THE JOINT EVALUATION REPORT
ON
THE FRESHWATER AQUACULTURE DEVELOPMENT PROJECT
IN INDONESIA

Jakarta, April 28, 2005

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1. Evaluation of the Project

1-1 Objectives of Evaluation

1) Evaluating degree of achievement based on the Record of Discussions, Project Design Matrix (hereinafter referred to as "the PDM") and the Plan of Operations (hereinafter referred to as "the PO").

2) To evaluate the Project in terms of the five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact and Sustainability).

3) To make recommendations regarding the measures to be taken for improvement of the Project, as well as to draw the lessons for the improvement in planning and implementation of similar technical cooperation projects.

1-2 Methodology of Evaluation

For the purpose of the evaluation study, the Evaluation Team consisting of both the Indonesian and the Japanese sides has conducted the hearing of the presentation made by the Japanese experts and Counterparts (C/Ps) of the Project, field visit to the Jambi Freshwater Aquaculture Development Center or Balai Budidaya Air Tawar Jambi, (hereinafter referred to as "BBAT Jambi") and one of the extension model areas, and a series of discussion within the Evaluation Team. The evaluation was made based on the findings from the above activities.

1) The degree of achievement of the Project Activities was assessed using the Evaluation Grid (Results) which was attached in ANNEX 3.

2) Analysis was made for the Five Evaluation Criteria described below, based on the Evaluation Grid (Five Criteria) attached in ANNEX 9.

a) Relevance

Relevance is to question whether the outputs, project purpose and overall goal are still in keeping with the priority needs and concerns at the time of evaluation.

b) Effectiveness

Effectiveness concerns the extent to which the project purpose has been achieved, in relation to the outputs produced by the Project.

c) Efficiency

Efficiency is the productivity of the implementation process. How efficiently the various inputs are converted into outputs.

d) Impact

Impact is intended and unintended, direct and indirect, positive and negative changes as a result of the Project.

e) Sustainability

Sustainability of the development project is to question whether the project benefits are likely to continue after the external aid has come to an end.

1-3 Members of the Evaluation Team

1-3-1. Japanese Team

Dr. Kunihiko FUKUSHO Leader/ Aquaculture Technology	Director, Breeding Department, Port of Nagoya Public Aquarium
Dr. Kishio HATAI Fish Disease Measures	Professor, Division of Fish Diseases, Nippon Veterinary and Animal Science University
Mr. Shohei NATSUDA Evaluation Analysis	Consultant, Project Operation Division, International Department, Sanyu Consultants Inc.
Mr. Ryutaro KOBAYASHI Planning Evaluation	Project Officer, Fisheries Cooperation Division, Rural Development Department, Japan International Cooperation Agency (JICA)

1-3-2. Indonesian Team

Mr. MASKUR	Director, Sukabumi Freshwater Aquaculture Development Center, Directorate General of Aquaculture, Ministry of Marine Affairs and Fisheries
Dr. Estu NUGROHO	Director, Research Institute for Freshwater Aquaculture, Research Center for Aquaculture, Agency for Marine Affairs and Fisheries Research, Ministry of Marine Affairs and Fisheries
Dr. Odang CARMAN	Associate Professor, Department of Aquaculture, Faculty of Fisheries and Marine Science, Bogor Agricultural University

2. Outline of the Project

2-1 Background of the Project

Based upon the Record of Discussions (hereinafter referred to as "the R/D") signed on March 29, 2000, the Government of Japan and the Government of Indonesia have been implementing the Project since August 28, 2000. The Project is scheduled to be implemented for five (5) years at BBAT Jambi and is to complete on August 27, 2005.

Nearly four and a half years have passed since the commencement of the Project. At the termination of the Project, JICA dispatched the Terminal Evaluation Team to Indonesia in order to evaluate the Project jointly with Indonesian authorities and to give advice for the project activities of remaining project period, and discuss about the post-Project.

2-2 Summary of the Project

The project purpose is 'Dissemination activities for appropriate applied freshwater aquaculture technologies available to small-scale fish farmers are developed and strengthened'. The Outputs of Project written in the present PDM (modified in the mid-term evaluation study, ANNEX 1) are as follows;

1) High quality broodstock of existing freshwater fish culture species is supplied to seed production units.
2) Quality of aquaculture products (seed and grow-out fish) of existing freshwater fish culture species are improved.
3) Fish breeding technologies for new fish culture species are developed.
4) Effective extension models adjusted to the local conditions are established.
5) The stakeholders in the project area are more interested in adopting freshwater aquaculture technology developed by the Project.

3. Achievement of the Project Plan

3-1 Achievement of the Inputs

Achievement of the inputs was examined in accordance with the lists prepared by the Project. The summary of the results is as follows;

1) Inputs from the Japanese Side

a) Dispatch of Experts

A total of six (6) long-term experts and a total of nineteen (19) short-term experts have been dispatched. The list of Japanese experts is attached in ANNEX 5-1.

b) Training of C/Ps in Japan

A total of twenty (20) C/Ps have visited Japan. The list of C/P training in Japan is attached in ANNEX 5-3.

c) Provision of Equipment and Machinery

A total amount of 152,310,000-yen (equivalent to Rp. 12,822,477,180) equipment and machinery were provided to carry out the activities effectively as shown in ANNEX 6.

d) Supplementary Funds to Cover Local Cost

The Japanese side bore a part of the project local cost to implement the Project more effectively. The supplementary fund made by the Japanese side is shown in ANNEX 7.

2) Inputs from the Indonesian Side

a) Provision of Land, Buildings and Facilities

The land, buildings and facilities for the Project have been provided.

b) Allocation of Budget

The Indonesian side bore expenses for the construction of facilities and other miscellaneous expenses, and the disbursement of C/Ps' fund is shown in ANNEX 8.

c) Assignment of C/Ps

Indonesian C/Ps have been assigned to the Project. The list of C/Ps' assignment is attached in ANNEX 5-2.

3-2 Achievement of the Outputs

1) **Output 1:**

High quality broodstock of existing freshwater fish culture species is supplied to seed production units.

Indicator:

1.1 The good quality broodstock which satisfies the needs of seed production unit is secured in the extension area.

High quality verified broodstock was sold and distributed: common carp; 2,217kg, tilapia; 2,400 kg, patin; 200 kg. Fry was sold and distributed: tilapia; 290,000, patin; 1,000,000. A part of distributed fry of tilapia and patin is bred to broodstock at distributed places. The broodstock was distributed / sold to private seed production unit or seed production center of the local governments in the model areas and the other provinces. It is expected to produce and expand high quality broodstock of the second generation at the distributed places.

Distribution of common carp was interrupted due to the occurrence of Koi Herpes Virus (hereinafter referred to as "the KHV") disease. Regarding high quality tilapia species, nilotica, delay of standard operational procedure by the Indonesian Committee caused delay of the distribution activities.

2) **Output 2:**

Quality of aquaculture products (seed and grow-out fish) of existing freshwater fish culture species is improved.

Indicators:

2.1 The technologies on selection of fish, feed, health control, water quality control etc. are standardized and possible to disseminate.

2.2 The seed and grow-out fish are produced (based on the standardized technology) steadily in the extension model area.

It is judged that quality of aquaculture products in the four model areas was improved because high quality seed and grow-out fish can be produced steadily in the areas. Further activities are necessary to secure the continuous production of aquaculture, though. In the model area on West Sumatra Province, achievement level of the output-2 is low since the period of activities is short. Hence, the continuous extension activities are necessary for the area from now on.

3) **Output 3:**

Fish breeding technologies for new fish culture species are developed.

Indicators:

3.1 The necessary number of new species broodstock which are for seed production experiment are raised (1,000 fishes by the completion of the Project).

3.2 The survival rate of fingerlings until they grow up to the size of seed is more than 30 % of the total.

3.3 Technical papers on fish culture of new species are prepared.

Over 1,000 broodstock breeding of sand goby is prospected up to the end of the Project under the high survival rate, which shows the aquaculture and breeding techniques were developed in the experimental level. After the end of the Project, staffs in BBAT Jambi have to conduct the experiment on the techniques by themselves in order to materialize this plan as an aquaculture business in the commercial level.

4) **Output 4:**

Effective extension models adjusted to the local conditions are established.

Indicators:

4.1 Level of improvement of training program (Indicator B*).

4.2 Level of improvement of training textbook (Indicator C*).

4.3 The monitoring is held regularly in the model area by counterpart personnel.

4.4 Level of technology improvement (Indicator D*).

4.5 Fifty percent of small scale fish farmers take record of aquaculture in model area

4.6 The extension manuals are prepared.

*Indicator of B, C and D are shown in attachment of the ANNEX1 (PDM).

Achievement level of regular monitoring activities conducted by the C/Ps in the model areas is about 50 % on the average. It seems to take more two or three years to reach the level A, "The fish farmers / fish farmers groups acquire and utilize the project-standard technology" in the all model areas. However extension models for trainings and technical guidance were established and techniques of fish farmers were improved well as the progress of the extension activities. In addition to the extension activities by the staffs in BBAT Jambi, more participation of the local governments for the activities is necessary in each model area.

5) **Output 5:**

The stakeholders in the project area are more interesting in freshwater aquaculture.

Indicators:

5.1 Exchange of information between the project and local government officials is implemented twice a year.

5.2 Informative materials for aquaculture extension are published twice a year and distributed.

5.3 The fish farmers and local fishery department have common information on freshwater aquaculture.

We can say that fish farmers, extension officers and the other staff of the local governments are interested in freshwater aquaculture through holding of the extension networking seminars, the open seminars and the general meetings in the monitoring, and distribution of newsletters, farmer's diaries and calendars for promotion of aquaculture. In addition to these outputs, more participation of the local governments is necessary for the extension activities in each area.

3-3 Achievement of the Project Purpose

Project Purpose: Dissemination activities for appropriate applied freshwater aquaculture technologies available to small-scale fish farmers are developed and strengthened.

Indicators:

- Activity level of extension work in the project extension area (Indicator A*)
- The number of small-scale fish farmers in the extension model area are increased
- The production of freshwater aquaculture in the extension model area is increased
- The income by freshwater aquaculture of small scale fish farmers in the extension model area is steadied

*Indicator of A is shown in attachment of the ANNEX1 (PDM).

Achievement level of the project purpose seems to be high because aquaculture techniques have been developed and disseminated in the Project. Incomes, number and production of fish farmers have been increased. But continuation of the extension works and development of aquaculture activities of fish farmers are not stable yet, because many local governments have not conduct the activities properly and KHV disease seems to be occurred furthermore.

3-4 Achievement of the Overall Goal (Prospect)

Overall Goal: Sustainability of freshwater aquaculture of small-scale fish farmers is improved.

Indicators:

- The yield and production of freshwater aquaculture are increased or steadied in high level in the project area.

We can expect enough increase of the production of freshwater aquaculture in the project area. The production in six provinces in Sumatra increased every year from 47,192 metric ton (mt) in 2000 to 100,404 mt (213%) in 2003. It is too early to judge that impact by the project activities and the continuation of these trends is promised, though.

4. Results of the Evaluation with Five Criteria

4-1 Relevance

We can judge that the relevance of the Project is still high. It is clear that the project purpose conforms to the Indonesian development policy because some plans and their activities aim for same goal of the Project. The approach, which was conducted as technical development and extension service together, was valid because the extension service approach was useful to find technical problems in the field, and these problems were studied in the technical development approach.

The effect of the Project was distributed fairly in the extension areas since the technical transfer to the provinces which have no model area was covered by the seminars and trainings in the Project.

4-2 Effectiveness

The effectiveness of the Project is high. The project purpose is achieved fairly since the extension activities increased the number of fish farmers and their production, based on the standardized techniques of the Project. The effort of the experts and C/Ps led to the motivation of the fish farmers, which caused these results.

The movement of decentralization of authority was considered as an unexpected matter and caused reformation of the extension system of the local areas in Indonesia. The Project obtained agreeable results on the extension activities under such a severe condition. Hence full participation of the local governments will assure to achieve the project purpose completely.

4-3 Efficiency

The efficiency of the Project was not so high owing to the delay of the construction for the facilities, the occurrence of the land problem, the outbreak of KHV disease and the changing of the extension system of the local governments. These problems are considered as unexpected matters for the efficiency of the Project.

On the other hand, the appropriate countermeasures to the problems were conducted by the Project as follows in order to increase the efficiency.

1) The enhancement of the primary surveys for the extension service was carried out during the delay of the construction for the facilities.

2) The Project made effort to solve the land problem in cooperation with the provincial and central government.
3) The direct approach to the fish farmers or farmers' groups was applied in the extension activities since the extension system was changed and the local governments played a role in the extension, partially.
4) The dispatch of the short-term experts, trainings for C/Ps and guidance for fish farmers on fish diseases were implemented as the countermeasures to the outbreak of KHV disease.

4-4 Impact

Strong impact is observed in the field of technical development and the extension service, respectively. First, the Project made possible full-scale research and development on freshwater aquaculture in Sumatra. BBAT Jambi is the first national center in the area and the activities started with the preparation of the organization and the facilities. The Project trained a lot of young researchers and students, which would lead to aquaculture development in the near future.

Secondly, the Project has been carrying out the extension service, which can guide farmers concretely since the experts and C/Ps understand their needs. It was the first time for the fish farmers to receive answers in detail to their questions. The service promoted the motivation of the core farmers and they convey the introduced techniques to other farmers over the border of the extension model areas. Thus it is expected that the expansion of the project-standard techniques will contribute to achieve the overall goal.

4-5 Sustainability

The sustainability of the Project is not so high yet. From now on, the Project should strengthen the technical transfer to the C/Ps in order to secure their independent activities because the C/Ps do not have enough abilities for the planning and administration. They will have to maintain the machinery and equipment in BBAT Jambi, and train their junior staffs, who will be planned to increase, by themselves after the end of the Project.

They also have to increase their techniques on fish diseases, which are crucial skill for the extension service. Regarding fish diseases, the environment around aquaculture sites should be conserved.

Collaboration with the extension officers in each district is indispensable for the expansion of the extension activities. Therefore more participation of the local governments in the activities including the assignment of the staff concerned and appropriate cost share is expected as well as the establishment of the extension system.

5. Conclusion

The Joint Evaluation Team has found that many activities have been conducted and several numerical indicators have been set at high level. Judging from these facts, the achievement level of the Project Purpose will be high, however, several important parts of the project purposes will not be achieved, due to the following factors;

1) Delay on the construction of the structure of BBAT Jambi,
2) Occurrence of the land problem of the BBAT Jambi,
3) Outbreak of the KHV disease in the western part of Indonesia,
4) Unexpected changing of the extension system of the local governments due to the decentralization of authorities in Indonesia.

Therefore, the Team recognized that these negative assumptions lowered the efficiency of the Project. On the other hand, the Team found that the relevance and effectiveness of the Project are high and strong impacts are gained.

6. Recommendations

6-1 Activities of the Remaining Period

In order to contribute the achievement of the Project Purpose, it is necessary for the Project to continue the activities during the remaining Project period. The activities of the period are shown in ANNEX 11.

6-2 Extension of the Project Period

6-2-1 Activities of Extension Period

In order to complete the Project Purpose, it is necessary to continue the cooperation of Japanese side after the Project period on following activities,

1-1. Standardize technology on broodstock production with high quality.
1-3. Supply the above broodstock to the seed production unit.
2-1. Feed back the result of the monitoring activities to formulate the standard of the technology

2-2. Standardize the production technology of seed and grow-out fish by species and prepare its manual.

2-3. Produce seed and grow-out fish with application of the project standard

4-3. Carry out training programs.

4-6. Monitor operational conditions and situations of fish farmers in model area and give advice.

4-10. Support and collaborate on the extension work which are implemented by local government

5-1. Conduct activities for information exchange among local government and the project side

The above activities are the parts of "Project Activities" mentioned by the Project Design Matrix (PDM),

However, the Evaluation Team suggested self-reliant operation by the C/Ps of BBAT Jambi for the sustainability of that institution. The part of remaining activities (1-3, 2-2, 5-1) could be implemented by themselves.

And the Evaluation Team suggested that the Project needs to continue the activities (1-1, 2-1, 2-3, 4-3, 4-6, 4-10) with Japanese experts after the Project period.

The classification of the C/Ps' own activities and collaborative activities with Japanese experts is shown in ANNEX 11.

6-2-2 Extension Period of the Project

Two (2) years

6-2-3 Inputs of Extension Period

The inputs of Japanese side during the extension period of the Project are suggested as follows;

[Japanese Experts]

① Long-term Japanese expert on "Freshwater Aquaculture" / 1 person
/Main activities on 1-1, 2-1, 2-3,

② Long-term Japanese expert on "Aquaculture Extension" / 1person
/ Main activities on 4-3, 4-6, 4-10,

③ Short-term Japanese expert on "Fish Diseases" / 1person
/ Main activities are fish disease diagnosis and prevention,

And the other Short-term Japanese experts if being required (ex. Project Management)

[C/P Training in Japan]

Technical trainings of the C/Ps will be conducted in Japan when the Indonesian and the Japanese sides find it necessary for the Project within the framework of the Project extension period.

[Others]

The Japanese side will prepare local cost which is necessary to implement the Project except the local cost which the Indonesian side will be required to pay, through mutual consultation between both sides.

Machinery and equipment were introduced enough in the 5 years project period. So these materials will not be provided in the extension period of the Project.

The inputs of Indonesian side during the extension period of the Project are suggested as follows;

[Indonesian Counterpart Personnel]

① C/Ps in BBAT Jambi

② C/Ps in local governments

[Others]

The Indonesian side will make effort to secure the necessary budget, provision of buildings and facilities continuously during the extension period of the Project.

6-2-4 Strategy of the Dissemination Activities during the Extension Period

The Evaluation Team recommends for the Project to select model areas for the purpose of the extension activities during the extension period of the Project. Due to the amounts of the inputs of that period as mentioned in 6-2-3, it is appropriate to select two (2) model areas. The requirements of selection of model areas are mentioned as follows;

A) The extension activities by the local governments of the province and district are expected. Because it is necessary for the Project to construct the extension system including the local governments in order to guarantee the dissemination of aquaculture techniques between villages, districts and provinces.

B) The assignment of the local extension officers to the project C/Ps is expected, because the Japanese experts are going to continue the extension activities with them as well as C/Ps in BBAT Jambi during the extension period of the Project.

C) High commitment between Directorate General of Aquaculture (hereinafter referred to as "DGA") and the local governments to provide supporting budgets is needed in order to implement the requirements mentioned in the above items, A) and B).

D) Easy access (ex. road and telecommunication) to the BBAT Jambi is secured.

E) The two (2) model areas will be selected from the existing 5 model areas.

6-3 Development of the Aquaculture Technology

6-3-1 Possibilities of Transfer Technology in Indonesia

BBAT Jambi has conducted the activities to establish "hybrid technology" for freshwater aquaculture on common carp, tilapia, patin, freshwater prawn, and sand goby by introduction of Japanese and Indonesian technology. From now on, the BBAT Jambi should make efforts to utilize the technology accumulated and succeeded for long history of freshwater aquaculture in Java and other area in Indonesia.

6-3-2 Relationship between BBAT Jambi and Other Organizations

The Project has maintained the suitable relationship with BPBAT Bengkulu (Freshwater Aquaculture Development Center under Bengkulu Province) in the field of carp culture. It is desirable that BBAT Jambi collaborate with such organizations of local governments, being arranged by DGA.

6-4 Countermeasures of the Fish Diseases

6-4-1 Countermeasures of KHV Disease

KHV (Koi Herpes Virus) disease in common carp is now occurring in the western part of Indonesia. However, some of common carp naturally infected with KHV might survive, but they will become carrier of KHV. Therefore, once the disease occurred in the private farm, the fish should be never transferred to the other farms, because the infected fish may transfer the virus to healthy fish.

The Project should keep the stock of the KHV free carp for the dissemination to the farmers in KHV uninfected area. When carp seeds produced from broodstock of virus-free are distributed to the farmers, in addition to the carp seeds, a pamphlet that some information to prevent an occurrence of the disease is described should be also distributed.

If the disease occurred in the pond, it is to be desired that water temperature is maintained more than at 28℃. At present, the other countermeasure is not known.

The Project has to take careful approach for the fish farmers about KHV disease. However, the Project should make efforts to search appropriate countermeasures of KHV disease through the experiments, field survey on the model area and information from all over the world.

6-4-2 Lesson from the KHV Disease

KHV disease has been a quite unexpected damage in the western part of Indonesia. But this disease has been a good alarm for farmers. The many kinds of fish diseases now occur in this area with development of aquaculture. In order to establish a sustainable aquaculture, the Project has to disseminate the importance of countermeasures not only for KHV disease but also for the other fish diseases. Control of water quality and introduction of the healthy seeds are important to prevent the diseases.

7. Lessons Learned from the Project

7-1 Extension Methods of "On Farm Activities"

Since the extension system of local governments was in a transitional stage, the Project, started their extension activities, but had to approach fish farmers in extension model areas directly. Some fish farmer groups were willingly to take part in the joint verifiable trials of freshwater aquaculture offered by the Project and those trials became more and more actively. In addition that the local government extension officials who were person in charge of each extension model area also took part in the Project activities such as technical training, one-day course of consulting fish diseases. Therefore a closer connection with local governments for the extension of freshwater aquaculture is to be built up in each area.

The extension strategy, which focused on core fish farmers or farmers' groups, contributed well to achieve the project purpose. Reliable relationship between the fish farmers groups and the Project was established through the steady regular monitoring, discussion and exchange of information. Diligent fish farmers' activities lead to expand the extension activities for the other farmers on their own initiative.

7-2 Other Effective Extension Methods

Level of aquaculture techniques is diverse among farms and areas. An offer or a transfer of techniques from the Project is conformed to each level of the development and a feedback of the solution of problems made the project extension activities strengthen and carry on things smoothly. Furthermore a course of the consulting of fish diseases at each extension model area was known as a quite effective tool for conducting the extension activities of freshwater aquaculture.

8. Remarks

It should be remarked that the capability of many young C/Ps on freshwater aquaculture including C/Ps on fish diseases have been improved through the five years period of the Project. These young C/Ps are "treasures" to develop technologies on freshwater aquaculture and transfer knowledge to farmers in Indonesia.

ANNEX 1

Project Design Matrix (PDM)

Name of the Project: Freshwater Aquaculture Development Project in Indonesia
Duration: 28th August, 2000～27th August, 2005
Project Area: Western Indonesia (Sumatra, Java and Bali)
Date: 8th July, 2003
Extension Area: 6 provinces in Sumatra (Jambi, Riau, West Sumatra, Bengukulu, South Sumatra, Lampung)
Extension Model Area: The area chosen in the process of project activities Target Group: Small-scale fish farmers

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal: Sustainability of freshwater aquaculture of small-scale fish farmers is improved.	The yield and production of freshwater aquaculture are increased or steadied in high level in the project area.	・ Fishery statistics of DGA and provincial level	・Economic condition of Indonesia does not get worse.
Project Purpose: Dissemination activities for appropriate applied freshwater aquaculture technologies available to small-scale fish farmers are developed and strengthened.	- Activity level of extension work in the project extension area (Indicator A) - The number of small-scale fish farmers in the extension model area are increased - The production of freshwater aquaculture in the extension model area are increased. - The income by freshwater aquaculture of small scale fish farmers in the extension model area are steadied	・ Baseline Survey Report, Fishery statistics and statistics on socio-economy of DGA and provincial level, Project Report, Evaluation survey on extension work	・ Social condition (market condition of fish etc:) does not get worse. ・ Water environment does not get worse.
Outputs: 1. High - quality broodstock of existing freshwater fish culture species is supplied to seed production units.	1.1 The good quality broodstock which satisfies the needs of seed production unit are secured in the extension area.	・ Project Report, Record of breed, Baseline survey Report, Record of broodstock, questionnaire	・ Fishery dept., extension officer and leaders of fish farmers are under well cooperation and coordination.
2. Quality of aquaculture products (seed and grow-out fish) of existing freshwater fish culture species is improved.	2.1 The technology on selection of fish, feed, health control, water quality control etc. are standardized and possible to disseminate. 2.2 The seed and grow-out fish are produced (based on the standardized technology) steadily in the extension model area.	・ Project Report, interview to fish farmers, questionnaire ・ Project Report ・ Fishery statistics of DGA and provincial level	・ Social condition (market condition of fish etc.) does not get worse.
3. Fish breeding technologies for new fish culture species are developed.	3.1 The necessary number of new species broodstock which are for seed production experiment are raised (1000 by the completion of the project). 3.2 The survival rate of fingerlings until they grow up to the size of seed are more than 30 % of the total. 3.3 Technical papers on fish culture of new species are prepared.	・ Project Report, Technical Report, questionnaire ・ - do- ・ -do-	
4. Effective extension models adjusted to the local conditions are established.	4.1 Level of improvement of training program (Indicator B). 4.2 Level of improvement of training textbook (Indicator C). 4.3 The monitoring is held regularly in the model area by counterpart personnel. 4.4 Level of technology improvement (Indicator D). 4.5 50% of small scale fish farmers take record of aquaculture in model area 4.6 The extension manuals are prepared.	・ Project Report, Interview to participants ・ -do- , Training textbook ・ Project Report ・ Interview to participants, Monitoring Record ・ Project Report, Monitoring Record	
5. The stakeholders in the project area are more interested in freshwater aquaculture.	5.1 Exchange of information between the project and local government officials is implemented twice a year.	・ Extension manual	

	5.2 Informative materials for aquaculture extension are published twice a year and distributed. 5.3 The fish farmers and local fishery department have common information on fresh water aquaculture.	• Project Report • -do -, materials made • Interview to fish farmers, questionnaire	
Activities: 1-1. Standardize technology on broodstock production with high quality. 1-2. Prepare its manual. 1-3. Supply the above broodstock to the seed production unit. 2-1. Feed back the result of the monitoring activities to formulate the standard of the technology. 2-2. Standardize the production technology of seed and grow-out fish by species and prepare its manual. 2-3. Produce seed and grow-out fish with application of the project standard 3-1. Secure enough number of broodstock necessary for seed production. 3-2. Develop seed production technology, intermediate culture and breeding technology. 3-3. Prepare technical papers on fish culture. 4-1. Prepare training program. 4-2. Prepare textbooks for training courses. 4-3. Carry out training programs. 4-4. Conduct baseline survey of fresh water aquaculture 4-5. Conduct socio-economic survey of fish farmers and select extension model areas. 4-6. Monitor operational conditions and situations of fish farmers in model area and give advise. 4-7. Make the 'Farmers' database' based on the result of monitoring 4-8. Carry out evaluation survey on extension work of the project 4-9. Prepare extension manuals. 4-10. Support and collaborate on the extension work which are implemented by local government 5-1. Conduct activities for information exchange among local government and the project side 5-2. Publish informative materials to promote freshwater aquaculture activities for local government officials.	Inputs: (Japanese Side) 1) Personnel: Long-term experts; Team Leader Coordinator Fish breeding expert Fish culture expert Extension expert Short-term Experts: as required 2) Equipment: Machinery, Laboratory equipment, Equipment for seed production, Audio-visual equipment, Vehicles, Books, etc. 3) Counterpart training in Japan 2-3 persons annually 4) Local cost Part of expenses for project activities	(Indonesian Side) 1) Personnel: Project Director Project manager Project co-manager Fish breeding Fish culture Extension 2) Equipment: Necessary equipment 3) Facilities: Facilities of Loka Jambi including office for Japanese experts. 4) Local cost: Operational budget of facilities Budget for project activities	• Fishery department of local government shows understanding and cooperation for the project continuously. • No more serious problems of land. Precondition: The principle of development policy on Technical Implementing Unit of DGF is sustained by the by the new administration.

Attachment of the ANNEX 1

Indicator A

1. Correspondence to PDM : Overall Goal · Project Purpose · Output (Extension activities for the applied appropriate freshwater aquaculture technologies available to small-scale fish farmers are strengthened.)					
2. Objectively Verifiable Indicators : Activity level of extension works in the extension target area					
3. Target Level : Reach to level A, by August, 2005 (completion of the project)					
4. Expected Year : completion of the Project	1st Year	2nd Year	3rd Year	4th Year	5th Year
		Level D	Level C	Level B	Level A
5. Indicators／Target Level (Evaluate with Level E to A at the time of project completion. Check the possibility to continue extension work on freshwater aquaculture after completion of the project) Level A: The fish farmers / fish farmers groups continue to do fish farming by utilizing the project-standard technology. Level B: The fish farmers / fish farmers groups and / or extension workers master the project-standard technology. Level C: The counterparts make plans of extension activities with the experts' advice, and hold training course for the fish farmers / fish farmers groups and / or extension workers and monitor them. Level D: There is shortage of extension activity					
6. Means of verification Project Report, Evaluation survey on extension works					
7. Remark					

Indicator B

1. Correspondence to PDM : Overall Goal · Project Purpose · Output (4. Effective extension model adjusted to the local conditions are established.)					
2. Objectively verifiable Indicators : Level of improvement of Training Programs					
3. Target Level : Reach to level A, by August, 2005 (completion of the project)					
4. Expected Year : completion of the Project	1st Year	2nd Year	3rd Year	4th Year	5th Year
		Level D	Level C	Level B	Level A
5.Indicators／Target Level (Evaluate with Level E to A at the time of project completion. Check the ability of program establishment and management) Level A: Present training programs meet the needs of trainees. Level B: The contents of training programs is revised for the needs of trainees after each training course. Level C: The training courses are implemented as planned (place, number of times, time, contents). Level D: Counterparts make the training plan (place, number of times, time, contents) with experts. Experts teach how to make the training plan. Level E: The training program is not improved at all yet.					
6. Means of verification Project Report, Evaluation survey on extension works					
7. Remark					

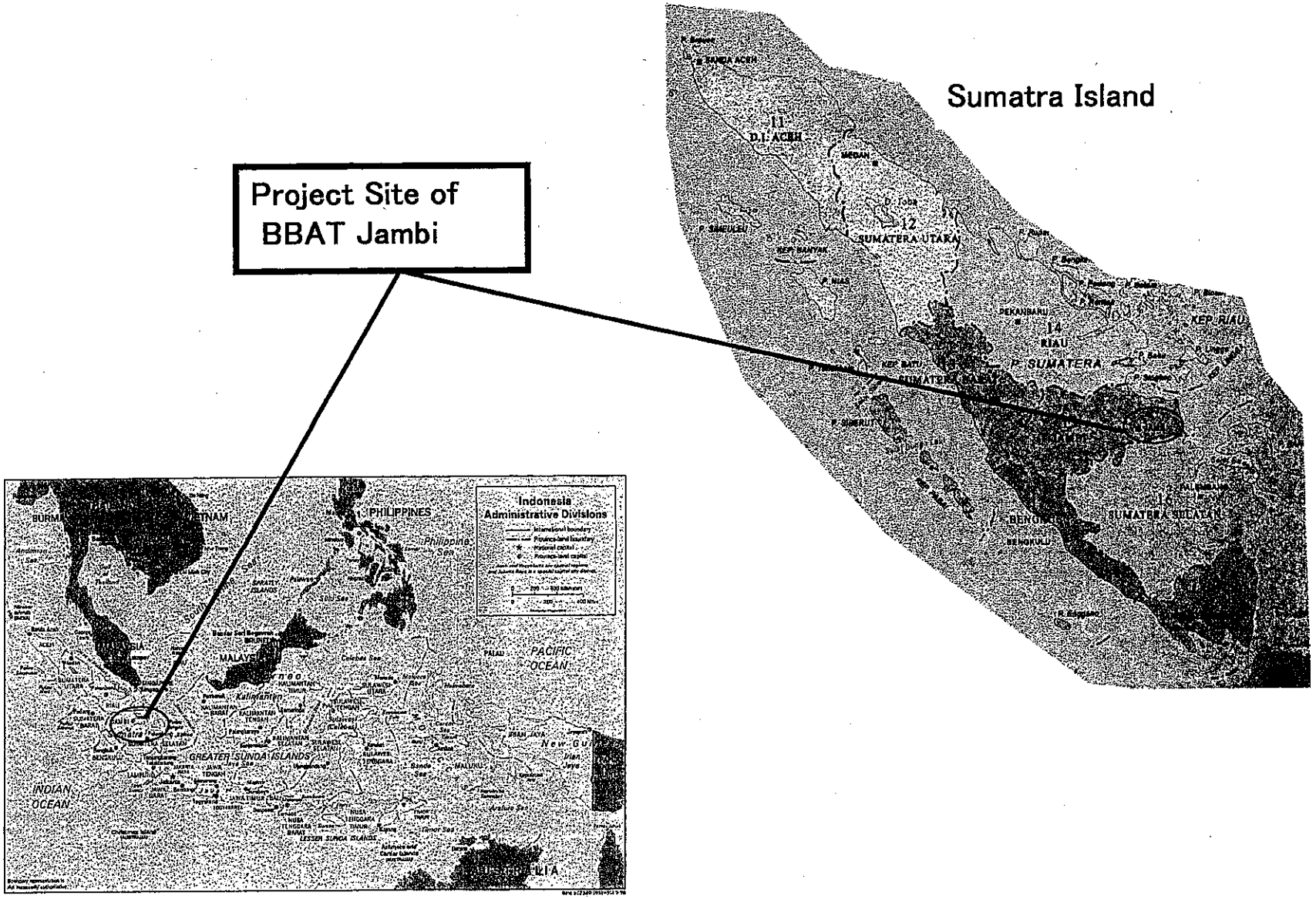
Indicator C

1. Correspondence to PDM : Overall Goal・Project Purpose・Output (4. Effective extension model adjusted to the local conditions are established.)					
2. Objectively verifiable Indicators : Level of improvement of Training Texts					
3. Target Level : Reach to level A, by August, 2005 (completion of the project)					
4. Expected Year : completion of the Project	1st Year	2nd Year	3rd Year	4th Year	5th Year
		Level D	Level C	Level B	Level A
5.Indicators／Target Level (Evaluate with Level E to A at the time of project completion. Check the validity of training text for extension service) Level A: Present training texts meet the needs of trainees. Level B: The training texts are revised for the needs of trainees after each training course. Level C: The training texts are prepared and easy to understand but should be improved. Level D: The training texts are prepared. Level E: The training texts are not prepared at all yet.					
6. Means of verification Project Report, Evaluation survey on extension works					
7. Remark					

Indicator D

1. Correspondence to PDM : Overall Goal・Project Purpose・Output (4. Effective extension model adjusted to the local conditions are established.)					
2. Objectively verifiable Indicators : Level of Technology improvement					
3. Target Level : Reach to level A, by August, 2005 (completion of the project)					
4. Expected Year : completion of the Project	1st Year	2nd Year	3rd Year	4th Year	5th Year
		Level D	Level C	Level B	Level A
5. Indicators／Target Level (Evaluate with Level E to A at the time of project completion. Check the technology improvement) Level A: The fish farmers / fish farmers groups acquire and utilize the project-standard technology. Level B: The fish farmers / fish farmers groups understand and utilize some parts of the project-standard technology. Level C: The fish farmers / fish farmers groups acquire and utilize the already-established technology. Level D: The fish farmers / fish farmers groups understand and utilize some parts of the already-established technology.					
6. Means of verification Project Report, Evaluation survey on extension works					
7. Remark					

Map of BBAT Jambi



ANNEX 3 Evaluation Grid (Results)

Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
Performance	Achievement Level of the Overall Goal (Sustainability of freshwater aquaculture of small-scale fish farmers is improved.)	Will the yield and production of freshwater aquaculture be increased or steadied in high level in the project area?	Fishery statistics in Sumatra Province and the nation	Report on extension evaluation survey by the expert, p6	Document review	1	We can expect enough increase of the production of freshwater aquaculture in the project area. The production in six provinces in Sumatra increased every year from 47,192 metric ton (mt) in 2000 to 100,404 mt (213%) in 2003. It is too early to judge that impact by the project activities and the continuation of these trends is promised, though.
Performance	Achievement Level of the Project Purpose (Dissemination activities for appropriate applied freshwater aquaculture technologies available to small-scale fish farmers are developed and strengthened.)	1) Was activity level of extension work in the project extension area increased?	Increasing rate of fish farmers	Data of the study for the terminal evaluation by the experts, p4	Document review	2	We can say that active extension work was conducted in the extension area because all numbers of fish farmers in the extension area were increased. According to fishery statistics in every province 1999-2003; 13.7 % in Riau Province, 3.1 % in Jambi Province, 10.1 % in West Sumatra Province, 7.5 % in Bengkulu Province, 11.4 % in Lampung and 8.9 % in South Sumatra. The rate in West Java Province for comparison was minus 1.0 %. The countermeasures of the KHV disease and participation of the local governments for the extension activities are needed further more, though.
		2) Were the number of small-scale fish farmers in the extension model area increased?	Number of small-scale fish farmers	Data of the study for the terminal evaluation by the experts, p4	Document review	3	Regarding three original areas, the number of fish farmers increased twice or three times (2002-2004). Fish farmers in the model area in Bungo became 58 households from 31. In the model area in Batang Hari, number of fish farmers increased about three times, 1,527 from 513. Fish farmers were increased to 508 households in the model area in Bengkulu Utara. Number of fish farmers are also showing a tendency to rise in the added two model areas in Riau Province and West Sumatra Province.

Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
		3) Were the production of freshwater aquaculture in the extension model area increased?	Production trend of fresh water aquaculture	Data of the study for the terminal evaluation by the experts, p5	Document review	4	In the evaluation on the extension effect in Sep. - Oct. 2004, interviews with 151 person in the five model areas were conducted. According to the interviews, 63 % of fish farmers in the model area in Bungo answered that their production was up and there was no fish farmers whose production was decreased. In the model area in Bengkulu Utara, 73 % of fish farmers increased their production and 11 % decreased their production due to an effect of KHV disease. 90 % of the answerers in the new model area in Batang Hari increased their production in the past two or three years. 72 % and 66 % of fish farmers in the model areas in Riau Province and West Sumatra Province answered the production was increased, respectively. It is anxious about continuous development due to the outbreak of KHV disease.
		4) Were the income by freshwater aquaculture of small-scale fish farmers in the extension model area steadied?	An evaluation on livelihoods of small-scale fish farmers	Data of the study for the terminal evaluation by the experts, p5	Document review	5	According to the evaluation on the extension effect, 68-76 % of fish farmers in the three model areas, where more than 50 % of fish farmers gained more than half of their income by aquaculture, were evaluated that their livelihoods were good. 35 % and 58 % of fish farmers in other two model areas, where 21 % of fish farmers gained more than half of their income by aquaculture, were evaluated same way. It is too early to judge the continuation of these trends, though.
		Summary				6	Achievement level of the project purpose seems to be high because aquaculture techniques have been developed and disseminated in the Project. Incomes, number and production of fish farmers have been increased. But continuation of the extension works and development of aquaculture activities of fish farmers are not stable yet, because many local governments have not conduct the activities properly and KHV disease seems to be occurred furthermore.

Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
Performance	Achievement Level of the Output-1 (High-quality broodstock of existing freshwater fish culture species is supplied to seed production units.)	1.1 Were the good quality broodstock which satisfies the needs of seed production unit secured in the extension area?	Report of the Project	1) Data of the study for the terminal evaluation by the experts, p7 2) Activity Plan	Document review	7	1) High quality verified broodstock was sold and distributed: common carp; 2,217kg, tilapia; 2,400 kg, patin; 200 kg. Fry was sold and distributed: tilapia; 290,000, patin; 1,000,000. A part of distributed fry of tilapia and patin is bred to broodstock at distributed places. The broodstock was distributed / sold to private seed production unit or seed production center of the local governments in the model areas and the other provinces. It is expected to produce and expand high quality broodstock of the second generation at the distributed places. 2) Distribution of common carp was interrupted due to the occurrence of Koi Herpes Virus (hereinafter referred to as "the KHV") disease. Regarding high quality tilapia species, nilotica, delay of standard operational procedure by the Indonesian Committee caused delay of the distribution activities.
Performance	Achievement Level of the Output-2 (Quality of aquaculture products (seed and grow-out fish) of existing freshwater fish culture species is improved.)	2.1 Were the technology on selection of fish, feed, health control, water quality control etc. standardized and possible to disseminate?	Report of the Project	1) Data of the study for the terminal evaluation by the experts, p7 2) Activity Plan	Document review	8	1) Extension activities conducted with technical development. Verified trials are carried out on problems, which are fed back from monitoring in the field, and the results are applied/shown one after another in technical training or the model areas. Improved techniques are disseminated one after another to core fish farmers in regular guidance tours in the four model areas except one, which became a model area in 2004, in West Sumatra Province. 2) Monitoring by BBAT Jambi is necessary for works of fish farmers in the model areas for the time being in order to secure the continuation of the works.
		2.2 Were the seed and grow-out fish produced (based on the standardized technology) steadily in the extension model area.	Report of the Project	1) Data of the study for the terminal evaluation by the experts, p7 2) Activity Plan	Document review	9	1) Results of improved techniques are applied to technical trainings, field seminars and guidance tours, and lead to produce steadily in the model areas. According to the monitoring sheets, high quality seed and grow-out fish can be produced in the four model areas except one that started later in West Sumatra Province. 2) After the Project, C/P have to take measures to fish disease, including KHV disease, by themselves to secure the continuous production, and enhance their planning ability in order to make more cooperation between extension works and technical development. These problems still remain in the Project.

Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
		Summary				10	It is judged that quality of aquaculture products in the four model areas was improved because high quality seed and grow-out fish can be produced steadily in the areas. Further activities are necessary to secure the continuous production of aquaculture, though. In the model area on West Sumatra Province, achievement level of the output-2 is low since the period of activities is short. Hence, the continuous extension activities are necessary for the area from now on.
Performance	Achievement Level of the Output-3 (Fish breeding technologies for new fish culture species are developed.)	3.1 Were the necessary number of new species broodstock which are for seed production experiment raised (1,000 by the completion of the project)?	Report of the Project	Data of the study for the terminal evaluation by the experts, p8 Activity Plan	Document review	11	Sand Goby was selected as new fish culture species. More than 800 of the broodstock, including the candidates, are bred in January 2004, and more than 1,000 will be raised by the completion of the Project.
		3.2 Were the survival rate of fingerlings until they grow up to the size of seed more than 30 % of the total?	Report of the Project	Data of the study for the terminal evaluation by the experts, p8 Activity Plan	Document review	12	Survival rate of about five months breeding (6 cm) is more than 50 % under the condition of 100-150 juveniles/m^2.
		3.3 Were technical papers on fish culture of new species prepared?	Report of the Project	Data of the study for the terminal evaluation by the experts, p8 Activity Plan	Document review	13	The technical report will be made by around June 2005. The data arrangement is ongoing now.
		Summary				14	Over 1,000 broodstock breeding of sand goby is prospected up to the end of the Project under the high survival rate, which shows the aquaculture and breeding techniques were developed in the experimental level. After the end of the Project, staffs in BBAT Jambi have to conduct the experiment on the techniques by themselves in order to materialize this plan as an aquaculture business in the commercial level.

Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
Performance	Achievement Level of the Output-4 (Effective extension models adjusted to the local conditions are established.)	4.1 Was level of improvement of training program improved enough?	Report of the Project	Data of the study for the terminal evaluation by the experts, p8 Activity Plan	Document review	15	The level A in the detailed indicator B, "Present training programs meet the needs of trainees." was achieved. Training programs were prepared by the executive committee, who were chosen from C/P at every training, six or seven persons. They decided the theme, receiving advices of the experts, and made the program, considering trainees levels and characteristics of areas. Evaluation questionnaires were carried out after the end of trainings in order to grasp needs of the trainees and improve the next training.
		4.2 Was level of improvement of training textbook improved enough?	Report of the Project	Data of the study for the terminal evaluation by the experts, p8 Activity Plan	Document review	16	The level A in the detailed indicator C, "Present training texts meet the needs of trainees." was achieved. Training texts were revised many times, adding reference data of existing books, collected data in the verification trials, and problems and needs in the model areas. The contents cover eight fields, such as feed, nutrition, water quality, fish disease, aquaculture management, etc. Combination and level of the contents are changed, considering the themes, trainees and fish species. They are improved, referred to results of the evaluations, by which are carried out trainees after the training.
		4.3 Were the monitoring held regularly in the model area by counterpart personnel who were assigned every area?	Report of the Project	Data of the study for the terminal evaluation by the experts, p8 Activity Plan	Document review	17	Implementation of the monitoring, held regularly by C/P who were assigned every area, is achieved about 50 % and needs more effort from now on. The monitoring are not held on schedule though C/P who covers each model area are decided since they have other works of BBAT Jambi. The extension expert monitors all areas regularly but he cannot continuous activities with C/P, who are changed every monitoring. The project adjusts to make C/P have initiative for the monitoring. In addition to these outputs, more participation of the local governments for the extension activities is necessary in each area.

Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
		4.4 Was technological level of fish farmers improved?	Report of the Project	Data of the study for the terminal evaluation by the experts, p9 Activity Plan	Document review	18	Core fish farmers in Bungo achieve the level B, "The fish farmers / fish farmers groups understand and utilize some parts of the project-standard technology.", in the detailed indicator D. Core fish farmers in the old model area in Batang Hari achieve the level D, "The fish farmers / fish farmers groups understand and utilize some parts of the already-established technology." It is judged that the new model areas in Batang Hari, Riau Province and Bengkulu Utara achieve the level B, and the newest model area in West Sumatra Province achieves the level D.
		4.5 Did 50% of small scale fish farmers take record of aquaculture in model area?	Report of the Project	Data of the study for the terminal evaluation by the experts, p9 Activity Plan	Document review	19	According to confirmation at the monitoring, recording ratios of core fish farmers were 0 % in 2002, 41 % in 2003 and 59 % in 2004. They did not have a custom to record aquaculture activities but they came to recognize the usefulness year by year, and about 100 diaries were distributed in 2005. The monitoring activities by staffs in the BBAT Jambi are still necessary, though.
		4.6 Were the extension manuals prepared?	Report of the Project	Data of the study for the terminal evaluation by the experts, p9 Activity Plan	Document review	20	The extension manuals, in which the results of success and failure in the Project are compiled, are being made.
		Summary				21	Achievement level of regular monitoring activities conducted by the C/Ps in the model areas is about 50 % on the average. It seems to take more two or three years to reach the level A, "The fish farmers/fish farmers groups acquire and utilize the project-standard technology" in the all model areas. However extension models for trainings and technical guidance were established and techniques of fish farmers were improved well as the progress of the extension activities. In addition to the extension activities by the staffs in BBAT Jambi, more participation of the local governments for the activities is necessary in each model area.

Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
Performance	Achievement Level of the Output-5 (The stakeholders in the project area are more interested in freshwater aquaculture.)	5.1 Was exchange of information between the project and local government officials implemented twice a year?	Report of the Project	Data of the study for the terminal evaluation by the experts, p10 Activity Plan	Document review	22	There are enough opportunity to exchange of information between the Project and local government officials. The Project held extension networking seminars three times with aquaculture extension units in the whole country, open seminars three times with local fishery officers in districts and provinces in Sumatra, irregular general meetings with local fishery departments in the model areas as the monitoring, and discussion to exchange information with the persons concerned once or twice a month as a visit to the fishery departments in the districts.
		5.2 Were Informative materials for aquaculture extension published twice a year and distributed?	Report of the Project	Data of the study for the terminal evaluation by the experts, p10 Activity Plan	Document review	23	Regular newsletters were published twice a year and distributed to the district fishery departments and other public fishery units (total 90 units), and core fish farmers. Aquaculture calendars and diaries were published and distributed a year. When various kinds of seminars were held, the presentation materials and posters were made and distributed/displayed. It is necessary to consider the sustainability of these activities by the staffs in BBAT Jambi, though.
		5.3 Do the fish farmers and local fishery department have common information on fresh water aquaculture?	Report of the Project	Data of the study for the terminal evaluation by the experts, p10 Activity Plan	Document review	24	Results of interviews with core fish farmers and participation of local governments to the Project show that information on aquaculture is well exchanged between the district fishery departments and extension workers and fish farmers through the trainings and seminars. And the information are shared certainly in the persons concerned because farmers gatherings and meetings, held by the district governments, are success and always gather many participants of fish farmers and officials. In addition to these outputs, more participation of the local governments for the extension activities is necessary in each area.
		Summary				25	We can say that fish farmers, extension officers and the other staff of the local governments are interested in freshwater aquaculture through holding of the extension networking seminars, the open seminars and the general meetings in the monitoring, and distribution of newsletters, farmer's diaries and calendars for promotion of aquaculture. In addition to these outputs, more participation of the local governments is necessary for the extension activities in each area.

ANNEX 4 Achievement of the Project Activities

Achievements of activities

1. : No activities
2. : Problems are remained(not solved by the end of the project)
3. : Prospect of completion (possibility of completion by the end of the project)
4. :Completion (already completed)

Activity Plan

Activity Plan			Attainable goal	Progress and achievement								Level of Achievement	Reason of delay	Future plan
Items	Contents			Results of activities	Outcomes of activities	Annual Plan								
						1	2	3	4	5				
1. Supply of high-quality broodstock														
1-1Standardize technology on broodstock production with high	Species Patin	Improve management of broodstock	Problems of existing technology is to be made clear and improved	Repaired facilities and arranged breeding equipment and conducted verifiable trials.	Collected data and applied them to existing technology		*	*	*	*	3	As scheduled	To continue verifiable trials by the initiative of counterparts
	Common Carp	Establish the center of broodstock (intermediate culture)	Select the optimal spot for broodstock production and standardize technology on seed production and intermediate culture	Based on BPBAT Bengkulu and conducted verifiable trials	Established works of seed production and intermediate culture as the routine at the broodstock distribution center	*	*	*	*	*	2+	Being interrupted the production activities by the occurrence of KHV disease.	To examine the measures against KHV and other infections and establish the production work by self-supporting in BBAT Jambi
	Common Carp	Establish the center of broodstock (distribution and training)	Establish the distribution center of high quality broodstock in Sumatra area	Implemented distribution activities and technical trainings	Distributed high quality broodstock to the extension model areas its 3rd generations are now being cultured	*	*	*	*	*	2+	Being interrupted the distribution activities by the occurrence of KHV disease.	To examine the possibility of KHV disease tolerant broodstock production
	Common Carp	Establish the center of broodstock (running water culture)	Establish the breeding center of high quality broodstock by running water culture.	Located the center at BPBAT Bengkulu and conducted verifiable trials.	Rountinized the process of broodstock production at the center.	*	*	*	*	*	2+	Being interrupted the production activities by the occurrence of KHV disease.	To examine the measures against KHV disease
	Tilapia	Produce high quality broodstock	High quality broodstock are to be distributed	Repaired facilities and arranged breeding equipment and conducted verifiable trials for improving existing technology	Established production of high quality red and gift broodstock, and its distribution activities as the routine works. Started the distribution of tilapia nilotica			*	*	*	2+	Required much time and labor to repair and improve the facilities. Delay of standard operational procedure about tilapia nilotica by the Indonesian Committee	To establish the self-supporting system of BBAT Jambi for the planned production and the standard procedure
	Tilapia	Introduce new strain.	Introduced new strain.	Introduced new strain of tilapia from Kagoshima, Japan.	Produced broodstock of tilapia nilotica.			*			3	Required much time and labor to repair and improve the facilities	To continue production of tilapia at BBAT Jambi (Tilapia's marketable value is risen as the substitution of carp)
1-2 Prepare its manual.	All species	Prepare manuals on its broodstock production technology	Pigeonhole the data collected from various verifiable trials and prepare technical manuals for extension activities	Accumulated the data from various verifiable trials. The data are being pigeonholed	Technical manuals of broodstock production on each species are to be published by the end of the project				*	*	3	As scheduled	-
1-3 Supply the above broodstock to the seed production unit.	Common Carp	Distribution of broodstock	Establish the system of broodstock distribution at BPBAT Bengkulu	Distributed of high quality broodstock, the number of about ♀1,000 and ♂1,200	Achieved the production of 2nd generation of broodstock and seed with high quality from the distributed broodstock to the model area			*	*		2	The occurrence of KHV disease	To examine the countermeasures against KHV disease and other pathogen

Activity Plan

Activity Plan			Attainable goal	Progress and achievement							Level of Achievement	Reason of delay	Future plan
Items	Contents			Results of activities	Outcomes of activities	Annual Plan 1	2	3	4	5			
1. Supply of high-quality broodstock (continued)													
1-3 Supply the above broodstock to the seed production unit (continued).	Species: Tilapia	Distribution of broodstock	Establish the system of broodstock distribution of BBAT Jambi.	Distributed about 2,400Kgs of broodstock.	Distribution of broodstock became almost a routine work.			*	*	*	3	As scheduled	-
	Patin	Distribution of broodstock	Establish the system of broodstock distribution of BBAT Jambi.	Distributed about 100Kgs of broodstock.	There some hatcheries came out which tried broodstock production using large sized seed.			*	*	*	2	Replaced broodstock with large sized seed and distributed.	To follow up the distributed broodstock and seed at seed production makers
2. Quality of aquaculture products is improved.													
2-1 Feed back the results of the monitoring activities to formulate the standard of the technology.	Species: —	Improvement of methodologies (spawning and hatching)	Improve the technology adjusted to the local characteristics.	Through monitoring activities at model areas, the problems became clear and incorporate them in verifiable trials.	Appearance of fish farmers who conducted reproduction trials voluntarily. That made them raise their motivation.			*	*	*	2	Monitoring activities that involves local governments has not carried out yet.	To examine to apply the results of monitoring activities to the extension activities of local governments
2-2 Standardize the production technology of seed and grow-out fish by species and prepare its manual	Common carp	Improvement of methodologies (spawning and hatching)	Establish a stable method of spawning and hatching by using high quality broodstock	As a part of the consecutive broodstock production with high quality, conducted verifiable trials at BPBAT Bengkulu.	Improved spawning and hatching technologies at local fish farmers' level by attending the training based on the results of verifiable trials.	*	*	*	*		3	The occurrence of KHV disease	To take in the technology that standardized by the project to manual
	Common carp	Improvement of methodologies (rearing techniques on hatched fry)	Establish the intermediate breeding technology	Conducted verifiable trials at both BPBAT Bengkulu and BPBAT Jambi.	Data of how to make good rearing water in pond by fertilization and propagation of water flea are being accumulated.	*	*	*	*	*	2	The occurrence of KHV disease	To establish the stable propagation method of water flea in ponds and apply its to the manuals
	Common carp	Applied experiment on female broodstock (check the quality of eggs on multi-spawning fish)	Examine optimal frequency of spawning and its intervals, and quality of eggs.	Planned verifiable spawning experiments.	The detailed numerical data are not seized yet.		*				2	Suspended the trials because of the occurrence of KHV disease and facility problem.	Resumption of trials by the initiative of C/Ps after the solution of KHV disease problem
	Tilapia	Improvement of methodologies (intentional seed production)	Establish production technology of high quality seed from high quality broodstock.	Conducted verifiable trials for improving existing technologies.	Established the stable seed production technology			*	*	*	3	As scheduled	To apply the seed production technology to manual
	Tilapia	Improvement of methodologies (mono sex culture)	Establish the technique of mono sex (male) seed production that grow faster.	Continue to conduct the masculinization trials of seed by treatment of hormone and crossbreeding.	Practical trial succeeded to produce 99% of male seed. Growth and crossbreeding trials are still on going.			*	*	*	3	Delay of the completion of buildings and facilities.	To prepare manuals based on the results of various verifiable trials
	Patin	Improve the technology of seed production, such as propagation of natural living feed and utilization of artificial micro-diet.	Study initial natural feed for fish, apply its to seed production technology and contrive reduction of both labor and production cost.	Conducting verifiable trials of fertilization and propagation of Moina sp.	Accumulated the data from the results of verifiable trials.		*	*	*	*	3	As scheduled	To apply the results of verifiable trials to manual

Activity Plan

Activity Plan			Attainable goal	Progress and achievement								Level of Achievement	Reason of delay	Future plan
Items	Contents			Results of activities	Outcomes of activities	Annual Plan 1	2	3	4	5				
2. Quality of aquaculture products is improved.														
2-2 Standardize the production technology of seed and grow-out fish by species and prepare its manual (continued).	Species													
	Patin	Improve the intermediate culture technology emphasized on the development of optimal feed.	made known an optimal artificial feed for fish during intermediate culture	Conducted verifiable trial of nutritional reinforcement and comparison among assorted feeds on the market.	Accumulated the data from the results of verifiable trials.		*	*	*		3	As scheduled	To apply the results of verifiable trials to manual
	Patin	Improve the intermediate culture technology from the economical viewpoint.	Contrive the reduction of labor and production cost during intermediate culture by fertilization and propagation of water flea	Conducted verifiable and reproduction trials on breeding fish by fertilization in order to produce large sized seed.	Being accumulated data of high growth and high survival rates from verifiable trials.		*	*	*	*	3	As scheduled	To apply the results of reproduction trials to manual
	Freshwater Prawn	Demonstrate seed production by the recirculation system of rearing water.	standardize the methodology of seed production applying water recirculation system	Conducted verifiable trials at both BBAT Jambi and BPBAT Bengkulu.	Standardized the seed production by the recirculation system of rearing water that transported from the sea.			*	*	*	3	Delay of the arrangement of production facilities.	To prepare manual on production method
	Freshwater Prawn	Establish the method of intermediate culture	Establish intermediate breeding technology of large sized seed for polyculture.	Constructed new breeding tanks and improved them and conducting verifiable trials to use them.	Accumulated the data from the results of verifiable trials and the proper production method is close to being established.				*	*	3	Delay of the arrangement of breeding facilities.	To prepare manual on breeding method
2-3 Produce seed and grow-out fish with application of the project standard.	Tilapia	Production of high quality of seed	Establish the methodology of seed production with high quality at BBAT Jambi.	Conducted verifiable trials in order to produce high quality seed.	Accumulated the data from the results of verifiable trials.			*	*	*	3	Delay of the arrangement of breeding facilities.	Speeding up the technical transfer to counterparts
	Tilapia	Applied experiment on growth by species.	Compare the growth of Tilapia, such as red, white, gift and nilotica (transplanted from Japan) respectively.	Arranged production facility, then conducted growth trials of the above mentioned 4 tilapia strains incidental to the verifiable production trials.	Verified the growth predominance of tilapia nilotica among 4 strains and obtained the official permission for its distribution.			*	*	*	3	Delay of the arrangement of facilities	To take measures to fish diseases by fish farmers them-selves
	Tilapia	Applied experiment on growth of mono sex.	Verify the growth rate of male seed treated by hormone dosage.	Conducting the growth trials of male seed.	Being accumulated the data from trials.					*	2+	Delay of the arrangement of facilities	Speeding up the technical transfer to counterparts
	Patin	Applied experiment on fish diseases.	Establish diagnostic and therapeutical methods for the sake of seed production	Conducted the field surveys of fish diseases and made clear diagnostic and therapeutical methods.	Strengthened the capacity of the Fish Disease Laboratory of BBAT Jambi. Prepared and distributed the diagnostic fish disease manual including quarantine and treatment and, cases of fish disease manual.		*	*	*	*	2	Increased duties because of the occurrence of KHV disease.	To take measures to fish diseases by fish farmers them-selves
	Patin	Applied experiment on suitable culture methods on pond conditions.	Verify the suitable culture method to the local characteristics	While the survey of the actual circumstances of wooden box and earthen pond culture in extension model area, gave some pieces of advice based on the results of verifiable trials.	Became clear the problems at the field of aquaculture, then the advice and consulting about fish diseases of the project made the aquaculture environment be close to being improved.	*	*	*	*		3	As scheduled	

Activity Plan

Activity Plan			Attainable goal	Progress and achievement							Level of Achievement	Reason of delay	Future plan
Items	Contents			Results of activities	Outcomes of activities	Annual Plan							
						1	2	3	4	5			
	Species												
2-3 Produce seed and grow-out fish with application of the project standard (continued).	Freshwater prawn	Establish mass production method (suitable site, simplify and economic methods)	Establish mass production technology of seed adjusted to the natural features of Sumatra Island.	Being conducted the verifiable trials of production by the recirculation of rearing water system at both BBAT Jambi and BPBAT Bengkulu.	Established the mass production technology of seed through the verifiable trials.			*	*	*	3	Discontinued the construction of the facilities due to the financial difficulty of local government.	Technical guidance from BPBAT Bengkulu to a seed production unit of Bengkulu Province
	Freshwater prawn	Develop the suitable culture methods in Sumatra.	Verify its commercial value as the seed of polyculture.	Being conducted the polyculture with tilapia and common carp after the distribution of seed	Being Collected data.				*	*	2+	Delay of distribution of freshwater prawn seed due to the delay of the facility's construction.	To give advice and conduct follow-up survey of the trial of polyculture as a part of monitoring activities
	Common carp	Applied experiment on fish disease.	Establish diagnostic method for the sake of the production of healthy seed and grow-out fish.	Conducted the field surveys of fish diseases and made clear diagnostic methods. Regarding KHV disease, established the PCR diagnostic methods	Prepared and distributed the diagnostic fish disease manual including quarantine and treatment and, cases of fish disease manual.		*	*	*	*	2	Increased duties because of the occurrence of KHV disease	To examine the countermeasures against KHV disease and other pathogen
3. Fish breeding technologies for new culture species are developed.													
3-1 Secure large number of broodstock necessary for seed production.	Sand Goby	Secure enough number of broodstock for seed production.	Bring up the number of 1,000 broodstock.	Fly, fingerling and juveniles are being bred and also broodstock are being brought up.	At the time of the end of year 2004, about 800 of broodstock candidates were being secured.		*	*	*	*	3	As scheduled.	-
3-2 Develop seed production technology, intermediate culture and breeding technology.	Sand Goby	Develop breeding methodology (experiment on initial feed)	Supply initial natural feed to fish stably during it fry and fingerling stages.	Conducted comparative verifiable trial on natural living feed with artificial feed.	Continuing propagation trials on micro-algae, freshwater rotifer and Moina sp. in ponds.		*	*	*	*	3	As scheduled	-
	Sand Goby	Develop breeding methodology (collecting fry at spawning pond)	Establish the effective capture method on fry at spawning ponds.	Conducted comparative trials concerning capture methods for fingerlings in ponds.	Developed the new capture method of fingerling by utilizing floating waterweed.		*	*	*	*	3	As scheduled	-
	Sand Goby	Establish intermediate nursery technology.	Become clear the proper size of seed for commercial use.	Conducted growth and feeding trial at both ponds and floating net cages.	Verified the optimal size of seed for commercialization obtained from the trial of wooden box culture.		*	*	*	*	3	Slow growth during juvenile stage	
3-3. Prepare technical papers on fish culture.	Sand Goby	Pigeonhole the data of the trials and prepare a technical paper.	Prepare technical report.	Conducted each trial of bringing up broodstock , seed production, intermediate breeding and culturing until marketable size so on.	Accumulated the data from each trial. A technical paper is expected to be published by the end of the project period.		*	*	*	*	3	As scheduled	-

Activity Plan

Activity plan		Attainable goal	Progress and achievement							Level of Achievement	Reason of delay	Future plan
Items	Contents		Results of activities	Outcomes of activities	Annual Plan 1	2	3	4	5			
4. Effective extension models adjusted to the local conditions are established.												
4-1. Prepare training program.	The same as mentioned in the column of "Items"	Prepared training program for technical training.	Implemented technical training based on the training program.	Became clear the effective training program.		*	*	*	*	3	As scheduled	-
4-2. Prepare textbooks for training courses.	The same as mentioned in the column of "Items"	Prepared textbook for technical training.	Repeated the revision of textbooks taking in the results of verifiable trials and problems at extension model areas, and prepared total 7th editions so far.	Prepared practical textbooks based on the problems happened at the field of aquaculture.		*	*	*	*	3	As scheduled	-
4-3. Carry out training program.	The same as mentioned in the column of "Items"	Conduct technical training of each different thema on fish farmers in extension model areas.	Conducted 21 times of technical trainings and supported the ones held by BBAT Jambi. The total No. of trainees came up to 720.	Conducted the trainings to meet the needs of aquaculture field.		*	*	*	*	2+	Delay of the selection of extension model areas.	Continuation of the training that meet the needs of the field
4-4. Conduct baseline survey of freshwater aquaculture.	The same as mentioned in the column of "Items"	Become clear the actual conditions of the extension target areas.	Conducted the baseline survey on the actual conditions of aquaculture in 6 Provinces of Sumatra and W. Java Prov.	Strategy of the extension activity is confirmed based on the results of several surveys.	*					4	As scheduled	-
4-5. Conduct socio-economic survey of fish farmers and select model areas.	The same as mentioned in the column of "Items"	Select extension model areas for developing the effective extension activities.	Conducted this survey at the second year of the project based on the results of the baseline survey.	Selected firstly 7 areas as the site proposed then selected again 3 of them as the extension model areas as the first step.		*				4	As scheduled	-
4-6. Monitor operational conditions and situations of fish farmers and select model areas.	The same as mentioned in the column of "Items"	Monitor the fish farmers in extension model areas and establish the extension model that meet the characteristic of each area.	Developed monitoring activities at 3 extension model areas at the first step and at 5 areas this time.	Developed extension activities effectively to involve fish farmer groups in the model areas.			*	*	*	2	Collapse of the former extension system and confusion of its reorganization and delay of selection of extension model areas.	To examine concrete supporting plan to serve as an aid for local government to reconstruct the extension system, also study to select new extension model areas in 2 provinces
4-7. Make the "Farmers' database" based on the results of monitoring.	The same as mentioned in the column of "Items"	Make clear the actual conditions and transitions of the aquaculture spots at extension model areas.	Took the information of total 155 fish farmers from 5 extension model areas into the "Farmers' database"	Made clear the extension model that adjusted to local characteristics.			*	*	*	3	As scheduled	Achievement level is satisfactory but remained problems such as collecting and accumulating of information
4-8. Carry out evaluation survey on extension work by the project.	The same as mentioned in the column of "Items"	Verify the extension effect by the project activities at extension target and model areas.	Conducted the survey of the present situation on the project extension target areas and the field surveys on each model area..	Became clear the effect of project activities from the results of the survey of extension target areas and extension model areas.					*	4	As scheduled	Achievement level is satisfactory but this kind of survey is expected to be conducted again
4-9. Prepare extension manuals.	The same as mentioned in the column of "Items"	Prepare the effective extension manual taking in the experience of project extension activities.	Being accumulated useful information for further extension technology. Technical manual of extension will be published by next August.	The effective extension technology reflected of the actual conditions of the field of aquaculture is close to be cleared				*	*	3	As scheduled	-
4-10. Support and collaborate on the extension work which are implemented by local government.	The same as mentioned in the column of "Items"	Support and cooperate fishery departments of local government and give them a hint about reconstruction of extension system.	local government official concerned also attended technical trainings, monitoring activities and meetings with fish farmers conducted by the project.	Positive participation and demand came out from fish farmers and local government officials concerning technical training and demonstration at extension model areas.		*	*	*	*	2	Collapse of the former extension system and confusion of its reorganization.	To examine concrete supporting plan for central and local governments who assume the responsibility of extension activities

Activity Plan

Activity Plan		Attainable goal	Progress and achievement							Level of Achievement	Reason of delay	Future plan
Items	Contents		Results of activities	Outcomes of activities	Annual Plan 1	2	3	4	5			
5. The stakeholders in the project area have common information on freshwater aquaculture.												
5-1. Conduct activities for information exchange among local government and project side.	The same as mentioned in the column of "Items"	Held necessary information for the extension activities in model areas in common with local governments' organization concerned.	held open seminars, technical trainings at the extension model areas. Joined the meetings of local fish farmers to exchange opinions.	Information of freshwater aquaculture technology and current situation of local villages are close to being owned in common.	*	*	*	*	*	2	Confusion of local governmental reorganization by the decentralization of authority	To examine concrete supporting plan for local governments who assume the responsibility of extension activities
5-2. Publish informative materials to promote freshwater aquaculture activities for local government officials.	The same as mentioned in the column of "Items"	Presentation of the project activities and joint ownership of information.	Distributed newsletters and calendars, held extension networking seminars, poster presentation at national conference of aquaculture.	The cases of project activities are close to being influenced to other areas.		*	*	*	*	3	As scheduled	-

ANNEX 5-1 List of Japanese Experts

(Japanese Side)

1. Dispatch of Experts:

Long-term Expert (6 persons)

① Chief Advisor	Mr. NUKIYAMA Yoshitetsu	August 28, 2000 ~ August 27, 2005
② Project Coordinator	Mr. SAITO Etsuo	August 28, 2000 ~ August 27, 2005
③ Freshwater Fish Breeding	Mr. TAKANO Masakazu	August 28, 2000 ~ August 27, 2005
④ Freshwater Fish Culture	Mr. IENAKA Takao	January 29, 2001 ~ January 28, 2005
⑤ Aquaculture Extension	Mr. IINUMA Mitsuo	August 28, 2000 ~ August 27, 2002
	Mr. NIWA Yukiyasu	August 14, 2002 ~ August 27, 2005

Short-term Expert (19 persons)

Fiscal year of 2000

① Baseline Survey	Mr. MAEKAWA Akira	January 29 ~ March 30, 2001	INTEM Consulting, Inc.
② Freshwater Fish Breeding	Dr. SENO Shigeharu	February 18 ~ March 17, 2001	University of Malaysian Sabah
③ Freshwater Fish Culture	Mr. TANAKA Mikio	February 18 ~ March 17, 2001	Saitama Pref. Agri.. & For. Rec. Center

Fiscal year of 2001

① Socio-economic Survey	Mr. NIWA Yukiyasu	August 27 ~ November 30, 2001	INTEM Consulting, Inc.
② Feed Development	Mr. TOSHIDA Shunji	January 23 ~ May 22, 2002	Fisheries & Aquaculture Inter'l Co., LTD.
③ Diagnosis of Fish Diseases	Dr. YUASA Kei	January 23 ~ May 22, 2002	Fisheries & Aquaculture Inter'l Co., LTD.
④ Freshwater Fish Breeding	Dr. SENO Shigeharu	February 16 ~ March 16, 2002	University of Malaysian Sabah

Fiscal year of 2002

① Diagnosis of Fish Diseases	Dr. YUASA Kei	August 18 ~ December 4, 2002	Fisheries & Aquaculture Inter'l Co., LTD.
② FW Aquaculture Extension	Mr. TANAKA Mikio	January 13 ~ March 12, 2003	Saitama Pref. Agri.. & For. Rec. Center
③ Feed Development	Mr. TOSHIDA Shunji	February 19 ~ July 9, 2003	Fisheries & Aquaculture Inter'l Co., LTD.
④ Freshwater Fish Breeding	Dr. SENO Shigeharu	March 26 ~ April 23, 2003	University of Malaysian Sabah
⑤ Diagnosis of Fish Diseases	Dr. YUASA Kei	March 26 ~ October 25, 2003	Fisheries & Aquaculture Inter'l Co., LTD.

Fiscal year of 2003

① Broodstock Management	Dr. SAKAI Kiyoshi	July 20 ~ August 16, 2003	Tokyo University of Fisheries
② Freshwater Fish Breeding	Dr. SENO Shigeharu	February 6 ~ March 5, 2004	University of Malaysian Sabah
③ Feed Development	Mr. FURUSAWA Atomu	February 10 ~ June 10, 2004	Fisheries & Aquaculture Inter'l Co., LTD.
④ Diagnosis of Fish Diseases	Dr. WAKITA Kunika	March 20, 2004 ~ January 20, 2005	Fisheries & Aquaculture Inter'l Co., LTD.

Fiscal year of 2004

① Baseline Survey	Mr. MAEKAWA Akira	September 13 ~ Nov. 11, 2004	INTEM Consulting, Inc.
② Freshwater Fish Breeding	Mr. FURUSAWA Atomu	January 6 ~ July 5, 2005	Fisheries & Aquaculture Inter'l Co., LTD.
③ Diagnosis of Fish Diseases	Dr. WAKITA Kunika	March 1 ~ July 15, 2005	Fisheries & Aquaculture Inter'l Co., LTD.

ANNEX 5-2 List of C/P Assignment

Area/Section	Name of Counterpart	Position/Speciality/ Target Species	Extension Target Area
Management	Mr. Ceno Harimurti Adi	Head of BBAT Jambi	
	Ms. Evi Rahayuni	Manager of the Counterparts	
	Mr. Mubinun	Sub-Manager of the Counterparts	
Freshwater Fish Breeding	Mr. Mubinun *	Tilapia	
	Ms. Miftahul Jannah	Tilapia	
	Mr. Yudi Yustiran	Carp	
Freshwater Fish Culture	Mr. Dafzel Day *	Patin	
	Mr. Mashudi	Sand Goby	
	Mr. Boyun Handoyo	Patin	
	Mr. Wahyu Wibowo	Sand Goby	
	Mr. Irwan	Patin	
Aquaculture Extension	Mr. Rushadi *		Batanghari(Jambi) and Riau
	Ms. Evi Rahayuni		Batanghari (Jambi)
	Mr. Yoyo Wiramiharja		Bungo (Jambi) and West Sumatra
	Mr. Wawan Cahyono		Bungo (Jambi) and West Sumatra
	Mr. Yudho Adhitomo		Padang Jaya (Bengkulu)
	Ms. Irma Minarti Harahap		Padang Jaya (Bengkulu)
	Mr. Endrizal		Riau
	Mr. Nurkholis		Batanghari (Jambi)
Fish Disease	Mr. Edy Barkat Kholidin *	Fish Disease(Now studying in the Graduate School of Mie University, Japan)	
	Ms. Melya Bahnan	Fish Disease	
	Ms. Novita Panigoro	Fish Disease	
	Ms. Indri Astuti	Fish Disease	
	Ms. Salfira	Fish Disease	
Nutritional Analysis	Ms. Evi Rahayuni *	Nutritional Analysis	
	Mr. Yoyo Wiramiharja	Feed Planning	
	Ms. Rina Hernawati	Nutritional Analysis	
	Mr. Agustin	Feed Planning	
Water Quality & Environment	Mr. Yudho Adhitomo*	Water Quality	
	Mr. Wawan Cahyono	Water Quality	

* Group Leader

ANNEX 5-3 List of C/P Training in Japan

JFY 2000 (3 persons)

Subject of Training	Name	Status/Organization	Period of Training	Training Site
① Freshwater Aquaculture	Mr. Maskur	Head of BBAT Jambi	March 27 ~ July 10, 2001	Saitama Pref. Agri. & Fores. Res. Center, Fisheries Branch
② Aquaculture Extension	Mr. Yusuf M. Sugilar	Deputy Director General of DGA	March 27 ~ April 7, 2001	Inspection of Fisheries Organizations Concerned

JFY 2001 (4 persons)

① Freshwater Aquaculture	Mr. Ediwarman	Staff of BBAT Jambi	April 12 ~ July 24, 2001	Saitama Pref. Agri. & Fores. Res. Center, Fisheries Branch
② Diagnosis of Fish Diseases	Mr. Edy Barkat Kholidin	Staff of BBAT Jambi	Sep. 3 ~ Dec. 4, 2001	Nippon Veterinary and Animal Science University
③ Feed Development	Ms. Evi Rahayuni	Staff of BBAT Jambi	Sep. 3 ~ Dec. 4, 2001	Kagoshima University
④ Aquaculture	Mr. Anto Sunaryanto	M. Director of Aquacult. Dept., DGA	Jan. 21~ Feb. 2, 2002	Inspection of Fisheries Organizations Concerned

JFY 2002 (4 persons) +Long-term Training (1person)

① Freshwater Aquaculture	Mr. Mubinun	Staff of BBAT Jambi	April 4 ~ July 16, 2002	Saitama Pref. Agri. & Fores. Res. Center, Fisheries Branch
② Aquaculture Extension	Mr. Joko Fitrianto	Staff of BBAT Jambi	Aug. 27 ~ Dec. 3, 2002	Saitama Pref. Agri. & Fores. Res. Center, Fisheries Branch
③ Aquaculture Extension	Mr. Yoyo Wiramiharja	Staff of BBAT Jambi	Aug. 27 ~ Dec. 3, 2002	Saitama Pref. Agri. & Fores. Res. Center, Fisheries Branch
④ Aquaculture	Mr. Agus Apun Budhiman	Head of Programming Div., DGA	Feb. 23 ~ March 9, 2003	Inspection of Fisheries Organizations Concerned
⑤ Physiological Maturation of Freshwater Fish	Mr. Mimid A. Hamid	Staff of BBAT Jambi	April 20, 2002 ~ March 31, 2005	Tokyo University of Fisheries

JFY 2003 (1 person)

① Diagnosis of Fish Diseases	Ms. Meliya Bahnan	Staff of BBAT Jambi	Jan, 26 ~ April 28, 2004	Nippon Veterinary and Animal Science University

JFY 2004 (7 persons) +Long-term Training (1person)

① Freshwater Aquaculture	Mr. Ceno Harimurti Adi	Head of BBAT Jambi	April 13 ~ July 21, 2004	Saitama Pref. Agri. & Fores. Res. Center, Fisheries Branch
② Freshwater Aquaculture	Mr. Mashudi	Staff of BBAT Jambi	April 13 ~ July 21, 2004	Saitama Pref. Agri. & Fores. Res. Center, Fisheries Branch
③ Freshwater Aquaculture	Mr. Yudho Adhitomo	Staff of BBAT Jambi	April 13 ~ July 21, 2004	Saitama Fisheries Branch, Tokyo University of Fisheries
④ Diagnosis of Fish Diseases	Ms. Novita Panigoro	Staff of BBAT Jambi	Jan 16 ~ April 28, 2005	Nippon Veterinary and Animal Science University
⑤ Freshwater Aquaculture	Mr. Dafzel Day	Staff of BBAT Jambi	March 22 ~ July 2, 2005	Saitama Pref. Agri. & Fores. Res. Center, Fisheries Branch
⑥ Freshwater Aquaculture	Mr. Boyun Handoyo	Staff of BBAT Jambi	March 22 ~ July 2, 2005	Saitama Pref. Agri. & Fores. Res. Center, Fisheries Branch
⑦ Freshwater Aquaculture	Ms. Miftahul Jannah	Staff of BBAT Jambi	March 22 ~ July 2, 2005	Saitama Pref. Agri. & Fores. Res. Center, Fisheries Branch
⑧ Diagnosis of Fish Diseases	Mr. Edy Barkat Kholidin	Staff of BBAT Jambi	Sep. 20, 2004 ~ March 31, 2007	Mie University

ANNEX 6 List of Equipment, 2000-2004

No.	Fiscal Year	Name of Equipment	Manufacturer	Model, Specification	Unit Price($)	Q'ty	Total Price($)
1	2000	Heavy-duty 4 Wheel Driving Vehicle	TOYOTA	Land Cruiser, STD 2000	54,114.00	2	108,228.00
2	2000	3 Ton Truck	MITSUBISHI	Colt FE 334, 6 Tires 100PS	13,515.00	1	13,515.00
3	2000	OHP (Overhead Projector)	ELMO	HP-A305LV SOLAR	692.31	1	692.31
4	2000	Slide Projector	ELMO	Omnigraphic 253AF	1,144.00	1	1,144.00
5	2000	Tripod Screens	DA-LITE	for Slide Pro. & OHP	184.62	1	184.62
6	2000	Audio Apparatus	TOA	Meeting Amplifier ZW-770	1,560.00	1	1,560.00
7	2000	Photocopy Machine	CANON	NP-6130, ADF + Accessories	6,154.67	1	6,154.67
8	2000	Notebook Personal Computer	IBM	Think Pad Series, P-III-500MHz	2,676.00	1	2,676.00
9	2000	Color Laser Printer	Hewlett Packard	HP Color LaserJet 4550N	4,719.96	1	4,719.96
10	2000	Scanner	Hewlett Packard	HP ScanJet 5300C	318.00	1	318.00
11	2000	CD-RW Drive	YAMAHA	CRW2100SX-VK	384.00	1	384.00
12	2000	Digital Video Camera	SONY	Digital Handycam, DCR-TRV20	2,106.00	1	2,106.00
13	2000	Digital Camera	OLYMPUS	CAMEDIA, C-990 ZOOM	1,088.10	1	1,088.10
14	2000	Television Set	TOSHIBA	43D8UXE, Multi System	2,650.00	1	2,650.00
15	2000	Video Cassette Recorder	SONY	SLV-ED95MN, VHS	407.69	1	407.69
16	2000	Profile Projector	NIKON	V-12BS, 10x, 25x, 50x	18,084.00	1	18,084.00
17	2000	Biological System Microscope	OLYMPUS	BX-40-31-PHD	9,352.00	1	9,352.00
18	2000	High Perform. Objective Microscope	OLYMPUS	SZX9-3122, 35mm	8,666.00	1	8,666.00
19	2000	Automatic Microscope Camera App.	OLYMPUS	PM10SP-1	5,446.00	1	5,446.00
20	2000	Electric Sewing Machine	JUKI	DDL-5530N H Type	528.00	1	528.00
21	2000	Meat Chopper	Hanaki	M-1 Type: No.12, 300W	2,618.00	1	2,618.00
22	2000	Blender	Hanaki	Milk Mixer, Type: MX-40	4,578.00	1	4,578.00
23	2000	Air Conditioner	National	1.5 PK, CS-C125KH	2,654.40	5	13,272.00
24	2000	Air Conditioner	National	3/4 PK, CS-C75KJ	1,217.28	5	6,086.40
25	2000	Air Pump	Techno Takatsuki	Hiblow SPP-150GJ-H	1,105.00	5	5,525.00
26	2000	UV-Sterilizer	Earth Co.	Sanitron SS-10G, 0.48㎥	1,386.00	1	1,386.00
27	2000	Polycarbonate Tank	Earth Co.	SPS- 100	239.40	20	4,788.00
28	2000	Polycarbonate Tank	Earth Co.	SPS- 500	691.60	15	10,374.00
29	2000	Polycarbonate Tank	Earth Co.	SPS-1000	931.00	10	9,310.00
30	2000	Artemia Incubation Tank	Sun Field	SBF-30, 30L, with BV 20A	910.00	10	9,100.00
31	2000	Live Fish Tank	Earth Co.	25A, 500L	630.00	2	1,260.00
32	2000	Blood Corpuscle Counters	Iuchi Seieido	J.H.S	350.00	3	1,050.00
33	2001	Mini Bus	ISUZU	NHR55/77PS/2,800cc	22,447.00	1	22,447.00
34	2001	Impact Pulvenrizer	Nakayasu Co., Ltd.	IP-2, 220V, 50Hz, 2.2KW	13,142.86	1	13,142.86
35	2001	Auto Paraffin Osmosis Machine	Sakura Seiki Co.,	Sakura Rotary RX-11	12,571.43	1	12,571.43
36	2001	Microtome	Yamato Kouki	RV-240N, Rotary Type	11,200.00	1	11,200.00
37	2001	Laboratory Pellet Mills	CPM Pacific Ltd.	MODEL CL TYPE 3,	39,978.60	1	39,978.60

No.	Fiscal Year	Name of Equipment	Manufacturer	Model, Specification	Unit Price($)	Q'ty	Total Price($)
38	2001	Dry Sterilizer	ISUZU Manufacture	EKM-114S, Max Temp. 260℃	2,000.00	1	2,000.00
39	2001	Autoclave	IUCHI	ASV-3023, 105-126℃	5,800.00	1	5,800.00
40	2001	Inverted Microscope	OLYMPUS	CK30-11RPC	4,820.00	1	4,820.00
41	2001	Digital Camera for Microscope	OLYMPUS	DP12	5,100.00	1	5,100.00
42	2001	Incubator	ADVANTEC	IS-2000	3,880.00	1	3,880.00
43	2001	Bio-Labo Clean Bench	Jyuji Field Co.,	NS-8AST	3,400.00	1	3,400.00
44	2001	Compact Electronic Balance	A & D Co., Ltd	EK-600H	570.00	3	1,710.00
45	2001	Analytical Balance	A & D Co., Ltd	HR-60	1,300.00	1	1,300.00
46	2001	Hematocrit Centrifuge	KOKUSAN Corp.	H-1200B	2,600.00	1	2,600.00
47	2001	Micro Centrifuge	Nihon Ika Kiki	Biofuge Pico	2,700.00	1	2,700.00
48	2001	Automatic Water Distillation Appa.	ADVANTEC TOYO	GS-170	4,500.00	1	4,500.00
49	2001	Tube Touch Mixer	Yazawa Kagaku Co.,	KS-2, 2,400rpm,	430.00	1	430.00
50	2001	Micro pipettes	M.S. Kiki Co.,	Pipettesman, P-5000	390.00	1	390.00
51	2001	Micro pipettes	M.S. Kiki Co.,	Pipettesman, P-1000	330.00	1	330.00
52	2001	Micro pipettes	M.S. Kiki Co.,	Pipettesman, P-200	330.00	1	330.00
53	2001	Hand Suction Pump	ADVANTEC TOYO	HP-01,	200.00	1	200.00
54	2001	Mini Vacuum Desiccators	ADVANTEC TOYO	VR Type, ϕ 140 x 200mm	350.00	1	350.00
55	2001	Compact Microscope	Nihon Rikagakukiki	Model: DSM-1-021	930.00	1	930.00
56	2001	Dissecting Tool Set		Laboratory Animal Dissecting Use	800.00	2	1,600.00
57	2001	Submersible Pumps	Earth Corporation	CSL-100, for Seawater	450.00	3	1,350.00
58	2001	Submersible Pumps	Earth Corporation	CX-250, for Seawater	930.00	5	4,650.00
59	2001	pH DO Meter	HORIBA	pH/DO Multi-meter, D-25E	2,730.00	2	5,460.00
60	2001	Personal Computer	ACER	Veriton 7100, PIII-933Mhz	2,080.00	1	2,080.00
61	2001	Water Wheel		"Shark" Brand, Made in Taiwan	724.50	10	7,245.00
62	2001	Live Fish Tank	EARTH Corp.	Polyethylene Square Type	1,000.00	2	2,000.00
63	2001	Water Pump	HONDA	with Engine: HONDA GX160	1,024.50	5	5,122.50
64	2001	Pit Tag System	Electronic ID, Inc.	Mini Portable Reader, HS6100L	1,310.00	1	1,310.00
65	2001	Grass Cutter	STIHL	FR125SEA, Back Pack Brush Cutter	1,150.00	5	5,750.00
66	2001	Grass Cutter	Local Made	MTD GE 45	1,725.00	2	3,450.00
67	2001	Dehumidifier		For drying wet clothes, High Power	690.00	2	1,380.00
68	2001	Polycarbonate Vacuum Desiccators	Iuchi Seieido	Model : 301	250.00	1	250.00
69	2001	Digital Scale	Iuchi Seieido	Model : 339-00	290.00	2	580.00
70	2001	Mixer	Nakayasu Co., Ltd.	KM-1, Capa: 100Kg	6,750.00	1	6,750.00
71	2001	Water Analyzing Set for Aquaculture	HACH	HACH DREL/2010	7,850.00	1	7,850.00
72	2001	Stereo Microscope		SCW-60L	1,250.00	2	2,500.00
73	2001	Carpenter Tool Set	AS ONE	Wood & Electric Working Tools	1,250.00	1	1,250.00
74	2001	Artemia Incubation Tank	Sun Field Co. Ltd.	Model : SBF-200, Capacity: 200L,	1,060.00	3	3,180.00
75	2001	Artemia Incubation Tank	Sun Field Co. Ltd.	Model : SBF-500, Capacity: 500L,	1,650.00	3	4,950.00
76	2001	Paraffin Stretching Tank	ELMA	Water Bath Type, PS-M	1,000.00	1	1,000.00
77	2001	Wax Dispenser		PM-401-1	3,700.00	1	3,700.00

No.	Fiscal Year	Name of Equipment	Manufacturer	Model, Specification	Unit Price($)	Q'ty	Total Price($)
78	2001	Paraffin Stretching Plate	IKEDA RIKA	Hot Plate Model: HP-4530	910.00	1	910.00
79	2001	Vertical Pump	EARTH Corp.	P-318A, f15mm, 220V	310.00	5	1,550.00
80	2001	Hot Air Welding Unit	FUJI IMPULSE	New Super 300	700.00	1	700.00
81	2001	Stereo Microscope	OLYMPUS	BX-41-32, Magnific : 40X - 1000X	5,920.00	1	5,920.00
82	2001	Cooling Case	AS ONE	SFB-114A, 220V, 3-7℃	2,380.00	1	2,380.00
83	2001	Fabricated Fish Tank	EARTH Corp.	Model : F Type, 5000L	2,100.00	2	4,200.00
84	2002	Visual Presenter	ELMO	Model: HV 3500XG	2,165.00	1	2,165.00
85	2002	LCD Projector	PANASONIC	PT-L 720, Brightness: 2200ANSI lm,	4,600.00	1	4,600.00
86	2002	Roller Mill	CPM Pacific Ltd.	Roskamp SP 6506, Wright: 665Kg	10,000.00	1	10,000.00
87	2002	Micro-Sifter	DALTON Co., Ltd.	Standard 403, Motor: 0.4KW	5,864.00	1	5,864.00
88	2002	Trash Engine Pump	Sakuragawa Pump	STR-501, Power: 3.5PS/3,600rpm	1,515.00	2	3,030.00
89	2002	Trash Engine Pump	Sakuragawa Pump	STR-801, Power: 5.5PS/3,601rpm	1,515.00	2	3,030.00
90	2002	Auto Dry Desiccators	AS ONE	SP-BG1, Auto Dry Desiccators	680.00	2	1,360.00
91	2002	Rotary Evaporator	SHIBATA SCIENCE	R200-A	2,545.00	1	2,545.00
92	2002	Table-Top Centrifuge & Parts	AS ONE	H-103N, with Rota, Bucket, Bucket	1,864.00	1	1,864.00
93	2002	Magnetic Stirrer	IKEDA RIKA	ISM-3B-1, Stirring Capa.: 50ml～5L	287.00	1	287.00
94	2002	Water Bath	IKEDA RIKA	T-2M, Temp. Range: +5～60℃	985.00	1	985.00
95	2002	Laboratory Instruments Dryer	ADVANTEC TOYO	FP-612, Temp. Range: 40-60℃	2,667.00	1	2,667.00
96	2002	Ultrasonic Pipettes Washer	YAMATO SCIENCE	AW-31, Capacity: Max. 500mm	3,525.00	1	3,525.00
97	2002	High Pressure Water Washer	Shinsho Co., Ltd.	SJE-1010MA, Compact Type	1,733.00	1	1,733.00
98	2002	Electronic Handy Grinder	HITACHI KOKI	GP 2V, with Grindstone	328.00	1	328.00
99	2002	Freezer	AS ONE	SCR-R411N, Capa. ±400L	2,389.00	1	2,389.00
100	2002	Drying Chamber	AS ONE	DO-450A, Temp.: 40～150℃	924.00	1	924.00
101	2002	Analytical Balances	SHIMADZU	AW 220, Capa.: 220g, Min.: 0.1mg	1,834.00	1	1,834.00
102	2002	Electronic Balances	Mettler Toledo	PG203-S, Capa.: 210g, Min.: 0.001g	1,863.00	1	1,863.00
103	2002	Homogenizer	NIHON SEIKI	Ace Homogenizer AM-8	2,343.00	1	2,343.00
104	2002	Kjeldahl Nitrogen Analyzing System	GERHARDT	KBL8S-BS, Made in Germany	21,499.00	1	21,499.00
105	2002	Muffle Furnace	IKEDA RIKA	TMF-1200, Desk Top Program	3,533.00	1	3,533.00
106	2002	Spectrophotometer	HITACHI	U-2010, Double Beam Method	10,486.00	1	10,486.00
107	2002	Crude Fiber Measurement System	Sansin Kogyo	6 Row Type, 1.5Kw	2,758.00	1	2,758.00
108	2002	Fat Extraction System	Nihon General	HT-6 Extraction System, weight: 30Kg,	17,000.00	1	17,000.00
109	2002	Lap-Top Personal Computer	TOSHIBA	Windows XP Prof. Jpns. Ver., Office XP	2,780.00	1	2,780.00
110	2002	Ultra Low Temperature Freezer	SANYO	MDF-192AT, Horizontal Type	9,240.00	1	9,240.00
111	2002	Cold Light	AS ONE	PL-075W, Bifurcate Type, 75W	960.00	2	1,920.00
112	2002	Freezer	AS ONE	SCR-T270C, Vertical Type	3,250.00	1	3,250.00
113	2002	Digital Camera	OLYMPUS	C-4100 Zoom, USB Connection	540.00	1	540.00
114	2002	Dissolved Oxygen Meter	HORIBA	OM-14-02	1,520.00	1	1,520.00
115	2002	Water Quality Monitoring System	HORIBA	U-21, Parameters: Tem., pH, DO, etc.	3,430.00	1	3,430.00
116	2002	PCR Thermal Cycler MP	TAKARA	TP3000, Temp. Range: -5～99℃	9,090.00	1	9,090.00

No.	Fiscal Year	Name of Equipment	Manufacturer	Model, Specification	Unit Price($)	Q'ty	Total Price($)
117	2002	Polaroid Camera for Gel Photograph's	FAC	DS-300, Camera Body + ML Gel Hood	1,360.00	1	1,360.00
118	2002	Transilluminator	AS ONE	MID-170, with Acrylic Protection Cover	1,040.00	1	1,040.00
119	2002	Color Laser Printer	EPSON	LP-8800C, Paper Size: A3	3,600.00	1	3,600.00
120	2003	Vehicle, Minibus	MITSUBISHI	L-300, 2500CC, A/C Double Blower	15,404.00	1	15,404.00
121	2003	Cryovials	AS ONE	Tube for keeping frozen, Material: PP	325.00	1	325.00
122	2003	Desiccators	AS ONE	Polycarbonate Vacuum with a cock	200.00	2	400.00
123	2003	Labo Timer	AS ONE	1 Cycle: 24hours, Min.: 15min., 100V 15A	219.00	3	657.00
124	2003	Filter Holder Manifold	AS ONE	Made of PVC	827.00	2	1,654.00
125	2003	Pump for Air	AS ONE	Model: 6130-0010	205.00	2	410.00
126	2003	PVC Cleaning Tank	AS ONE	K-1, PVC Square Tank	210.00	1	210.00
127	2003	Shaker	AS ONE	SRR-3	2,940.00	1	2,940.00
128	2003	Sunction Bottles	NRK	VKU-500	210.00	2	420.00
129	2003	Micro Centrifuge with Cooling Unit	KUBOTA	Model: 3660, Max.: 15000 rpm	6,827.00	1	6,827.00
130	2003	Thermo-Mixer	eppendorf	Thermo-mixer comfort	2,880.00	1	2,880.00
131	2003	Horizontal Electrophoresis Mini	COSMO-BIO	Mupid-2, Mini Electrophoresis Unit	448.00	1	448.00
132	2003	Cooling Rack	AS ONE	Model No. 5115-0032, Desktop Cooler	363.00	1	363.00
133	2003	Motorcycle	YAMAHA	YT-115, Offroad Type, 115cc	2,154.00	2	4,308.00
134	2003	Drawing Attachment	OLYMPUS	U-DA, System Microscope BX Series	1,132.00	1	1,132.00
135	2003	Research Steromicroscope System	OLYMPUS	SZX12-1131, Zoom Range: 0.7x -9x	7,229.00	1	7,229.00
136	2003	Ling Light Guide	OLYMPUS	LG-R66, for SZX Series	1,415.00	1	1,415.00
137	2003	Digital Camera	OLYMPUS	DO12, 3.34MILLION PIXELS	4,149.00	1	4,149.00
138	2003	Multifunctioning Printer	HP	PSC750, Printer, Scanner and Color Copy	418.00	1	418.00
139	2003	Pump Vacuum Diaphragm	BUCHI	V-500	1,865.00	1	1,865.00
140	2003	Vacuum Guage	AS ONE	DVR5-set, M. Range: 0.1-1100hPa	1,729.00	1	1,729.00
141	2003	Aspirator	AS ONE	WJ-20, Displacement: 12～15L/min x 2	660.00	1	660.00
142	2003	Ultrasonic Cleaner	AS ONE	US-4, Volume: 9.2L, Draining: Manual	2,029.00	1	2,029.00
143	2003	Desktop Vacuum Sealer	AS ONE	SQ-202, Single Heater System	1,955.00	1	1,955.00
144	2003	Deionization System	AS ONE	Model: PW-16, Distilled Water Maker	1,132.00	1	1,132.00
145	2003	Automatic Titrator	"S Titrino"	Model: 719/2-20S Titrino 719, Stirrer 728	7,533.00	1	7,533.00
146	2003	PC Label Printer	BROTHER	P-Touch 9300pc, Connectable with PC	382.00	1	382.00
147	2003	BOOK BINDING MACHINE	Pro-Bind	GDBP400, Plastic Ring Binding Method	2,086.00	1	2,086.00
148	2003	Copying Machine	CANON	IR-1600, A4, Max. Size A3	3,020.00	1	3,020.00
149	2003	Electronic Balance	METTLER TOLEDO	BD6000, Wgh'g Capa.: 6,000g	435.00	2	870.00
150	2003	Electronic Balance	METTLER TOLEDO	BD1201, Wgh'g Capa.: 1,200g	435.00	2	870.00
151	2003	Digital Scale	AND	HV-60KGL, Wgh'g Capa.: (15/30/60Kg)	454.00	1	454.00
152	2003	Electronic Balance	BONSO	339-00, Capa.: 500g, Min. indi.: 0.1g	314.00	5	1,570.00
153	2003	Portable Balance	SARTORIUS	BJ 3100, Capa.: 3100g, Min. indi.: 0.1g	539.00	5	2,695.00
154	2003	Scale	ESCO	EA715DC-30	692.00	3	2,076.00
155	2003	Hatching Jar	MPC-6	Volume: 6L, ϕ: 159mm	398.00	6	2,388.00

No.	Fiscal Year	Name of Equipment	Manufacturer	Model, Specification	Unit Price($)	Q'ty	Total Price($)
156	2003	Submersible Pump	ESCO	Draining Pump	513.00	5	2,565.00
157	2003	Portable Residue Dewatering Pump	TSURUMI	Model: LSP1.4S	1,183.00	2	2,366.00
158	2003	Submersible Pump	TERADA	CSL-100, Draining Pump	315.00	5	1,575.00
159	2003	Salinity Refractometer	ATAGO	New S-100, M. Range: 0～100ppt	220.00	5	1,100.00
160	2003	Measuring Board for Fish Length	Earth Corp.,	FS-400, Scaling Graduation: 400mm	482.00	5	2,410.00
161	2003	Measuring Board for Fish Length	Earth Corp.,	FS-1000, Scaling Graduation: 1000mm	975.00	2	1,950.00
162	2003	UV Sterizing Apparatus	Earth Corp.,	SANITRON/SS901MN, Sterilizer for Sea Water	5,533.00	3	16,599.00
163	2003	Compact PH Meter	HORIBA	B-212, Twin pH Meter	252.00	2	504.00
164	2003	Automatic Feeder	Fish Technica Co.	Clockwork, 3Kg-12Hour Type	325.00	20	6,500.00
165	2003	Vertical Pump	YASUDA	Stainless Steel Vertical Pump	2,689.00	2	5,378.00
166	2003	Floating Fish Culture Net Cages	Assembling	Steel Frame, 10 units	15,075.00	1	15,075.00
167	2003	Work Table SUS	AS ONE	Model: W-156S, Made of stainless steel	397.00	5	1,985.00
168	2003	PH Comparators	ADVANTEC	CP-3, Portable Type	293.00	1	293.00
169	2003	Portable DO Meter	METTLER TOLEDO	MO128-2M, DO Range: 0.01-19.99mg/L	1,770.00	1	1,770.00
170	2004	Live Fish Tank	Earth Corp.,	Live Fish Tank, Square Type, 1,000 Liter,	1,025.70	3	3,077.10
171	2004	Salinity Refractmeter	Earth Corp.,	NEW S-100, Measu. Range: 0～100‰	212.66	4	850.64
172	2004	Power Jetter, Water Washer	Earth Corp.,	SJE-1010MA, Compact Type	2,687.53	1	2,687.53
173	2004	Trash Engine Pump	Sakuragawa Pump	STR-801	2,120.80	2	4,241.60
174	2004	Trash Engine Pump	Sakuragawa Pump	STR-501	1,593.82	2	3,187.64
175	2004	PCR Thermal Cycler	TAKARA	TP600, Personal, Compact Type	7,574.08	1	7,574.08
176	2004	Centrifuge	HITACHI	CT-4D, Table Top Centrifuge	2,405.92	1	2,405.92
177	2004	Clean Booth	AS ONE	BIO-LABO NS-8AST	6,940.84	1	6,940.84
178	2004	Sterilizer	AS ONE	IT-2346, Can Volume: 20L	3,557.35	1	3,557.35
179	2004	PH Meter	YOKOGAWA	PH71-11-E-AA	683.10	1	683.10
180	2004	DO/PH Meter	HORIBA	D-55E + 9611-10D	1,088.36	2	2,176.72
181	2004	Micro Shifter	DALTON	Model: 503, Cartridge Type, 3 layer-sieves	24,538.30	1	24,538.30
182	2004	Impact Pulverizer	NAKAYASU	1P-2, 3-Phase, 380V, 50Hz, 2.2KW,	12,269.15	1	12,269.15
183	2004	Digital Video Camera	SONY	DCR-VX2001, Option: Accessory Kit	3,466.26	1	3,466.26
184	2004	LCD Projector	EPSON	EMP-0745, Brightness: 250lm, Wght: 1.8Kg	3,266.00	1	3,266.00
185	2004	Audio Set	TOA	ZW-780,/ZU-1800C	749.97	1	749.97

ANNEX 7 Local Cost Implementation by Japan　　G. Total : ¥88,636,000円

JFY 2000

Item of Expenditure	Period of Duration	Local Currency	Yen/Rp.	Japanese Yen
① Project Management Cost	September 2000 ~ March 2001	Rp.220,650,000	0.01269	¥2,801,000
② Field Activity Cost	October 2000 ~ March 2001	Rp. 77,500,000	0.01265	¥980,000
③ Field Activity (Baseline Survey) Cost	January ~ March 2001	Rp.160,000,000	0.01200	¥1,920,000
Total		Rp.458,150,000	0.01244	¥5,701,000

JFY 2001

Item of Expenditure	Period of Duration	Local Currency	Yen/Rp.	Japanese Yen
① Project Management Cost	April 2001 ~ March 2002	Rp.450,000,000	0.01220	¥5,490,000
② Field Activity Cost	July 2001 ~ March 2002	Rp.175,000,000	0.01200	¥2,100,000
③ Facility Arrangement Cost Term of Works: March ~ August 2002	(Planning & Execution Cost) (Direct Construction Cost)	Rp. 77,000,000 Rp.1,861,000,000	0.01290	¥25,000,000
Total		Rp.2,563,000,000	0.01272	¥32,590,000

JFY 2002

Item of Expenditure	Period of Duration	Local Currency	Yen/Rp.	Japanese Yen
① Project Management Cost	April 2002 ~ March 2003	Rp.385,000,000	0.01379	¥5,310,000
② Field Activity Cost	May 2002 ~ March 2003	Rp.368,088,000	0.01400	¥5,153,000
③ Facility Arrangement Cost	February ~ March 2003	Rp.147,437,000	0.01400	¥2,064,000
Total		Rp.900,525,000	0.01391	¥12,527,000

JFY 2003, first half year

Item of Expenditure	Period of Duration	Local Currency	Yen/Rp.	Japanese Yen
① Project Management Cost	April ~ September 2003	Rp.220,000,000	0.01390	¥3,060,000
② Field Activity Cost	April ~ September 2003	Rp.231,435,000	0.01400	¥3,240,000
③ Facility Arrangement Cost	August ~ September 2003	Rp.125,000,000	0.01400	¥1,750,000
Total		Rp.576,345,000	0.01397	¥8,050,000

JFY 2003, latter half year

Item of Expenditure	Period of Duration	Local Currency	Yen/Rp.	Japanese Yen
① Project Management Cost	October 2003 ~ March 2004	Rp.241,500,000	0.01342	¥3,240,000
② Field Activity Cost	October 2003 ~ March 2004	Rp.161,430,000	0.01400	¥2,260,000
Total		Rp.402,930,000	0.01365	¥5,500,000
JFY 2003 Grand Total		Rp.979,275,000	0.01384	¥13,550,000

JFY 2004

Item of Expenditure	Period of Duration	Local Currency	Yen/Rp.	Japanese Yen
① Project Management (Routine) Cost	April 2004 ~ March 2005	Rp.477,370,000	0.01220	¥5,836,000
② Field Activity (Extension, Tech. Develop.) Cost	April 2004 ~ March 2005	Rp.219,584,000	0.01200	¥2,635,000
③ Field Activity (Publicity) Cost	April 2004 ~ March 2005	Rp. 46,830,000	0.01300	¥609,000
④ Field Activity (2 Seminars) Cost	Aug. 10, 2004／March 23, 2005	Rp.123,500,000	0.01200	¥1,482,000
⑤ Field Activity (Baseline Survey) Cost	September ~ November 2004	Rp.161,330,000	0.01200	¥1,936,000
Total		Rp.1,028,614,000	0.01215	¥12,498,000

JFY 2005

Item of Expenditure	Period of Duration	Local Currency	Yen/Rp.	Japanese Yen
① Project Management (Routine) Cost	April ~ August 2005	Rp.158,920,000	0.011175	¥1,776,000
② Field Activity Cost	April ~ August 2005	Rp.163,650,000	0.011878	¥1,944,000
Total		Rp.322,570,000	0.011532	¥3,720,000

ANNEX 8 Allocation of Budget and Expenditure by Indonesia

1. Mankind:

Project Director	Director General, Directorate General of Aquaculture (DGA), Ministry of Marine Affairs and Fisheries (MOMAF)
Project Manager	Secretary of Director General of Aquaculture, DGA, MOMAF
Project Co-Manager	Head of Jambi Freshwater Aquaculture Development Center (BBAT Jambi), DGA

Counterpart of BBAT Jambi	Total 22
Freshwater Fish Breeding	3
Freshwater Fish Culture	5
Aquaculture Extension	8
Diagnosis of Fish Diseases	4
Others	2

Counterparts' allocation of the above table is at the time of the end of March, 2005

2. Equipment: Excluding furniture and office equipment, almost all technical equipment were provided by JICA.

3. Facilities: Offered free use of necessary facilities of BBAT Jambi and exclusive use of a office building for Japanese Experts.

4. Annual Budget of BBAT Jambi:

Unit : Rupiah

IFY 2000: April ~ December 2000 Total: Rp.6,179,707,000

Development Budget	Rp.291,283,000
Sector Program Loan (Construction Cost)	Rp.5,841,000,000
Project Counterpart Budget	0
Routine Budget	Rp.46,424,000

IFY 2001: January ~ December 2001 Total Rp.1,905,167,000

Development Budget	Rp.1,300,000,000
(Included Project Counterpart Budget)	(Rp.450,000,000)
Routine Budget	Rp.605,167,000

IFY 2002: January ~ December 2002 Total: Rp.4,403,419,000

Development Budget	Rp.4,000,000,000
(Included Facility Construction Budget)	(Rp.1,054,000,000)
(Included Project Counterpart Budget)	(Rp.454,000,000)
Routine Budget	Rp.403,419,000

IFY 2003: January ~ December 2003 Total: Rp.3,576,000,000

Development Budget	Rp.3,074,000,000
(Included Facility Construction Budget)	(Rp.1,424,000,000)
(Included Project Counterpart Budget)	(Rp.476,650,000)
Routine Budget	Rp.502,000,000

IFY 2004: January ~ December 2004 Total: Rp.3,807,061,000

Development Budget	Rp.3,200,000,000
(Included Facility Construction Budget)	(Rp.1,767,783,000)
(Included Project Counterpart Budget)	(Rp.448,425,000)
Routine Budget	Rp.607,061,000

ANNEX 9 Evaluation Grid (Five Criteria)

Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
Relevance	Was selection of the extension model areas appropriate?	How were the model areas selected?	The method for the selection of the model areas	Data of the study for the terminal evaluation by the experts, p6 Experts	Document review Interviews	26	At the beginning of the Project, the situation of aquaculture fields and change in the situation of aquaculture extension under the decentralization of authority were grasped through some surveys such as a baseline survey. The model areas were selected, considering technical aptitude and distance from BBAT Jambi, based on the results of the surveys. South Sumatra and Lampung Provinces does not have the model area due to the long distance from BBAT Jambi but the technical transfer to these provinces is covered by the seminars and trainings in the Project.
Relevance	Does the project purpose still conform to the present needs of the beneficiaries?	Does the project purpose conform to the fish farmers' needs?	Trend of fish farmers	Report on extension evaluation survey by the expert, p29	Document review	27	Small-scale fish farmers, whose main work is agriculture, are increasing the portion of freshwater aquaculture in their income to expect high-return even if it is high-risk. Hence, it seems that the project purpose conforms to the needs of the fish farmers.
			Opinion of experts, C/P, districts/provinces	Data of the study for the terminal evaluation by the experts, p3 Fishery staffs	Document review Interviews	28	Improvement of optimal techniques, that meet the characteristic of each area, and its extension work comfort to needs of local fish farmers because there is a strong demand for extension of aquaculture techniques in Sumatra, where freshwater aquaculture is not developed well.

Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
Relevance	Does the project purpose conform to development policy in Indonesia?	How is freshwater aquaculture project located in national development plan? What are the contents of the plan?	Clash program Master plan on fishery promotion National development plan in Indonesia Strategy of Ministry of Marine Affairs and Fisheries	①Data of the study for the terminal evaluation by the experts, p1 ②Data of the study for the terminal evaluation by the experts, p2 ③Data of the study for the terminal evaluation by the experts, p3	Document review	29	① It is expected that promotion of freshwater aquaculture lead to supply food stably and make opportunity for work, which was incorporated in the Clash Program, 1998. Department of Fishery went on the grounding for facilities of BBAT Jambi, which became a center for development and extension of freshwater aquaculture in the western part of Indonesia, based on the general plan for fishery promotion, 1995. ② In the action plan on fishery development in the national development plan, fishing management and aquaculture promotion are planning to acquire foreign currency through fishery export. Freshwater aquaculture is expected to supply high-quality protein for domestic consumption, make opportunity of employment in rural area and increase income of local farmers. ③ According to the strategic plan of Ministry of Marine Affairs and Fisheries in 2005, priority problems of aquaculture are 1) preparation for regulations on use of the surface of the water, 2) financial support to fish farmers, 3) expanding of the market for aquaculture produce, 4) technology, especially excellent techniques on seed production, and 5) preparation of aquaculture facilities.
		Does the project purpose conform to the development policy?	Opinion of head of BBAT Jambi Opinion of experts	Head of BBAT Jambi Data of the study for the terminal evaluation by the experts, p14	Interviews Document review	30	Indonesian government states that sustainable development of promotion of freshwater aquaculture lead to stable food supply, including high-quality protein, to local inhabitants, increase/stabilize income and make opportunity of employment in family-scale enterprises, whose main workers are farmers, and these results will achieve rural development. The government promotes freshwater aquaculture with different viewpoint from large-scale aquaculture, whose typical example is prawn aquaculture in brackish ponds.
Relevance	Does the Project conform to Japanese policy of ODA?	Which fields have priority in Japanese policy of ODA in Indonesia?	Japanese policy of ODA for Indonesia	Technical assistance guide in Indonesia, p1	Document review	31	JICA places importance on 1) promotion of development driven by investment of private sector, 2) reform of governance, 3) social development and poverty reduction, 4) environmental conservation, 5) assistance for peace and reconstruction. The item of 3) includes rural development and securing of food.

Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
		How is an aquaculture project located in Japanese policy of ODA in Indonesia?	Japanese policy of ODA for Indonesia	Technical assistance guide in Indonesia, p13	Document review	32	Assistance for sustainable aquacultute is one of the target of JICA in Indonesia to increase the domestic demand and to supply fishery produce at a low price.
Relevance	Is approach of the Project appropriate?	Was approach of the Project appropriate?	Opinion of experts, C/P	Data of the study for the terminal evaluation by the experts, p3	Document review Interviews	33	The extension strategy, which focused on fish farmers groups, made feedback of problems found in the monitoring to technical improvement, and led to show the results to the field.
		Is there any more proper approach for achievement of the project purpose?	Opinion of experts, C/P	Data of the study for the terminal evaluation by the experts, p15	Document review Interviews	34	DGA shows policy, which specifies model areas and supports extension activities under efficient cooperation with local governments in order to develop aquaculture industry, comprehensively.
Relevance	Worthwhileness of Japanese technical assistance	What are helpful matters particularly in the Japanese assistance?	Opinion of C/P, experts	C/P, experts	Interviews	35	Planning and handling way of fish in aquaculture works by Japanese staffs are useful for the C/P as well as the japanese techniques.
Relevance	Are benefit and cost shared impartially in fish farmers?	Is the benefit shared equally?	Benefit sharing system	Opinion of experts	Document review	36	Fairness of the Project is secured since the effect spread outside of the model areas. South Sumatra and Lampung Provinces does not have the model area due to the long distance from BBAT Jambi but the technical transfer to these provinces is covered through the extension and training activities in the Project.
		Is the cost shared equally?	Cost sharing system	Opinion of experts	Document review	37	The cost, which is shared by the Indonesian side, for the whole project activities is not so high.

Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
Summary						38	We can judge that the relevance of the Project is still high. It is clear that the project purpose conforms to the Indonesian development policy because some plans and their activities aim for same goal of the Project. The approach, which was conducted as technical development and extension service together, was valid because the extension service approach was useful to find technical problems in the field, and these problems were studied in the technical development approach. The effect of the Project was distributed fairly in the extension areas since the technical transfer to the provinces which have no model area was covered by the seminars and trainings in the Project.
Effectiveness	Does the Project achieve expected results of the project purpose?	How do the stakeholders evaluate the progress of the Project?	Opinion of experts, C/P	Data of the study for the terminal evaluation by the experts, p3	Document review Interviews	39	The extension activities progress smoothly so far though the development level differs with the period of the activities. Continuation of the activities in the model areas with the local governments and expansion of the extension area remain as subjects from now on.
Effectiveness	Have the outputs contributed to the realization of the project purpose?	How do the stakeholders evaluate contribution of each output to achieve the project purpose?	Opinion of experts, C/P	Data of the study for the terminal evaluation by the experts, p6	Document review Interviews	40	The extension strategy, which focused on core fish farmers or farmers' groups, contributed well to achieve the project purpose. Confidence between the fish farmers groups and the Project was established through the steady regular monitoring. In addition to these outputs, perseverance of the fish farmers contributed achievement of the project purpose.
Effectiveness	Have the important assumptions affected for process to achieve the project purpose?	Were fishery dept. of local government, extension officer and leaders of fish farmers under well cooperation and coordination?	Opinion of experts, C/P	Data of the study for the terminal evaluation by the experts, p3	Document review Interviews	41	After 2001, the movement of decentralization of authority was in earnest and the local government, that was main unit for the implementation of the extension work, plunged into the phase of reorganization, which caused confusion between the fish farmers due to disability of extension system.

Criteria	Evaluation Questions: Items	Evaluation Questions: Subitems	Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
Summary						42	The effectiveness of the Project is high. The project purpose is achieved fairly since the extension activities increased the number of fish farmers and their production, based on the standardized techniques of the Project. The effort of the experts and C/Ps led to the motivation of the fish farmers, which caused these results. The movement of decentralization of authority was considered as an unexpected matter and caused reformation of the extension system of the local areas in Indonesia. The Project obtained agreeable results on the extension activities under such a severe condition. Hence full participation of the local governments will assure to achieve the project purpose completely.
Efficiency	Was the input well managed and fully utilized for achieving the output?	Was there any problem in management or application of the input?	Opinion of experts, C/P	Data of the study for the terminal evaluation by the experts, p12	Document review Interviews	43	Equipment of the Japanese input are installed to each laboratory or production facility and used effectively with related equipment for the extension activities. The greater part of the periodical inspection, maintenance, management, mending, arrangement for repair and the payment is relied on the experts though the equipment is managed well by the C/P, who are assigned to each laboratory/facility for the maintenance.
Efficiency	Was timing of the input appropriate?	Was there any problem in timing of the input conducted by Japanese side?	Opinion of experts, C/P	①Data of the study for the terminal evaluation by the experts, p11 ②Data of the study for the terminal evaluation by the experts, p12	Document review Interviews	44	① Short-term experts were dispatched on good timing. ② Almost all equipment, that conforms to reality, was introduced on schedule and worked well to develop the activities efficiently.
		Was there any problem in timing of the input conducted by Indonesian side?	Opinion of experts, C/P	Data of the study for the terminal evaluation by the experts, p13	Document review Interviews	45	After a half year later from the beginning of the Project, dispute about land return by immigrants occurred in the site of BBAT Jambi, and it took four months to be solved completely with help of the district government and DGA. The construction of the facilities was delayed by the happening, and the main facilities were completed about a year later from the beginning of the Project.

Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
Efficiency	Were the quality, quantity, and cost of inputs appropriate?	Was there any problem about quantity, quality, or cost of the input conducted by Japanese side?	Opinion of experts, C/P	①Data of the study for the terminal evaluation by the experts, p11 ②Data of the study for the terminal evaluation by the experts, p12	Document review Interviews	46	① Long-term experts: The fields and the number of the experts were appropriate. The experts, who were dispatched at the beginning of the Project, could play active, that conformed to reality in their fields, as they had experience of technical assistance in Indonesia or Malaysia. Short-term experts: They were dispatched to proper fields, which were weak area for the long-term experts, in order to deal with the priorities. The period and times of the dispatches, which were adjusted to the necessity, were appropriate. ② The trainings in Japan made the trainees understand the Project deeply and management of the Project become smoothly after that. Almost all trainings of C/P brought the trainees expected result. The trainings offered not only opportunity to learn the techniques but also stimulation to their attitudes on work.
		Was there any problem about quantity, quality, or cost of the input conducted by Indonesian side?	Opinion of experts, C/P	Data of the study for the terminal evaluation by the experts, p13	Document review Interviews	47	In the beginning of the Project, four C/P were assigned but the activities continued to rely on effort of the experts because they were not full-time C/P, which caused serious effect for the short-term experts and implementation of the extension activities, especially. Formation of the C/P was reconsidered and the current formation was established up to around the mid-term evaluation since the technical staffs were increased by substantial new graduates in April 2003. Now, there are many C/P in each field but they are still part-time C/P. Hence, technical transfer tends to delay because the experts cannot transfer their techniques to the same C/P continuously, which remains as a problem. Regarding lack of equipment in the breeding facilities and the laboratories, the experts improved/repaired with the initiative, and the supplemental construction was implemented by the Indonesian side. The construction, with which Indonesian side could not deal, was implemented by the JICA budget of foundation work.
Efficiency	Was there any communication problem in stakeholders?	Have the JCC and the supporting committee in Japan worked appropriately?	Opinion of experts, C/P	Experts, C/P	Interviews	48	The JCC worked appropriately as the unit, which made the final decision. The supporting committee workd well, guidance on fish disease, selection of the experts and introduction of institutes for the C/P training in Japan, for example.

Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
		Were progress or problems of the activities dealt well through proper sharing of information in stakeholders?	Opinion of experts, C/P	Experts, C/P	Interviews	49	- Delay of the facilities construction in BBAT Jambi was used for enhancement of primary surveys for the extension activities. - Decentralization of authority was dealt with the direct approach for the fish farmers or farmers' group in the extension activities. - KHV disease was dealt with dispatch of short-term experts for fish disease.
Efficiency	Have not important assumption affected for the input or the output?	Did fishery department of local government show understanding and cooperation for the Project continuously?	Opinion of experts, C/P	Data of the study for the terminal evaluation by the experts, p6	Document review Interviews	50	There were shortage/lack of understanding of the project activities in the local fishery departments in the beginning of the activities in the model areas. Shortage of C/P and financial difficulties in the local government also hindered the project activities.
		Did not any unexpected important assumption occur?	Opinion of experts, C/P	Data of the study for the terminal evaluation by the experts, p6	Document review Interviews	51	The land problem occurred and delayed the construction of the facilities in the beginning of the Project. This problem and the occurrence of KHV disease and the decentralization of authority are considered important assumption. Lack of equipment for the completed facilities, telephone connection and management ability/system of BBAT Jambi also hindered the project activities.

Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
Summary						52	The efficiency of the Project was not so high owing to the delay of the construction for the facilities, the occurrence of the land problem, the outbreak of KHV disease and the changing of the extension system of the local governments. These problems are considered as unexpected matters for the efficiency of the Project. On the other hand, the appropriate countermeasures to the problems were conducted by the Project as follows in order to increase the efficiency. 1) The enhancement of the primary surveys for the extension service was carried out during the delay of the construction for the facilities. 2) The Project made effort to solve the land problem in cooperation with the provincial and central government. 3) The direct approach to the fish farmers or farmers' groups was applied in the extension activities since the extension system was changed and the local governments played a role in the extension, partially. 4) The dispatch of the short-term experts, trainings for C/Ps and guidance for fish farmers on fish diseases were implemented as the countermeasures to the outbreak of KHV disease.
Impact	Can we expect to achieve the overall goal in the future?	How do the stakeholders consider achievement of the overall goal?	Opinion of experts, C/P	①Data of the study for the terminal evaluation by the experts, p3 ②Data of the study for the terminal evaluation by the experts, p14	Document review Interviews	53	① The cases of the activities in the model areas are the first step to activate extension work of the local government and to build extension system, and expected to lead to the overall goal. ② The production in the project area is increasing steadily. The extension activities of promotion of freshwater aquaculture contributes well to increase the production in Sumatra, where freshwater aquaculture is not developed enough though the potential is high.
Impact	Was any unexpected impact observed from policy aspects?	(Positive and negative impact)	Opinion of experts, C/P	①Data of the study for the terminal evaluation by the experts, p3 ②Data of the study for the terminal evaluation by the experts, p6	Document review Interviews	54	① The cases of the activities in the model areas increased opportunities of collaboration and exchange/sharing of information with the extension departments in the local governments. The cases activated aquaculture extension and showed an example of extension system in the local governments. ② The promotion of aquaculture, based on power of fish farmers, succeeded to gain interest of the local governments, and the contribution for building of the extension system is expected.

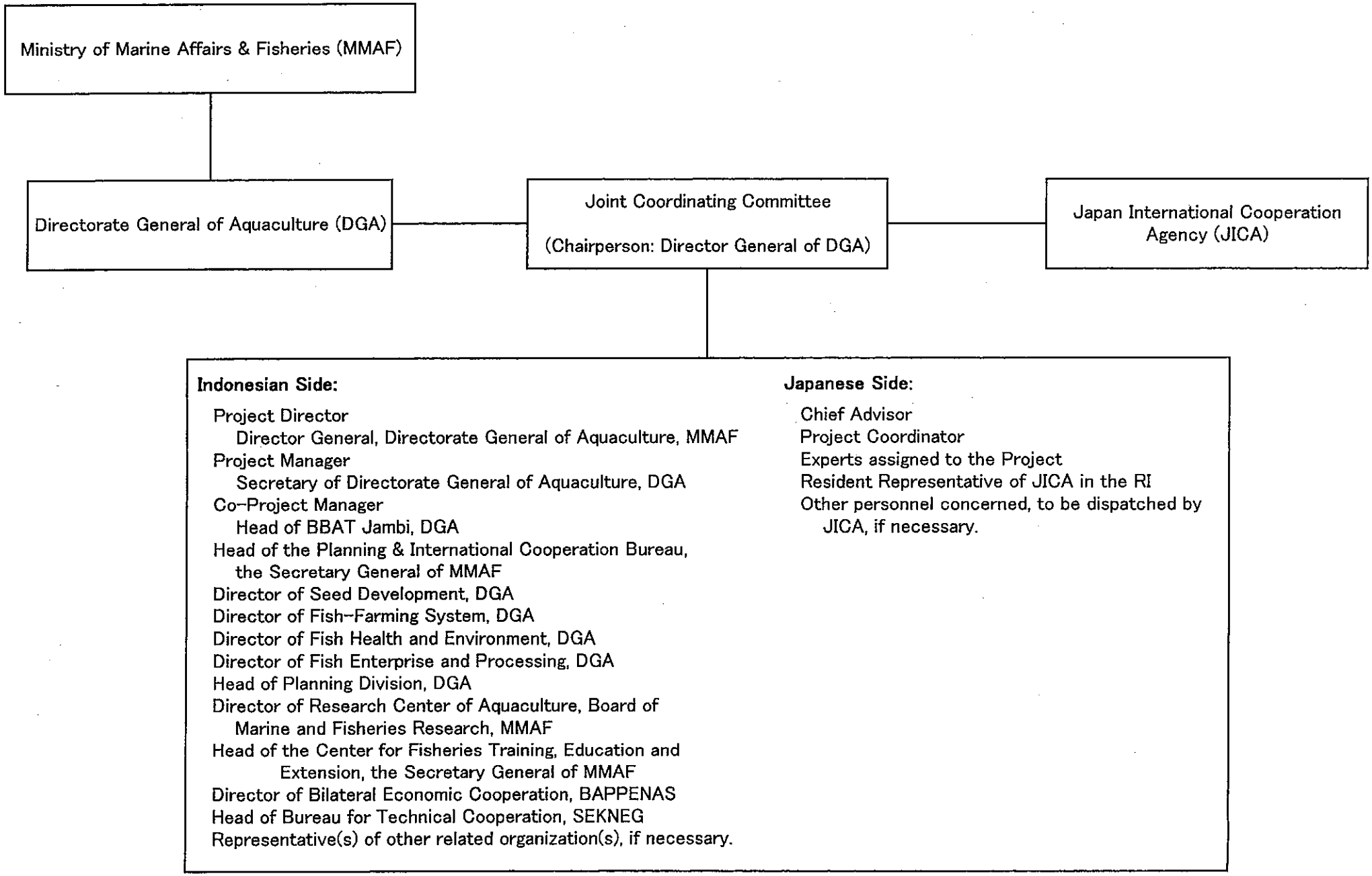
Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
Impact	Was any unexpected impact observed from organizational or institutional aspects?	(Positive and negative impact)	Opinion of experts, C/P	①Data of the study for the terminal evaluation by the experts, p3 ②Data of the study for the terminal evaluation by the experts, p6 ③Data of the study for the terminal evaluation by the experts, p14	Document review Interviews	55	① Showing the cases and results of the activities in the model areas promoted extended effect between fish farmers groups. ② Recording of aquaculture diaries, verified trials by participation approach and study tours of aquaculture sites were carried out by fish farmers with their initiative. The monitoring of the distributed broodstock promoted independent production of the second generation-broodstock . ③ DGA is grouping extension strategy not only in Sumatra but Java and Kalimantan, referring to the method of extension model area. They request Japan to continue the Project, that purposes are making of extension model utilized fish farmers groups and strengthening of extension system in the local government, in order to develop the extension activities in the whole country.
Impact	Was any unexpected impact observed from technical aspects?	(Positive and negative impact)	Opinion of experts, C/P	①Data of the study for the terminal evaluation by the experts, p9 ②Data of the study for the terminal evaluation by the experts, p15	Document review Interviews	56	① It was monitored in communities around the model areas that some fish farmers recorded aquaculture activities, following the distributed aquaculture diary. ② Trainees and research students were increased and visits, requests and consultation are asked frequently from outside of the model areas to BBAT Jambi. Reception of fish disease researchers for actual technique practice contributed to increase technique level of diagnosis on fish disease in the eastern and central part of Indonesia. Some freshwater aquaculture centers began to receive the success cases in the Project through holding of the networking seminars.
Impact	Was any unexpected impact observed from environmental aspects?	(Positive and negative impact)	Opinion of experts, C/P	Data of the study for the terminal evaluation by the experts, p18	Document review Interviews	57	The sewage disposal from the laboratories was revised as a measure for holding the bad influence, which the project activities may cause to circumstances, at a minimum.

Criteria	Evaluation Questions: Items	Evaluation Questions: Subitems	Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
Summary						58	Strong impact is observed in the field of technical development and the extension service, respectively. First, the Project made possible full-scale research and development on freshwater aquaculture in Sumatra. BBAT Jambi is the first national center in the area and the activities started with the preparation of the organization and the facilities. The Project trained a lot of young researchers and students, which would lead to aquaculture development in the near future. Secondly, the Project has been carrying out the extension service, which can guide farmers concretely since the experts and C/Ps understand their needs. It was the first time for the fish farmers to receive answers in detail to their questions. The service promoted the motivation of the core farmers and they convey the introduced techniques to other farmers over the border of the extension model areas. Thus it is expected that the expansion of the project-standard techniques will contribute to achieve the overall goal.
Sustainability	Have the implementing organizations secured management capability for continuing the activities?	Were necessary staffs for the activities trained, and the person in charge decided in relative departments?	Opinion of experts, C/P	①Data of the study for the terminal evaluation by the experts, p12 ②Data of the study for the terminal evaluation by the experts, p13 ③Data of the study for the terminal evaluation by the experts, p16 ④Data of the study for the terminal evaluation by the experts, p17	Document review Interviews	59	① Elevation of motivation in C/P who came back from the training in Japan promotes their awareness as core staffs in BBAT Jambi. ② It is difficult to increase C/P's motivation since there is no system for evaluation on the extension activities. Evaluation system of public officers should be modified such as increasing of opportunities to present their results. ③ DGA is trying to expand aquaculture extension, which decides the model areas, in the whole country. The local governments are groping for an efficient extension system. The extension systems of the local governments are not yet established, hence, the extension activities are conducted temporarily under the condition of the local governments. ④ The C/P's ability of management and administration of the organization, negotiation with the central/local governments, adjustment and planning for development of the extension activities, and maintenance and management of the facilities and equipment are not so high that it takes more time for them to stand on their own feet.

Criteria	Evaluation Questions		Information / Data	Data Sources	Data Collection Methods	No.	Result of Survey
	Items	Subitems					
Sustainability	Have the implementing organizations secured necessary financial resources for continuing the activities?	Does the department in charge of budget secure necessary financial resources?	Opinion of experts, C/P	①Data of the study for the terminal evaluation by the experts, p12 ②Data of the study for the terminal evaluation by the experts, p17	Document review Interviews	60	① There is not enough system to prepare budget of management and maintenance for equipment in Indonesian budgetary system. Therefore, management and maintenance of the equipment in BBAT Jambi is not clear. ② Regarding the administration of the Project, Japanese budget took a big role. Financial aid of DGA to BBAT Jambi is a crucial issue for management and maintenance of the equipment and collaboration with the districts.
Sustainability	Is necessary technology for continuing the activities disseminated in fish farmers?	Are necessary system and plan for the extension work prepared?	Opinion of experts, C/P	Data of the study for the terminal evaluation by the experts, p17	Document review Interviews	61	It is expected that the extension measure, introduced in the project, will be applied to extension approach by DGA and the local governments, and expanded. On the other hand, the assistance of technical transfer, including capacity building of C/P, does not seem to be enough. It is necessary for C/P to increase their ability of understanding of problems at an aquaculture site and planning of the countermeasures. The goal is only one more step since C/P's awareness and motivation are increasing. They also have to increase their techniques on fish diseases, which are crucial skill for the extension service. Regarding fish diseases, the environment around aquaculture sites should be conserved.
Summary						62	The sustainability of the Project is not so high yet. From now on, the Project should strengthen the technical transfer to the C/Ps in order to secure their independent activities because the C/Ps do not have enough abilities for the planning and administration. They will have to maintain the machinery and equipment in BBAT Jambi, and train their junior staffs, who will be planned to increase, by themselves after the end of the Project. They also have to increase their techniques on fish diseases, which are crucial skill for the extension service. Regarding fish diseases, the environment around aquaculture sites should be conserved. Collaboration with the extension officers in each district is indispensable for the expansion of the extension activities. Therefore more participation of the local governments in the activities including the assignment of the staff concerned and appropriate cost share is expected as well as the establishment of the extension system.

ANNEX 10

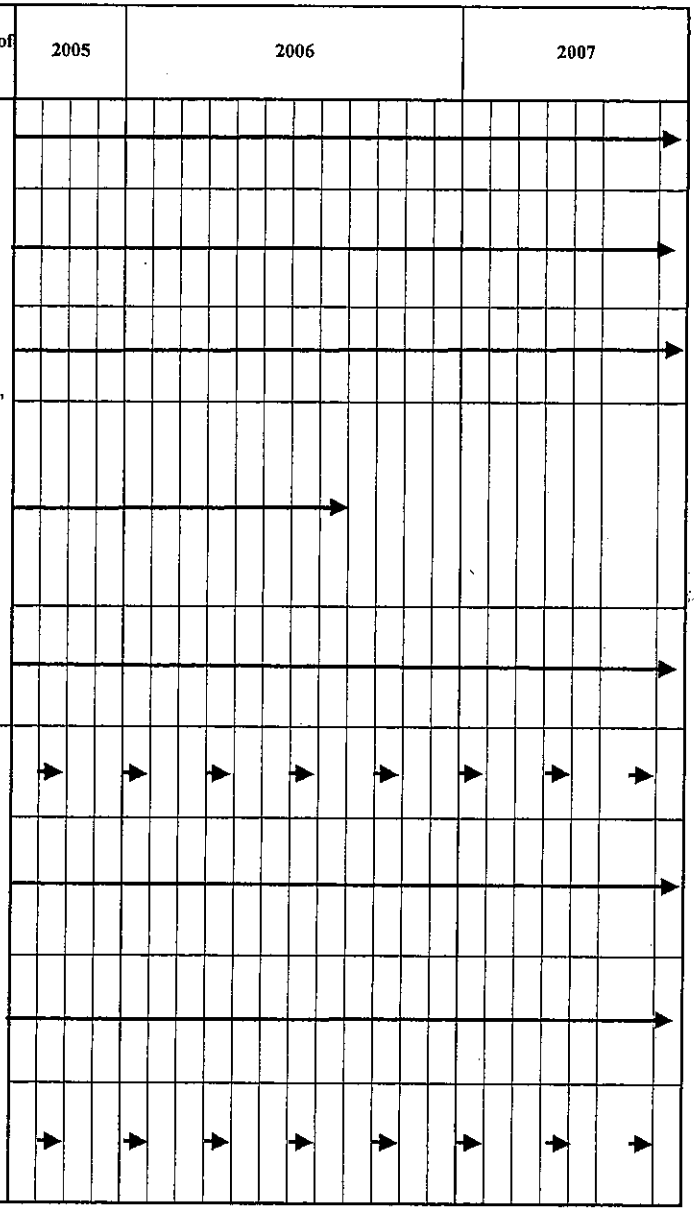
ORGANIZATION OF THE PROJECT



ANNEX 11 Tentative Schedule of Activities after August 2005

"Outputs" and "Activities" are picked up from the Project Design Matrix (PDM)

"Outputs" of 2 Years Extension Period	"Activities" of 2 Years Extension Period	Operation of Activities by Japanese Experts and Indonesian Counterparts of BBAT Jambi	Operation of Activities by Indonesian Counterparts of BBAT Jambi (Self Reliant Operation)	Japanese Inputs (Fields of Japanese Experts)
1. High - quality broodstock of existing freshwater fish culture species is supplied to seed production units.	1-1. Standardize technology on broodstock production with high quality.	To establish the methods of fish disease protection and treatment	To enhance planned production of the broodstock	①Long Term Expert "Fresh Water Aquaculture" ③Short Term Expert "Fish Disease"
	1-3. Supply the above broodstock to the seed production unit.		To continue the supply of the broodstock to the fish farmer To follow up the disseminated broodstock at the fish farmers	
2. Quality of aquaculture products (seed and grow-out fish) of existing freshwater fish culture species is improved.	2-1. Feed back the result of the monitoring activities to formulate the standard of the technology.	To monitor fish farmers and feed back the technologies to the extension activities with local governments in the 2 model site		
	2-2. Standardize the production technology of seed and grow-out fish by species and prepare its manual.		To implement the experiments which are not conducted in the project period(if the problems of KHV are solved during the extension period of the Project) To apply new technologies to the manuals during the extension period	
	2-3. Produce seed and grow-out fish with application of the project standard	To establish the methods of fish disease protection and treatment To establish the technologies such as polyculture of freshwater prawn	To enhance planned production of seed and grow-out fish	
4. Effective extension models adjusted to the local conditions are established.	4-3. Carry out training programs.	To continue the training that meet the needs of the fields of the extension activities		②Long Term Expert "Aquaculture Extension" ③Short Term Expert "Fish Disease"
	4-6. Monitor operational conditions and situations of fish farmers in model area and give advice.	To monitor and give advice for the activities of the 2 model sites with local governments and BBAT Jambi as a "On the Job Training" for the extension activities		
	4-10. Support and collaborate on the extension work which are implemented by local government	To monitor and give advice for the activities of the 3 model sites with local governments and BBAT Jambi as a "On the Job Training" for the extension activities		
5. The stakeholders in the project area are more interested in adopting freshwater	5-1. Conduct activities for information exchange among local government and the project side		To continue the networking seminars for the local governments	



実施協議調査団報告書

第１章　実施協議調査の概要

1-1.　調査団派遣の経緯と目的

本調査は、インドネシア淡水養殖振興計画の延長に際し、インドネシア国海洋漁業省との協議を通じ、協力期間延長の枠組みについて確認を行うとともに、合意・確認事項を R/D に取りまとめのうえ署名・交換を行うことを目的とする。具体的な調査内容は下記のとおり。

・協力期間について
・プロジェクト目標・成果・活動について
・プロジェクト実施体制について
・日本側及びインドネシア側からのプロジェクトへの投入について
・プロジェクト評価について
・免税措置について　など

1-2.　調査団構成と調査期間

（1）調査団の構成

・　戸塚　眞治　（総括）　　独立行政法人国際協力機構　インドネシア事務所　次長
・　堺水尾　真也（協力企画）　独立行政法人国際協力機構　農村開発部水産開発チーム　職員

（2）調査期間（2005 年 7 月 20 日～2005 年 7 月 27 日）

月	日	曜日	行　　程	宿泊地
7	20	水	成田（11:25）→ ジャカルタ（16:50）　JL725	ジャカルタ
	21	木	09:00　JICA インドネシア事務所との打ち合わせ 10:30　在インドネシア日本国大使館表敬 14:00　海洋漁業省養殖総局表敬及び R/D 予備協議 16:30　JICA インドネシア事務所との打ち合わせ	同上
	22	金	ジャカルタ（10:05）→ ジャンビ（11:15）　7P-541 13:30　ジャンビ淡水養殖開発センター見学 15:00　ジャンビ淡水養殖開発センター所長との意見交換 16:00　タンギット・バル村パティン養殖状況見学	ジャンビ
	23	土	08:50　ムアラジャンビ県公営ふ化場見学 10:10　バタンハリ県種苗生産農家見学 12:45　スナニン村見学（セナニンジャヤ） 14:15　ルブックルソ村見学（パティンジャヤ）	同上
	24	日	06:15　ジャンビ市場見学 ジャンビ（11:45）→ ジャカルタ（12:55）　7P-542 16:00　団内打ち合わせ	ジャカルタ
	25	月	10:00　海洋漁業省養殖総局との R/D 最終協議 13:30　団内打ち合わせ	同上
	26	火	11:00　R/D 署名交換 15:30　JICA インドネシア事務所報告 17:00　在インドネシア日本国大使館報告 ジャカルタ（22:35）→	機中泊
	27	水	→ 成田（07:55）　JL726	―

第２章　調査結果

2-1.　海洋漁業省養殖総局との協議

7/21 の海洋漁業省養殖総局表敬時においては、総局長並びに同次官と協議を行い、延長部分のプロジェクト枠組み内容の確認等を行った。

その席で養殖総局長より、今後のプロジェクト延長では過去の 5 年間でプロジェクトが何を実施し、その結果がどうなっているかということの検証と同時に、今後プロジェクト・サイトではどのような可能性があり、どういった技術開発が求められるのか、といった観点からの検証も重要であるとの見解が示され、具体的に現地には商業的価値が高いにもかかわらず、未だ養殖技術が確立されていない魚種が存在するとのコメントがあった。また養殖総局長より、本年 40 億ルピア（大まかに約 4400 万円）であったジャンビ淡水養殖開発センターに対する年間予算を、来年度には 60 億ルピア（同約 6600 万円）に増額する予定である旨が表明され、養殖総局として本プロジェクトに並々ならぬ期待と、オーナーシップをもって取り組んでいる旨が強調されたほか、ジャンビ淡水養殖開発センターの技術改良・開発業務をさらに促進させる必要があることから、このことを今回署名交換予定の延長 R/D に記載するプロジェクト枠組み内容に明記したいとの要望があった。しかしその後の協議の結果、本件は延長プロジェクトの「成果」レベルには明記されていないものの、プロジェクト目標「小規模養魚家が活用できる適切な淡水養殖技術が開発され普及活動が強化される」の内容や延長部分における個別の活動内容に含まれることから、プロジェクトの枠組みの変更を行わず、R/D の「Other Matters」にプロジェクト実施に際しての留意点として取りまとめることとした。

一方、貫山専門家よりジャンビ淡水養殖開発センター施設の保守管理に必要な経費が、現状ではインドネシア側から必ずしも時期的・金額的に十分手当てされていない状況であることから改善を申し入れたところ、養殖総局長より留意する旨回答があった。

また、養殖総局長からは、養殖総局のスタッフを視察型研修で日本に 2 名派遣したいと考えていることと、沿岸住民の生計向上と一部輸出産品の生産といった観点から貝類養殖にかかるプロジェクト実施に興味を持っているとのコメントがあった。

一方 7/25 の海洋漁業省養殖総局との R/D 最終協議では、関係する総局内の各局の担当職員と、国家開発計画庁（BAPPENAS）から水産担当職員が集まり、RD 案の最終検討を行った。ここでは基本的なプロジェクトの枠組みに関して様々な質疑が行われたが異論はでず、終了時評価調査の際にミニッツで確認された延長のプロジェクト内容に関して、大筋で理解が得られたようであった。また、7/21 の意見交換時にも懸案となっていたジャンビ淡水養殖開発センター施設の保守管理に必要な経費については、R/D 内で明文化し、インドネシア側の積極的な対応を期待することとなった。

以上の協議結果を踏まえ、7/26 の 11:00 より海洋漁業省養殖総局において、海洋漁業省養殖総局長と戸塚団長の間で本協力にかかる延長の R/D 署名・交換を行った。

2-2.　プロジェクト・サイト見学結果

（1）　ジャンビ淡水養殖開発センター（BBAT-Jambi）での見学等

ジャンビ淡水養殖開発センターで、センター施設とプロジェクト実施状況の見学と、センター所長との意見交換を行った。センター施設とプロジェクト実施状況の見学においては、整然とした広大な場内に設置されている大小 50 以上の池で様々な活動が実施されており、その中でカウンターパートが活躍をしている様子を目にすることができた。また餌料や魚病に関連する施設や各種実験分析機器も充実しており、5 年間のプロジェクト活動を通じて投入された資機材は、適切

に管理され使用されていた。

同センターでは、ボゴール農科大学などの学生の受け入れも行っており、センター内のあいている施設を用いた試験研究活動を行ったり、また地元の高校生や農民を対象とした実習や研修等も行ったりしているとのことであった。同センター内には、そのほか図書館や研修生用の宿泊施設なども設置されており、既存施設と 5 年間のプロジェクト活動を通じて整備された各種資機材を用い、プロジェクト活動が活発に実施されている様子を目にすることができた。さらに同センターは地域養魚家への種苗の生産販売も行っており（3-5cm ティラピア種苗価格は 1 尾あたり 100 ルピア（おおまかに約 1.1 円））、ある一定以上の売り上げを達成すると以降の売上金はセンターの運営費や職員のボーナスとして還元される仕組みとなっているとのことで、見学当日にも地域の養魚家が種苗の購入にセンターを訪問している様子なども見かけられた。

しかし一方では、センター内には施設の維持管理にも使用可能なワークショップも設けられているものの、専従のスタッフが配属されていない状況にあり、今後のセンターにおける資機材・施設のメンテナンス体制の確立が急務であるとの印象を受けた。

見学に引き続いて行ったセンター所長との意見交換では、プロジェクト活動によりカウンターパートが順調に育成されており、その結果センター内の他のスタッフにも良い波及効果が現れている旨コメントがあったほか、今後は技術的分野だけではなく管理・運営部門に関する支援も必要であるとのコメントがあった。具体的には、管理運営のためのスタッフを本邦研修に出したいとのことであったため、不可能ではないものの延長期間はプロジェクト本体の 5 年間に残された課題の達成に集中すべきであると考えられることから、本邦研修についてもセンターの管理運営ではなく、残された課題に関連する分野とすることが望ましい旨こちらからコメントを行った。その他所長から、7 月中旬を過ぎた現在で承認された 2005 年度予算の 20%相当額しか引き出すことができていない状況であり、この仕組み※のために効率的な事業運営が困難であるとの見解が示された。

(2)　プロジェクト周辺サイトでの見学等

ジャンビ淡水養殖開発センターの周辺に存在する数ヵ所のプロジェクト周辺サイトを訪問し、インドネシア（スマトラ島）における淡水養殖の状況についての見学を行った。

訪問を行った地域では、もともとバタンハリ川などでの漁獲漁業やゴム採集、農作物栽培や木材伐採などを生業として従事していた人が多く（推測平均月収約 100 万ルピア（おおまかに約 11,000 円））、淡水養殖は生計の多角化の一環として取り組み始めたとのことであったが、今回訪問を行った地域では、もともとの生業から淡水養殖のほうへ軸足をシフトさせているという養魚家が多く、中には養殖だけで月 155 万ルピア（約 17,200 円）の月収がある人もいた。

今回は、日程の関係から現地でうまく行っている事例のみの見学となったとのことであったが、成功している村または地域ではクロンポックがその中心的役割を果たしている様子が見受けられた。クロンポックは、日本で言う無尽講（頼母子講）の機能を有する地域住民による組合組織であり、一般的には同業者同士が集まり、組合を形成することにより集団による集荷・出荷，仲買人との価格交渉，資機材の共同購入・使用等を可能とし、効率的な養魚運営に大きく貢献していた。今回見学を行ったのは養魚者が集まり餌料製造のクロンポックを組織していた事例、バタンハリ川におけるパティン箱生簀養魚者がクロンポックを組織していた事例（パティンジャヤ）、さらに同じくバタンハリ川におけるパティン箱生簀養魚者がパティン燻製製造のクロンポックを組

※　予算の引き出しに関しては、多額の予算を一度に配分してしまうと、様々な問題が生じるとの中央政府の過去の反省に基づき、本年度と来年度に限り試行的に段階的にしか予算を引き出せない制度が実施されているとのことであった。ちなみにインドネシアの予算年度は 1 月から 12 月。

織している事例（セナニンジャヤ）などであった。各クロンポックにより、それぞれ入会資格や組合員の規則などを設定しており、基本的には同じ地域に住む顔見知り通しが組合を形成しているようであった。また地域（県）の普及員も、このクロンポックを普及活動にうまく取り込んでおり、当日も我々が訪問した際に、普及員がクロンポックへの様々な情報を伝達する役割を果たしている様子を見ることができた。さらに活動が積極的であるクロンポックの中には、州政府などから表彰されたり、資機材の供与を受けていたりしているところもあり、援助の受け皿としても重要な役割を担っていると思われる。

しかしながらクロンポックの活動は、リーダーの意識いかにかかっている部分もあると思われ、クロンポックの形成を支援するだけでは不十分であり、いかにクロンポックでの活動を持続させるかという点が重要であると思われた。プロジェクトではこのクロンポックを通じた普及活動にも力を入れており、クロンポックの中心人物とも良好な関係を築いており、こういった中心人物にジャンビ淡水養殖開発センターが開催する各種研修に参加してもらい、普及効果の拡大を図っているところである。

一方で養魚者に種苗を提供する種苗生産者では、今回県による公営の施設並びに家族経営の民間種苗生産業者の見学を行った。見学を行った両者ともにティラピア（赤色）の種苗生産を中心に行っており、一部でパティンの種苗生産も行っているとのことであった。種苗の価格は両者ともに３～５㎝で１尾約 80～100 ルピア（大まかに約１円）であり、現状のところ需要に対する供給のバランスは取れているとのことであったが、民間の種苗生産者はさらなる需要を掘り起こし、事業を拡張したいとのことであった。ちなみに当日訪問を行った民間の家族経営での種苗生産業者は、月に 800 万ルピア～900 万ルピア（おおまかに約 88,000 円～100,000 円）を販売するとのことで、家族以外に２名の作業者を雇用しているほか、自宅の新築工事を実施中であった。

一方、県公設の種苗生産施設では、中央政府から州を通さず県に配分された予算を用い、池の大規模改修工事を実施済みであり、現在においても餌料製造プラントを建築中であった。プロジェクトでは、両者に対し作成したマニュアルを配布したり、研修に参加してもらうなどして技術的援助を行っているものの、今後の課題としては、両者ともに種苗生産に用いる良質な親魚はプロジェクトからの供給を受けていることから、良質親魚の自家生産に取り組むこととのことであった。

今回の見学を通じて、ジャンビ周辺の限定的な視察結果であったが、プロジェクトにおける普及活動は順調に推移しており、今後のさらなる発展が期待されるとともに、一方では周辺 ASEAN 諸国で実施中の同様プロジェクトにおけるモデル事例となりうるものであったと考えられる。また地方分権化の推進状況に関しては、州と県のデマケーションがいまだ明確化されておらず、様々な事業が双方により調整されることなく実施されている印象を強く受け、今後は両者の明確な役割分担と、その分担内容に応じた支援を実施されることが、プロジェクトにとっても、現地養魚家にとっても有益なことであると思われた。

(3)　ジャンビ市場見学

ジャンビ市内に設置されている市場を、水産物売り場を中心に見学した。市場内では、主として農産品と水産物が扱われており、肉類は鶏肉を扱う店が数店あるだけであった。

水産物を扱っている店は海産物を扱う店と、淡水魚を扱う店に大きく分けることができ、海産物を扱う店のそのほとんどが、鮮魚を冷凍したものを解凍し、販売を行っていた。当日市場で販売されていた海産物は、アジ・サバ・イカ・ミルクフィッシュ・カツオ等であり、価格は Kg あたり 15000～18000 ルピア（大まかに約 166～200 円）であった。また一部ではあるが、冷凍せず氷水で運搬されてきたものや干物に加工された海産魚や赤貝などの貝類の販売も行われていた。

一方淡水魚では、そのほとんどが活魚の状態で販売されており、主に扱われているものはパティン・ティラピア（赤・黒）・ライギョであり、見学を行った当日に鯉はまったく見られなかった。そのうち、特にティラピアは小さな水槽内に水を満たし、遊泳させている状態で販売を行っているものが多く、ポンプを使って水を循環させ曝気をしながら販売している店もあった。価格は、養殖パティンで Kg あたり 9,000 ルピア（おおまかに約 100 円）、養殖ティラピアは赤色・黒色ともに Kg あたり 12,000～13,000 ルピア（同約 133～144 円）、ライギョは天然ものが Kg あたり 25,000 ルピア（同約 277 円）、養殖ものが 20,000 ルピア（同約 222 円）であった。また淡水魚に関しても、一部で干物を販売している店や、ライギョの皮をむいてフィレにしてからすり身に加工して販売している店もあった。

別添資料１．

主要面談者

（1）海洋漁業省養殖総局
・ Dr. Made L. Nurdjana　Director General of Aquaculture
・ Dr. Anto Sunaryanto　Secretary for Director General of Aquaculture
・ Mr. Tri. H　Staff of Seed Development
・ Mr. Abdoh　Staff of Farming System
・ Ms. Maya　Staff of Planning Division

（2）国家開発計画庁（BAPPENAS）
・ Mr. Roby Fadillan　Staff of Directorate of Marine and Fisheries

（3）ジャンビ淡水養殖開発センター（BBAT-Jambi）
・ Mr. Ceno Harimurti Adi　Head of BBAT Jambi
・ Mr. Mimid A. Hamid　Staff of BBAT Jambi
・ Mr. Wawan Cahyono　Staff of BBAT Jambi

（4）スカブミ淡水養殖開発センター（BBAT-Sukabumi）
・ Mr. Muskur　Head of BBAT Sukabumi

（5）タンギット・バル村
・ Mr. Baso Patolay　クロンポック代表

（6）ムアラジャンビ県公営ふ化場
・ Mr. Coco Suciarsa　場長

（7）バタンハリ県種苗生産農家
・ Mr. Sabidi　種苗生産農家

（8）スナニン村
・ Mr. Dahlan A.R.　セナニンジャヤ（クロンポック）代表

（9）ルブックルソ村
・ Mr. M. Samanz　パティンジャヤ（クロンポック）代表

(10) 在インドネシア日本国大使館
・ 川口　大二　書記官

(11) JICA 関係者
・ 戸塚　眞治　JICA インドネシア事務所次長
・ 大原　克彦　JICA インドネシア事務所企画調査員
・ 貫山　義徹　淡水養殖振興計画チーフアドバイザー
・ 斎藤　悦男　淡水養殖振興計画業務調整
・ 高野　昌和　淡水養殖振興計画淡水魚種苗生産分野専門家
・ 丹羽　幸泰　淡水養殖振興計画養殖普及分野専門家

別添資料２．

プロジェクト延長 R/D

THE RECORD OF DISCUSSIONS
ON
THE EXTENSION OF THE JAPANESE TECHNICAL COOPERATION
FOR
THE FRESHWATER AQUACULTURE DEVELOPMENT PROJECT
IN
INDONESIA

With regard to the Japanese technical cooperation for the Freshwater Aquaculture Development Project in Indonesia (hereinafter referred to as "the Project"), based on the Record of Discussions signed in Jakarta on March 29, 2000, terminal evaluation of the Project was conducted jointly with both Japanese and Indonesian teams in Jakarta on April 28, 2005.

Based on the result of terminal evaluation, the Japanese Project Design Team (hereinafter referred to as "the Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") headed by Mr. Shinji Totsuka, was dispatched in order to examine the necessity of extension of the Project term through a series of discussions with the concerned authorities of Indonesia.

As results of these discussions, both sides agreed to recommend to their respective governments the implementation of the extension of the Project along the lines described in the document attached hereto.

Jakarta, July 26, 2005

Mr. Shinji Totsuka
Leader,
Project Design Team,
Japan International Cooperation Agency
(JICA)
Japan

Dr. Made L. Nurdjana
Director General,
Directorate General of Aquaculture (DGA),
Ministry of Marine Affairs and Fisheries
(MMAF)
Indonesia

THE ATTACHED DOCUMENT

I. TERM OF COOPERATION

The duration of the extension of the Japanese technical cooperation for the Project will be two (2) years from 28 August, 2005.

II. SCOPE OF THE COOPERATION

(1) OUTPUTS AND ACTIVITIES OF TECHNICAL COOPERATION

< OUTPUTS >

Outputs which has to be completed by the end of the extension period of the Project are followings. These are 1, 2, 4 and 5 of "Project Outputs" that is mentioned in the Project Design Matrix (hereinafter referred to as "PDM") as ANNEX 1 and not accomplished by the Project until August 2005.

1 High quality broodstock of existing freshwater fish culture species is supplied to seed production units.
2 Quality of aquaculture products (seed and grow-out fish) of existing freshwater fish culture species is improved.
4 Effective extension models adjusted to the local conditions are established.
5 The stakeholders in the project area are more interesting in freshwater aquaculture.

< ACTIVITIES >

Activities which has to be completed by the end of the extension period of the Project are followings. These are 1-1, 1-3, 2-1, 2-2, 2-3, 4-3, 4-6, 4-10 and 5-1 of "Project Activities" that is mentioned in the PDM as ANNEX 1 and not accomplished by the Project until August 2005.

1-1. Standardize technology on broodstock production with high quality.
1-3. Supply the above broodstock to the seed production unit.
2-1. Feed back the result of the monitoring activities to formulate the standard of the technology
2-2. Standardize the production technology of seed and grow-out fish by species and prepare its manual.
2-3. Produce seed and grow-out fish with application of the project standard
4-3. Carry out training programs.
4-6. Monitor operational conditions and situations of fish farmers in model area and give advice.
4-10. Support and collaborate on the extension work which are implemented by local government
5-1. Conduct activities for information exchange among local government and the project side

Among the above activities, 1-3, 2-2 and 5-1 could be implemented as self-reliant operation and taken charge of its accomplishment by Counterpart(s) (hereinafter referred to as "C/P") of Balai Budidaya Air Tawar Jambi (hereinafter referred to as "BBAT Jambi").

Remaining activities that are 1-1, 2-1, 2-3, 4-3, 4-6, and 4-10 will be implemented by the Project with Japanese experts.

Tentative schedule of implementation and detailed demarcation of Project activities that is charged by C/P of BBAT Jambi and Japanese experts are shown in ANNEX 2.

(2) MEASURES TO BE TAKEN BY THE GOVERNMENT OF JAPAN

< DISPATCH OF JAPANESE EXPERT >

The Government of Japan will provide the services of the Japanese experts as followings for the extension period of the Project.

A. Long-term experts

- Freshwater Aquaculture	In charge of activities 1-1, 2-1 and 2-3 of PDM as ANNEX 1
- Aquaculture Extension	In charge of activities 4-3, 4-6 and 4-10 of PDM as ANNEX 1

B. Short-term experts

Short-term experts such as "Fish Diseases" and/or "Project Management" will be dispatched when necessity arises for the smooth implementation of the Project.

< TRAINING OF INDONESIAN PERSONNEL IN JAPAN >

Technical trainings of the C/P will be conducted in Japan when necessity arises for the smooth implementation of the Project.

< OTHERS >

Through the 5 years Project period since 2000, enough machinery and equipment were introduced. Therefore, further machinery and equipment will not be provided in the extension period of the Project.

(3) MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE REPUBLIC OF INDONESIA

< INDONESIAN COUNTERPART PERSONNEL >

The Government of Indonesia will provide the services of the C/P personnel as followings for the extension period of the Project.

- C/P in BBAT Jambi
- C/P in local governments

< OTHERS >

The Government of Indonesia will make continuous effort to secure the necessary budget including the cost of maintenance and repair, buildings and facilities during the extension period of the Project.

III. OTHER MATTERS

(1) Collaborative work between both Japanese and Indonesian sides in the Project is essential in order to achieve the Project purpose.

(2) Through the implementation of the Project activities, due consideration should be paid to the technical and organizational capacity development of BBAT Jambi.

(3) All matters other than those mentioned above will be treated in the same manner as prescribed in the articles of the Record of Discussions signed in Jakarta on March 29, 2000.

ANNEX :

1 Project Design Matrix (PDM)
2 Tentative Schedule of Implementation for 2 years Extension Period

ANNEX 1 Project Design Matrix (PDM)

Name of the Project: Freshwater Aquaculture Development Project in Indonesia — Duration: August 28, 2000 ~ August 27, 2007
Project Area: Western Indonesia (Sumatra, Java and Bali) — Date: July 26, 2005
Extension Area: 6 provinces in Sumatra (Jambi, Riau, West Sumatra, Bengukulu, South Sumatra, Lampung)
Extension Model Area: The area chosen in the process of project activities — Target Group: Small-scale fish farmers

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal: Sustainability of freshwater aquaculture of small-scale fish farmers is improved.	The yield and production of freshwater aquaculture are increased or steadied in high level in the project area.	· Fishery statistics of DGA and provincial level	· Economic condition of Indonesia does not get worse.
Project Purpose: Dissemination activities for appropriate applied freshwater aquaculture technologies available to small-scale fish farmers are developed and strengthened.	- Activity level of extension work in the project extension area (Indicator A) - The number of small-scale fish farmers in the extension model area are increased - The production of freshwater aquaculture in the extension model area are increased. - The income by freshwater aquaculture of small scale fish farmers in the extension model area are steadied	· Baseline Survey Report, Fishery statistics and statistics on socio-economy of DGA and provincial level, Project Report, Evaluation survey on extension work	· Social condition (market condition of fish etc.) does not get worse. · Water environment does not get worse.
Outputs: 1. High quality broodstock of existing freshwater fish culture species is supplied to seed production units.	1.1 The good quality broodstock which satisfies the needs of seed production unit are secured in the extension area.	· Project Report, Record of breed, Baseline survey Report, Record of broodstock, questionnaire	· Fishery dept., extension officer and leaders of fish farmers are under well cooperation and coordination.
2. Quality of aquaculture products (seed and grow-out fish) of existing freshwater fish culture species is improved.	2.1 The technology on selection of fish, feed, health control, water quality control etc. are standardized and possible to disseminate. 2.2 The seed and grow-out fish are produced (based on the standardized technology) steadily in the extension model area.	· Project Report, interview to fish farmers, questionnaire · Project Report · Fishery statistics of DGA and provincial level	· Social condition (market condition of fish etc.) does not get worse.
3. Fish breeding technologies for new fish culture species are developed.	3.1 The necessary number of new species broodstock which are for seed production experiment are raised (1000 by the completion of the project). 3.2 The survival rate of fingerlings until they grow up to the size of seed are more than 30 % of the total. 3.3 Technical papers on fish culture of new species are prepared.	· Project Report, Technical Report, questionnaire · -do- · -do-	
4. Effective extension models adjusted to the local conditions are established.	4.1 Level of improvement of training program (Indicator B). 4.2 Level of improvement of training textbook (Indicator C). 4.3 The monitoring is held regularly in the model area by counterpart personnel. 4.4 Level of technology improvement (Indicator D). 4.5 50% of small scale fish farmers take record of aquaculture in model area 4.6 The extension manuals are prepared.	· Project Report, Interview to participants · -do- , Training textbook · Project Report · Interview to participants, Monitoring Record · Project Report, Monitoring Record · Extension manual	

5. The stakeholders in the project area are more interested in freshwater aquaculture.	5.1 Exchange of information between the project and local government officials is implemented twice a year. 5.2 Informative materials for aquaculture extension are published twice a year and distributed. 5.3 The fish farmers and local fishery department have common information on fresh water aquaculture.	• Project Report • -do -, materials made • Interview to fish farmers, questionnaire	
Activities: 1-1. Standardize technology on broodstock production with high quality. 1-2. Prepare its manual. 1-3. Supply the above broodstock to the seed production unit. 2-1. Feed back the result of the monitoring activities to formulate the standard of the technology. 2-2. Standardize the production technology of seed and grow-out fish by species and prepare its manual. 2-3. Produce seed and grow-out fish with application of the project standard 3-1. Secure enough number of broodstock necessary for seed production. 3-2. Develop seed production technology, intermediate culture and breeding technology. 3-3. Prepare technical papers on fish culture. 4-1. Prepare training program. 4-2. Prepare textbooks for training courses. 4-3. Carry out training programs. 4-4. Conduct baseline survey of fresh water aquaculture 4-5. Conduct socio-economic survey of fish farmers and select extension model areas. 4-6. Monitor operational conditions and situations of fish farmers in model area and give advice. 4-7. Make the 'Farmers' database' based on the result of monitoring 4-8. Carry out evaluation survey on extension work of the project 4-9. Prepare extension manuals. 4-10. Support and collaborate on the extension work which are implemented by local government 5-1. Conduct activities for information exchange among local government and the project side 5-2. Publish informative materials to promote freshwater aquaculture activities for local government officials.	Inputs: (Japanese Side) 1) Personnel: Long-term experts: Team Leader Coordinator Fish breeding expert Fish culture expert Extension expert Fresh Water Aquaculture Aquaculture Extension Short-term Experts: as required Fish Disease etc. 2) Equipment: Machinery, Laboratory equipment, Equipment for seed production, Audio-visual equipment, Vehicles, Books, etc. 3) Counterpart training in Japan 2-3 persons annually as appropriate 4) Local cost Part of expenses for project activities	(Indonesian Side) 1) Personnel: Project Director Project manager Personnel in BBAT Jambi Project co-manager Fish breeding Fish culture Extension Personnel in local governments Extension officer 2) Equipment: Necessary equipment 3) Facilities: Facilities of BBAT Jambi*1 including office for Japanese experts. 4) Local cost: Operational budget of facilities Budget for project activities	• Fishery department of local government shows understanding and cooperation for the project continuously. • No more serious problems of land. Precondition: The principle of development policy on Technical Implementing Unit of DGF is sustained by the by the new administration.

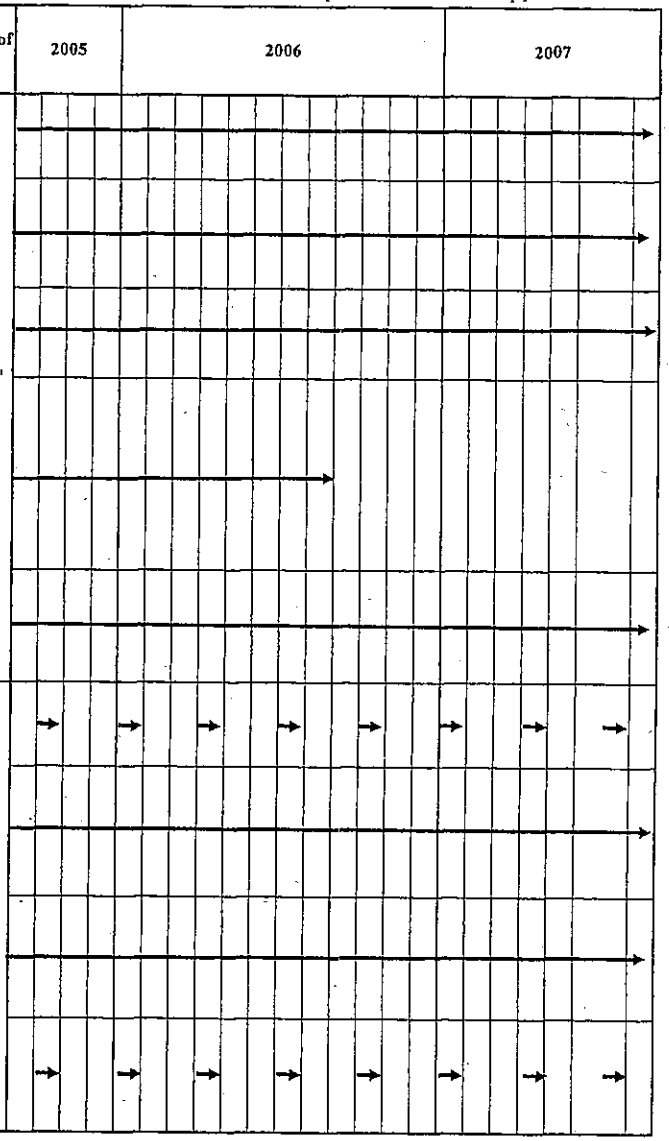
Note:
*1 According to the original sentence in PDM, this part was written as "Loka Jambi". However, up to the present, "Loka Jambi" was raised its status as "BBAT Jambi". Therefore, original sentence is replaced in accordance with present organization at the timing of commencement 2 years extension period.

ANNEX 2 Tentative Schedule of Implementation for 2 years Extension Period

"Outputs" and "Activities" are picked up from the Project Design Matrix (PDM)

Target Species of 2 years Extension Period: Tilapia, Common Carp, Patin

"Outputs" of 2 Years Extension Period	"Activities" of 2 Years Extension Period	Operation of Activities by Japanese Experts and Indonesian Counterparts of BBAT Jambi	Operation of Activities by Indonesian Counterparts of BBAT Jambi (Self Reliant Operation)	Japanese Inputs (Fields of Japanese Experts)
1. High - quality broodstock of existing freshwater fish culture species is supplied to seed production units.	1-1. Standardize technology on broodstock production with high quality.	To establish the methods of fish disease protection and treatment	To enhance planned production of the broodstock	①Long Term Expert "Fresh Water Aquaculture" ③Short Term Expert "Fish Disease"
	1-3. Supply the above broodstock to the seed production unit.		To continue the supply of the broodstock to the fish farmer To follow up the disseminated broodstock at the fish farmers	
2. Quality of aquaculture products (seed and grow-out fish) of existing freshwater fish culture species is improved.	2-1. Feed back the result of the monitoring activities to formulate the standard of the technology.	To monitor fish farmers and feed back the technologies to the extension activities with local governments in the 2 model site		
	2-2. Standardize the production technology of seed and grow-out fish by species and prepare its manual.		To implement the experiments which are not conducted in the project period(if the problems of KHV are solved during the extension period of the Project) To apply new technologies to the manuals during the extension period	
	2-3. Produce seed and grow-out fish with application of the project standard	To establish the methods of fish disease protection and treatment To establish the technologies such as polyculture of freshwater prawn	To enhance planned production of seed and grow-out fish	
4. Effective extension models adjusted to the local conditions are established.	4-3. Carry out training programs.	To continue the training that meet the needs of the fields of the extension activities		②Long Term Expert "Aquaculture Extension" ③Short Term Expert "Fish Disease"
	4-6. Monitor operational conditions and situations of fish farmers in model area and give advice.	To monitor and give advice for the activities of the 2 model sites with local governments and BBAT Jambi as a "On the Job Training" for the extension activities		
	4-10. Support and collaborate on the extension work which are implemented by local government	To monitor and give advice for the activities of the 2 model sites with local governments and BBAT Jambi as a "On the Job Training" for the extension activities		
5. The stakeholders in the project area are more interested in adopting freshwater	5-1. Conduct activities for information exchange among local government and the project side		To continue the networking seminars for the local governments	



→ : The period of the project activities