。 (2) 簡易養殖技術が早い時期にパッケージ化されたこと。 (3) 一般養殖農家、種苗生産農家への投入支援が効率よく実施されたこと。 (4) 能力強化されたカウンターパートの努力により種苗生産農家が育成され、農民間研修への積極的な理解・協力が得られたこと。 (5) 農民参加のワークショップ、先進養殖農家への視察、農民間の相互訪問の機会を多く取り入れ、養殖技術の実践的な理解を早めたこと。その結果、各種苗生産農家は、種苗生産開始 1 年目に平均値で 10 万匹の種苗を生産できた。この生産量は、以前実施された AIT プロジェクトで育成された種苗生産農家の 1 年目の生産量と比較して 5 倍大きい。 B. その他の貢献要因 1)AIT プロジェクトで育成された種苗生産農家の場合、個別に生産活動を行っている。一方、本プロジェクトでは、バティ種苗生産研究センターでの研修を一緒に受講したことならにスタディーツアーにも一緒に参加したことを通じて、種苗生産農家間で情報交換する基礎ができた。このことで、種苗生産農家のネットワーク設立についての合意が容易に得られることにつながった。 2)カンボジア側のニーズに柔軟に対応して、日本人専門家及び第三国専門家の派遣やスタディーツアーが実施されたこと。

5項目	評価設問		必要なデータ	調査結果
	大項目	小項目		
インパクト	上位目標「対象地域において、養殖生産量が増加する。」が将来、達成される見込みはあるか。	（達成度表のとおりの上位目標達成見込み参照）	（達成度表のとおり）	（達成度表のとおり）
	上位目標達成のための外部条件の状況	今後、養殖魚の価格が大きく下がらないかどうか。	・関係者からの情報	一般養殖農家の生産物は、自家消費が多く、市場に回る量は限られており、現時点では、養殖魚の価格を大きく下げるような状況はみられない。
	カウンターパートへの影響	仕事への取り組み意欲、意識の変化	・関係者からの情報	カウンターパートは、協力的姿勢を持ちつつ、積極的に本プロジェクトに取り組んでいる。また、研修コース等で学んだことを積極的に取り入れている。種苗生産農家ならびに一般小規模養殖農家向けの各種研修準備は、カウンターパートが主体的に行うようになっている。
	社会に及ぼした影響	タンパク質摂取機会の増加の程度や、栄養改善への寄与の程度	・関係者からの情報	2007年に実施された、社会経済・インパクト調査結果によると、養殖農家は、特に乾期に、市場で魚を購入する代わりに、自分の池で養殖した魚を食べることが可能となっている。ただし、魚の消費量について、2005年の調査結果と2007年の調査結果を比較した場合、大きな変化はなかった。平均の魚の一人一日あたり消費量は、雨期に87g、乾期75gである。この量は、一人一日あたり必要消費量である200～250gと比較すると、まだ少ない。すなわち、栄養改善に対するインパクトはまだ確認されていない状況である。 なお、野生の魚資源の漁獲圧力の低下や、特に乾期に市場から魚を購入する量が少なくなるという効果が見られる。

	生計向上に対する寄与度	・関係者からの情報	記述の社会経済・インパクト調査結果によると、小規模養殖農家の収入が顕著に増加している。 対象州で本プロジェクトが対象とした小規模農家について、調査（2005 年と 2007 年）を実施した結果の比較は下表のとおりである。

（単位：ドル）

収入源	2005 年調査における平均収入（調査戸数 327）	2007 年調査における平均収入（調査戸数 283）	増加収入（増加倍率）	増加収入（ドル）
稲作	321	357	1.1	36
家畜飼育	139	204	1.5	65
野菜栽培	62	109	1.8	48
養殖	53	204	3.9	151
賃金労働	137	420	3.1	283
仕送り	19	203	10.6	184
その他	63	326	5.1	263
計	794	1,824	2.3	1,030

平均収入は、2.3 倍に増加している。収入増加の大きな要因は、賃金労働、仕送り、養殖である。したがって、養殖は、小規模養殖農家の生計向上において大きく寄与している要因の一つである。

	その他の正負のインパクト。	その他のインパクト	・関係者からの情報	（1）小規模養殖技術や種苗生産技術に関する研修を本プロジェクトで実施しているが、対象州内の養殖普及員だけでなく、対象州以外の養殖普及員にも参加の機会を与えており、これまでに 9 つの州の 23 名の養殖普及員が研修に参加した。この他、学生や NGO スタッフが参加したケースもある。このような形で、本プロジェクトの成果が全国に普及されている。 （2）本プロジェクトのカウンターパートが、種苗生産技術研修コースを企画し、Bantey Meanchey 州で ECOSORN/EU が実施しているプロジェクトで選定された 2 名の農家を対象に研修を実施した。 （3）本プロジェクトのカウンターパート及び 1 名の種苗生産農家が、DFID?DANIDA が支援しているプロジェクト地区の選定された 16 名の農家を対象に、7 日間の種苗生産技術研修コースを実施した。 （4）政府職員、NGO スタッフ、コミューン評議会委員等を含む多くの人々が、本プロジェクトで育成された種苗生産農家を訪問し、その経験を聞き、生産施設を視察している。 （5）本プロジェクトで育成されたある種苗生産農家が、NGO（CARE International）の依頼を受けて、合計 200 名の農家に養殖技術研修を行った。2 日間の研修コースを 1 回当たり 50 人、計 4 回実施した。このような農民間研修を通じて本プロジェクトの成果が普及されている。なお、種苗生産農家にとっては、プロジェクト対象コミューン以外の農家に種苗を配布することができた。 （6）本プロジェクトでは、森林分野人材育成計画フェーズ 2 (Capacity Building for the Forestry Sector Phase Ⅱ）への小規模養殖導入について支援が行われた。そして、農家は、養殖技術の簡易さと開始しやすさから、養殖導入に関心を示しているとの報告がある。 （7）スペイン国際協力庁（AECI）は、来年から 2 つの州（Kratie 州と Stung Treng 州）で養殖プロジェクトを開始する予定であり、またその 2 州の水産局職員は、本プロジェクトで開発した研修コースと同様の研修に参加する予定となっている。 （8）幾人かの種苗生産農家は、公共の池に放流目的の種苗を供与している。

5 項目	評価設問		必要なデータ	調査結果
	大項目	小項目		
自立発展性（見込み）	国家開発計画やその他関連政策における淡水養殖の今後の位置付けはどうか。		・国家開発政策、その他関連政策	既述のとおり、養殖池、稲田養殖、研修、種苗生産場建設を通じた養殖開発推進が、政府の政策の中で重視されている。したがって、本プロジェクトの政策面における自立発展性は、確保されるものと思われる。
	水産局では、本プロジェクトがどのように認識されているか。		・関係者の意見	農林水産大臣は、本プロジェクトで育成した種苗生産農家を訪問し、淡水養殖振興に大きな関心を持っている。このほか、水産局養殖課では、各部署の幹部が集まって行う月例会議が実施されており、この時に、本プロジェクトの進捗状況や成果についての情報共有が行われている。 したがって、水産局は、本プロジェクトが良好な成果を上げつつあることを良く認識している。

本プロジェクトの成果を活用・発展させていく方針と実施能力が水産局に備わっているか。	プロジェクト終了後、水産局は、プロジェクト対象地域ならびにその他の地域で本プロジェクトの成果を組織的に普及・広げていくことができるか。 ①組織面 ②資金面	・関係者の意見 ・スタッフの配置見込み ・予算確保の見込み	本プロジェクトには、水産局本部、バティ種苗生産研究センター、及び州水産事務所のスタッフがカウンターパートとして参画している。組織改編に伴い、水産局本部が州水産事務所を直接の管轄下におさめるようになったことに伴い、普及活動がより機動的に実施できるようになった点は、組織面からみた実施能力にとってプラスである。また、本プロジェクトで実施している技術研修・普及手法研修等に他州の水産事務所の養殖普及員が参加しているケースもある。このように、本プロジェクトを通じて、カウンターパートのみならず、他州の地域普及員の能力強化も図ることができている。これらのことから、水産局には、本プロジェクトの成果を活用・発展させていく能力が強化されていると判断される。ただし、政府予算が限られている現状では、水産局独自で、プロジェクト成果をさらに他の州で組織的に普及・広げていくことは、困難を伴うであろうと考えられる。 したがって、カンボジア政府予算に左右されない、農民主体で養殖技術の普及・定着が可能となる仕組み作りが大切となる。そういった意味から、本プロジェクトの後半期では、アウトプット4「農村部における養殖普及ネットワークが構築される」を達成することが焦点となる。 2007年9月末に、農民主導によるネットワークを組織化するためのワークショップが開催され、このネットワークの基本的な枠組みについて合意され、プロジェクト対象4州ごとに役員が選出された。このネットワークが機能すれば、水産局の/地域普及員と農民とのパイプ役としての役割、プロジェクト終了後の農民間研修の実施母体としての役割などが期待できる。このネットワークの活動資金としては、組合費の徴収、積立金が検討されているが、プロジェクトがおこなっている中核農家への施設投入支援の返済金をネットワーク組織の原資とすることも考慮の余地がある。このような形で、プロジェクトの成果が、自立発展的に普及・発展することが期待される。
移転された技術は定着していくか。	カウンターパート（水産局及び州水産事務所のC/Psの技術レベル）の技術力	・関係者の意見	カウンターパート（水産局、バティ種苗生産研究センター及び州水産事務所のC/Ps）の技術レベルは、着実に向上しており、本プロジェクトを通じて得られた知識・経験は、水産局内に定着するものと考えられる。
	中核農家や養殖を行っている農民の技術力の定着性と採算性	・関係者の意見	養殖技術自体は、シンプルで、パッケージ化され、あまりコストがかからない方法であるため、中核農家や一般養殖農家に必要な技術が定着する可能性は高い。農家が有する技術・経験を農民間ネットワークでの情報交換を通じて、技術がさらに工夫・改善されていくことが期待される。これまでに中核農家が48戸育成され、また一般養殖農家が約3,300戸育成されている。なお、今後は、これらの養殖農家、特に種苗生産農家において、種苗生産や農民間研修が継続・定着するかをモニタリングし、技術の定着や経営面での課題があれば、それを改善するような方策の検討も必要かもしれない。
	①移転された技術は、他の地域・州に普及できる技術であるか。 ②移転された技術を農民から新規に参入する	・関係者の意見	(1) 本プロジェクトで改良した、生産コストを抑え、農地から得られる資源を餌として用いる技術パッケージは、カンボジアの他の州に適用できる技術である。 (2) 本プロジェクトでは、種苗生産農家が中核農家として、地域への種苗供給体制を整え、また種苗の購入顧客確保と販路拡大の手段として農民に対し養殖に新規参入することを奨励し、そのために必要な技術を農民間研修・巡回指導によって、新規農民に技術移転していくというメカニズムの構築を図っている。これが、種苗生産農家か

		農民へと移転・普及させるメカニズムがプロジェクトに取り込まれているか。 ③今後、その普及メカニズムは、機能・定着するかどうか。(養殖普及ネットワークの持続性)		ら新規養殖農家への技術移転・普及のメカニズムであり、農村部における基本的な普及手法である。 (3)　上記の農民間技術移転・普及のメカニズムが機能し定着すれば、農民レベルにおける技術面の自立発展性が確保されることにつながる。
	供与資機材の維持管理は適切に行われているか。また、協力終了後も適切に行われる見通しはあるか。		・関係者の意見	本プロジェクトで、バティ種苗生産研究センターの施設・資機材の整備が実施され、養殖技術改善のための活動で活用されてきた。ただし、養殖技術改善分野の活動は、2008 年の第一四半期に終了する予定となっている。その後は、センター側に、施設・資機材の活用が任されることになる。日本人専門家が滞在中は、機材の修理やメンテナンスに係わる費用を日本側が負担し、維持管理も行われていた。ただし、センター側に任せた後は、政府予算が限られていることを勘案すると施設・資機材が適切に維持管理されるかどうか危惧される。今後、水産局が、バティ種苗生産研究センターの予算面で適切な予算措置を取ることが求められる。
	自立発展性に影響を与える貢献・阻害要因は何か。		・関係者の意見	特になし。

２．実施プロセスの検証

	評価設問		調査結果
	大項目	小項目	
実施プロセス	当初計画した成果を達成するためにどのような計画・実施体制の変更・軌道修正が行われたか	プロジェクト実施中に把握されていた課題は何か。その課題はどのように解決されたか	特に大きな計画変更や実施体制の変更は、行われていない。
	技術移転の方法に問題はなかったか。	問題がある場合、どの分野におけるどのような技術移転方法に問題があったか。どのように解決されたか。	技術移転方法についての問題は特に生じていない。カウンターパートへの技術移転ならびに養殖農家への技術移転は、順調に進んでいる。
	相手国のオーナーシップ	①C/P 配置の適正さ ②予算手当て	既述のとおり、39 名のカウンターパートが配置されている。水産局養殖課で 14 名、バティ種苗生産研究センターで 5 名、4 州の水産事務所の普及員が 20 名である。その配置は、適切であると考えられる。　政府の財政難に伴い、カンボジア国側の予算支出は限定的である。
	プロジェクトのマネジメント体制に問題はなかったか。	JCC は必要な時期に実施され、必要なテーマが話し合われていたか	JCC は、過去 3 回実施された（2005 年 3 月 9 日、2006 年 3 月 6 日、2007 年 3 月 9 日）。年 1 回の頻度で開催されている。JCC では、過去 1 年間の活動実績の報告と今後 1 年間の活動計画についての説明が行われ、その後、議論が交わされている。議事録も作成されており、適切な頻度で、適切に実施されていると言える。
		その他の定例会議は、十分機能しているか。	日本人専門家とカウンターパート間の定例会議は、特に設定されていない。必要に応じて、カウンターパートと日本人専門家間での会議が行われている。その他、既述のとおり、水産局養殖課では、各部署の幹部が集まって行う月例会議が実施されており、この時に、本プロジェクトの進捗状況や成果についての情報共有が行われている。
		プロジェクトの進捗状況はどのようにモニタリングされていたか。	半期報告書および年次報告書が、作成されており、この中で進捗状況等についてモニタリングされている。
		専門家とカウンターパート間のコミュニケーションは、円滑に行われているか。	日本人専門家とカウンターパート間で、非常に良好なコミュニケーションが取られており、相互信頼に基づく良好な関係が築かれている。特に、カウンターパート側は、プロジェクト活動に関心が高く、より進んだ知識や技術の習得に意欲的である。
		JICA カンボジア事務所及び JICA 本部との連絡・協力が円滑に実施されたか。	プロジェクト実施側と JICA カンボジア事務所管の連絡・協力は円滑に行われている。

3. 達成度表　（上位目標、プロジェクト目標、アウトプットの達成度）

<table>
<tr><th rowspan="2"></th><th colspan="2">項目</th><th rowspan="2">必要な情報・データ
（指標）</th><th rowspan="2">調査結果</th></tr>
<tr><th>主項目</th><th>サブ項目</th></tr>
<tr><td>達成度</td><td colspan="2">上位目標の達成見込み
（対象州において、養殖生産量が増加する。）</td><td>対象州の養殖生産量が1.5倍になる。</td><td>
農林水産省の農業統計ならびに水産局のデータによると、対象4州の2004年から2006年までの養殖生産量は、下表のとおりである。プロジェクト開始前の2004年の生産量は、4州合計で1,390トンである。このプロジェクト開始前の生産量を基準とする（1,390トンの50%分、すなわち約700トンの増産が目標となる）。2006年の生産量は、4州合計で2,048トンであり、2004年の生産量に比較して1.47倍となっている。統計データ上では、2006年時点で目標達成に近い水準になっている。
（単位：トン）
<table>
<tr><th>年</th><th>Kampot州</th><th>Kompong Speu州</th><th>Prey Veng州</th><th>Takeo州</th><th>4州合計</th></tr>
<tr><td>2004年</td><td>25</td><td>40</td><td>510</td><td>815</td><td>1,390</td></tr>
<tr><td>2005年</td><td>50</td><td>110</td><td>600</td><td>800</td><td>1,560</td></tr>
<tr><td>2006年</td><td>90</td><td>163</td><td>845</td><td>950</td><td>2,048</td></tr>
</table>
出展：Agricultural Statistics, Ministry of Agriculture, Forestry and Fisheries（2004年及び2005年）及び水産局のデータ（2006年）
注：統計資料では、Kampot州の生産量は230トンであるが、この中に海岸部でのエビ養殖分205トンが含まれるので、エビの生産量は除外した。

一方、本プロジェクトで育成された新規養殖農家（今後の予定も含む）における生産量を試算すると下表のとおりである。（この生産量が、増産量となる）
<table>
<tr><th>年次</th><th>生産量
kg/100m2</th><th>平均池面積
（m2/戸）</th><th>新規の養殖
農家数（戸）</th><th>生産量
（ton）</th><th>定着率を80%と想定した場合の生産量
（ton）</th></tr>
<tr><td>2005</td><td>24.8</td><td>224</td><td>640</td><td>36</td><td>28</td></tr>
<tr><td>2006</td><td>36.4</td><td>224</td><td>1,759</td><td>143</td><td>115</td></tr>
<tr><td>2007</td><td>50.0</td><td>224</td><td>3,359</td><td>376</td><td>301</td></tr>
<tr><td>2008</td><td>50.0</td><td>224</td><td>6,959</td><td>779</td><td>624</td></tr>
<tr><td>2009</td><td>50.0</td><td>224</td><td>10,559</td><td>1,183</td><td>946</td></tr>
</table>
注：2005年及び2006年のデータは、サンプル調査結果。2007年以降の数値は、推定値。

これまで選定され育成された新規農家の場合、すでに養殖に使用できる池を所有している農家であったので、研修受講後、すぐに養殖を開始することができた。一方、2008年以降、農民間研修を通じて育成される新規の養殖農家場合、池を持っていない農家も参加する場合が考えられる。そのような農家がどのくらいの割合になるかによって大きく生産量が左右される。もし80%程度の農家がすぐに養殖を開始すると想定すれば、プロジェクト終了時までに、1.5倍の目標（700
</td></tr>
</table>

<table>
<tr><th></th><th colspan="2">項目</th><th>必要な情報・データ（指標）</th><th>調査結果</th></tr>
<tr><th></th><th>主項目</th><th>サブ項目</th><th></th><th></th></tr>
<tr><td></td><td></td><td></td><td></td><td>トンの増産）を達成することが可能である。割合が80%より低くなったとしても、プロジェクト終了後も、農民間研修等を通じて、新規養殖農家の増加が期待されるので、そう遠くない時期に上位目標は達成可能と見込まれる。</td></tr>
<tr><td></td><td>プロジェクト目標の達成見込み
(対象州において、小規模養殖技術が広く普及する。)</td><td></td><td>プロジェクト対象4州で、小規模養殖農家が既存の2,000戸から4,400戸に増加する。</td><td>プロジェクト対象4州で本プロジェクトによって育成された養殖農家数ならびに今後、2009年度までに育成される予定の農家数の内訳は、下表のとおり。（2008年と2009年の数値は、計画値）

<table>
<tr><th rowspan="2">年次</th><th colspan="3">選定養殖農家数（戸）</th><th rowspan="2">農民間研修により育成された農家数（戸）</th><th rowspan="2">新規農家の合計</th><th rowspan="2">新規農家の累計</th></tr>
<tr><th>新規</th><th>既存</th><th>小計</th></tr>
<tr><td>2005</td><td>320</td><td>320</td><td>640</td><td>-</td><td>320</td><td>320</td></tr>
<tr><td>2006</td><td>320</td><td>320</td><td>640</td><td>479</td><td>799</td><td>1,119</td></tr>
<tr><td>2007</td><td>320</td><td>320</td><td>640</td><td>960</td><td>1,280</td><td>2,399</td></tr>
<tr><td>2008</td><td>0</td><td>0</td><td>0</td><td>3,600</td><td>3,600</td><td>5,999</td></tr>
<tr><td>2009</td><td>0</td><td>0</td><td>0</td><td>3,600</td><td>3,600</td><td>9,599</td></tr>
<tr><td>計</td><td>960</td><td>960</td><td>1,920</td><td>8,639</td><td>9,599</td><td>-</td></tr>
</table>

2007年度末時点で、新規に育成された小規模養殖農家数は、約2,400戸増加する。既存農家数2,000戸と併せると約4,400戸となる。目標を達成する。2006～2007年度に農民間研修を受けた農家は、養殖に利用できる池を所有しているが、2008～2009年度に農民間研修を受ける農家の場合、養殖に利用できる池や初期投資に必要な資金を持っているかいなかによって、実際に養殖を開始するまで時間を要する場合も考えられる。そうであっても、今後、農民間研修によって育成される農家数を考えると、プロジェクト終了時までには、目標を大幅に超える養殖農家数に達するものと見込まれる。</td></tr>
<tr><td></td><td>アウトプットは計画通り産出しているか。</td><td>1. 既存小規模養殖農家の技術改善により、種苗生産農家が育成される。</td><td>20戸の種苗生産農家が、独自に種苗生産を行うようになる。</td><td>2005年度及び2006年度にそれぞれ、対象各州の4つのコミューンから1戸ずつ種苗生産農家が選定され、この2年間で、4州x4コミューンx2年＝32戸の新規種苗生産農家が育成された。この32戸は、順調に種苗生産を開始した。2007年度においても同様に16戸の新規種苗生産農家を育成中である。したがって、今年度中に48戸の種苗生産農家が育成される。指標的には、目標値の20戸をすでに超え、その目標を達成している。
ただし、本アウトプットは、種苗生産農家の育成であり、種苗生産が技術的並びに経営的に安定することが求められる。2005年度及び2006年度に選定され、研修を受講した農家での種苗生産は、研修でならった技術を適用しているものの、その生産量にバラツキがあることが報告も見られる。種苗生産農家が、中核農家として技術的ならびに経営面から自立して種苗生産を行っていけるかどうかいう点、そして種苗の供給だけでなく、農民間の情報交換における主導的役割を果たすことできるかどうかという点では、さらに経験を積み重ねる必要がある。</td></tr>
<tr><td></td><td></td><td>2. 小規模養殖技術とその普及手法</td><td>現地に適合する、小規模養殖技術及びその普及</td><td>バティ種苗生産研究センターでの、親魚管理、種苗生産、育成に関わる技術改善ならびに農家でのオンファーム実証試験を通じて得られた知見を取り纏め、小規模養殖技術がパッケージ化された。これを基に、農民が容易に理解できるよう</td></tr>
</table>

<table>
<tr><td rowspan="2"></td><td colspan="2">項目</td><td rowspan="2">必要な情報・データ（指標）</td><td rowspan="2">調査結果</td></tr>
<tr><td>主項目</td><td>サブ項目</td></tr>
<tr><td></td><td>が、改善される。</td><td>に関するマニュアルが作成される。</td><td>に絵を多く取り入れた養殖技術ブックレット（小冊子）やポスター類（養殖技術や共有池管理に関するもの）が作成された。この養殖技術ブックレットは、本プロジェクトで選定された農家への研修や農民間研修、さらに他の州の農民向けにも利用されている。したがって、この指標はほぼ達成されている。
なおこの他に、小規模養殖（グローアウト）に関するビデオ教材が作成済みであり、種苗生産に関するビデオ教材を作成中である。作成中のビデオ教材は、2008 年中には完成する見込みである。</td></tr>
<tr><td></td><td>3. プロジェクト対象地域で、土地なし貧困農民が裨益する養殖関連活動が振興される。</td><td>20 の共有池で、増殖活動が独自に行われるようになる。</td><td>毎年 4 ヵ所以上の共有池を設定する方針で、共有池管理事業の振興が進められている。各年度に設定した共有池数ならびに今後の設定予定数は、次の通りである。

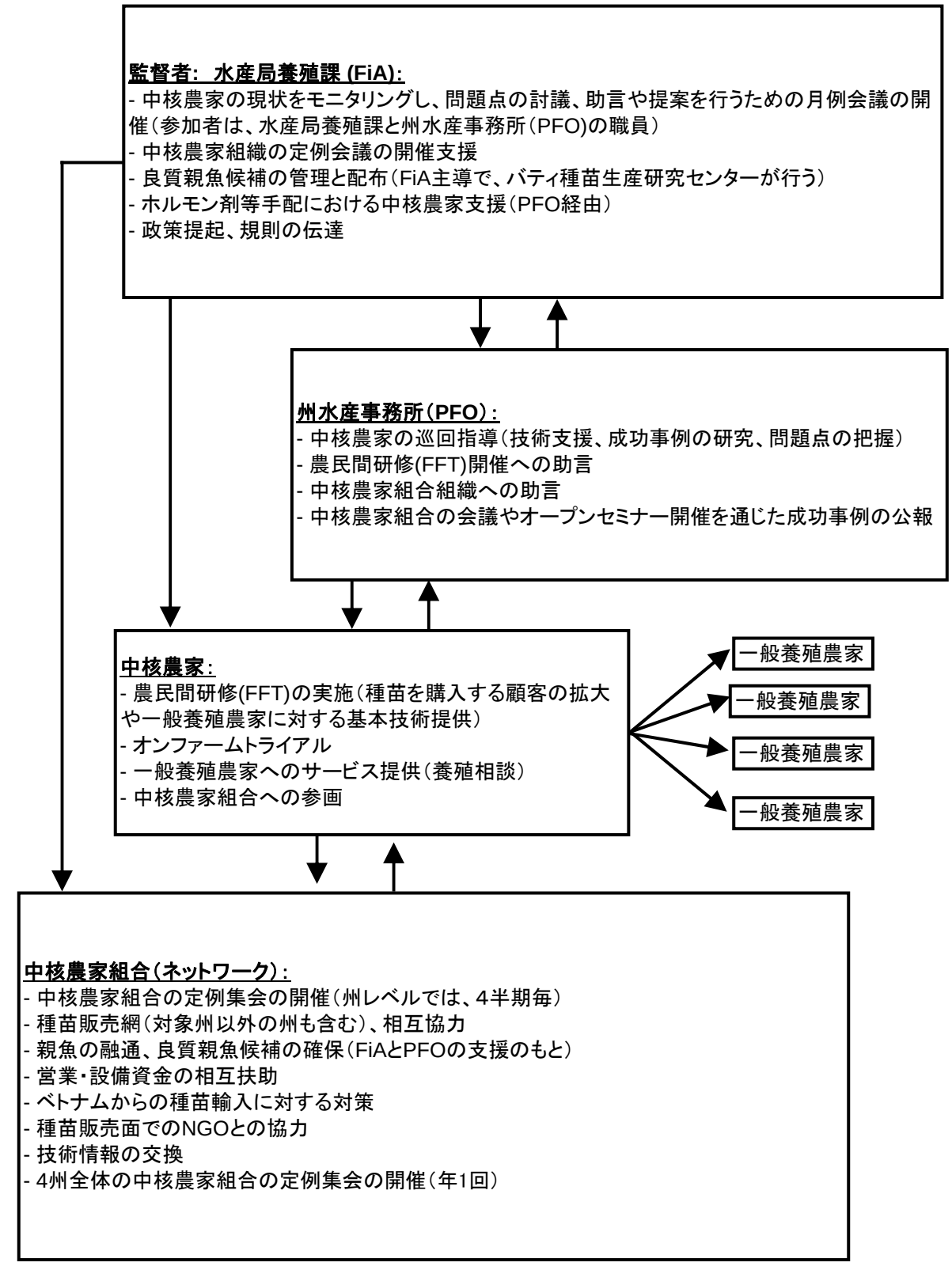
<table><tr><th>年度</th><th>設定共有池数</th></tr><tr><td>2005 年</td><td>4</td></tr><tr><td>2006 年</td><td>4</td></tr><tr><td>2007 年</td><td>3（WFP との連携）+3（準備中）</td></tr><tr><td>2008 年</td><td>4（計画）</td></tr><tr><td>2009 年</td><td>4（計画）</td></tr><tr><td>計</td><td>22（見込み）</td></tr></table>（注：WFP：国連世界食糧計画）

現時点では、11 ヵ所の共有池において、魚道整備、住民による管理組合の創設、魚の放流等の事業が終了している。2009 年度までには、計 22 ヵ所の共有池での養殖関連活動が振興される見込みであり、目標値の 20 ヵ所を超える予定である。したがって、プロジェクト終了時には、本指標が達成される見通しである。
なお、共有池設定後、収穫できる魚の量が増加した、あるいは魚の種類が増加したとの報告が上がっている。また、コミュニティーの住民は共有池管理活動への参加についての理解が進んでいる。</td></tr>
<tr><td></td><td>4. 農村部における養殖普及ネットワークが構築される。</td><td>4-1.　種苗生産農家が、彼らのイニシアティブにより、毎年少なくとも 1 回は、農民間研修を行う。</td><td>(4-1) 種苗生産農家が、彼らのイニシアティブにより、毎年少なくとも 1 回は、農民間研修を行う。

本プロジェクトで育成・支援された種苗生産農家は、農民間研修のためのトレーナー研修を受け、2006 年から、農民間研修を実施している。受講した農民数は、2006 年に 479 戸、2007 年に 960 戸である。今後も、各種苗生産農家（以前、他の機関が実施したプロジェクトで育成された先進種苗農家 11 戸を含む）が、毎年 60 人の新規農家を対象に農民間研修を実施していく予定である。2008 年と 2009 年には、毎年 3,600 戸の新規養殖農家が育成される計画である。水産局養殖課や州水産事務所の技術的支援を受けつつ、種苗生産農家が主体的に、農民間研修のトレーナーを務めることで、また普及活動を実施していくことで今後更に、種苗生産農家の能力向上が図られることが期待される。</td></tr>
<tr><td></td><td></td><td>4-2 ネットワークのミー</td><td>(4-2) ネットワークのミーティングが各州で年 3 回開催される。</td></tr>
</table>

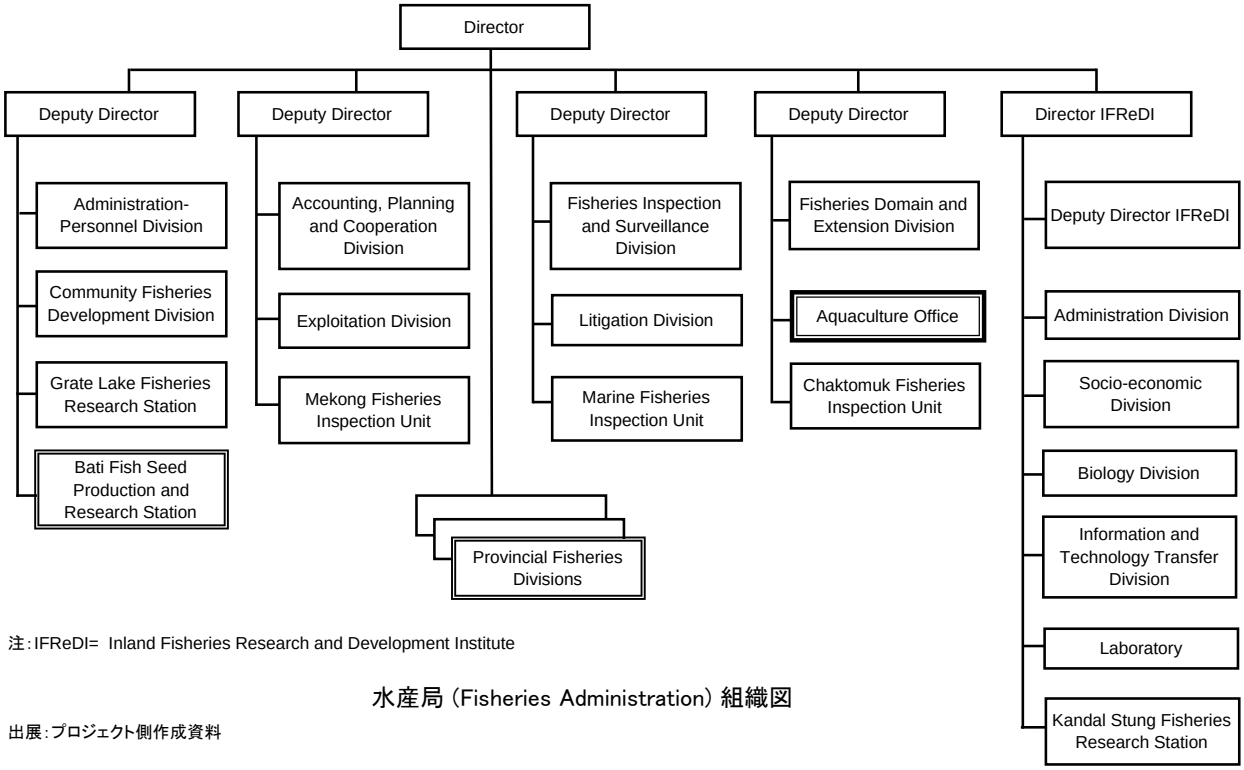
	項目		必要な情報・データ（指標）	調査結果
	主項目	サブ項目		
			ティングが各州で年3回開催される。 4-3 ネットワークの4州全体の合同ミーティングが少なくとも年1回開催される。	(4-3) ネットワークの4州全体の合同ミーティングが少なくとも年1回開催される。 種苗生産農家は中核農家として地域の養殖農家のリーダー的存在である。2007年度までに48戸の中核農家が育成され、その48戸の種苗生産農家及びAITプロジェクトで育成された種苗生産農家12戸のもとで3,300戸以上の農家が養殖に従事している計算となる。 農民主体の自立的ネットワークの育成が、本プロジェクトの今後の養殖振興における最優先課題である。2007年9月末に、農民主導によるネットワークを組織化するためのワークショップが開催された。参加者は中核農家全員（48名）と先進種苗生産農家（12名）の計60名である。この時、ネットワーク組織の基本的な枠組みが合意され、4州毎の役員が選出された。今後、州毎に、年3回の会議開催、そして4州全体会議が年1回開催される計画である。 種苗販売、親魚の融通、対ベトナム種苗対策、運転資金・設備投資資金の相互補助、関連情報の交換など実利的なネットワーク作りを目指している。このネットワーク構築によって、水産局/地域普及員と農民とのパイプ役としての役割、プロジェクト終了後の農民間研修の実施母体としての役割などが期待できる。資金は組合費の徴収や積立金が検討されているが、プロジェクトがおこなっている中核農家への施設投入支援の返済金をネットワーク組織の原資とすることも考慮の余地がある。こうした形でプロジェクト成果の技術的・財政的自立発展性の確保が図られる見通しである。

付属資料5　農民ネットワークの概念図（案）
（農民間普及の推進と水産局による養殖農家支援）



注：　中核農家組合は、2007年9月に立ち上げ、各州毎に組合の役員が選定された。

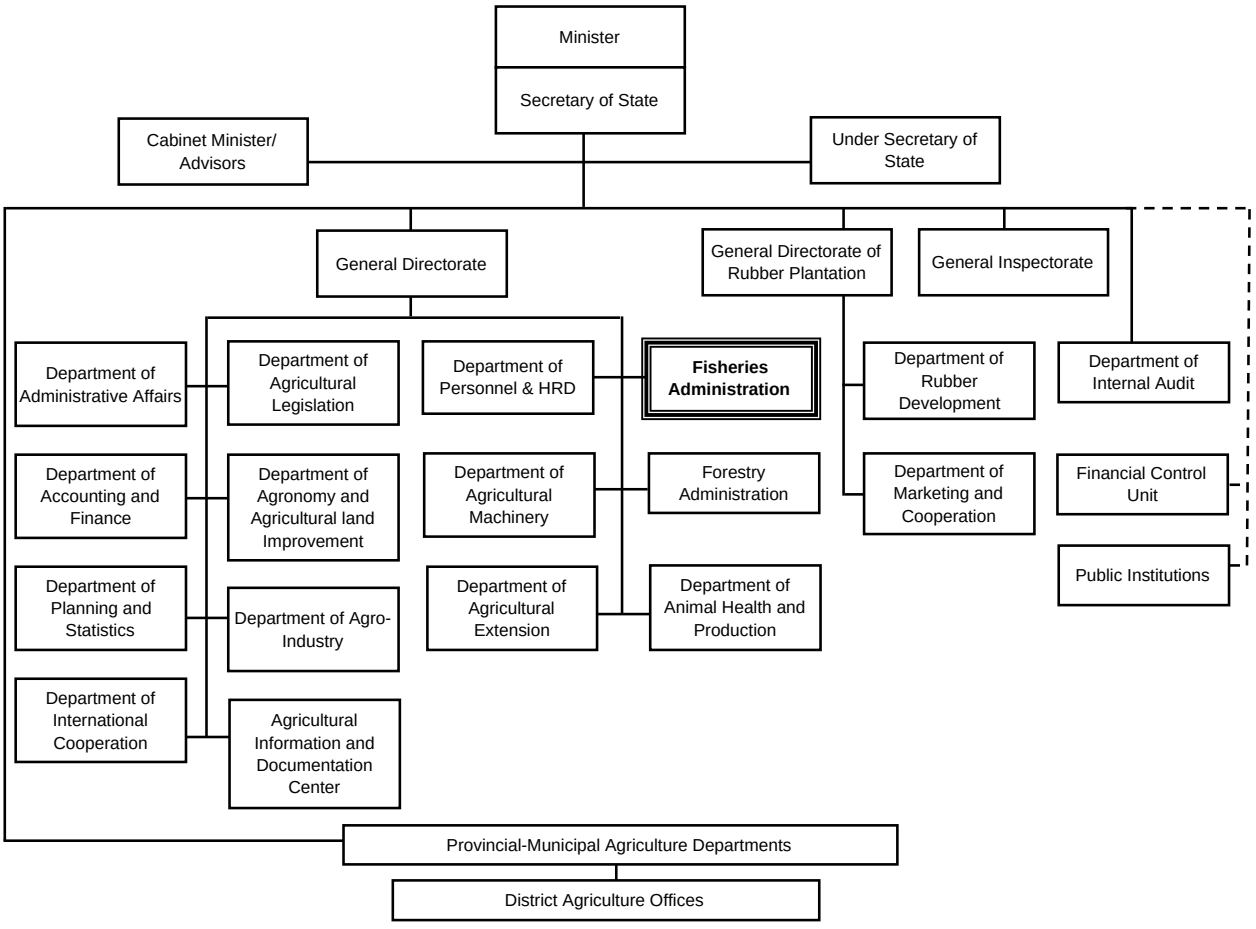
付属資料6 水産局及び農林水産省の組織図



注：IFReDI= Inland Fisheries Research and Development Institute

水産局 (Fisheries Administration) 組織図

出展：プロジェクト側作成資料



農林水産省組織図

出展：カンボジア国農林水産省ホームページ


JICA
ジャイカ