

Figure 1 Shift in the contents of the Inputs along with the project progress

(3) Contents and timing of the Project Inputs from the Cambodian side

A sufficient number of counterpart personnel with appropriate background and experience were assigned to the necessary positions for the implementation of the Project. Most of them have remained at the same positions throughout the project period. Despite the funding base of RGC is not strong, FiA has paid the salary for the counterparts and the electricity and water bills without delay for the smooth implementation of the Project.

4. Impacts

Impact of the Project is considered to be high as the Project affected positively on various aspects of the concerned institutions and personnel as discussed in the following analyses:

(1) Achievement of the Overall Goal

This Project is considered to have been achieved already the Overall Goal in terms of the indicator stipulated in the PDM. The fish production in the target provinces by SSFs increased about 900 tons from 2004 to 2008. The number of the fish farmers who were motivated for starting fish farming by the Project's extension activities at the end of 2008 was estimated to be 6,000, each of whom produces about 100 kg/year, making the total production of 600 tons. Thus, approximately 2/3 of the 900 tons would be ascribable to the Project achievement, implying the logical cause-effect relation between the Project activities and the achievement of the Overall Goal.

(2) Impacts on fisheries development policy

The Agriculture Ministerial message at the Cambodia Development Council (CDC) of 2007 mentioned about the progress in integrated fish farming and rice-fish farming in rural communities. This was a reflection of government's recognition of the improved livelihoods of the rural farmers as an achievement of this Project. As a realization of this political message, MAFF through FiA has launched projects with a NGO (AIDA) that has a similar fundamental concept of this Project in the four north eastern provinces since December 2007. FiA also developed the Projects' stock-enhancement activities into a concept of "One commune, one community fish refuge" and is promoting it nationally. There were over 200 community fish refuge ponds established in the country by the end of 2008 some of which were supported

from various donors and NGOs. There are other cooperative projects that are in progress as ripple effect activities of this Project as already mentioned earlier. As these tangible cases that supports further the government's policy on poverty reduction through aquaculture development are observed, it is reasonable to conclude that the Project has produced significant positive impacts on the fisheries development policy of the government.

(3) Nutritional improvement on the target people

The Project is expected to promote aquaculture into approximately 9,000 households of the farmers in the target provinces by the end of the 5-year Project period. Each household now on average enjoys about 100kg of aquaculture harvest every year. According to the baseline survey of this Project, about 60% of fish farmers' households in the target villages did fish farming mainly for family consumption and about 30% of them did it for both family consumption and income generation. Therefore, 90% of fish farmers who were doing aquaculture consumed at least a part of their harvested fish. In those fish farming households, the harvested fish certainly contributed for improving the nutritional status of the family members. Therefore, it is doubtless that the project impacted positively the nutritional status of the families of the 9,000 fish farming households that have started aquaculture as a result of this Project's implementation.

The community fish refuge program also has impacts on the nutrition of the participating farmers' households although the amount of fish consumed is small. For example, at Prey Kdouck village where the community fish refuge program harvested 309 kg of fish by 56 families in a week, each household obtained on average 790g of fish. Approximately 2/3 of the harvest was consumed by the family members.

(4) Income generation on the target people

1) Small scale farmers

Approximately 2/3 of the rural households in the project area purchase fish occasionally during the rainy season when the capture fishing activity declines and purchase fish regularly during the dry season. Therefore, those fish farming households which participated in this Project now are able to have a better cash flow position either by obtaining revenue from the fish sales or saving the expenses that would have been spent for buying fish.

The average annual incomes of the fish farmers increased from 78 US dollars in 2005 to 209 US dollars in 2007 and then to 335 US dollars in 2009 according to the baseline and impact surveys for this project. The annual income of the rural farmers of the project region studied by the same impact survey was 2,375 US dollars in 2009. Thus, the income from the aquaculture operation is equal to about 14% of the total household income in 2009, which is a significant supplement for the households. Therefore, it is clear that the project impacted positively on the income generation for the fish farming households.

2) Fingerling producing farmers

The average gross income of SPFs of all the four target provinces increased from 1,079 US dollars in 2005 to 2,547 US dollars according to the baseline and impact surveys for this Project as shown in Table 5. The total running cost without depreciation was about 30% of the gross income, generating the net incomes of 784 US dollars in 2005 and 1,765 US dollars in 2008. The economic model developed by the Japanese expert for a 300,000 fingerling production system estimated the total facility cost as 4,650 US dollars. Assuming the average life of the facility is 10 years, the annual depreciation cost is 465 US dollars. Adding this as a part of expenditure, the net profit in 2009 would be 1,300 US dollars, which is about 55% of the average income of farmers of the target communes. In other words, starting seed production business increased the household income about 1.5 times for the SPFs.

Table 5: Average income and expenditure by the seed producing farmers of the four target provinces from 2005 to 2009

Year	2005	2006	2007	2008
Gross income	1,079	1,106	2,199	2,547
Expenditure	295	309	457	782
Net profit	784	780	1,742	1,765

(5) Expansion of aquaculture out of the Project area through increased supply of fingerlings by the SPFs and though cooperated donor projects

The Project assisted the SPFs for setting up the necessary facilities for fingerling production with 500 US dollars per household, which was enough only for approximately 1/3 of total funding requirements for the purpose. The SPFs prepared the rest of money in their own responsibility by various means such as selling pigs and rice and borrowing from the relatives. This self-supporting funding capacity of the selected SPFs suggested their fundamental entrepreneurship character. As such, when they confirmed the feasibility of the fingerling production business in the first years of the experience, many of them quickly invested large sums of money for the expansion of the facility as the Team confirmed through the interviews. This investment and the technical upgrading through the training by the Project increased the fingerling production capacity to the extent that it attracted the fingerling buyers and the donor and NGO assisted projects such as the project of Ayuda, Intercambio y Desarrollo (AIDA) and the UN World Food Programs as a reliable source for the fingerlings for the demands existing outside of the target communes. The market channels for the produced fingerlings by the SPFs which are still in development are explained schematically in Figure 2. This distribution of fingerlings supplied to



Figure 2: Marketing channels for fingerling produced by the seed producing farmers

the outside of the fingerling, which is especially prominent in Takeo Province, can be considered to be a ripple effect of the Project.

(6) Technical impacts

1) Aquaculture of high valued fish

The SPFs and advanced SSFs became interested in aquaculture of high valued species like sutchi catfish and freshwater giant prawn along with the increased technical capacity during the Project period. FiA is highly interested in the development of these value-added aquaculture systems for its contribution to the national economy. Responding the requests from FiA, the Project carried out some activities supportive for the aquaculture development of these high valued species. This increased interest on the high valued species by the advanced farmers and FiA is considered as a positive impact of this Project.

2) Stable supply of fingerlings

The SPFs of the aquaculture network started co-operating each other for the fingerling production and distribution. Newly established small-scale hatcheries which often do not have sufficient brood stock at the onset of spawning season borrow brood fish from established hatcheries. As all SSFs stock fingerling at the beginning of the rainy season, the demand for fingerlings peaks at the same time at which even the large-scale farms cannot meet all the requests from the customers so as to obtain additional fingerling from small-scale hatcheries or distribute the orders to the other hatcheries. In addition, SPFs are buying fingerlings from other members for supplying of particular species that have higher demand in the area which vary depending on the locality. These cooperative activities not only increase the total supply of fingerling to the region but also improve the reliability of fingerling supply for the customers. Customers have now more chances to obtain necessary fingerlings than before. This qualitative improvement of the stable fingerling supply system in the target region is considered as a positive impact of the Project.

3) Transfer of technology outside of the project area

Along with the technical development on fingerling production, the SPFs are intending to expand their customer bases by selling fingerlings to the farmers outside of the Project's target area and inviting them for the aquaculture training courses. The technology developed by this Project is transferred to outside of the Project area through the SPFs activities along with the distribution of fingerlings. Transfer of technology improved by this Project to the other regions is also occurring through the cooperative programs with the other donor agencies and NGOs as mentioned above. The expansion of the Project-improved technology beyond the boundary of the target area is another technical impact of the Project.

5. Sustainability

The sustainability of the Project is assessed as high with the following results of the analyses.

(1) Compliance to the national development policy

The Cambodia government remains keeping the policy of reducing rural poverty with extension of aquaculture. It is rather enhancing the activities in rural aquaculture development upon recognition of the achievements of this Project. It is expected that the compliance between this project objectives and the government policy on fisheries development will be held in future.

(2) Institutional capacities for sustainable operation of the Project

1) Institutional capacity of the implementation agency

During the Project period, the provincial fisheries extension offices were transferred from the provincial government to FiA, which made the command line in the government system related to the aquaculture extension simple and straightforward. Through OJT and the training opportunities in Japan and in the third countries, the capacity of the counterpart personnel is upgraded, which can be proofed by the higher-than-the-expected achievements of this Project. It is evaluated that FiA has the sufficient institutional capacity to follow up the aquaculture development programs in the Project area, although it does not have financial capacity to run a similar project independently in the other region in the country.

2) Sustainability of the aquaculture network

This project aimed to set up a farmer to farmer extension system for aquaculture development in the target area in consideration of the government limited financial capacity. Therefore, the continuation of aquaculture development in the Project area is largely dependent on the sustainability of the farmer to farmer extension system or the established aquaculture network, which is composed of the SPFs in the area. The sustainability then in turn depends on 1) operational stability of individual SPFs and 2) institutional capacity of the aquaculture network.

Regarding the operational stability of individual SPFs, the increase of fingerling production during the project period can be taken as a good indicator. The Project provided support for the construction of the facility at the beginning of the project but has refrained giving financial supports for the operation in the later phase, therefore, the increased fingerling production in the 4th and 5th years of the Project is a good proof for their operational capacity. The initial financial supports for their facility construction were given as loans to be returned later either as cash or as fingerlings equivalent in the market value. The pay-back of the loan has been done on schedule and the returned fund is now used as the source for establishing the mutual micro financing system for the network members. From these observations, it is expected that the individual SPFs will be sustained their operations in the future.

It is mentioned in the "Impact" section that the SPFs of the network are helping each other for their fingerling production business through lending brood stock fish or distributing fingerling orders among the member farmers. This is a clear indication that the network is formed based on mutual business merits rather than

an obligatory response to the Project's approach. There is a wide variation in the capacity of fingerling production among the SPFs. Therefore, they are logically possible to choose either to go into "competition" to contend each other or to go into "cooperation" to help each other. It is generally advantageous to associate each other in the earlier phase of industrial development when the demand usually exceeds the supply, while it is generally advantageous to compete with others in the mature phase of industry when the market is saturated with the commodity or the supply exceeds the demand. The fingerling producers of the Project area apparently are choosing the association strategy at the moment. From these observations, it is expected that the aquaculture network will continue operating to support the member farmers to supply fingerling to the project area at least for a short to medium term period.

(3) Technical sustainability

Three types of techniques are disseminated through this Project to the targets groups; 1) fingerling production, 2) small-scale farming, 3) stock enhancement with community fish refuge ponds. The sustainability of each technology was assessed as good as shown below:

1) Fingerling production techniques

The fingerling production technology that this project used is for four species that are very common as aquaculture species in the region, and is not high in the required technological level for the SPFs to adopt. There are 48 SPFs supported by the project and all of them are in operation of fingerling production currently except one farmer who is currently experiencing facility breakdown. Namely, the rate of operation among the trained farmers is very high at 98%. Further more a part of them are producing fingerlings of high valued aquaculture fish which are more difficult in the reproduction technology than the four target species of the Project, implying their technical level is much higher than before. Based on these observations, the acceptance of the transferred fingerling production technology in this Project by the SPFs is high and expected to be used with further improvements in the Project area. In addition, degradation of water resources and environment has given negative impact on fingerling production ponds. However, some SPFs have explored manners to keep water condition suitable for brood stocking and nursery of fingerlings.

2) Small-scale fish farming

The fish farming technology transferred to SSFs in the Project is based principally on fertilization of pond water for growing-out of fish with animal manure. It is an appropriate technology for resources limited farmers. The basic techniques used had been developed through a long history of experimental projects in Cambodia with technical assistances from various research institutions like AIT and World Fish Center since 1993. Thus, the adoption rate by the SSFs in the project was very high. It is estimated that 90% of those who started the fish farming is continuing the operation after one year. The same technology is used by the other aquaculture project like the AIDA project in the north eastern

provinces. Based on these observations, the grow-out technology is expected to be used continuously by the SSFs in and outside of the Project area for a long time.

3) Stock enhancement with community fish refuge ponds

The project developed stock enhancement technology applied to community fish refuge ponds for the poor farmers in communities who often do not possess land and thus are not able to do fish farming in their own ponds. The project implemented the community fish refuge programs at 22 communities during the Project period. FiA is promoting the program nation-wide with the concept of "One commune, one community fish refuge" and established more than 200 community fish ponds by 2008. Based on the rapid expansion of the community fish refuge pond program, it is obvious that the stock enhancement technology used in the Project is accepted by many communities in the country and will be used for a long time.

(4) Maintenance of equipment and facility

1) Equipment supplied to the government institutions

The equipment supplied to Bati Fingerling Production and Research Center was used for improvement of aquaculture technology in the earlier phase of the project. The condition of operation and maintenance of the supplied equipment is adequate based on the inventory record verified by the site observation.

2) Hatchery facility of seed producing farmers

The fingerling production facility at the SPFs' hatcheries would play a key role in the sustainability of the aquaculture activity in the Project area because the farmers need new sets of fingerlings every year when they start fish farming. As discussed above, the operational stability of the SPFs was assessed as good based on the performance of fingerling production in the project area in the 4th and the 5th years of the Project.

However, the facility of the hatcheries includes water pumps and fishing nets which need regular replacements, and concrete tanks and a reservoir that need costly maintenance once the problem occurs. In fact, four farmers out of 48 SPFs supported by the Project could not operate in 2007 because of the facility breakdown. The maintenance of the fingerling production facility at the SPFs' hatcheries will be an important factor for the sustainability of the project.

V. CONCLUSION

The Team highly appreciates that the Project has successfully implemented without any major or critical problem, having already achieved the Project Purpose to date as well as the Overall Goal of the Project. The Project has been evaluated as high on all the five evaluation criteria. Therefore, it is to be concluded that the Project will be terminated as stipulated in the R/D.

The Team recognizes that the aquaculture network of SPFs has just been established in the later phase of the Project, and it still needs further institutional

development especially in the aspects of mutual technical support for the network members for the long term sustainability of the aquaculture development in the target regions. Strengthening the network in the marketing aspect through the on-going fingerling and brood fish exchanges mechanism is also an important area for the network members. Their economic sustainability would hold the key for the continuous development of aquaculture in the target regions after the termination of the Project. For the rest of the Project period, the Project should continue working for accomplishing the remaining activities related to the strengthening of the aquaculture network. The Project continuously monitors on the 22 cases of community fish refuge, identifies best practices and shares information.

VI. RECOMMENDATIONS

The Team recommends the Project to focus its activities in the following work areas for the remaining period of the Project.

- (1) To continue strengthening the network for long term sustainability of the Project
 - Enhance the function of network for technical upgrading and brood fish exchange among the member SPFs with assistances from the Fisheries Administration Cantonments and public aquaculture institutions like the Bati Seed Production and Research Center. The Project experts and the Cambodian counterpart staff are requested to support the network's self-initiative in their technical capacity building in the fingerling production.
 - Develop marketing function for increasing the customer bases through the coordinated fingerling sales and the market information exchange among the member SPFs. The Team recommends the Project encourages network members to be registered to the local government authorities for participating into the biddings for supply of fingerlings and training services to public projects. The financial stability of SPFs holds the key importance for the continuous development of small-scale aquaculture in the target areas.
- (2) To strengthen monitoring on the community fish refuge activity for the stock enhancement
 - The Team recommends that the Project continue monitoring the effects of fish stocking and its impacts on all stakeholders of the community fish refuge activity. The Project should identify best practices based on the analysis of the 22 cases carried out, and encourages sharing of the accumulated information among stakeholders in the 22 Project sites.
- (3) To summarize the three step technology transfer including farmer to farmer extension
 - The Team realizes that one of the main factors that enabled the fast expansion of aquaculture into the target regions is the incorporation of the three step technology transfer including farmer to farmer extension in the

Project design and its functionalization by the effective implementation of the Project. The Project implemented the three step technology transfer:

- 1) from the experts to the government counterpart staff,
- 2) from the government counterpart staff to SPFs, and then,
- 3) from the SPFs to the SSFs

It is highly recommended that the Project summarize its experience as a successful case of freshwater aquaculture extension in a rural development context. The Team advises the Project to produce a series of documentation in a form that can be applied to the similar projects.

VII. LESSONS LEARNED

This Project has achieved successful implementation with accomplishments of the Project Purpose as well as the Overall Goal earlier than the expected timeframe. Through the assessment of the achievements and evaluation of the Project performances, the Team lists the followings as lessons learned from the implementation of Project that would be beneficial to on-going and future similar projects.

(1) Three step technology transfer

The three step technology transfer including farmer to farmer extension accelerates further development of rural freshwater aquaculture when the technology is slotted onto the local condition.

(2) Village hatchery

The development of village hatchery business plays a key role for the sustainable freshwater aquaculture in poor rural society. The expansion of the fingerling production capacity motivates farmers to involve in freshwater aquaculture for improving their livelihoods.

(3) Rural aquaculture development for livelihood

A rural aquaculture development project needs a production system that fits to the livelihood strategy of the small-scale farmers for improving quality of life.

(4) Aquaculture network of SPFs

Establishment of aquaculture network of SPFs contributes technical and marketing development through: 1) sharing experience about seed production techniques, 2) sharing marketing information, and 3) financial arrangement. Collaboration with local authority might facilitate the above processes.

(5) Community fish refuge pond

Establishment and management of community fish refuge pond require appropriate procedures, i.e., setting accessible criteria for site selection, involvement of stakeholders, monitoring, controlling and surveillance.

(6) Education program on freshwater aquaculture

School's education program on freshwater aquaculture will contribute to disseminate its idea in society and raise people's concerns.

J. SP.

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ANNEX 1: Schedule of the Joint Evaluation

Date	Day	Activities
31 Aug.	Mon	PM: The member for evaluation and analysis arrived in Cambodia
1 Sept.	Tue	0830: Meeting with JICA office 1000: Meeting and interview with the Japanese expert at the JICA office 1400: Visit the FiA and the project office. Interviewed with the project counterpart
2 Sept.	Wed	0600: Departed from Phnom Penh 0800: Interview with seed producing farmers (SPFs) and small-scale farmers (SSFs) in Takeo province
3 Sept	Thu	0600: Interviewed with SPFs in Kampot province 1200: Departed from Kampot province 1500: In Phnom Penh, interviewed with provincial fisheries officers at their monthly meeting and conducted a focused group discussion with them
4 Sept.	Fri	AM: Analysis of the data collected 1600: Joint evaluation meeting at FiA
5 Sept.	Sat	Analysis of the data collected
6 Sept.	Sun	Analysis of the data collected Arrival of the Japanese member for aquaculture extension
7 Sept.	Mon	0800-0900: Internal meeting at JICA Office 0930-1100: Interview with the Project team at FiA 1100: Courtesy call on the Embassy of Japan 1500: Courtesy call on the Director General of Fisheries Administration 1530: Joint evaluation meeting on planning for the field study trip
8 Sept.	Tue	0730: Departed from Phnom Penh 0930: Site observation in Takeo province Visited fingerling producers and small-scale farmers, and a village working on community fish refuge program site.
9 Sept.	Wed	0800: Site observation in Kampot province Visited fingerling producers, small-scale farmers, community fish refuge village site.
10 Sept	Thu	0800: Departed from Phnom Penh 0920: Site visit in Kampong Speu province Visited provincial fish hatchery, fingerling producers, small-scale farmers, community fish refuge village. 1930: Arrived at Phnom Penh
10 Sept.	Thu	0600: Departed from Phnom Penh 0930: Site observation in Prey Veng province Visited fingerling producers and small-scale farmers, community fish refuge village, and school fish farming site Visited Bati Seed Production and Research Center 1930: Arrived at Phnom Penh
12 Sept	Sat	AM: Analysis of the data collected PM: Internal meeting, Analysis of the data collected and preparation for the Minute
13 Sept.	Sun	Analysis of the data collected and preparation for the JER
14 Sept	Mon	Preparation of the Minute and the joint evaluation report
15 Sept.	Tue	Consultation on the Minute and the joint evaluation report with the both sides and finalization of them
16 Sept.	Wed	0830~1130: Joint Coordination Committee for the Project, Approval of the joint evaluation report and signing on the Minute 15:00: Report to the Embassy of Japan The Japanese team members left Phnom Penh
17 Sept.	Thu	Arrived in Japan

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ANNEX 2: PDM modified in December 20, 2007

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

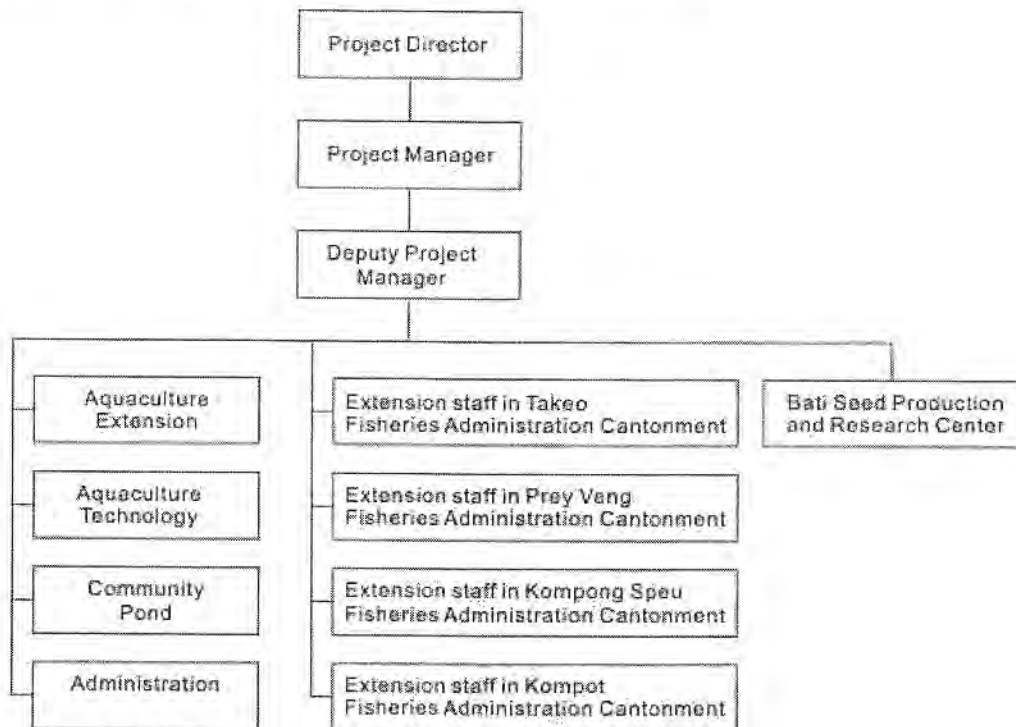
Date of Revision: 20 December 2007

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.	<ul style="list-style-type: none"> Statistical data of the Fisheries Administration 	
Project Purpose Small-scale aquaculture technologies are extended largely in target provinces.	<ul style="list-style-type: none"> Number of small-scale fish farmers is increased from existing 2,000 households to 4,400 households. 	<ul style="list-style-type: none"> Project monitoring reports 	<ul style="list-style-type: none"> Price of cultured fishes is not largely declined Natural disasters such as extraordinary drought and flood do not take place.
Outputs <ol style="list-style-type: none"> Seed producing farmers are trained among existing small-scale fish farmers by improving their aquaculture technologies. Small-scale aquaculture technologies and its extension methods are improved. Aquaculture-related activities to benefit the poor farmers are promoted. An aquaculture extension network in rural area is developed 	<ul style="list-style-type: none"> 20 seed producing farmers are developed and produce seeds by themselves Small-scale aquaculture technologies suitable for local conditions are developed and its extension materials are prepared Stock enhancement activities are undertaken in 20 fish refuge ponds 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. 	<ul style="list-style-type: none"> Project monitoring reports Technical reports/manuals Project monitoring reports Project monitoring reports Project monitoring reports Project monitoring reports 	<ul style="list-style-type: none"> Outbreak of serious fish disease does not occur. Natural disasters such as extraordinary drought and flood do not take place.

Activities	Input	
<p>1.1 Review the result of foregoing projects of similar type, analyze current situation and identify problems in rural aquaculture of target provinces</p> <p>1.2 Select model villages to train seed producing farmers based on the baseline survey result.</p> <p>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</p> <p>2.1 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.</p> <p>2.2 Train local extension staff on the aquaculture technologies and extension methods.</p> <p>2.3 Strengthen small-scale experimental facilities to support technical improvement.</p> <p>2.4 Compare and examine small-scale aquaculture technologies suitable for local conditions in the small-scale experimental facilities.</p> <p>3.1 Undertake stock enhancement activities through release of breeders and seeds in the community ponds.</p> <p>3.2 Arrange management scheme for the fish refuge ponds</p> <p>4.1 Prepare a farmer-based aquaculture extension program in cooperation with the seed producing farmers and the local extension staff.</p> <p>4.2 Train small-scale fish farmers through training and extension activities conducted principally by seed producing farmers, utilizing improved technologies by the Project.</p> <p>4.3 Encourage grouping of small-scale fish farmers through distribution of seeds, aquaculture-related material and technical information in the rural area.</p> <p>4.4 Incorporate aquaculture into school activities</p> <p>4.5 Prepare farmer-based aquaculture extension programs for the target provinces by summarize case studies of small-scale aquaculture activities.</p> <p>4.6 Provide support necessary for strengthening the core fish farmer's network</p>	<p>[Japanese side] (Total: about JPY 550,000,000)</p> <p>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.</p> <p>b) Equipment provision Vehicles and various aquaculture equipment, as per necessity</p> <p>c) Acceptance of trainees Two to three trainees will be accepted in Japan or the third countries per year.</p> <p>d) Operation cost</p>	<p>[Cambodia side]</p> <p>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</p> <p>b) Facilities and equipment Basic facilities and equipment necessary for the Project including offices, meeting rooms, training rooms, laboratories and fish ponds</p>

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

ANNX 3 : Organizational Structure of the Project



ANNEX 4: Plan of Operations

Plan of Operation (PO)	Schedule of Implementation					
	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year
Outputs and Activities						
Output 1. Seed producing farmers are trained among existing small-scale fish farmers by improving their aquaculture technologies.						
1.1 Review the result of foregoing projects of similar types, 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.		■	■	■	■	■
Outputs 2. Small-scale aquaculture technologies and its extension methods are improved.						
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.		■	■	■	■	■
Output 3. Aquaculture-related activities to benefit the poor landless farmers are promoted.						
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.		■	■	■	■	■
Output 4. An aquaculture extension network in rural areas is developed.						
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.		■	■	■	■	■

ANNEX 5: List of Experts Dispatched for the Project

Fields of Assignment	2004	2005	2006	2007	2008	2009
(Experts from Japan)						
Chief Advisor/Extension Administration	1.0	9.0	10.0	8.0	3.0	3.0
Aquaculture Improvement and Extension	1.0	9.0	10.0	10.5	6.5	7.5
Coordinator/Rural Development	1.0	9.0	10.0	10.5	5.5	3.0
Broodstock Management/Seed Production	1.0	6.0	8.0	8.0		
Fish Refuge Pond Management		3.3	4.7	3.0	1.0	1.0
Facility Design	0.5					
Bidding /Construction Supervision		1.2				
Feed Development		2.0	2.0			
Gender Mainstreaming		1.5		1.0		
Baseline Support	0.3	1.5				1.0
Open Seminar				0.4		
Total M/M	4.8	42.5	44.7	41.4	16.0	15.5
	164.9					
(Experts from Third Countries)						
Training Development (Indonesia)			0.7			
Small-scale Hatchery (Indonesia)			0.7			
Giant Freshwater Prawn Seed production and culture (Vietnam)		0.9		1.5		
Small scale Hatchery (India)				1.0		
Broodstock Quality Management (Indonesia)			0.4	0.2		
Pangasius Seed Production (Indonesia)				1.5		
Participatory Planning and Evaluation (Nepal)		1		1		1
Open Seminar (India)				0.4		
Total M/M	0.0	1.9	1.8	5.6	0.0	1.0
	10.3					

ANNEX 6: Provision of Machinery and the Equipment by the Japanese Side

Equipment Provided

JFY2004	Equipments use for extension activities, technical development and office.	1,843,000 yen	US\$16,000
JFY2005	4 WD Vehicle 2 cars	5,000,000 yen	US\$43,500
	Equipments used for extension activities, technical development and office	12,990,000 yen	US\$113,000
JFY2006	Mini-bus 1 car:	2,726,000 yen	US\$23,700
	Pick-up Truck 1 car	2,291,000 yen	US\$20,000
	Equipments used for extension activities, technical development and office	2,031,000 yen	US\$17,700
JFY2007		0 yen	US\$0
JFY2008	Engine pump	17,000 yen	US\$188
JFY2009		0 yen	US\$0
Total		26898,000 yen	US\$233,900

Infrastructure Development

JFY2005	Bati 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 yen	US\$ 174,000
JFY2006		0 yen	US\$0
JFY2007		0 yen	US\$0
JFY2008	Repairing generator	445,000 yen	US\$4,940
JFY2009		0 yen	US\$0
Total		20,445,000 yen	US\$178,940

JP.

ANNEX 7: List of Training of Counterpart Personnel

(Training in Japan)

Title of Training Course		2005	2006	2007	2008	2009
Observation Tour on Fisheries	Duration	13days	19days	—	—	—
	No. of Participant	1	2	—	—	—
Training on Freshwater Fish Seed Production	Duration	3months	3months	—	—	—
	No. of Participant	1	2			
Freshwater Fish Ecology *1	Duration				3years	
	No. of Participant				1	
Total number of participants	For the year	2	4		1	
	For the project	7				

(Training in Third Countries)

Title of Training Course		2005	2006	2007	2008	2009
1. Philippines						
Freshwater Aquaculture technique	Duration	10days				
	No. of Participant	7				
JICA Group Training (Extension Method)	Duration	10days				
	No. of Participant	1				
2. Vietnam						
Giant Freshwater Prawn Seed production	Duration	56days	40days			
	No. of Participant	5	5			
Giant Freshwater Prawn Culture	Duration				7days	
	No. of Participant				7	
Mekong Indigenous Species Seed Production and Culture	Duration		12days			
	No. of Participant		10			
Mekong Freshwater Aquaculture technique	Duration		7days			
	No. of Participant		12			
3. Thailand						
Freshwater Aquaculture technique	Duration	10days				
	No. of Participant	10				
4. Indonesia						
Advanced Freshwater Aquaculture extension	Duration		10days			
	No. of Participant		7			
Pangasius Seed Production	Duration			30days		
	No. of Participant			5		
Tilapia Breeding	Duration			15days		
	No. of Participant			7		
5. Singapore						
Tilapia culture	Duration	14days				
	No. of Participant	1				
Total number of participants	For the year	24	34	12	7	
	For the project	77				

*1 : Long-term training course until September 30, 2001 at Tokyo University of Marine Science and Technology (Training and Study Tour in Asian Countries)

ANNEX 8: Local Cost borne by the Japanese Side

(Unit: JPY)

	JFY2004		JFY2005		JFY2006		JFY2007		JFY2008		JFY2009	
	Actual		Actual		Actual		Actual		Actual		Planned	
(1)General Project Cost	2,431,000		28,141,000		29,353,000		37,669,000		22,772,000		21,348,000	
①Employment Cost	110,921	0	1,977,135	8,453	1,764,838	241,041	2,513,204	810,574	768,562	706,400	1,041,297	418,506
②Equipment Maintenance Cos												
③Consumables Cost	1,254,694		2,137,368		1,688,997		2,625,852		1,157,865		749,920	
④Travel Transportation Cost	0		7,065,555		7,018,976		5,122,480		1,463,549		2,227,406	
⑤Communication Cost	165,432		636,862		679,964		639,071		487,656		562,814	
⑥Materials and Document Preparation	306,012		703,425		1,348,018		1,483,810		1,925,958		2,579,050	
⑦Cost for Car Rental and Fuel	273,761		4,057,758		2,593,921		3,001,003		1,414,794		1,468,949	
⑧Cost for Electricity and Water	0		200,058		812,363		733,278		734,069		536,066	
⑨Cost for Securing Human Resources	318,700		4,125,884		4,917,315		5,694,722		5,397,628		5,238,873	
⑩Local Training Cost	0		3,402,128		4,121,511		5,464,358		6,898,373		5,698,763	
⑪Third Country Training Cost	0		0		0		4,990,990		624,693		0	
⑫Miscellaneous Cost	2,115		3,827,247		4,166,501		4,590,117		1,193,290		826,961	
(2)Cost for Local Consultant Employment	0		2,675,000		1,056,000		2,727,000		0		2,500,000	
(3)Meeting Expense	20,000		79,000		48,000		16,000		23,000		38,000	
Total	2,451,000		30,895,000		30,457,000		40,412,000		22,795,000		23,886,000	
Cumulative total	2,451,000		33,346,000		63,803,000		104,215,000		127,010,000		150,896,000	

JSP.

ANNEX 9: List of Counterpart Personnel

Date: May 29, 2009

N°	Name	Office	Position	Assigned
1	H.E. Nao Thuok	Fisheries Administration	Director	June 22, 2005
2	Mr. Chin Da	Aquaculture Office	Deputy Chief	June 22, 2005
3	Mr. Haing Leap	Aquaculture Office	Deputy Chief	June 22, 2005
4	Mrs. Chhy Savry	Aquaculture Office	Deputy Chief	June 22, 2005
5	Mr. Ouch Lang	Aquaculture Office	Officer	June 22, 2005
6	Mr. Pol Mimosa	Aquaculture Office	Officer	June 22, 2005
7	Mr. Kim Sophea	Aquaculture Office	Officer	June 22, 2005
8	Mrs. Sar Hokseng	Aquaculture Office	Officer	June 22, 2005
9	Mrs. Ker Phalla	Aquaculture Office	Officer	June 22, 2005
10	Mr. Hem Than	Aquaculture Office	Officer	June 22, 2005
11	Mr. Lach Bunthy	Aquaculture Office	Officer	June 22, 2005
12	Mr. Hang Savin	Aquaculture Office	Officer	March 01, 2008
13	Mr. Sroy SeangLy	Aquaculture Office	Officer	October 01, 2008
14	Mr. Prak Viseth	Aquaculture Office	Officer	April 1, 2009
15	Mr. Seng SamOeun	Prey Veng Provincial Fisheries Office	Deputy Chief	June 22, 2005
16	Mr. Chan SamNang		Officer	June 22, 2005
17	Mr. Ngim Sok		Officer	June 22, 2005
18	Mr. Kan Bonvarun		Officer	June 22, 2005
19	Mr. Lieng Sarin		Officer	August 06, 2007
20	Mr. Ouk Hak	Takeo Fisheries Administration Cantonment	Officer	June 22, 2005
21	Ms. Hun Sotheary		Officer	June 22, 2005
22	Mr. Meas Sareth		Officer	June 22, 2005
23	Mr. Sao Kosal		Officer	June 22, 2005
24	Mr. Hong Chathon		Officer	July 1, 2006
25	Mr. Sar Sorin	Kampot Provincial Fisheries Office	Officer	June 22, 2005
26	Mr. Pheun Phalla		Officer	June 22, 2005
27	Mr. King Sophany		Officer	June 22, 2005
28	Mr. Ly Seyha		Officer	June 22, 2005
29	Mr. In Savan		Officer	July 1, 2006
30	Mr. Phon Pech	Kampong Speu Provincial Fisheries Office	Officer	June 22, 2005
31	Mrs. Chhim Chantha		Officer	June 22, 2005
32	Mr. You SamOn		Officer	June 22, 2005
33	Mr. Kheav Sambok		Officer	June 22, 2005
34	Mr. In Savuth		Officer	September 1, 2006
35	Mr. Ngan Heng	Bati Seed Production and Research Station	Director	June 22, 2005
36	Mr. Sam Narith		Deputy Director	June 22, 2005
37	Mr. Ros Narin		Officer	June 22, 2005

ANNEX 10: Output Indicators and Achievements

Narrative Summary	Objectively Verifiable Indicators	Achievements
<p>Overall goals Aquaculture production in target provinces is increased.</p>	<p>Aquaculture production of target provinces is increased by 1.5 times.</p>	<p>The aquaculture production by small-scale farmers in the target provinces increased from 1,390 tons in 2004 to 2,294 tons in 2008, or by 1.65 times.</p>
<p>Project Purpose Small-scale aquaculture technologies are extended largely in target provinces.</p>	<p>Number of small-scale fish farmers is increased from existing 2,000 households to 4,400 households.</p>	<p>The current number of the small-scale fish farmers in the target provinces is estimated to be close to 9,000. The target number of 4,400 is considered to have been exceeded sometime between 2007 and 2008.</p>
<p>Outputs</p> <ol style="list-style-type: none"> 1. Seed producing farmers are trained among existing small-scale fish farmers by improving their aquaculture technologies. 2. Small-scale aquaculture technologies and its extension methods are improved. 3. Aquaculture-related activities to benefit the poor farmers are promoted. 4. An aquaculture extension network in rural area is developed 	<p>20 seed producing farmers are developed and produce seeds by themselves</p> <p>Small-scale aquaculture technologies suitable for local conditions are developed and its extension materials are prepared</p> <p>Stock enhancement activities are undertaken in 20 fish refuge ponds</p> <p>[4.1] Seed producing farmers conduct farmer to farmer training at least once a year by their initiative.</p> <p>[4.2] Meetings of the network in each target province are held 3 times a year.</p> <p>[4.3] Joint meeting of the network for all target provinces is held at least once a year.</p>	<p>There are currently 48 seed producing farmers developed by the Project. All of them are operating fingerling production except one farmer whose hatchery facility is currently under repair.</p> <p>The Project produced booklet, posters, technical manuals, audio-visual extension materials (DVD, CD, video, slides), etc. in Khmer and/or in English. They are used by the extension staffs, core farmers, and small-scale farmers to successfully introduced aquaculture into a large number of farmers.</p> <p>There were 18 fish refuge ponds supported by the Project for the stock enhancement activities by 2008. The Fish Refuge Committee established for each pond is now leading the community involved to manage the fisheries resources. Additional four villages started working on the stock enhancement program of the Project newly in 2009, making the total number of community fish refuge ponds to be 22 under the Project.</p> <p>The seed producing farmers in total number of 59 conducted 147 times of training in 2008, or 2.5 times/farmer, which is more than the target frequency of one training per year. A similar or exceeding number of trainings are expected to be conducted in 2009.</p> <p>Provincial meeting of the network was conducted 3 times in 2008 and is expected to be held 3 times in 2009.</p> <p>The joint meeting was conducted once in 2008 and is expected to be held once in 2009.</p>

ANNEX 11: List of the Materials produced by the Project

<p>List of output materials in Year 2004</p> <ol style="list-style-type: none"> 1) Inception report, JCC minute, Minute of inception seminar 2) Report on the strategy of project implementation 3) Training plan, Project input list 4) Report on fish farming extension and fish farming techniques 5) Bati seed Production and Research rehabilitation plan 6) Brood fish stock list 7) Report on preparation for the baseline study 8) Equipment list 9) Fish farming technical manual 	<p>List of output materials in Year 2005</p> <ol style="list-style-type: none"> 1) Year 2005 Map of target area for aquaculture improvement and extension 2) Community profiles 3) Facilitation guidelines for workshops 4) Guideline for basic aquaculture training course for beginners 5) Slide explanation for community fish refuge pond management program 6) Introductory leaflet for community fish refuge pond management programs 7) Brochure for introduction of the project (tentative version) 8) Baseline Survey Report 9) Report on Commune and village profiles 10) Commune and Village Profiles 11) Community profile (in Japanese) 12) Guidebook on aquaculture for farmers (in Khmer) 13) Guidebook on intermediate fingerling rearing for farmers (in Khmer) 14) Notes for training participants (in Khmer) 15) Fisheries magazine published from FiA (in Khmer) 16) Brochure on introduction of the Project (English) 17) Bati Seed Production and Research rehabilitation completion report
<p>List of output materials in Year 2006</p> <ol style="list-style-type: none"> 1) Report on the overseas training in Vietnam on fish farming and fingerling production of Mekong indigenous species (in Khmer) 2) Revised booklet on fish farming techniques (tentative, in English) 3) Curriculum on small-scale fish farming and fingerling production techniques for extension agents 4) Slide presentation on brood fish quality management of brood fish 5) Slide presentation on the monitoring results of community fish refuge management program 6) Project proposal of school fish farming program (in English) 7) Brochure on introduction of the Project 2006 version (in English) 8) Booklet on small-scale fish farming (grow-out) techniques, manuscript for the revised version (in Khmer) 9) ... ditto... (in English) 10) Video scenario on small-scale fish farming (grow-out) techniques (in Khmer) 11) ... ditto... (in English) 12) Manuscript for small-scale farming (grow-out) manual (in English) 13) Course syllabus on small-scale fish farming and fingerling production for extension agents and fingerling producers (in English) 14) Course syllabus on training course on small-scale fish farming for farmers (in English) 15) Brochure on introduction of the Project 2006 version (in English) 	<p>List of output materials in Year 2007</p> <ol style="list-style-type: none"> 1) Revised edition of the booklet on fish farming techniques (in Khmer) 2) Revised version of extension poster on fish farming (in Khmer) 3) Slide presentation on quality control of brood fish (in English) 4) Report on the fisheries activities in rice fields and the economic effects of fish refuge pond (community pond) 5) Slide presentation on seed production of giant freshwater prawn 6) Slide training material on seed production of giant freshwater prawn 7) Slide presentation on fingerling production of pangasid catfish 8) Report on the fisheries activities in rice fields and the economic effects of fish refuge pond (community pond) II 9) Manuscript for fingerling production manual (in English) 10) Pictorial script on useful zooplankton (rotifers) (in English) 11) Slide training material on the culture of daphnia (in English) 12) Brochure for introduction of the Project (in English) 13) 2008 project publicity calendar (in Khmer) 14) Audio-visual materials (VCD, DVD) on fish farming techniques (in Khmer) 15) 2007 Baseline survey (impact study) Final report (in English)
<p>List of output materials in Year 2008</p> <ol style="list-style-type: none"> 1) VCD education material on fingerling production 2) Fish farming extension calendar 3) Manual on fingerling production (in English) 4) Booklet on fingerling production (intermediate rearing) (in Khmer) 5) Pictorial material on useful plankton (in English) 6) Manual on the seed production and grow-out of giant freshwater prawn (in Khmer) 7) Extension poster for community fish refuge pond 	<p>List of output materials in Year 2009 (Planned)</p> <ol style="list-style-type: none"> 1) Video educational material on community fish refuge pond management (in Khmer) 2) Picture book on useful plankton (in Khmer) 3) Manual on fingerling production techniques (in Khmer) 4) 2010 project poster (fish farming and community pond management) 5) 2009 baseline survey (impact study) report, final report (in English)

- | | |
|--|--|
| 8) Flipchart for aquaculture training (20 kinds)
9) Project brochure (in English) | |
|--|--|

ANNEX 12: Progress in Implementing the Activities

Results and Outcomes of the Project Activities

Plan of Activities according to PDM		Implemented period						Progress of Activities		Final Achievement	Level of Achievement (%)
		Content						Results of Activities	Outcome of Activities		
		1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year	6 th Year				
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 team for the effective cooperation with other donor agencies.	100%
	1.2	Select target communes to train seed producing farmers (16 communes).	✓	✓	✓	✓	✓	Selected communes from each target province every year.	Totally 48 communes were selected by JFY 2007. Fish farmer's activities were monitored in 48 selected communes.	Seed producing farmer was brought up in each and every selected commune.	100%
	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 (or core farmer) were selected by JFY 2007. 48 seed producing farmers were followed up to bring them up as the core farmers in the target areas.	Totally 48 seed producing farmers (or core farmer) were selected by JFY 2007. 48 seed producing farmers were followed up to bring them up as the core farmers in the target areas.	48 seed producing farmers were brought up as the core farmers, who would conduct grow-out technologies for small-scale fish farmers in the target areas.	100%
	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. technologies and extension methods.	✓	✓	✓	✓	✓	Provided Technical training, additional brush-up training, technical assistance and necessary inputs of Hatchery Operation for Core farmers.	Totally 44 core farmers among 48 selected core farmers were started the Hatchery operation by JFY 2008. So far JFY 2009, 41 farmers are running seed production.	Core farmer was brought up as seed producing farmers. Individual seed producing farmers operate seed production by using appropriate technique.	100%
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 trainings in aquaculture activities for local extension staff.	60 local extension staffs in target provinces were conducting their extension work adequately.	60 local extension staffs in target provinces were conducting their extension work adequately.	Extension approach was followed up by local extension staffs to make more focus on the farmer initiative activities.	100%
	2.2	Strengthen small-scale extension facilities to support technical improvement.	✓	✓	✓	✓	Renovated and improved Bas Seed Production Research Center.	Necessary facilities and equipment were strengthened with necessary technologies to conduct experimental trial in Bas Center.	Necessary facilities and equipment were strengthened with necessary technologies to conduct experimental trial in Bas Center.	The facilities of the Center are operated by FIA with support from Japanese expert and it is fully utilized for technical improvement of the Project.	100%
	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 Bas Center and farms of core farmer.	Verifiable trials were conducted at Bas Center and also by on-farm experimental trial to develop the aquaculture technologies.	Verifiable trials were conducted at Bas Center and also by on-farm experimental trial to develop the aquaculture technologies.	Basic technological package suitable for small-scale aquaculture was developed.	100%
OUTPUT 3: Aquaculture-related activities to benefit the poorest farmers are promoted	3.1	Understand stock enhancement activities through release of breeders and seeds in the community pond.	✓	✓	✓	✓	Select proper community ponds and assessed the community in the implementation of fish release pond management.	Total of 18 community ponds were selected and managed by farmers living there as of JFY 2008.	Activities are still continued in additional 4 community ponds in JFY 2009. The total number of community ponds that would be undertaken stock enhancement activities will be 22 ponds.	Activities are still continued in additional 4 community ponds that would be undertaken stock enhancement activities will be 22 ponds.	100%
	3.2	Arrange management scheme for the community ponds.	✓	✓	✓	✓	Facilitated active participation of the stakeholders and measured the effect of the stock enhancement activities.	Stock pond management was organized well by local management group. Research study was carried out to examine the effect of the stock enhancement.	Through these activities and experiences, basic management scheme for the community ponds was established.	Through these activities and experiences, basic management scheme for the community ponds was established.	100%
	4.1	Prepare farmer-to-farmer extension program in cooperation with seed producing farmers and local extension staff.	✓	✓	✓	✓	Implemented the training of trainers (TOT) for use seed-producing farmers.	80 seed producing farmers were trained as trainers by TOT as of JFY 2008.	Farmer-to-farmer extension program in cooperation with seed producing farmer network was prepared and was practiced.	Farmer-to-farmer extension program in cooperation with seed producing farmer network was prepared and was practiced.	100%
	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.	✓	✓	✓	✓	48 times of farmer to farmer training (FFT) were held from 2006 to 2007. Consequently 143 times of FFT was held in 62 communes in JFY 2008.	479 in 2006, 260 in 2007 and 3603 in 2008 small-scale fish farmers were trained by core farmers in successively implemented FFT from 2006 to 2007.	Significant number of small-scale farmer was brought up under FFT extension program.	Significant number of small-scale farmer was brought up under FFT extension program.	100%
OUTPUT 4: Aquaculture extension networks are established in rural areas	4.3	Encourage grouping of small-scale fish farmers through distribution of seeds, aquaculture related equipment and technical information in the rural areas.	✓	✓	✓	✓	Grouping of small-scale fish farmers was promoted by 48 core farmers who in the target area.	Individual core farmers were organized each province in target area.	Small-scale fish farmer networks were built up on the basis of core farmers grouping in target area.	Small-scale fish farmer networks were built up on the basis of core farmers grouping in target area.	100%
	4.4	Incorporate aquaculture into school activities.	✓	✓	✓	✓	Provided technical training, inputs for fish-culture in total of 19 schools of pond.	Students, teachers and parents had experience of harvesting fish successfully consequently raised interest for fish culture activities.	Large number of people influenced by school aquaculture has started aquaculture in their own pond. Several schools adopted aquaculture practice as an educational subject in school.	Large number of people influenced by school aquaculture has started aquaculture in their own pond. Several schools adopted aquaculture practice as an educational subject in school.	100%
OUTPUT 5: Aquaculture extension programs for the target provinces by summarizing case studies of small-scale aquaculture activities	4.5	Prepare farmer-based aquaculture extension programs for the target provinces by summarizing case studies of small-scale aquaculture activities.	✓	✓	✓	✓	Farmer-based extension activities for small-scale aquaculture promotion have been studied by summarizing case studies.	The effectiveness of farmer-based extension system has been verified throughout various case studies of small-scale aquaculture activities.	Farmer-based aquaculture extension program was compiled on the basis of case studies and lessons. Aquaculture extension programs will be finalized for next JCC.	Farmer-based aquaculture extension program was compiled on the basis of case studies and lessons. Aquaculture extension programs will be finalized for next JCC.	90%
	4.6	Provide support necessary for strengthening the core fish farmer's network.	✓	✓	✓	✓	Farmer meeting has been held in cooperation with existing core farmers and extension officers to discuss and to prepare the base of network structure.	Fish farmer's network meetings have been implemented at least every quarter (for the year 2008 and 2009) in each province of target area.	Function of fish farmer's network was strengthened. Kind of breadth networking will be clarified. Number of participating fish farmers is augmented.	Function of fish farmer's network was strengthened. Kind of breadth networking will be clarified. Number of participating fish farmers is augmented.	90%

ANNEX 13: List of Training, workshop, and seminars by the Project and by the Seed Producing Farmers

(Year 2005)

Name of training course	Duration	Frequency	Participants	Number of persons
Small-scale fingerling production and fish farming techniques	8 days	1	Provincial extension officers	20
Basic fish farming techniques	2 days	16	Existing fish farmers	320
Basic fish farming techniques	2 days	16	New fish farmers	320
Small-scale fingerling production and fish farming techniques	7 days	1	New fingerling producers	20
Study tour to advanced fish farming places	2 days	1	New fingerling producers	20
PRA workshop techniques	2 days	1	FiA counterparts, provincial extension officers	13
Participatory workshop	3 days	1	Fish farmers	40
Participatory workshop	3 days	4	Villagers working on community fish refuge pond program	170
Study tour to advanced community fish refuge pond management villages	1 day	2	Community fish refuge pond committees	44
Seminar on giant freshwater prawn farming	1 day	1	FiA counterparts, provincial extension officers, etc.	20
Annual review workshop	2 days	1	FiA counterparts, provincial extension officers	29
Total number of training/workshop		41	Total participants	996

(Year 2006)

Name of training course	Duration	Frequency	Participants	Number of persons
Small-scale fingerling production and fish farming techniques	8 days	1	Provincial extension officers	20
Basic fish farming techniques	2 days	16	Existing fish farmers	320
Basic fish farming techniques	2 days	16	New fish farmers	320
Basic fish farming (farmer to farmer)	1 day	16	New fish farmers	479
Exchange visits among fish farmers*	1 day	16	New fish farmers	400
Small-scale fingerling production and fish farming techniques	7 days	1	New fingerling producers	20
Study tour to advanced fingerling producers	2 days	1	New fingerling producers	20
Participatory workshop	3 days	4	Villagers working on community fish refuge pond programs	180
Study tour to advanced community fish refuge pond management villages	1 day	4	Community fish refuge pond committees	48
Basic fish farming techniques for school fish farming program	1 day	6	Pupils, teachers, parents of school fish farming programs	488
Special technical seminar	3 days	1	Provincial extension officers, core farmers	24
Workshop on production of training and extension materials *	3 days	1	FiA counterparts, provincial extension officers, etc.	24
Seminar on brood fish quality management	1 day	1	FiA counterparts, provincial extension officers, etc.	26
Seminar on training development and small-scale hatchery	1 day	1	FiA counterparts, provincial extension officers, etc.	25
Annual review workshop*	2 days	1	FiA counterparts, provincial extension officers	32
Trainer's training for farmers	2 days	1	2005 fingerling producers	20
Total number of training/workshop		87	Total participants	2446

(Year 2007)

Name of training course	Duration	Frequency	Participants	Number of persons
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Name of training course	Duration	Frequency	Participants	Number of persons
Small-scale fingerling production and fish farming techniques	8 days	1	Provincial extension officer	20
Basic fish farming techniques	2 days	16	Existing fish farmers	320
Basic fish farming techniques	2 days	16	New fish farmers	320
Basic fish farming (farmer to farmer)	1 day	32	New fish farmers	960
Exchange visits among fish farmers*	1 day	16	New fish farmers	400
Small-scale fingerling production and fish farming techniques	7 days	1	New fingerling producers	20
Study tour to advance fingerling producers' places	2 days	1	New fingerling producers	20
Participatory workshop	3 days	4	Villagers of community fish refuge pond programs	180
Study tour to advanced community fish refuge management villages	1 day	4	Community fish refuge committees	48
Basic fish farming techniques for school fish farming program	1 day	12	Pupils, teachers and parents of school fish farming programs	1200
Evaluation meeting on general fish farmers	1 days	16	2006 fish farmers	640
Trainer's training for farmers	2 days	1	2006 fingerling producers	20
Trainer's training for school teachers	1 day	4	Target commune school teachers	100
Training on fingerling production techniques	8 days	1	Provincial extension officers, etc.	35
Workshop on farmer's network	2 days	1	Core farmers	59
Training on catfish fingerling production	3 days	1	Provincial extension officers and core farmers	30
Giant freshwater seed production techniques	15 days	1	FIA counterparts, provincial extension officers, core farmers	20
Workshop on village evaluation	3 days	2	Fish farmers, community fish refuge program villagers	100
Open seminar	1 days	1	Stakeholders, journalists, general public	55
Total number of training/workshop		131	Total participants	4547

(Year 2008)

Name of training course	Duration	Frequency	Participants	Number of persons
Training on giant freshwater prawn farming techniques	7 days	1	FIA counterparts, provincial extension officers, core farmers	7
Preliminary practice of fingerling production (farmer to farmer training)	4 days	4	2007 new fingerling producers	16
Evaluation meeting on general fish farmers	1 day	16	2007 fish farmers	640
Trainer's training for farmers	2 days	1	2007 fingerling producers	20
Giant freshwater seed production techniques	30 days	1	Provincial extension officers, core farmers	41
Supplemental training on silver carp fingerling production techniques	4 days	4	Core farmers	33
Participatory workshop	2 days	4	Villagers of community fish refuge pond programs	200
Study tour to advanced community fish refuge pond management villages	1 day	4	Community fish refuge committees	44
Basic fish farming (farmer to farmer)	2 days	143	New fish farmers	3608
Provincial meeting of farmer's network	1 day	12	Core farmers, fish farmers	193
Basic fish farming techniques for school fish farming program	1 day	4	Pupils, teachers and parents of school fish farming programs	400
Workshop on community fish refuge pond management	1 day	1	FIA staffs, provincial extension officers, general farmers	55
Annual general meeting of farmer's network	4 days	1	Core farmers, fish farmers, extension officers	90
Total number of training/workshop		196	Total participants	5347

(Year 2009 Plan)

Name of training course	Duration	Frequency	Participants	Number of persons
Basic fish farming (farmer to farmer)	2 days	180	New fish farmers	3600
Supplemental technical training (fingerling production)	4 days	4	Core farmers	32
Provincial meeting of farmer's network	1 day	12	Core farmers and fish farmers	180
Annual general meeting of farmer's network	4 days	1	Core farmers, fish farmers and extension officers	60
Basic fish farming techniques for school fish farming program	1 day	4	Pupils, teachers and parents of school fish farming programs	400
Participatory workshop	2 days	4	Villagers of community fish refuge pond programs	180
Study tour to advanced community fish refuge pond management villages	1 days	4	Community fish refuge committees	100
Open seminar	1 day	1	Stakeholders, journalists, general public	100
Total number of training/workshop		210	Total participants	4657

2. PDM (和文)

プロジェクト名: カンボジア王国淡水養殖改善・普及計画

対象地域: カンボジア南部4州(プレイベン州・タケオ州・カンポット州・コンポンスプー州)

プロジェクト期間: 2005年2月28日から2010年2月27日までの5年間

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 改訂日: 2007年12月20日

プロジェクト要約	指 標	指標入手手段	外部条件
上位目標: 対象地域において、養殖生産量が増加する。	<ul style="list-style-type: none"> 対象州の養殖生産量が1.5倍になる。 	<ul style="list-style-type: none"> 水産局の統計データ 	
プロジェクト目標: 対象地域において、小規模養殖技術が広く普及する。	<ul style="list-style-type: none"> プロジェクト対象4州で、小規模農家が既存の2,000戸から4,400戸に増加する。 	<ul style="list-style-type: none"> プロジェクトモニタリング報告書 	<ul style="list-style-type: none"> 養殖魚の価格が大きく下がらない。 極度の早魃や洪水などの自然災害が影響を及ぼさない。
アウトプット: 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。 2. 小規模養殖技術とその普及手法が、改善される。 3. プロジェクト対象地域で、貧困農民が裨益する養殖関連活動が振興される。 4. 農村部における養殖普及ネットワークが構築される。	<ul style="list-style-type: none"> 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。 現地に適合する、小規模養殖技術及びその普及材料が作成される。 20の共有池で、増殖活動が独自に行われるようになる。 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。 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。 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。 	<ul style="list-style-type: none"> プロジェクトモニタリング報告書 技術報告書/マニュアル プロジェクトモニタリング報告書 プロジェクトモニタリング報告書 プロジェクトモニタリング報告書 プロジェクトモニタリング報告書 	<ul style="list-style-type: none"> 深刻な魚病が発生しない。 極度の早魃や洪水などの自然災害が影響を及ぼさない。
活動: 1.1 先行している類似プロジェクトの成果をレビューし、対象州の農村における養殖の現状と課題を整理し、改善点を取りまとめる。 1.2 ベースライン調査を基に、種苗生産農家を育成する村落(モデル村落)を選定する。 1.3 地域普及員他と協力して、モデル村落の既存小規模養殖農家に対し種苗管理及び育成管理他を支援しながら、種苗生産農家の候補を選定する。 1.4 種苗生産農家の候補に対して、地域普及員他と協力して、親魚、池及び種苗の管理と販売の指導を行いながら、種苗生産農家として育成する。	投入: [日本側] (計:約5億1,000万円) a) 専門家派遣: (長期3名) 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 (短期) 親魚育成/種苗生産、 参加型計画、 餌料開発、	[カンボジア側] a) カウンターパート (地域社会) 新規種苗生産農家、共有池管理組織(者) (政府) 水産局、州水産事務所、パティ種苗生産研究センター(BSPRC)から適切な人数のカウンターパートと、管理部門のスタッフを配置する。	

<p>2.1 地域普及員の養殖普及に係る実際的な指導能力を強化する。</p> <p>2.2 技術改善を支援するための、小規模試験施設を強化する。</p> <p>2.3 小規模試験施設において、現地に適合する小規模養殖技術を比較し、検討する。</p> <p>3.1 農村部の共有池に、種苗及び親魚を放流する資源増殖活動を行う。</p> <p>3.2 共有池管理体制を整える。</p> <p>4.1 種苗生産農家及び地域普及員と協力して、モデル村落における農民間養殖技術普及計画を策定する。</p> <p>4.2 対象となる小規模農家に対し、種苗生産農家が中心となり、プロジェクトで改善された養殖技術を農民間で普及し、小規模養殖農家を育成する。</p> <p>4.3 農村地域に種苗・養殖関連資材の供給及び技術情報の提供を通じて、小規模養殖農家のグループ化を促進する。</p> <p>4.4 学校における教育活動に、養殖を導入する。</p> <p>4.5 小規模養殖農家の養殖事例を集約し、対象州における農民間養殖技術普及計画を策定する。</p> <p>4.6 中核農家のネットワークの強化のために必要な支援を提供する。</p>	<p>共有池管理、ジェンダー主流化、養魚流通、施設設計、入札支援／施工監理 他</p> <p>b) 機材供与 車輜や各種養殖資機材等。</p> <p>c) 研修員受け入れ 日本あるいは第三国での研修に、毎年2-3名受け入れる。</p> <p>d) プロジェクト活動費</p>	<p>b) 建物・設備・機材 プロジェクトに必要な事務室、会議室、研修室、研究室、養殖池。</p>
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注：中核農家とは、養殖農民のためのトレーナーとなった種苗生産農家を意味する。

3. 調査日程

NO	月日	曜日	内容
0	8月31日	月	評価分析団員カンボジア着
1	9月1日	火	JICA カンボジア事務所打合せ 日本人専門家との打合せインタビュー 水産局カウンターパートインタビュー
2	9月2日	水	フィールド視察（タケオ州） 種苗生産農家及び小規模農家インタビュー
3	9月3日	木	フィールド視察（カンボット州） 種苗生産農家及び小規模農家インタビュー 州普及員に対するインタビュー
4	9月4日	金	水産局との協議
5	9月5日	土	資料整理
6	9月6日	日	資料整理 養殖普及計画団員カンボジア着
7	9月7日	月	合同評価団及びプロジェクト関係者との調査打合せ
8	9月8日	火	フィールド視察（タケオ州） 視察（種苗生産農家、養殖農家、共有池）及び関係者へのインタビュー
9	9月9日	水	フィールド視察（カンボット州） 視察（種苗生産農家、養殖農家、共有池）及び関係者へのインタビュー
10	9月10日	木	フィールド視察（コンボンスプー州） 視察（種苗生産農家、養殖農家、共有池）及び関係者へのインタビュー
11	9月11日	金	フィールド視察（プレイベン州） 視察（種苗生産農家、養殖農家、共有池、学校養殖事業）及び関係者インタビュー パティ種苗生産研究センター視察
12	9月12日	土	資料整理
13	9月13日	日	資料整理
14	9月14日	月	ミニッツ案・JER 準備
15	9月15日	火	ミニッツ案・JER 協議、協議結果取りまとめ
16	9月16日	水	合同調整委員会（JCC）・JER 承認・ミニッツ署名、在カンボジア日本国大使館報告
17	9月17日	木	日本着

4. 主要面談者リスト

(1) 農林水産省 (MAFF)

H. E. NAO Thouk	水産局 局長
H. E. SRUN Limsong	水産局 副局長
Mr. CHIN Da	水産局 養殖課 課長
Mr. HAING Leap	水産局 養殖課 副課長
Mr. LIENG Sopha	水産局 コミュニティ漁業課 課長代理
Mr. OUK Hak	タケオ州普及員
Mr. PHEUN Phalla	カンポット州普及員
Mr. KING Sophany	カンポット州普及員
Mr. HEAN Veacharn	コンポンスプー州水産事務所 所長
Mr. PHON Pich	ウドン郡水産事務所 所長
Mr. SENG Sameoun	プレイベン州普及員
原 士郎	プレイベン州バティ魚類種苗センター シニアボランティア (オニテナガエビ種苗生産)

(2) 在カンボジア日本国大使館

黒木 雅文	特命全権大使
松尾 秀明	一等書記官
杉山 裕秀	二等書記官

(3) プロジェクト専門家

貫山 義徹	総括／普及行政
丹羽 幸泰	副総括／養殖改善普及
前川 晶	インパクト調査

5. 質問票とその回答

本付属資料は、質問票と、プロジェクト日本人専門家とカウンターパートによって提出された回答を項目ごとに併記した物である。なお、カウンターパートは一部の質問に対して直接回答せず関連情報を述べている場合がある、問題に対する意識を示すと考えそのまま掲載した。

【質問票前文】

The terminal evaluation will be conducted following the “JICA Guideline for Project Evaluation” using an evaluation grid. A draft version of the evaluation grid specifically prepared for this project is available together with this questionnaire. The evaluation questions appearing in the grid will be used for guiding the evaluators for acquiring most of the data required for the terminal evaluation study. The following questions are prepared to supplement the evaluation grid and requested to be available to the evaluators before the commencement of the field visits.

質問 1 (妥当性に関する質問 : プロジェクトの一般的妥当性)

[General relevance of the project to the needs of the fisheries sector] How did this project contribute for the specific needs of the fisheries sector of Cambodia? Was the performance of the project in terms of the contribution satisfactory to your expectation?
プロジェクトはカンボジア水産事情の課題にいかに関与したか。貢献度は十分であったと思うか。

【カンボジアカウンターパート職員による回答】

- Government’s policy is for poverty reduction as stated in *National Strategic Development Plan* (NSDP, 2006 - 2010) “Given the crucial role of fish in the lives of millions of Cambodians in terms food, nutrition, income and livelihood, the goal is to ensure sustainable access to fisheries resources for the poor.
- Government fisheries policy is also for poverty reduction as stated in *Strategic Planning Framework for Fisheries: 2009 - 2018* of FiA
- Project targeted and selected the area in poor fish consumption areas with majority of poor families.
- Yes (it has contributed), because rural farmers now have fish for consumption, higher income and improved livelihoods through the promotion and development of rural aquaculture activities and rural aquatic resources management. The Project has replied to Government Policy in improving food security, reducing rural poverty without pressure on fisheries resources in natural water bodies.

【日本人専門家による回答】

タンパク源としての淡水魚は慢性的な不足状況にあり、かつ灌漑が未発達で農業の生産性が低いプロジェクト対象地域で養殖導入による生計向上へ貢献した。さらに自給目的で伝統的に行われてきた稲田漁業による漁獲量が年々減少している中、共有池事業による資源管理手法を導入し貧困農民の生計向上に貢献した。対象地域では、これまで多くの援助団体の支援で地域の特性に合った養殖技術の導入、普及活動が試行錯誤の中で実施されてきたが、予算・人的制約の大きいカンボジアにおいて持続性・自立発展性の面での貢献度は限定されていた。こうしたカンボジア行政府の現状を念頭にいた淡水養殖普及のために、低コストで実効性のある養殖普及実施が課題であったが、プロジェクト戦略はこれらの課題克服に適したアプローチであり、貢献度は高かったと思われる。

質問 2 (有効性に関する質問 : プロジェクトのアウトプット産出効率について)

[Overall effectiveness in achievement of the outputs] The purpose of the project is to extend the aquaculture to small-scale farmers. The indicator for assessing this objective is to extend aquaculture from 2400 to 4400 small-scale farms in the 4 target provinces, thus the project purpose has been achieved already before the termination of the project. What do you think was the main cause of this excellent performance?

プロジェクトの目標は対象地域の養殖農家の数を 2400 から 4400 に増加する事である。本プロジェクトは既にこの目標を現時

点で達成していると思われるが、この優れた成果の主な原因はどこにあったと思うか。

【カンボジアカウンターパート職員による回答】

- Firstly, site selection and farmers selection were very crucial issues to make project implementation success because:
- Site selection targeted fish deficit areas only and where rural poor farmers are living and depending mainly on fish for their daily consumption. On the other hand, many rural farmers have individual earthen ponds for raising fish.
- Farmers selection of rural farmers/families were good in demonstration and dissemination of achievement of project activities.
- Secondly, the creation of network with excellent fish farmers was good strategy and necessary to organize the promotion and development of rural aquaculture activities.
- Thirdly, the responsibility of project staff was also very important because it was their group implementation that the project activities and work collaborated closely with rural farmers,
- Lastly, budget/fund was one factor for the effective project implementation to facilitate the project activities successfully.

【日本人専門家による回答】

中核農家のインセンティブを新規農家の開拓に向けさせ、高いモチベーションを保った農民間研修が養殖農家数を増加させる原動力となった。施設資機材の供給と技術研修による中核農民の育成、中核農家（＝種苗生産者）による農民間研修実施、タイムリーな初期種苗の補助など、養殖農家数の増加のために描いた戦略が極めて理にかなっていたことが要因である。

質問 3（効率性に関する質問：プロジェクトコスト）

[Project cost] It is estimated that the project implementation resulted in the increase of fish production in the four target provinces from 1390 tons/year in 2004 to 2294 tons/year in 2008, or an increase of approximately 900 tons/year of fish production during the project period. At an assumed market value of US1\$/kg, this would be US\$900,000 in value, which is about 1/6 of the total project cost for the project. In other words, the continuous operation of the project for 6 years would be sufficient to produce fish in value equivalent to the total cost of the project. How would you assess this economic performance of the project?

プロジェクトが開始されて以来対象 4 州で増産された養殖魚の量は約 900 トン/年で、市場価格で約 90 万 US ドル程になると推定される。これは、日本側総予算約 5.5 億円の 1/6 程度に相当し、6 年間で投資額が回収できるとみる事もできる。この経済効果は妥当な評価であると思うか。

【カンボジアカウンターパート職員による回答】

- It is estimated that the increase of fish production is 900 tons form total project farmers of 10,000 who started fish farming during the whole project period.
- The total fish farmers and fish production increased every year because the fish seed production by the core fish farmers and other fish seed producing farmers in the project networks increased without much support from the project since 2008
- Efficiency of the project has been developed from year to year, because of the increase of rural farmers engaging fish culture activities not only in areas of the 4 project provinces but also out-of-target provinces as well, and because of many quantities of fingerlings have been distributed to other out-of-target provinces through effort of the fish seed producing farmers' network enhanced.

【日本人専門家による回答】

金額換算されるのには違和感もある。プロジェクトの貢献は相当あると考えるが、900 トンの増産全てがプロジェクト効果とするのは、やや過大。仮にこの 5 年間にプロジェクトが全く行われなかった場合にも地域経済発展

に伴う自然増産があったであろうと想像できる。

質問 4 (インパクトに関する質問 no. 1 : 政策・法律・制度面でインパクトー共有池増殖事業)

[Impact on policy, law, and system - Community fish refuge program] Successful implementation of the community fish refuge program often requires participants' awareness of their common property for the fisheries resources. The current law on Fisheries Management and Administration, however, is based on the principle of free access to the freshwater fisheries resources which does not seem to be compliant to the promotion of the community fish refuge program. Do you think that FiA needs to consider introducing fisheries regulations and laws that support the nation-wide extension of the community stock enhancement programs, for example, to restrict individual fishing activities in the community pond and paddy fields, to recognize legal right for the fisheries resources in the community owned pond, etc.?

共有池での増殖事業は、参加村落による水産資源管理を必要とし、住民の水産資源の共有化意識が事業の成否を決める重要なポイントと思われる。現カンボジア水産法 (Flat-law on Fisheries Management and Administration) では、稲田や共有池での漁業活動は原則オープンアクセスが認められていて、共有池事業を進める政策とは整合性が乏しい面があると思われる。FiA は共有池事業の全国的展開を図る政策的判断を行うに伴い、資源の所有権や漁業活動の規制によって、住民による水産資源管理が行い易いような方向に改める必要があると思うか。

【カンボジアカウンターパート職員による回答】

- Community fish refuge ponds (CFR) development has been supported and established since 1998 in Svay Rieng, Takeo and Kompot Speu until 2004 by Department of Fisheries (currently FiA) and resulted in an increased interest by the rural communities and families because of the benefits from the community fish refuge ponds management that caused rural aquatic resources increased in their rural common ponds,
- From 2005, this development concept of increasing fisheries resources through the enhancement and strengthening the CFR ponds had increasingly been considered by the Cambodian Government as an important strategy. Today, the government promotes this activity and plans to establish one CFR per commune.
- Since 2005, establishment of the CFR has been developed by government and local/international NGOs including the project of FAIEX-JICA. The increase of the CFR pond is surely caused by the strong efforts of the government and collaboration with the NGOs, particularly from FAIEX-JICA. The achievement of the project's CFR establishment and strengthening is a good demonstration and provides a lot of experiences to developing partners including local authorities to duplicate in establishing and managing the CFR in their target areas in sustainable ways.
- In the 10-year plan of the *Strategic Planning Frameworks for Fisheries 2009 - 2018*, the development of the CFR is included as one of the important action plans of the FiA.

【日本人専門家による回答】

国が定める漁具漁法の規制はあり、その上で住民の合意のものと禁漁区域を定めるなどの自主規制で管理している。共有池事業を進めている地域は（おかず確保のための）小規模な稲田漁業であり、商業漁業とは別カテゴリーであることから、地域住民で管理という現状の仕組みで当面は改める必要性は感じない。

質問 5 (インパクトに関する質問 no. 2 : 種苗生産量増加による外国種苗の輸入状況に与える影響)

[Impact on importation of fingerlings] This project increased the fingerling production in the target area by 165 % in four years. Do you think that the increased capacity of domestic fingerling production due to the project achievement can affect the situation of the importation of aquaculture fingerlings from neighboring counties?

本プロジェクトの成果によって対象地域では種苗生産量の増加傾向が著しい。同様な計画を全国展開する事で、国内種苗生産量を増やし、外国からの輸入種苗に依存している現状にプラスのインパクトを与えることはできると思うか。

【カンボジアカウンターパート職員による回答】

- Yes, because:
- It is absolutely indicated that, since the government has increasingly focused on the aquaculture development, particularly in rural areas, 165 local village fish hatcheries have been established including 48 village fish hatcheries of FAIEX-JICA. Cambodia now has a capacity to produce fish seeds amounting nearly 40 millions in 2008 while it produced only 7.5 millions in 2000. This is the real reason and caused reduction of fingerling importation from neighboring countries, especially for species of tilapia, common carp, silver carp, Indian carp, silver barb and so forth that the local village fish hatcheries are able to produce.

【日本人専門家による回答】

中間業者による安価な輸入低品質種苗の供給により養殖農家の不利益を被っているとの声は、地方でよく聞かれる。地場産の種苗を使うことは中核農家の経営基盤強化（地域の経済への貢献）といった面だけでなく、不要な魚病の侵入を防ぐなど防疫面からも養殖生産者に利する。地域内で国内産良質種苗が一定価格で安定供給される体制が確立されることは、現状を大きく改善する。（スマトラヘジャワからのパンガシウス種苗の流入が問題とされたインドネシアのプロジェクトの例でも同様の考察がなされた。）

質問 6 (インパクトに関する質問 no. 3: 民間養殖普及制度発展による政府普及制度に与える影響)

[Impact on the public sector aquaculture extension system] This project introduced and established a farmer-to-farmer extension system for aquaculture development in the target areas. The development of the new private sector-based extension system would replace a part of traditional government extension system. The role of the government extension system, therefore, must be adjusted accordingly along with the development of farmer-to-farmer extension system. Do you think it is necessary to reform or modify the existing government extension system for the freshwater aquaculture promotion because of the successful implementation of this project?

本プロジェクトは、農民間養殖普及ネットワークを育成・強化する事を内容的な柱の一つとしており、政府の水産普及制度を補完する機能を持っている。従って、本プロジェクトの成功によって、従来政府養殖普及制度が持っていた基本的な普及機能の一部は民間が実施することになる。この普及機能の一部民間への移譲に伴い、政府の養殖普及制度を改変する等の必要性があると思うか。

【カンボジアカウンターパート職員による回答】

- Yes, because:
- Many rural farmers have informed on the fish culture techniques and gotten knowledge through the technical training provided by the farmer to farmer extension system that was strengthened by the establishment of the local fish seed producing farmers' network. Through the extension system, rural farmers are easy to access any information on the fish culture techniques and to obtain fish seeds in their localities.

【日本人専門家による回答】

農民ネットワークに実施主体を委ねているが、仲介役、ファシリテーター、技術指南役として、国（地方）の普及員の関与が欠かせない。むしろ元々、十分に機能していなかった養殖普及制度が、本プロジェクトの施行した普及戦略にうまくはまったことから、現状の普及制度の改編の必要は感じていない。プロジェクト対象 4 州の普及員は、過去の他ドナーにより実施されていた養殖プロジェクトにより一定の知識経験を有していたが、他地域の普及員にはそれがないことから、普及員の能力強化がカンボジア水産局に課せられた課題となる。

質問 7 (インパクトに関する質問 no. 4: 民間普及システムの導入による特定ターゲットグループの選抜)

[Unintended selective extension of beneficiaries by the farmer-to-farmer extension system] The extension mechanism of the farmer-to-farmer extension system is based on economic incentive for fingerling sales by the private hatcheries. Who will purchase fingerlings

is determined by the “invisible hands” of the market economy, and generally, those who are relatively well-to-do have more chance to purchase fingerlings. Thus, the extension through the farmer-to-farmer system tends to introduce aquaculture into a particular type of small-scale farmer who are relatively wealthier in the poor village. While this potentially selective extension would result in sustainable operation of the introduced fish farming, it may increase the disparity between the rich and the poor in the rural communities. How do you think about this possible negative impact? Is there any countermeasure needs to be considered to mitigate the negative impact that could occur along with the introduction of farmer-to-farmer extension system?

養殖ネットワークの普及機能は、中核農家がより多くの種苗購入顧客を得ようとする経済的インセンティブに基づいており、誰が種苗を購入するかは、基本的に市場原理に基づいて決定される。一般的には経済力的余裕があり、余剰労働力を持ち、強い養殖実施意欲を持っている農家が種苗を購入する可能性が高く、農民間普及システムは、このような特徴をもった比較的裕福な農家を選択的に抽出する効果があると思われる。従って、民間普及制度の導入により、効率的に普及が進むと同時に、村落内に貧富の差が開いていくマイナスインパクトの可能性があると思うか。適当な対策を講じる必要性はあると思うか。

【カンボジアカウンターパート職員による回答】

- The project has focused on strengthening the farmers’ network that has very crucial roles to promote rural aquaculture development in their localities and out of their provinces through cooperation with other established farmers’ networks in the other provinces, to assist as the first priority the poor rural farmers to be engaged in the fish culture activities and to produce as many fish seeds as possible to meet the demand of the fish farmers. It is aimed to facilitate the access to information on the fish culture technologies and fish seed supply in their localities.

【日本人専門家による回答】

そのような話は聞かない。研修に参加するのは自由であり、誰にでも門戸は開かれている。また中核農家ネットワークでは、養殖を始めたい農家へ初期種苗の無償配布、地域のコミュニティーポンドへの放流種苗の無償での拋出など、共同発展を貢献したいという志をみることができる。貧富の格差拡大といった懸念は、今のところ感じない。

質問 8 (インパクトに関する質問 no. 5 : 女性の社会的地位の向上に対するインパクト)

[Gender impact by introduction of aquaculture] Aquaculture operation requires relatively light labor except for the time of stocking and harvesting. Because of this basic labor requirement characteristic, introduction of aquaculture often results in increase in the social status of women in the community. It seems that the numbers of woman participants of the training courses as well as woman counterparts in the project team were low in this project. Is there any social or cultural reason that is preventing the increased participation of women in the project? Are you aware of any (positive or negative) impact on gender issue by this project?

養殖は、漁業や農業と比べると肉体的な労働負担が少ないため、一般的に養殖の振興は女性の社会的地位の向上につながる事が多い。研修参加者やカウンターパートに女性の割合が低いように見受けられるが、プロジェクト活動が女性の地位の向上に結びついたようなジェンダー問題についてのプラスあるいはマイナスのインパクトは無いか。研修に女性の参加者を増やすなどの方針を取る考えはないか。

【カンボジアカウンターパート職員による回答】

- There is no social or cultural reason. For the project or government staff, it is dependent on the women themselves if they are interest in agriculture jobs that require working at field with rural farmers or not. As for the women farmers, husband is generally considered as a main leader in the family to earn income or work harder than women. Some of rural aquaculture activities, therefore, involve less participation of women such as training, fish transportation activities and so forth that are considered as hard works for women. But there are many activities of the family fish culture that are participated

by the worm including stocking fish, feeding, fertilizing pond, take care of fish ponds after stocking and harvesting periods. The small scale aquaculture development observed many rural women involved in the activities.

- There are a lot of positive impacts on the woman involvement in the achievement of the project including both fish culture and fish seed production development and community fish refuge ponds management as well. There are 3 project staffs actively participating in the project activities including both aquaculture development and aquatic resources management. As mentioned above, for the family fish culture, many women participated in the activities. As for the fish seed producing activities that resulted in good achievement of the project, the project came up on active participation of women those who are assisting a lot of activities in the breeding and nursing operations and selling fish/fingerlings and disseminating fish culture techniques and fish seed marketing supply.

【日本人専門家による回答】

研修には主に世帯主の参加が多かったため、農家の中での役割分担、伝統的な社会習慣もあるため、女性の参加比率が低いことは否めないものの、共有池ワークショップ、養殖研修への女性の参加はある程度あり（2009年実績で約3割）、女性世帯主が、養殖を切り盛りしている例もある。2009年度の研修では30名全員女性が参加した例もあった。日時設定など参加しやすいような配慮をすれば、効果がでることを示している。

質問9（インパクトに関する質問 no.6：外来魚の養殖普及による生態系へのインパクト）

[Impact on the environment by increased use of exotic species] Three species among the four main species (silver barb, silver carp, common carp, and Nile tilapia) used in this project do not originate from the Mekong River system. As the project target area flooded every year, it is practically impossible to prevent escape of the exotic fish into the open water system. How do you think about the ecological impact of the escaped exotic fish?

プロジェクトでは、対象4魚種の内3種がメコン河水系を元々の分布域としない外来魚である。地域全体が自然冠水するわけだから、魚の自然水域への逸散を回避するのは不可能である。養殖の振興による外来種の河川生態系への影響についてどのように考えているか。

【カンボジアカウンターパート職員による回答】

- This problem (flooded every year) is not occurred wherever of the rural aquaculture development, and rural farmers are not letting the rain water to flood their fish ponds. On the other hand, the target area of project or the area where government is introducing the culture of exotic species are far from the main natural water bodies where the released exotic species might affect the natural environment by flooding.

【日本人専門家による回答】

3種とも養殖対象魚として長い歴史をもっており、メコン河水系で再生産が行われ自生している事も確認されている。本プロジェクト種苗生産や養殖の普及によって、既に帰化動物として生態系の一部として確立してしまっているこれらの魚種の天然分布に与える影響は極めて小さいと考えられる。そもそも、国際河川であることから一国の努力で既に生態系を確立している魚を駆除することは不可能である。また、基本的にプランクトン・デトライタス・植物性の餌をとる食性を持っていて、生態系に与える影響も魚食性の魚ほど強くない。これらのことから、外来魚を対象魚種としているものの、自然生態系へのマイナスインパクトは、養殖を普及することによって得られるプラスのインパクトと比べるとごく僅かにしかならないとみなすことができる。

質問10（インパクトに関する質問 no.7：水の取り合いによる環境面でのインパクト）

[Social and environmental impacts by promotions of small-scale fish farming and community fish refuge program] Community ponds are traditionally used by the village communities for various purposes such as watering for livestock animals, irrigation of arable lands, household water, etc. In the preliminary report for FAIEX project, it is mentioned that the reasons for farmers digging fishponds included vegetable cultivation, irrigation,

household use, and house construction. It is therefore necessary for the users to prioritize the utilization among the multi-purpose functions of the ponds. Are you aware of any conflicts among the uses (or users) of the water resources because of the increased prioritization for the fish farming promoted by the project? For example, community members having livestock complained about the prioritized use of a community pond for community fish refuge program. It is often reported as a positive impact that farmers observed a synergy effect on the growth of rice when fish are introduced into paddy field. Is this the case for the project area, too?

共有池は伝統的に養殖以外の乾期の貴重な水源として、家畜の水飲み場・灌漑用水・家事などに利用されていたと考えられる。また、プロジェクト開始前の対象地域での社会経済調査によると、農家が池を掘る理由として、養殖以外に野菜栽培・灌漑・家事・建設用水などが挙げられている。従って、農家の個人養殖池も村の共有池も多目的用水として利用されている面があり、其々の利用目的の間の優先度を調整する必要がある。村人の中で水をめぐる衝突や、逆に利用者間の調整ができたことで村の間に協調が生まれたというような例はないか。多目的に養殖池の水を利用している農家が養殖を優先した事によって、他の作物の作柄に影響を与えたという例は無いか。

【カンボジアカウンターパート職員による回答】

- There are few households in few of established CFR complained about the prioritized uses of water resources for saving fish after common fish refuge have been agreed and managed by the local communities and authorities. However, there are appropriate resolutions for them by keeping some places in the CFR for their water consumption to meet the demand of their purpose. For the small-scale fish farming, some of them can use water resources from their own fish ponds for livestock animals, irrigation of arable lands and household water consumption.
- There is no information reported in the target areas of project implementation. If there are, it is not many cases occurred and not difficult to address.

【日本人専門家による回答】

タケオ州のある農家では 27 アールの水田に種苗 (4 魚種シルバーバーブ、インド鯉、ティラピア、コイ、5-8cm サイズ) 2000 尾を放したところ、5~6 か月後に 300kg、米の収量 (600kg) に匹敵する金額の収穫をあげた。こうしたシナジー効果の例はある。共有池インパクト調査において、各サイトの村長、コミュニオン長への聞き取りを行ったところ、「管理グループと村民との関係がよくなった (信頼関係が生まれた)」との回答が (18 サイト中 5 人)、「農業や家畜用の飲み水の確保が容易になった」とプラスの効果を上げた人も多数 (18 サイト中で 12 人) あった。

質問 11 (自立発展性に関する質問 no. 1 : 種苗生産の収益性)

[Profitability of fingerling production business] In the project's target area, the fishponds dry up every year during the dry season, which necessitates the farmers to purchase every year a new stock of fingerlings for continuation of fish farming. Therefore, the continuing fish farming activity after the project's termination depends on the reliable supply of fingerlings by the private hatcheries, which in turn depend on the economic feasibility of the fingerling production business. How are you assessing the economic performances of the private hatcheries in the project area after the termination of the projects?

対象地域では、養殖池が乾期に干上がるため、小規模農家が養殖を行うためには毎年種苗を購入する必要がある。従って、種苗生産者の経営の健全性が今後の養殖生産に維持に不可欠であるが、種苗生産業者の経営分析は行われているか。

【カンボジアカウンターパート職員による回答】

- Majority of seed producing farmers in the 4 target provinces are able to produce fish seeds to meet the demand of their customers. The seed producing farmers showed that actual fish seed production has been increasing every year because of their capacity and experiences to produce fish are improved and transferred from one to one through the network established by the project.

- The increase in fish seeds availability/supply is occurring not only in the project target area but also outside of the target provinces as well. On the other hand, the numbers of village fish seed producers have been increased and spread to other provinces where there are rural fish farmers to buy them for continuing their fish culture activities.

【日本人専門家による回答】

プロジェクト報告書に記載あり。(平成 19 年度年次報告書その 1、別紙資料 4「養殖家経営・種苗生産短期専門家業務報告書」9 ページ～17 ページで経営分析について報告している。) さらに再委託で実施中のインパクト調査で種苗生産農家の経営状況が明らかになっている。口頭で得た中間報告によれば、種苗生産農家の収益は年毎に増加、3 年後程度から急改善し、収益を大きくのばす例が多い。

質問 12 (自立発展性に関する質問 no. 2 : 種苗生産業者間の競合と協力)

[Competition or cooperation among the fingerling producers] The scale of operation varies greatly among the fingerling operators working the project area. Some were established long time before the commencement of the FAIEX project, while many of the project-supported hatcheries started the business just a few years ago. As economic entities producing the same commodity (fingerlings), they could chose either going into “competition” to competing each other or going to “cooperation” to help each other. Which way are the fingerling operators going on your observation? Would you provide any cases that support your observation? How has the establishment of aquaculture network influenced their attitude?

種苗生産農家の間には、施設規模や保有する親魚の魚種・保有数に差があり、お互いに淘汰し合う「競争」に向かう事も、反対に互いの短所を補うために「協力」して行くことも、理論的には可能である。其々の事例が観察されていれば挙げよ。現時点では、どちらが育成した中核農家の間で優勢な態度といえるか。今後、どのように変化していくと考えるか。

【カンボジアカウンターパート職員による回答】

- It is depend on the management of each location/province. In fact, in some provinces the fish seed produced by local fish hatcheries are sold completely within the province, but in some provinces, particularly in the 4 target provinces the produced fingerlings are sold with supplemental efforts of exchanging them among the network members.
- Based on our experiences or observations, we will recommend them to cooperate together as a group in each district or province in order to generate good opportunities and advantages for individuals including sharing experiences, information and easy access to donors to obtain supports to upgrade their knowledge, experience and skills in practical works of the fish seed production.
- The established aquaculture network by FAIEX-JICA project is a good model of what we are aiming to implement as a group in order not only for the core farmers to have those advantage (mentioned above) but also for the rural fish farmers to have more access to fish culture techniques and fish seed supply.

【日本人専門家による回答】

現時点では協力関係により傾斜しているように思われる。1 コミュニオンにつき 1 中核農家を選定し、地域内のバランスを考慮した。2008 年度は需要のピークに生産が合わず、一部の中核農家は種苗の売れ残しを出したが、地域外からの輸入種苗が相当量流通していることから、域内産種苗の絶対供給量は不足しているといわれている。中核農家が補完し合う関係は、今後数年間は続くと考えられる。

質問 13 (自立発展性に関する質問 no. 3 : 養殖ネットワークの小口金融基金)

[Establishment of micro financing system by the aquaculture network] The project is supporting an establishment of a micro financing fund utilizing the returned loans from the fingerling producers who were supported financially for the construction of hatchery facility in the earlier phase of project. Do you think it is necessary to set up a micro

financing fund especially for aquaculture farmers while there are many established micro financing institutions in Cambodia? Are you confident that the network is capable to manage the funds profitably and properly?

プロジェクトでは、計画当初に中核業者に対して支援した施設建設経費の返済金を原資として、養殖ネットワークによる小口金融制度の設立をはかっている。既存の金融制度が存在する状況で、養殖業者の為に特別の低資金融資制度を設立する必要性はあると考えるか。既存の小口資金制度の利用者との間で、問題が発生する懸念は無いのか。

【カンボジアカウンターパート職員による回答】

- Yes, it is necessary to set up a micro financing fund for aquaculture farmers, even though there are many established micro financing institutions in Cambodia because it will assist many rural farmers who are engaged in fish culture activities and village fish seed producing farmers to have credits with low interest for improving and increasing their fish seed production.
- We are confident the establishment of the micro financing system will run well gradually with continued supports from the project FAIEX-JICA phase II. We have thought that the establishment of the micro financing system is crucially useful and interested by the rural aquaculture farmers.

【日本人専門家による回答】

貸付は、小口融資の一般的金利(2.5-3.0%)と比べ、有利な条件(金利1.0%程度、無担保)で行われる。ネットワークメンバー全員の合意のもとで貸し付けられ、用途は明確に限定され、メンバーによる相互監視を受けていることから、民間金融とは一線を画している。生産現場においては、緊急支出(施設の補修整備、機材修繕など)が生じた際、臨機に対応可能な、ネットワークからの融資は農家にとって利用価値が極めて高く、意味ある制度と考えられる。

質問 14 (自立発展性に関する質問 no. 4 : ホルモン剤の継続支援)

[Discontinuation of supply of spawning inducing hormone] The project has continued providing the spawning inducing hormone up to the final year of the project as an exception for the non-supporting policy for running cost of the private hatcheries. Would discontinuation of this hormone supply after the project termination affect the sustainability of the private hatchery operation?

プロジェクトでは、計画の最終年度まで種苗生産農家にホルモン剤の供与を継続し、唯一のランニングコスト支援の例外となっている。この支援が滞った場合の代替の入手に関して入手先・資金に関して問題は無いのか。ネットワークで一括購入するとか、脳下垂体の自給体制を確立する等の対処は考慮されているか。ホルモン剤の管理は適切に行われているか。

【カンボジアカウンターパート職員による回答】

- There is no problem about the hormone supply. Majority of village fish seed producing farmer are able to purchase hormone from Department of Aquaculture Development (DAD) which finds the hormone and preserves for distributing to the fish seed producers.

【日本人専門家による回答】

供給ルートは水産局が持っており、今後の調達には支障はない。水産局を通して有償配布することになる。水産局が毎年生産シーズン前に仕入れたものをネットワーク農民が有償で購入するという供給ルートが主になるが、ネットワークメンバーの中から、独自に輸入を始める動きも想定できる。(現有ストックは、水産局の冷蔵庫で管理されており、2010年生産シーズンまでは賅える在庫量である)

7. 年次別研修等開催リスト

(2005 年度)

研修コース名	期間/回	回数	対象者	人数
小規模種苗生産・養殖技術	8日	1	地域普及員	20人
養殖基礎技術	2日	16	既存養殖農家	320人
養殖基礎技術	2日	16	新規養殖農家	320人
小規模種苗生産・養殖技術	7日	1	新規種苗生産農家	20人
種苗生産先進地視察	2日	1	新規種苗生産農家	20人
PRA ワークショップ手法	2日	1	水産局職員・地域普及員	13人
参加型ワークショップ	3日	1	養殖農民	40人
参加型ワークショップ	3日	4	共有池管理地域住民	170人
共有池先進地視察	1日	2	共有池管理グループ	44人
淡水エビ養殖セミナー	1日	1	水産局職員・地域普及員他	20人
年間活動レビューワークショップ	2日	1	水産局職員・地域普及員	29人
合計開催回数		131	延べ対象人数	4547人

(2006 年度)

研修コース名	期間/回	回数	対象者	人数
小規模種苗生産・養殖技術	8日	1	地域普及員	20人
養殖基礎技術	2日	16	既存養殖農家	320人
養殖基礎技術	2日	16	新規養殖農家	320人
養殖基礎技術(農民から農民)	1日	16	新規養殖農家	479人
養殖農家相互訪問*	1日	16	新規養殖農家	400人
小規模種苗生産・養殖技術	7日	1	新規種苗生産農家	20人
種苗生産先進地視察	2日	1	新規種苗生産農家	20人
参加型ワークショップ	3日	4	共有池管理地域住民	180人
共有池先進地視察	1日	4	共有池管理グループ	48人
学校池養殖基礎技術	1日	6	小中学校生徒・教職員・父兄	488人
特別技術セミナー	3日	1	地域普及員・中核農家	24人
研修/普及教材作成ワークショップ*	3日	1	水産局職員・地域普及員他	24人
親魚品質管理セミナー	1日	1	水産局職員・地域普及員他	26人
研修開発/小規模ハッチェリセミナー	1日	1	水産局職員・地域普及員他	25人
年間活動レビューワークショップ*	2日	1	水産局職員・地域普及員	32人
農民トレーナー養成研修	2日	1	2005年種苗生産農家	20人
合計開催回数		87	延べ対象人数	2446人

(2007 年度)

研修コース名	期間/回	回数	対象者	人数
小規模種苗生産・養殖技術	8日	1	地域普及員	20人
養殖基礎技術	2日	16	既存養殖農家	320人
養殖基礎技術	2日	16	新規養殖農家	320人
養殖基礎技術(農民から農民)	1日	32	新規養殖農家	960人
養殖農家相互訪問	1日	16	新規養殖農家	400人
小規模種苗生産・養殖技術	7日	1	新規種苗生産農家	20人

研修コース名	期間/回	回数	対象者	人数
種苗生産先進地視察	2日	1	新規種苗生産農家	20人
参加型ワークショップ	3日	4	共有池管理地域住民	180人
共有池先進地視察	1日	4	共有池管理グループ	48人
学校池養殖基礎技術	1日	12	小中学校生徒・教職員・父兄	1200人
一般養殖農家評価反省会	1日	16	2006年養殖農家	640人
農民トレーナー養成研修	2日	1	2006年種苗生産農家	20人
教員トレーナー養成研修	1日	4	対象郡教職員	100人
種苗生産技術研修	8日	1	地域普及員、他	35人
農民ネットワークワークショップ	2日	1	中核農家	59人
ナマズ種苗生産技術研修	3日	1	地域普及員・中核農家	30人
オニテナガエビ種苗生産技術	15日	1	水産局職員・普及員・中核農家	20人
村落評価ワークショップ	3日	2	養殖農家・共有地管理住人	100人
公開セミナー	1日	1	養殖関係者・マスコミ・一般市民	55人
合計開催回数		131	延べ対象人数	4547人

(2008年度)

研修コース名	期間/回	回数	対象者	人数
オニテナガエビ養殖技術研修	7日	1	水産局職員・普及員・中核農家	7人
種苗生産予行演習（農民間研修）	4日	4	2007年新規種苗生産農家	16人
一般養殖農家評価反省会	1日	16	2007年養殖農家	640人
農民トレーナー養成研修	2日	1	2007年種苗生産農家	20人
オニテナガエビ種苗生産技術	30日	1	地域普及員・中核農家	41人
シルバーカーブ [®] 種苗生産技術補完	4日	4	中核農家	33人
参加型ワークショップ	2日	4	共有池管理地域住民	200人
共有池先進地視察	1日	4	共有池管理グループ	44人
養殖基礎技術（農民から農民）	2日	143	新規養殖農家	3608人
州別農民ネットワーク集会	1日	12	中核農家、養殖農家	193人
学校池養殖基礎技術	1日	4	小中学校生徒・教職員・父兄	400人
共有池ネットワークワークショップ [®]	1日	1	水産局、地域普及員、一般農家	55人
農民ネットワーク年次集会	4日	1	中核農家、養殖農家、普及員	90人
合計開催回数		196	延べ対象人数	5347人

(2009年度 計画)

研修コース名	期間/回	回数	対象者	人数
養殖基礎技術（農民から農民）	2日	180	新規養殖農家	3600人
技術補完研修（種苗生産技術）	4日	4	中核農家	32人
州別農民ネットワーク集会	1日	12	中核農家、養殖農家	180人
農民ネットワーク年次集会	4日	1	中核農家、養殖農家、普及員	60人
学校池養殖基礎技術	1日	4	小中学校生徒・教職員・父兄	400人
参加型ワークショップ	2日	4	共有池管理地域住民	180人
共有池先進地視察	1日	4	共有池管理グループ	100人
公開セミナー	1日	1	養殖関係者・マスコミ・一般市民	100人
合計開催回数		210	延べ対象人数	4657人

8. プロジェクトの成果品リスト

<p>平成 16 年度 成果品リスト</p> <ol style="list-style-type: none"> 1) インセプションレポート、JCC 議事録、インセプションセミナー議事録 2) 普及活動の進め方に関するレポート 3) 研修計画、投入物リスト 4) 養殖普及および養殖技術に関するレポート 5) パティセンター改修計画レポート 6) 親魚リスト 7) ベースライン調査準備に関するレポート 8) 機材リスト 9) 養殖技術マニュアル 	<p>平成 17 年度 成果品リスト</p> <ol style="list-style-type: none"> 1) 2005 年度 養殖改善普及対象地域地図 2) コミュニティープロフィール 3) ワークショップ ファシリテーション ガイドライン 4) 養殖初心者向け 基礎技術研修コース ガイドライン 5) 共有池管理事業 説明スライド 6) 共有池管理事業 紹介リーフレット 7) プロジェクト紹介パンフレット (暫定版) 8) Baseline Survey Report 9) Report on Commune and village profiles 10) Commune and Village Profiles 11) コミュニティープロフィール(和文) 12) 農民向け養殖ガイドブック(クメール語) 13) 農民向け種苗中間育成ガイドブックレット(クメール語) 14) 研修参加者用ノート (クメール語) 15) 水産局発行の水産マガジン (クメール語) 16) プロジェクト紹介パンフレット (英文) 17) パティ種苗生産研究センター施設改修工事竣工レポート
<p>平成 18 年度 成果品リスト</p> <ol style="list-style-type: none"> 1) ベトナムにおけるメコン在来種養殖・種苗生産技術に関する海外研修実施報告書 (クメール語) 2) 養殖技術ブックレット改訂版 (暫定、英語) 3) 普及員向け小規模養殖・種苗生産技術研修カリキュラム 4) 親魚品質管理スライドプレゼンテーション 5) 共有池管理モニタリング結果スライドプレゼンテーション 6) 学校池養殖企画書 (英語) 7) プロジェクト紹介パンフレット 2006 年度暫定版 (英語) 8) 小規模養殖(グローアウト) 技術ブックレット改訂版原稿(クメール語) 9) 小規模養殖(グローアウト) 技術ブックレット改訂版原稿(英語) 10) 小規模養殖(グローアウト) 技術ビデオ教材資料(クメール語) 11) 小規模養殖(グローアウト) 技術ビデオ教材資料(英語) 12) 小規模養殖(グローアウト) 技術マニュアル原稿 (英語) 13) 普及員・種苗生産農家向け小規模養殖・種苗生産技術研修コースシラバス (英語) 14) 農民向け小規模養殖研修コースシラバス (英語) 15) プロジェクト紹介パンフレット 2006 年度版 (英語) 	<p>平成 19 年度 成果品リスト</p> <ol style="list-style-type: none"> 1) 養殖技術ブックレット改訂版 (クメール語) 2) 普及用養殖ポスター改訂版 (クメール語) 3) 親魚品質管理スライドプレゼンテーション (英語) 4) 稲田漁業の実態と越乾地 (共有池) の経済効果に関する報告書 5) オニテナガエビ種苗生産スライドプレゼンテーション 6) オニテナガエビ種苗生産スライド研修教材 7) パンガシウス種苗生産スライドプレゼンテーション 8) 稲田漁業の実態と越乾池 (共有池) の経済効果に関する報告書 II 9) 種苗生産技術マニュアル原稿 (英語) 10) 有用動物プランクトン (輪虫) 図説原稿 (英語) 11) ミジンコの培養スライド教材 (英語) 12) プロジェクト紹介パンフレット 2007 年度版 (英語) 13) 2008 年度プロジェクト広報カレンダー (クメール語) 14) 養殖技術視聴覚教材 (VCD, DVD) (クメール語) 15) 2007 年度ベースライン調査 (インパクト調査) 最終報告書 (英語)
<p>平成 20 年度 成果品リスト</p> <ol style="list-style-type: none"> 1) 種苗生産教材 VCD 2) 養殖普及カレンダー 3) 種苗生産マニュアル (英版) 4) 種苗生産 (中間育成) ブックレット (クメール語版) 5) 有用プランクトン図説 (英版) 6) オニテナガエビ種苗生産・養殖マニュアル (クメール語版) 7) 共有池普及ポスター 8) 養殖研修用フリップチャート[20 種] 9) プロジェクトパンフレット (英版) 	<p>平成 21 年度 成果品 (計画)</p> <ol style="list-style-type: none"> 1) ビデオ教材 共有池管理啓蒙 (クメール語版) 2) 有用プランクトン図鑑作成(クメール語版) 3) 種苗生産技術マニュアル作成(クメール語版) 4) 2010 年用カレンダー作成 (養殖&共有池管理) 5) 2009 年度ベースライン調査 (インパクト調査) 最終報告書 (英語)

9. プロジェクト進捗状況表

Results and Outcomes of the Project Activities

Title	項目		実施期間												進捗率 (%)
	活動	PO による活動項目	進捗												
			活動実績	活動成果	最終到達										
OUTPUT 1 既存小規模農業農家の技術改善により、灌漑設備が普及される。	11 灌漑に関する施設を改善することから灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100%
	12 灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100%
	13 灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100%
	14 灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100%
OUTPUT 2 小規模農業技術とその普及が、改善される。	15 灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100%
	16 灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100%
OUTPUT 3 プロジェクト対象地域で、貧困層が減少する。	17 灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100%
	18 灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100%
OUTPUT 4 農村部における農業普及率が高くなる。	19 灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100%
	20 灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100%
	21 灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100%
	22 灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	灌漑水の利用効率を向上させることにより、灌漑水の利用効率を向上させる。灌漑水の利用効率を向上させる。	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100%

