

## 5-2. Analysis of five evaluation criteria (refer to the Evaluation Grid for details)

### 5-2-1.Relevance

The relevance of the Project is evaluated to be high. The Overall Goal of the Project is in line with the Indonesian Development Policy (PROPENAS) and Indonesian Aquaculture Policy. According to the restructuring of the Ministry of Marine Affairs and Fisheries, BBAT Jambi was promoted from Loka (Station) to Balai (Center) in April 2002. Therefore BBAT Jambi is in a principal position for extension of freshwater aquaculture in Indonesia, and the Project will support it to achieve such an important role. The project is also relevant in terms of local small-scale farmers for providing opportunities of additional cash income.

### 5-2-2.Effectiveness

Effectiveness of this Project is appropriate. Inputs of experts have been made in an effective manner. Facilities are almost completed, planned Outputs were mostly achieved according to the PO, and Project Purpose have been achieved to some extent. Due to the transitional period of decentralization, extension system in local government is not well developed yet. For further dissemination of freshwater aquaculture, extension model should be developed in the remaining period.

### 5-2-3.Efficiency

The efficiency of the Project is considered to be appropriate. All the necessary Inputs for the Project have been appropriately utilized to optimize the Outputs. Problem of shortage of C/P in the beginning was solved. It is noted that short-term experts on fish diseases and aquaculture have been playing an important role for the Project.

### 5-2-4.Impact

Although it is too early to evaluate Impact of the Project to its Overall Goal, some positive Impacts were observed. For instance, NGO members and university students were trained in BBAT Jambi, and fish farmers living near BBAT Jambi have started intermediate rearing of Patin owing to distribution of the seeds and technical advices from BBAT Jambi.

### 5-2-5.Sustainability

Although it is not possible to judge sustainability of the Project in this stage, following points should be noted.

#### (1) Institutional Aspects

Establishment of extension system is important.

#### (2) Financial Aspects

Appropriate funds have been allocated to the Project so far.

Sustainable funds allocation from DGA to BBAT Jambi is a key.

#### (3) Technical Aspects

1) Acceptability of aquaculture technologies to be developed by the Project to the local farmers is essential.

2) Technical transfer to new C/P staff is essential.



## 6 Conclusion and Recommendations

### 6-1. Conclusion

Overall progress of the Project is found satisfactory at the time of this evaluation. Construction of necessary facilities in BBAT Jambi was almost completed and equipment was provided as planned. Development of aquaculture technology has been done almost as planned. Extension work was started in three selected model areas, and support to fish farmers groups and self-monitoring of leading farmers have been carried out. Technical support has been provided to Bengkulu Freshwater Aquaculture Development Center or Balai Pembangunan Budidaya Air Tawar Bengkulu, (hereinafter referred to as 'BPBAT Bengkulu') in order to develop it as a center for production of high quality broodstock of Common Carp for Bengkulu and other surrounding provinces.

### 6-2. Recommendations

#### KHV

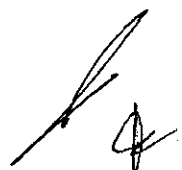
In view of the fact that KHV (Koi Herpes Virus) infection has occurred in some parts of the Sumatra Island, timely input of short-term expert in the subject was made by the Project. However, the Project should carefully monitor the outbreak of the diseases caused by the KHV in the Island and take possible measures to prevent the KHV infection from entering into BBAT Jambi, BPBAT Bengkulu and the extension model areas.

Prevention of some fish diseases including KHV infection is an important part of proper aquaculture management, and should be incorporated into extension activities under the Project as an important component.

As there are many activities being carried out on KHV issue in Indonesia, coordination between the Project and such activities is essential for proper and prompt reaction to the issue by the Project.

#### Conservation of Environment

As most of the facilities in BBAT Jambi have been completed and project activities are expanding, it is essential that due consideration should be given to possible negative effect of those activities on surrounding environment. Activities should be carried out in the manner which minimizes possible negative effects on the environment. In this regard, the water to be discharged should be treated in proper manner so that negative effects on environment can be avoided.



### Support to BPBAT Bengkulu

Function of BPBAT Bengkulu as a supply center of high quality Common Carp broodstock is very important in terms of aquaculture development for small-scale farmers in Sumatra Island. Therefore, activities to support the center by the Project should be continued and be expanded as appropriate.

### Extension

It is reaffirmed that extension of appropriate technology to local farmers is a main purpose of the Project, and it should be the main challenge during the remaining period. As the extension system has not been well developed yet due to the decentralization, it is essential for the Project to involve related authorities into the extension activities for better collaboration among different level of governments. Importance of better communication and networking should also be stressed.

### Sustainability, Training for C/P staff

By the effort made by Indonesian side, enough number of C/P staff is now assigned to the Project. It is very important that Project should make efforts to train such personnel in remaining period so that they would become capable of carrying out activities by themselves which are now carried out with assistance of Japanese experts, including research and extension work.

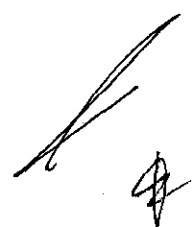
ANNEX 1. PDM1

ANNEX 2. PDMe

ANNEX 3. Revision points of PDM1 to PDMe

ANNEX 4. Achievement Grid

ANNEX 5. Evaluation Grid



## ANNEX 1

Revised Project Design 1 (Project Consultation Team)

Name of the Project: Freshwater Aquaculture Development Project in Indonesia

Project Area: Western Indonesia (Sumatra, Java and Bali)

Extension Area: 6 provinces in Sumatra (Jambi, Riau, West Sumatra, Bengkulu, South Sumatra, Lampung)

Extension Model Area: The area chosen in the process of project activities Target Group: Small-scale fish farmers

Duration: 28<sup>th</sup> August, 2000~27<sup>th</sup> August, 2005Date: 10<sup>th</sup> October, 2001

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 steadied in the project area.	<ul style="list-style-type: none"> <li>• Fishery statistics of DGA and provincial level</li> </ul>	<ul style="list-style-type: none"> <li>• Economic condition of Indonesia does not get worse.</li> </ul>
Project Purpose: Dissemination activities for appropriate applied freshwater aquaculture technologies available to small-scale fish farmers are strengthened.	<ul style="list-style-type: none"> <li>- Activity level of extension work in the project extension area (Detailed indicator A)</li> <li>- The number of small-scale fish farmers in the extension model area are increased</li> <li>- The production of freshwater aquaculture in the extension model area are increased.</li> <li>- The income by freshwater aquaculture of small scale fish farmers in the extension model area are steadied</li> </ul>	<ul style="list-style-type: none"> <li>• Baseline Survey Report, Fishery statistics and statistics on socio-economy of DGA and provincial level, Project Report, Evaluation survey on extension work</li> </ul>	<ul style="list-style-type: none"> <li>• Social condition (market condition of fish etc.) does not get worse.</li> <li>• Water environment does not get worse.</li> </ul>
Outputs: 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. 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 have common information on freshwater	1.1 The good quality broodstock which satisfies the needs of seed production unit are secured in the extension area.  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 supplied steadily in the extension model area.  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.  4.1 Level of improvement of training program (Detailed indicator B). 4.2 Level of improvement of training textbook (Detailed indicator C). 4.3 The monitoring are held regularly in the model area by counterpart personnel. 4.4 Level of technology improvement (Detailed indicator D). 4.5 50% of small scale fish farmers take record of aquaculture in model area 4.6 The extension manuals are prepared.  5.1 Exchange of information between the project and local government officials is implemented twice a year.	<ul style="list-style-type: none"> <li>• Project Report, Record of breed, Baseline survey Report, Record of broodstock</li> <li>• Project Report, interview to fish farmers</li> <li>• Project Report</li> <li>• Fishery statistics of DGA and provincial level</li> <li>• Project Report, Technical Report</li> <li>• - do-</li> <li>• -do-</li> <li>• Project Report, Interview to participants</li> <li>• -do-, Training textbook</li> <li>• Project Report</li> <li>• Interview to participants, Monitoring Record</li> <li>• Project Report, Monitoring Record</li> <li>• Extension manual</li> <li>• Project Report</li> </ul>	<ul style="list-style-type: none"> <li>• Fishery dept and extension officer are under well cooperation and coordination.</li> <li>• Social condition (market condition of fish etc.) does not get worse.</li> </ul>

aquaculture.	5.2 Informative materials for aquaculture extension are published twice a year and distributed.	do -, materials made	
<p>Activities:</p> <p>1-1. Standardize technology on broodstock production with high quality.</p> <p>1-2. Prepare its manual.</p> <p>1-3. Supply the above broodstock to the seed production unit.</p> <p>2-1. Feed back the result of the monitoring activities to formulate the standard of the technology.</p> <p>2-2. Standardize the production technology of seed and grow-out fish by species and prepare its manual.</p> <p>2-3. Produce seed and grow-out fish with application of the project standard</p> <p>3-1. Secure enough number of broodstock necessary for seed production.</p> <p>3-2. Develop seed production technology, intermediate culture and breeding technology.</p> <p>3-3. Prepare technical papers on fish culture.</p> <p>4-1. Prepare training program.</p> <p>4-2. Prepare textbooks for training courses.</p> <p>4-3. Carry out training programs.</p> <p>4-4. Conduct baseline survey of fresh water aquaculture</p> <p>4-5. Conduct socio-economic survey of fish farmers and select extension model areas.</p> <p>4-6. Monitor operational conditions and situations of fish farmers in model area and give advise.</p> <p>4-7. Make the 'Farmers' database' based on the result of monitoring</p> <p>4-8. Carry out evaluation survey on extension work of the project</p> <p>4-9. Prepare extension manuals.</p> <p>4-10. Support and collaborate on the extension work which are implemented by local government</p> <p>5-1. Conduct activities for information exchange among local government and the project side</p> <p>5-2. Publish informative materials to promote freshwater aquaculture activities for local government officials.</p>	<p>Inputs:</p> <p>(Japanese Side)</p> <p>1) Personnel:</p> <p>Long-term experts;</p> <p>Team Leader</p> <p>Coordinator</p> <p>Fish breeding expert</p> <p>Fish culture expert</p> <p>Extension expert</p> <p>Short-term Experts: as required</p> <p>2) Equipment: Machinery, Laboratory equipment, Equipment for seed production, Audio-visual equipment, Vehicles, Books, etc.</p> <p>3) Counterpart training in Japan 2-3 persons annually</p> <p>4) Local cost Part of expenses for project activities</p>	<p>(Indonesian Side)</p> <p>1) Personnel:</p> <p>Project Director</p> <p>Project manager</p> <p>Project co-manager</p> <p>Fish breeding</p> <p>Fish culture</p> <p>Extension</p> <p>2) Equipment: Necessary equipment</p> <p>3) Facilities: Facilities of Loka Jambi including office for Japanese experts.</p> <p>4) Local cost: Operational budget of facilities</p> <p>Budget for project activities</p>	<ul style="list-style-type: none"> <li>• Fishery department of local government shows understanding and cooperation for the project continuously.</li> <li>• No more serious problems of land.</li> </ul> <p>Precondition:</p> <p>The principle of development policy on Technical Implementing Unit of DGF is sustained by the by the new administration.</p>

[The Freshwater Aquaculture Development Project in the Republic of Indonesia]

Detailed Indicator A

1. Correspondence to PDM : Overall Goal · <u>Project Purpose</u> · 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	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> 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					

Detailed Indicator B

1. Correspondence to PDM : Overall Goal · Project Purpose · <u>Output</u> (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	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> 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					

Detailed Indicator C

1. Correspondence to PDM : Overall Goal · Project Purpose · <u>Output</u> (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	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> 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					

Detailed Indicator D

1. Correspondence to PDM : Overall Goal · Project Purpose · <u>Output</u> (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	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> 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					

## ANNEX 2

## Revised Project Design Matrix E (Mid-term Evaluation)

Name of the Project: Freshwater Aquaculture Development Project in Indonesia

Duration: 28<sup>th</sup> August, 2000~27<sup>th</sup> August, 2005

Project Area: Western Indonesia (Sumatra, Java and Bali)

Date: 24<sup>th</sup> July, 2003

Extension Area: 6 provinces in Sumatra (Jambi, Riau, West Sumatra, Bengkulu, 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 <u>increased</u> 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 <u>developed</u> and strengthened.	<ul style="list-style-type: none"> <li>- Activity level of extension work in the project extension area (Detailed indicator A)</li> <li>- The number of small-scale fish farmers in the extension model area are increased</li> <li>- The production of freshwater aquaculture in the extension model area are increased.</li> <li>- The income by freshwater aquaculture of small scale fish farmers in the extension model area are steadied</li> </ul>	• Baseline Survey Report, Fishery statistics and statistics on socio-economy of DGA and provincial level, Project Report, Evaluation survey on extension work	<ul style="list-style-type: none"> <li>• Social condition (market condition of fish etc.) does not get worse.</li> <li>• Water environment does not get worse.</li> </ul>
Outputs: 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. 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 <u>more interested in adopting freshwater</u>	<p>1.1 The good quality broodstock which satisfies the needs of seed production unit are secured in the extension area.</p> <p>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 <u>produced (based on the standardized technology)</u> steadily in the extension model area.</p> <p>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.</p> <p>4.1 Level of improvement of training program (Detailed indicator B). 4.2 Level of improvement of training textbook (Detailed indicator C). 4.3 The monitoring are held regularly in the model area by counterpart personnel. 4.4 Level of technology improvement (Detailed indicator D). 4.5 50% of small scale fish farmers take record of aquaculture in model area 4.6 The extension manuals are prepared.</p> <p>5.1 Exchange of information between the project and local government officials is implemented twice a year.</p>	<ul style="list-style-type: none"> <li>• Project Report, Record of breed, Baseline survey Report, Record of broodstock, <u>questionnaire</u></li> <li>• Project Report, interview to fish farmers, <u>questionnaire</u></li> <li>• Project Report</li> <li>• Fishery statistics of DGA and provincial level</li> <li>• Project Report, Technical Report, <u>questionnaire</u></li> <li>• - do-</li> <li>• -do-</li> <li>• Project Report, Interview to participants</li> <li>• -do-, Training textbook</li> <li>• Project Report</li> <li>• Interview to participants, Monitoring Record</li> <li>• Project Report, Monitoring Record</li> <li>• Extension manual</li> </ul>	<ul style="list-style-type: none"> <li>• Fishery dept., extension officer and <u>leaders of fish farmers</u> are under well cooperation and coordination.</li> <li>• Social condition (market condition of fish etc.) does not get worse.</li> </ul>



<p><b><u>aquaculture technology developed by the Project.</u></b></p>	<p>5.2 Informative materials for aquaculture extension are published twice a year and distributed. 5.3 <u>The fish farmers and local fishery government officials have common information on fresh water aquaculture.</u></p>	<ul style="list-style-type: none"> <li>• Project Report</li> <li>• -do -, materials made</li> <li>• <u>Interview to fish farmers, questionnaire.</u></li> </ul>	
<p>Activities:</p> <ol style="list-style-type: none"> <li>1-1. Standardize technology on broodstock production with high quality.</li> <li>1-2. Prepare its manual.</li> <li>1-3. Supply the above broodstock to the seed production unit.</li> <li>2-1. Feed back the result of the monitoring activities to formulate the standard of the technology.</li> <li>2-2. Standardize the production technology of seed and grow-out fish by species and prepare its manual.</li> <li>2-3. Produce seed and grow-out fish with application of the project standard</li> <li>3-1. Secure enough number of broodstock necessary for seed production.</li> <li>3-2. Develop seed production technology, intermediate culture and breeding technology.</li> <li>3-3. Prepare technical papers on fish culture.</li> <li>4-1. Prepare training program.</li> <li>4-2. Prepare textbooks for training courses.</li> <li>4-3. Carry out training programs.</li> <li>4-4. Conduct baseline survey of fresh water aquaculture</li> <li>4-5. Conduct socio-economic survey of fish farmers and select extension model areas.</li> <li>4-6. Monitor operational conditions and situations of fish farmers in model area and give advise.</li> <li>4-7. Make the 'Farmers' database' based on the result of monitoring</li> <li>4-8. Carry out evaluation survey on extension work of the project</li> <li>4-9. Prepare extension manuals.</li> <li>4-10. Support and collaborate on the extension work which are implemented by local government</li> <li>5-1. Conduct activities for information exchange among local government and the project side</li> <li>5-2. Publish informative materials to promote freshwater aquaculture activities for local government officials.</li> </ol>	<p style="text-align: right;">Inputs:</p> <p>(Japanese Side)</p> <ol style="list-style-type: none"> <li>1) Personnel: <ul style="list-style-type: none"> <li>Long-term experts; <ul style="list-style-type: none"> <li>Team Leader</li> <li>Coordinator</li> <li>Fish breeding expert</li> <li>Fish culture expert</li> <li>Extension expert</li> </ul> </li> </ul> </li> <li>Short-term Experts: as required</li> <li>2) Equipment: Machinery, Laboratory equipment, Equipment for seed production, Audio-visual equipment, Vehicles, Books, etc.</li> <li>3) Counterpart training in Japan 2-3 persons annually</li> <li>4) Local cost <ul style="list-style-type: none"> <li>Part of expenses for project activities</li> </ul> </li> </ol>	<p>(Indonesian Side)</p> <ol style="list-style-type: none"> <li>1) Personnel: <ul style="list-style-type: none"> <li>Project Director</li> <li>Project manager</li> <li>Project co-manager</li> <li>Fish breeding</li> <li>Fish culture</li> <li>Extension</li> </ul> </li> <li>2) Equipment: <ul style="list-style-type: none"> <li>Necessary equipment</li> </ul> </li> <li>3) Facilities: <ul style="list-style-type: none"> <li>Facilities of Loka Jambi including office for Japanese experts.</li> </ul> </li> <li>4) Local cost: Operational budget of facilities <ul style="list-style-type: none"> <li>Budget for project activities</li> </ul> </li> </ol>	<ul style="list-style-type: none"> <li>• Fishery department of local government shows understanding and cooperation for the project continuously.</li> <li>• No more serious problems of land.</li> <li>• <u>Coordination among different level of authorities for success of the Project is one of the tasks and functions of Central Government.</u></li> </ul> <p>Precondition: The principle of development policy on Technical Implementing Unit of DGF is sustained by the new administration.</p>

ANNEX3 Revision points of PDM1 to PDME

Underline parts shows added or revised.

PDM 1	PDME (Revised)	Reason
date:10 <sup>th</sup> October 2001	Revised for mid-term evaluation in July 2003	
<b>Objectively verifiable indicator of Overall Goal</b>		
The yield and production of freshwater aquaculture are steadied in the project area.	The yield and production of freshwater aquaculture are <u>increased</u> in the project area.	Overall Goal includes the improvement of fresh water aquaculture, and therefore the yield and production should be increased. According to the above reason, the indicator is changed.
<b>Project purpose</b>		
Dissemination activities for appropriate applied fresh water aquaculture technologies available to small-scale fish farmers are strengthened.	Dissemination activities for appropriate applied fresh water aquaculture technologies available to small-scale fish farmers are <u>developed</u> and strengthened.	Dissemination activities have to be developed and then to be strengthening. According to the above reason, the project purpose is changed.
<b>Outputs</b>		
5. The stakeholders in the project area have common on fresh water aquaculture.	5. The stakeholders in the project area <u>are more interested in adopting freshwater aquaculture technology developed by the Project.</u>	To clarify the output in detail.
<b>Objectively Verifiable Indicators of Outputs</b>		
2-2 The seed and grow-out fish are supplied steadily in the extension model area.	2-2The seed and grow-out fish are <u>produced (based on the standardized technology)</u> steadily in the extension model area.	The seed and grow-out fish should be produced based on the technology standardized by the Project. The aim of outputs are production, therefore 'supplied' is revised to 'produced'.
	5-3 <u>The fish farmers and local fishery government officials have common information on fresh water aquaculture.</u>	According to the revision of Outputs 5, new indicator is added.
<b>Means of verification of Outputs</b>		
1.Project Report, Record of breed, Baseline survey Report, Record of brood stock	1.Project Report, Record of breed, Baseline survey Report, Record of brood stock, <u>questionnaire</u>	To collect more detailed information, questionnaire is added.
2.Project Report, interview to fish farmers	2.Proeject Report, interview to fish farmers, <u>questionnaire</u>	Ditto
3.Project Report, Technical Report	3.Project Report, Technical Report, <u>Questionnaire</u>	Ditto
	5. <u>Interview to fish farmers, questionnaire</u>	According to the addition of Indicator 5-3, means of verification is also added.
<b>Important assumption of Outputs</b>		
· Fishery dept. and extension officer are under well cooperation and coordination	· Fishery dept., extension officer and <u>leaders of fish farmers</u> are under well cooperation and coordination	Because the position of extension workers is not closely defined by the local government due to the decentralization, leaders of fish farmers should play more important role in extension activities. Therefore, leaders of fish farmers are added as a key player.
<b>Important assumption of Activities</b>		
	<u>Coordination among different level of authorities for success of the Project is one of the tasks and functions of Central Government.</u>	In the transitional period, coordination is essential.

ANNEX 4 Achievement Grid

Category	Indicators	Source of Information	Method	Achievement
Input	Japanese Side			
	J-1: Japanese Experts			
	J-1-1 Amount	Personnel Input Record	Based on the record, confirmed whether the input was carried out as planned in terms of amount	-Up to May 2003, five (5) Long-term experts, and twelve (12) Short-term experts have been dispatched as planned.
	J-1-2 Quality and timing	Counterparts(C/P) Japanese Experts(J/E)	Questionnaire, interview	- According to interview and the questionnaire surveys, fields and timing of dispatch of the Japanese experts are judged to be appropriate.
	J-2: Counterparts training in Japan			
	J-2-1 Amount	Personnel Input Record	Based on the record, confirmed whether the input was carried out as planned in terms of amount	-Totally eleven (11) counterparts were sent to Japan for training which includes one long term training.
	J-2-2 Quality and timing	C/P, J/E	Questionnaire, interview	-According to the result of questionnaire from counterparts, the selection of trainees in Japan is highly evaluated.
	J-3: Procurement of machinery and facilities			
	J-3-1 Amount	Equipment record	Based on the record, confirmed whether the input was carried out as planned in terms of amount	-Equipment of 40.5 million Yen(2000 fiscal year), 36.6million Yen(2001 fiscal year) and 30 million Yen (2002 fiscal year), total 107.1 million Yen; in value, was provided mainly to BBAT Jambi.
	J-3-2 Quality and timing	C/P, J/E	Questionnaire, interview	-The procured equipment are utilized and maintained in good condition.
J-4: Assistance to local cost				
J-4-1 Amount	J/E	Financial records	-Local cost Rp. 461,823,000 (equivalent 5,542,000 Yen: FY2000), Rp.2,563,000,000 (equivalent to 33,319,000 Yen: FY2001), Rp.900,525,000(equivalent to 12,607,000 Yen: FY2002) was allocated.	
J-4-2 Quality and timing	C/P and J/E	Questionnaire, interview	-The budgeted are judged relevant from counterparts and Japanese experts.	

Category	Indicators	Source of Information	Method	Achievement	
Input	Indonesian Side				
	I-1: Land, building and facilities at the Project site				
	I-1-1 Amount I-1-2 Quality and timing	Site inspection/ financial record C/P, J/E	Confirm whether the necessary input was carried out as scheduled, and check the present condition. Questionnaire, interview	-Office for Japanese Experts and necessary facilities in BBAT Jambi were provided. -The construction of BBAT was delayed due to the land conflict. -Due to the low technique of construction by local contractor, Japanese experts had to spend time in renovation. -Most of facilities renovation was completed at the time of the evaluation.	
	I-2: Allocation of C/P				
	I-2-1 Amount I-2-2 Quality and timing	Counterpart allocation record C/P, J/E	Based on the record, confirmed whether the input was carried out as planned in terms of amount Questionnaire, interview	-By the end of April 2003, twelve (12) C/P were newly assigned (permanent C/P were only 3-4), and the total number of C/P is now twenty one (21), including five (5) new graduates of April 2003. -The clear Job description was prepared recently, and initially assigned C/P should transfer technology to new C/P from now on.	
	I-3: Tools and other materials				
	I-3-1 Amount I-3-2 Quality and timing	Equipment record	Based on the record, confirmed whether the input was carried out as planned in terms of amount Questionnaire, interview	-Most of equipment needed is procured by JICA, except some office fixtures. -Under the sight observation, equipment is maintained appropriately including newly devised local materials by Japanese experts.	
	I-4 Operation cost				
	I-4-1 Amount I-4-2 Quality and timing	J/E and C/P C/P and J/E	Check on Financial records Questionnaire, interview	-Development Budget Rp.0(2000FY), Rp. 425,025,000(2001FY), Rp. 454,000,000(2002FY), Rp.476,650,000(2003FY) were allocated. -The local cost has been allocated positively from Directorate General of Aquaculture (DGA).	
	Summary for Input Achievement				
	In general, Inputs from both Japanese and Indonesian sides have been made appropriately. However, the Project faced some difficulties in the beginning as 1) delay of construction of facilities, 2) needed renovation of facilities, 3) shortage of C/P. Currently the appropriate Inputs have been made and facilities provided (including equipment) are utilized in good conditions.				

Category	Indicators	Source of Information	Evaluation Method	Achievement
Activities	1-1 Standardize technology on brood stock production with high quality.	Project Report, C/P,J/E	Based on there information sources including the result of workshop, evaluation team confined whether the target the of this activity was achieved	-According to the result of workshop, Common Carp and Patin Siam broodstock production is making good progress. -Breeding group applied selected culture on Tilapia and Common Carp.
	1-2 Prepare its manual	ditto	ditto	-Textbook on Patin Siam broodstock (JICA-BBAT) in Indonesian is completed and development of other textbooks is in process.
	1-3 Supply the above brood stock to the seed production unit	ditto	ditto	-According to the result of workshop, supplying Patin Siam broodstock is making progress. -400 ♀ 650♂ of Common Carp has been distributed in Jambi and Benkule provinces since January 2003. -1,200 ♀ and 1,200♂ of Tilapia has been distributed in Jambi Province in 2003.
	2-1 Feed back the result of the monitoring activities to formulate the standard of the technology	ditto	ditto	-According to the result of workshop, feed back of monitoring is making progress on Patin Siam. -Manual for compost making is completed. -Manual for fish diseases is completed.
	2-2 Standardize the production technology of seed and grow-out fish by species and prepare its manual	ditto	ditto	-Text book on Patin Siam seed and grow-out is making progress -Following experiment have been carried out; -Experiment on seed production of Freshwater Prawn (spawning and rearing of post larva under 25days were conducted in the hatchery) -Experiment on intermediate culture of Tilapia (spawning and rearing of hatch fries were conducted by using Tilapia. After 15 days fries were harvested)
	2-3 Produce seed and grow-out fish with application of the project standard	ditto	ditto	-According to the result of workshop, production of seed and grow-out of Patin Siam has just started.
	3-1 Secure enough number of broodstock necessary for seed production	ditto	ditto	According to the result of workshop, technical development of broodstock production of Sand Goby is making progress -Result of experiment, seed production by natural breeding is efficient for Common Carp, Tilapia, and Freshwater Prawn.

3-2 Develop seed production technology, intermediate culture and breeding technology	ditto	ditto	<ul style="list-style-type: none"> <li>-Experiments on feeding and seed of appropriate size experiments have been implemented.</li> <li>-Study on commercialization of Sand Goby has been implemented.</li> <li>-According to the result of workshop, the activity is making progress on Sand Goby</li> </ul>
3-3 Prepare technical papers on fish culture	ditto	ditto	<ul style="list-style-type: none"> <li>-According to the result of workshop, textbook on Sand Goby is in process.</li> <li>-Collecting data for preparation of manual on Common Carp, Tilapia and Freshwater Prawn are done.</li> </ul>
4-1 Prepare training program	ditto	ditto	<ul style="list-style-type: none"> <li>-Based on the number of Training Target every year, extension training program has been implemented.</li> <li>-Last year, one fish health training (fish diseases) was carried out (5 persons from 5 centers).</li> <li>- Participants came from North Slawesi, South Kalimantan, West Java, Jambi and DGA.</li> </ul>
4-2 Prepare textbooks for training courses	ditto	ditto	<ul style="list-style-type: none"> <li>-An Extension material for training courses was prepared.</li> <li>-Two textbooks on fish health, one for farmers and one for laboratory techniques, have been prepared.</li> </ul>
4-3 Carry out training programs	ditto	ditto	<ul style="list-style-type: none"> <li>-Extension training program has implemented.</li> <li>-Five fish health training programs for fish farmers and one for laboratory technicians have been carried out.</li> </ul>
4-4 Conduct baseline survey of fresh water aquaculture	ditto	ditto	<ul style="list-style-type: none"> <li>-Baseline survey was completed in 2001.</li> </ul>
4-5 Conduct socio-economic survey of fish farmers and select extension model areas	ditto	ditto	<ul style="list-style-type: none"> <li>-Socio-economic survey was conducted in December 2001.</li> </ul>
4-6 Monitor operational conditions and situations of fish farmers in model area and give advise	ditto	ditto	<ul style="list-style-type: none"> <li>-Extension activities have been implemented in three model areas.</li> <li>-The group have been visiting to model areas almost monthly and giving advice to them.</li> <li>-At least once a week, and additionally when we get information on diseases occurrence, we have visited farmers to monitor and identify the pathogen.</li> <li>-Experiment with fish farmers in the field based on some problem have been carried out.</li> <li>-Monitoring and support for fish health have been carrying out also outside of model areas .</li> </ul>
4-7 Make the 'Farmers database' based on the result of monitoring	ditto	ditto	<ul style="list-style-type: none"> <li>-Extension activities have been carried out in three model areas.</li> </ul>

4-8 Carry out evaluation survey on extension work of the project	ditto	ditto	
4-9 Prepare extension manuals	ditto	ditto	-Collecting information about extension activities from Indonesian and international manuals were carried out.
4-10 Support and collaborate on the extension work which are implemented by local government	ditto	ditto	-Fish health group has been supporting and collaborating on the extension work which are implemented by local government included some experiment in the field for detection pathogen, prevention, and treatment method. -Some papers on fish health seminar were presented (extension networking in Bali, local government in Jambi).
5-1 Conduct activities for information exchange among local government and the project side	ditto	ditto	-Open lecture and seminar on extension were organized. -Plenary session has been cosponsored by local government (Bungo and Batanghari prefectures)and fish farmers for extension activities
5-2 Publish informative materials to promote freshwater aquaculture activities for local government officials	ditto	ditto	-Extension group has published News letter, leaflet, calendar, etc. -Some publication on fish health have published.
Additional activities (not included on PDM)	ditto	ditto	-Pathogen has been diagnosed -Development of prevention & treatment method of fish diseases have been carried out. -Fish health group have been giving advice and suggestion to fish farmers when they came to the group. -Vaccine technique has been developing.
<p>Summary for activities</p> <p><i>In general, Activities carried out are considered appropriate. Technical development of Carp, Tilapia and Sand Goby are making progress. Three model areas have been selected for extension activities and monitoring has started. Notably many additional activities have been done by the fish health group because of the occurrence of the KHV infection, which are not described on PDM.</i></p>			

Category	Indicators	Source of Information	Method	Achievement
Outputs	1.High-quality broodstock of existing freshwater fish culture species is supplied to seed production units	Project documents, C/P,J/E Site inspection	Confirmed as to whether this output is achieved with various documents stated in PDM ,questionnaire and interview results	-Carp broodstock: ♀ 400, ♂ 560 have been distributed, breeding are on going in Bengkulu province. -Telapia: Red Tilapia 13,000 (including 3,000 broodstock) has been distributed. -Patin: Selected 2 years 700 of fish have been rearing.
	2.Quality of aquaculture products (seed and grow-out fish) of existing freshwater fish culture species is improved	ditto	ditto	-Several kinds of verification experiments have been implemented. -Seed and grow-out of Patin Sian has been ready for distribution.
	3.Fish breeding technologies for new fish culture species is developed	ditto	ditto	- Fingerling production experiment has been implemented, and the number f Sand Goby broodstock is ±300. -The survival rate of fingerlings of Sand Goby until they grow up to the seed is still 20%. -Technical papers on Sand Goby fish culture is in process.
	4.Effective extension models adjusted to the local conditions are established	ditto	ditto	-Revising training program with C/P based on needs from model areas. -Revising training materials based on the results from verification experiments and monitoring. -According to the result of workshop, the achievement of indicator (4-1 and 4-2) is level B. -Regularly monitoring of fish health has been implemented in model areas. -The level of fish technology is level C on the indicator according to the result of workshop.
	5.The stakeholders in the project area are more interested in freshwater aquaculture	ditto	ditto	-Exchange of information has been implemented with officers of provinces and prefectures in each advisory tour in model areas. -According to the necessity, several kinds of seminar and workshops have been implemented. -Plenary session has been implemented in two model areas. -In national level, seminar has been implemented to establish extension network -Newsletter has been published twice, issued an extra (warning KHV).
<p>Summary for outputs</p> <p>At the time of Mid-term Evaluation, the planned Outputs are almost achieved satisfactorily according to the PO. The technical development of freshwater aquaculture has been progressing in BBAT Jambi, broodstock of Common Carp and Tilapia have been distributed and extension activities at the model areas have been started. During the next two and half years, the Project is to focus on dissemination activities in target areas.</p>				



Category	Indicators	Source of Information	Method	Achievement
Project purpose	Dissemination activities for appropriate applied freshwater aquaculture technologies available to small-scale fish farmers are developed and strengthened	Project documents, C/P, J/E Site inspection	Confirm as to whether this accomplished with achievement chart and various stated in PDM	<ul style="list-style-type: none"> <li>-Technical trainings : 9 times (3-20days/ time) 198 trainees.</li> <li>-Follow up for technical training , monitoring, exchange information with local government, farmers meeting, consultation for fish diseases, local seminar, follow up for distribution of broodstock have been implemented in three model areas.</li> <li>-The advisory tour has been implemented 26 times. The total number of fish culture farmers in farmers' group which the Project has been providing support is 90.</li> </ul>
<p>Summary for Project purpose</p> <p>The achievement of the Project Purpose is satisfactory at the time of Mid-term Evaluation. There were some difficulties relating to the number of C/P staff in the beginning of the Project, but they have been solved. Technical transfer to new C/P staff for capacity building is a key for the accomplishment of the Project Purpose at the end of the Project.</p>				

## ANNEX 5 Evaluation Grid

Category	Indicators	Source of Information	Method	Evaluation
Relevance	1.Relevance of the Project for Indonesian Development Policy	Counterparts (C/P), Japanese Experts(J/E), Project document Development policy	Confirm whether the Project is still meaningful along with the current Indonesian Development Policy (e.g.PROPENAS), decentralization program, and Aquaculture Development Policy of Indonesia.	-The Project will play an important role in diversification of food production which is an essential component of food security programs in PROPENAS. - Supporting the local government as focal points of extension activities will contribute to capacity building of such governments which are essential to achieve the decentralization policy. -There are five programs of Directorate General of Aquaculture (DGA ) according to the Aquaculture Development Policy of Indonesia, and the Project is on the line of programs, namely 1) Aquaculture Intensification, 2)Rural Aquaculture, 3)Integrated Aquaculture, 4)Culture-Based Fisheries(CBF), 5) Environmental Friendly Aquaculture.
	2.Relevance of the Project for implementing Agency	C/P, J/E Local government	Confirm whether the Project is still meaningful for the current situation of the implementing Agency (BBAT)	-According to the restructuring of Ministry of Marine Affairs and Fisheries, LOKA (station) Jambi was promoted to BBAT Jambi in April 2002. Therefore BBAT Jambi is in a principal position of extension of freshwater aquaculture in Indonesia, and the Project will support BBAT to achieve such an important role
	3.Relevance of the Project for the small-scale fish farmers	C/P, J/E Fish farmers	Confirm whether the Project is still meaningful fir the small-scale fish farmers	-1.62 million people are engaged in freshwater aquaculture (86% of aquaculture population). Freshwater aquaculture is very important for small-scale fish farmers that provide stable income and nutritional food. -Fish farmers' are motivated by the extension activities of the Project.
	4.Relevance of the cooperation plan of the Japanese government	C/P, J/E ODA white paper	Review of JICA's cooperation plan for Indonesia	One of the priority sectors of cooperation plan for Indonesia by government of Japan is focusing on securing equity which includes poverty alleviation (improvement of livelihood of poor people). This Project is consistent with Japan's cooperation plan.
	<p>Summary for Relevance</p> <p>The relevance of the Project is evaluated to be high. The Overall Goal of the Project is in line with the Indonesian Development Policy (PROPENAS) and Indonesian Aquaculture Policy. According to the restructuring of the Ministry of Marine Affairs and Fisheries, BBAT Jambi was promoted from Loka (Station) to Balai (Center) in April 2002. Therefore BBAT Jambi is in a principal position for extension of freshwater aquaculture in Indonesia, and the Project will support it to achieve such an important role. The project is also relevant in terms of local small-scale farmers for providing opportunities of additional cash income.</p>			

Category	Indicators	Source of Information	Method	Evaluation
Effectiveness	1.Achievement of Project	C/P, J/E, Project document Table of Achievement	Confirm as to whether the Project Purpose be achieved	-There are some delays in the technology development but facilities are almost completed and Project activities have been progressing well. -Extension activities have just started, but some positive responses from leading farmers are already observed through interviewing. -Breeding technology of Sand Goby is being developed faster than planned.
	2.Contribution of Outputs to Project Purpose	C/P, J/E Local government Fish farmers	Confirm as to whether the Outputs contributed to the achievements of the Project Purpose	-After distribution of Common Carp broodstock and Patin fry, fish diseases diagnose and training program in BBAT in Jambi and other places were carried out, and fish farmers have been motivated. -Through the monitoring in model areas and training program, the technical and business issues on the small-scale fish farmers were better understood.
	3.Contributory factors and Obstructive factors	C/P, J/E Fish farmers	-Confirm what the contributory / obstructive factors which affect to effectiveness.  -Important assumptions	-Inputs of experts have been made in an effective manner. -C/P attitude has been improved since training in Japan. - Appropriate treatment and monitoring for fish diseases has been implemented with support by short-term expert, which is an important contributory factor of effectiveness. - Monitoring was facing problem due to lack of consciousness of fish farmers' group in some model areas and extension system is not well developed in local government.
	<p><b>Summary for Effectiveness</b></p> <p>Effectiveness of this Project is appropriate. Inputs of experts have been made in an effective manner. Facilities are almost completed, and planned Outputs according to the PO, and Project Purpose have been achieved to some extent. Due to the transitional period of decentralization, extension system in local government is not well developed yet. For further dissemination of freshwater aquaculture, extension model should be developed in the remaining period.</p>			

Category	Indicators	Source of Information	Method	Evaluation
Efficiency	1.Comparison of Outputs with Inputs	C/P, J/E Table of Achievement	Confirm as to whether the quantity of input can be justified from Expert's and C/P staff point of view.	-The quality of Inputs is considered to be appropriate taking the actual magnitude of Project activities into consideration. The Inputs contributed to the achievement of Outputs. -Equipment and facilities are used well and maintained in good condition. -The Input of a short-term expert on fish diseases was timely and playing an important role for the Project.
	2.Combination of Inputs	C/P, J/E Fish farmers	-Confirm as to whether the Inputs content and level are proper or not from a view point of C/P staff.	-Combination of Inputs, namely, Inputs of long-term and short-term experts, C/P staff for transfer of technology and dispatch of C/P staff to training generated the out put efficiency.
	3.Contributory factors and Obstructive factors, other schemes and other donors' cooperation	C/P, J/E Fish farmers	-Confirm what the contributory / obstructive factors which affect to efficiency. -Sector Program Loan by OECF(JBIC) -Other donors' cooperation	-At the beginning of the Project, the construction of facility was delayed about one year due to the land conflict. -Assignment of C/P for each counterpart was delayed which was one of the obstructive factors to efficiency. Currently enough number of C/P have been assigned the issue was resolved. -C/P training in Japan is a contributory factor as it improves the attitude of young C/P staff.
	<p>Summary for Efficiency</p> <p>The efficiency of the Project is considered to be appropriate. All the necessary Inputs for the Project have been appropriately utilized to optimize the Outputs. Problem of shortage of C/P in the beginning was solved. It is noted that short-term experts on fish diseases and aquaculture have been playing an important role for the Project.</p>			

Category	Indicators	Source of Information	Method	Evaluation
Impact	1. Possibility to accomplish the Overall Goal of the Project	C/P, J/E Fish farmers	Confirm the relevant through stakeholders interviews as to whether the Overall Goal of the Project seems to be met eventually.	-High expectation for freshwater aquaculture as source of income is expressed by both C/P and local farmers. -Appropriate extension system should be developed for proper technology dissemination to achieve the Overall Goal.
	2. Impact to residents	C/P, J/E Fish farmers Local government	Confirm the relevant stakeholders as to whether there has been positive or negative positive/ negative impact to residents.	-The motivation of fish farmers are increased not only in the model areas also other areas as a result of extension activities by the Project, according to J/E and C/P. -Project provides employment for neighbors, ex. weaving and fixing nets. -Fish farmers living near BBAT Jambi has started intermediate rearing of Patin owing to distribution of the seeds and technical advices from BBAT Jambi, according to J/E.
	3. Impact to institutions	C/P, J/E	Confirm the relevant stakeholders as to whether there has been positive/negative impact to BAAT	-With support by the Project, BBAT Jambi accepted trainees from university students, and NGO members, and they are becoming able to deliver various trainings. -Many BBAT staff is trained on the job by J/E and gaining practical experiences. -J/E are giving advices to BAAT activities outside of the Project.
	4. Impact to cross-cutting issues (policy, technological, environmental, socio-cultural, economic financial aspects)	C/P, J/E, Fish farmers, Local government	Confirm the relevant stakeholders as to whether there has been positive/negative impact to cross-cutting issues	-The general aquaculture department is paying attention to extension activities of the Project for fish farmers in model areas. This extension activity can be a model of Indonesian aquaculture extension.
	<p>Summary for Impact</p> <p>Although it is too early to evaluate Impact of the Project to its Overall Goal, some positive Impacts were observed. For instance, NGO members and university students were trained in BBAT Jambi, and fish farmers living near BBAT Jambi have started intermediate rearing of Patin owing to distribution of the seeds and technical advices from BBAT Jambi.</p>			

Category	Indicators	Source of Information	Method	Evaluation
Sustainability	1. Institutions; Management Capability of implementing Institutions	C/P, J/E Local government General Fishery Department	Check the capability of BBAT and other agency to continue the Project activities after the end of the cooperation period	-Keeping on C/P's motivation and motivating fish farmers by establishing freshwater aquaculture as profitable business is essential for the Project. -Advice of fish health management is also essential. -The extension system involving local governments should be developed.
	2. Finance; Financial conditions of the implementing agency	C/P, J/E Fish farmers Local government General Fishery Department	Consider whether BBAT and other agency can exist with regard to financial aspects	-Reasonable funds have been allocated to the Project from the DGA so far. -The budget from local government is the key for the extension activities. In this regard, positive inputs by local government are noted. -Activities of seed production and selling by BBAT are effective for generating the running cost.
	3. Technology; Possibility for C/P to manage the activities for the implementing agency	C/P, J/E Fish farmers Local government General Fishery Department	Possibility of C/P staff and other agencies to manage the activities for the Project is examined through interviews and questionnaires	-The technology especially new C/P is still not enough to maintain the activities without Japanese Experts. So effective transfer of the technology is still needed from the Japanese Experts, -Not only technology, also more practiced experiences are needed for C/P.
<p>Summary for Sustainability</p> <p>Although it is not possible to judge sustainability of the Project in this stage, following points should be noted.</p> <p>(1) Institutional Aspects Establishment of extension system is important.</p> <p>(2) Financial Aspects Appropriate funds have been allocated to the Project so far. Sustainable funds allocation from DGA to BBAT Jambi is a key.</p> <p>(3) Technical Aspects: 1) Acceptability of aquaculture technologies to be developed by the Project to the local farmers is essential. 2) Technical transfer to new C/P staff is essential.</p>				

