

## 付属資料 1

### ミニッツ原文

(Minutes of Understanding)

THE MINUTES OF UNDERSTANDING  
BETWEEN THE JAPANESE SPECIALISTS FOR SUPPLEMENTARY STUDY  
AND THE AUTHORITIES CONCERNED OF  
THE GOVERNMENT OF THE REPUBLIC OF INDONESIA  
ON THE JAPANESE TECHNICAL COOPERATION  
FOR  
THE FRESHWATER AQUACULTURE DEVELOPMENT PROJECT  
IN INDONESIA

A Team of Japanese Specialist of Supplementary Study (hereinafter referred to as "the Team"), organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), headed by Mr. Yoshitetsu Nukiyama, visited the Republic of Indonesia for the purpose of defining the details of the technical cooperation in connection with the Freshwater Aquaculture Development Project (hereinafter referred to as "the Project") in the Republic of Indonesia.

During its stay in the Republic of Indonesia, the Team carried out field studies, exchanged views, held the PCM workshop and had a series of discussions with the Indonesian authorities concerned on the matters related to the Project.

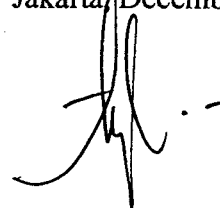
As a result of the discussions and the field study, the Team and the Indonesian authorities reached the common understanding on the issues of the Project and agreed to recommend to their respective governments, the matters contained herewith.

Jakarta, December 3rd, 1999



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Yoshitetsu Nukiyama  
Head of Specialists for Supplementary Study,  
Japan International Cooperation Agency,  
Japan.



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Sri Hartati Ramelan <sup>ES/P</sup>  
Director of Seed Development,  
Directorate General of Fisheries,  
Ministry of Agriculture,  
The Republic of Indonesia.

## THE ATTACHED DOCUMENTS

### I. Target Fish Species of the Project

The following fish species are selected as the target ones handled by the Project, to strengthen technological improvement and dissemination in terms of promoting sustainable freshwater aquaculture.

#### 1. Existing species for improving production management and dissemination:

Common Carp (Ikan Mas, *Cyprinus carpio*)

Tilapia (Ikan Nila, *Oreochromis nilotica*)

Pangasius (Ikan Patin, *Pangasius hypophthalmus*)

Freshwater Giant Prawn (Udang Galah, *Macrobrachium rosenbergii*)

#### 2. New species for developing breeding technologies:

Sand Goby (Ikan Betutu, *Oxyeleotris marmorata*)

### II. Dissemination System of the Project

The dissemination activities of the Project, especially the implementation of training program in freshwater aquaculture, are conducted by the Regional Freshwater Aquaculture Development Center in Jambi (Loka Budidaya Air Tawar Jambi) in cooperation with Fisheries Services (DINAS Perikanan) and Freshwater Fish Hatcheries (BBIS, BBIL) in the local governments (Province and District level). In this regard, the Directorate General of Fisheries takes responsibility for the coordination and consultation between the Project and related organizations of the central government and local governments to assist the implementation of the dissemination activities by the Project.

### III. Project Design Matrix

The PCM (Project Cycle Management) workshop was held at the Directorate General of Fisheries in three days (November 28th to December 1st, 1999) to form the tentative Project Design Matrix (PDM) for the implementation and evaluation of the Project. Based on the results of the PCM workshop, the tentative PDM are formed as noted in Annex I.

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### IV. Tentative Schedule of Implementation (TSI)

In accordance with the PDM above-mentioned, the tentative schedule of implementation (TSI) was formed as noted in Annex II.

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## V. Administration of the Project

The following matters are regulated to clarify the administration of the Project.

1. Director of Seed Development, Directorate General of Fisheries, as the Project Director, will bear overall responsibility for the administration and implementation of the Project.
2. Head of Regional Freshwater Aquaculture Development Center in Jambi, as the Project Manager, will be responsibility for the managerial and technical matters of the Project.
3. The Japanese Team Leader (Chief Adviser) will provide necessary recommendations and advice to the Project Director and the Project Manager on any matters pertaining to the implementation of the Project.
4. The Japanese experts will give necessary technical guidance and advice to the Indonesian counterpart personnel on technical matters pertaining to the implementation of the Project.
5. For the effective and successful implementation of technical cooperation for the Project, a Joint Committee (hereinafter referred to as "the Committee") will be established whose functions and composition are described in Annex III.

## VI. Transfer of responsibility for the Project

In case of reorganizing the Directorate General of Fisheries in near future, all agreements between Japanese and Indonesian sides in the preliminary and supplementary studies must be transferred intact to the new organization responsible for the Project.

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## Annex I Tentative Project Design Matrix at Supplementary Study

Project name: Freshwater Aquaculture Development Project in Indonesia  
 Project area: Western Indonesia (Sumatra, Java and Bali)

Duration: 2000 to 2005 (5 years)  
 Target group: Small-scale fish farmers

Date: December 3rd, 1999

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p><b>Overall Goal:</b>                      Sustainability of freshwater aquaculture of small-scale fish farmers is improved.</p>	<ul style="list-style-type: none"> <li>• Quality aquaculture products are increased.</li> <li>• Household income of small-scale fish farmers is increased.</li> <li>• Environmental impact by fish culture is minimized.</li> </ul>	<ul style="list-style-type: none"> <li>• Baseline study and project monitoring evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• Economic condition of Indonesia does not get worse.</li> </ul>
<p><b>Project Purpose:</b>                      Dissemination activities for applied appropriate freshwater aquaculture technologies available to small-scale fish farmers are strengthened.</p>	<ul style="list-style-type: none"> <li>• Extension workers are trained applied appropriate technologies.</li> <li>• Quality control managers are grown-out.</li> <li>• Key fish farmers are trained applied appropriate technologies.</li> </ul>	<ul style="list-style-type: none"> <li>• Report of DGF</li> <li>• Report of DINAS</li> <li>• Baseline study and project monitoring evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental condition for freshwater aquaculture does not get worse.</li> </ul>
<p><b>Outputs:</b>                      1. High-quality broodstock of existing freshwater fish culture species are supplied.                      2. Quality of aquaculture products (seed and grow-out fish) of existing freshwater fish culture species is improved.                      3. Fish breeding technologies for new species are developed.</p>	<ol style="list-style-type: none"> <li>1. Number of qualified broodstock is increased.</li> <li>2-1. Number of fish farmers producing seeds certified by Loka Jambi is increased.</li> <li>2-2. Number of fish farmers producing grow-out fish certified by Loka Jambi is increased.</li> <li>3-1. Number of domesticated broodstock is increased.</li> <li>3-2. Significant amount of seeds can be produced.</li> <li>3-3. Technical papers on breeding of new species are prepared.</li> <li>4-1. Information regarding aquatic environment is published.</li> <li>4-2. Seminar on the project achievement is held.</li> <li>5-1. Information of appropriate technologies is increased.</li> <li>5-2. Extension materials for extension workers is prepared.</li> </ol>	<ol style="list-style-type: none"> <li>1. Report of DGF</li> <li>2-1. Annual report of Loka Jambi</li> <li>2-2. Annual report of Loka Jambi</li> <li>3-1. Annual report of Loka Jambi</li> <li>3-2. Annual report of Loka Jambi</li> <li>3-3. Reports of the Project</li> <li>4-1. Reports of the Project</li> <li>4-2. Record of seminar</li> <li>5-1. Reports of the Project</li> <li>5-2. Reports of the Project</li> </ol>	<ul style="list-style-type: none"> <li>• Required budget for training is available by local government.</li> </ul>
<p>4. Knowledge and technology for sustainable freshwater aquaculture are disseminated.                      5. Extension programs for existing and new species are improved.</p>			

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<p>Activities:</p> <ol style="list-style-type: none"> <li>1-1. Demonstrate broodstock production.</li> <li>1-2. Introduce quality analysis equipment.</li> <li>1-3. Improve methodologies to examine the quality (fish disease, physiology, physical conditions, genetics, etc).</li> <li>1-4. Examine quality of broodstock produced.</li> <li>2-1. Demonstrate seed and grow-out fish production.</li> <li>2-2. Introduce quality analysis equipment.</li> <li>2-3. Improve methodologies to examine the quality.</li> <li>2-4. Examine quality of seed and grow-out fish specimen produced.</li> <li>3-1. Domesticate wild broodstock.</li> <li>3-2. Accumulate basic biological knowledge.</li> <li>3-3. Conduct experimental breeding and seed production.</li> <li>3-4. Introduce fish feed production technology.</li> <li>4-1. Specify current environmental problems on freshwater aquaculture.</li> <li>4-2. Examine activities in solving problems.</li> <li>4-3. Organize special seminars on sustainable freshwater aquaculture development.</li> <li>5-1. Carry out training programs for extension workers and quality control managers.</li> <li>5-2. Support training program of DINAS for key fish farmers.</li> <li>5-3. Introduce audio-visual materials.</li> <li>5-4. Conduct socio-economic survey of fish farmers.</li> <li>6-1. Conduct baseline survey of freshwater aquaculture.</li> <li>6-2. Conduct project monitoring evaluation.</li> </ol>	<p>Inputs:</p> <p>[Japan 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 &amp; Training expert</li> </ul> </li> <li>Short term experts: <ul style="list-style-type: none"> <li>as required</li> </ul> </li> </ul> </li> <li>2) Equipment <ul style="list-style-type: none"> <li>Machinery, Laboratory equipment, Seed production equipment, Audio-visual equipment, Vehicles, Books, etc.</li> </ul> </li> <li>3) Counterpart training in Japan <ul style="list-style-type: none"> <li>2-3 persons annually.</li> </ul> </li> <li>4) Local cost <ul style="list-style-type: none"> <li>Part of expenses for project activities</li> </ul> </li> </ol>	<p>[Indonesia 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>Fish breeding</li> <li>Fish culture</li> <li>Extension &amp; Training</li> </ul> </li> <li>Necessary other C/P</li> <li>2) Facilities <ul style="list-style-type: none"> <li>- Facilities of Loka Jambi including office for Japanese experts</li> <li>- Facility and equipment of BBIS and BBIL (as required)</li> </ul> </li> <li>3) Equipment <ul style="list-style-type: none"> <li>- Equipment which is not supplied by Japan side.</li> </ul> </li> <li>4) Local cost <ul style="list-style-type: none"> <li>- Budget for operation of facilities</li> <li>- Budget for project activities which is not covered by Japan side.</li> </ul> </li> </ol>	<ul style="list-style-type: none"> <li>• Custom clearance of equipment transported from Japan is not much delayed.</li> <li>• Required counterpart budget for Loka Jambi is allocated.</li> <li>• C/P works continuously.</li> </ul> <p>Preconditions</p> <p>Loka development policy is sustained by the new administration</p>
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Annex II Draft of Tentative Schedule of Implementation

Major Item/Project Year	1st	2nd	3rd	4th	5th
1. Improvement of freshwater aquaculture technology for existing species					
1) Common Carp (Ikan Mas)	.....				
2) Tilapia (Ikan Nila)	.....				
3) Pangasius (Ikan Patin)	.....				
4) Freshwater Giant Prawn (Udang Galah)	.....				
2. Development of freshwater aquaculture technology for new species					
1) Sand Goby (Ikan Betutu)	.....				
3. Dissemination of knowledge and technology	.....				
4. Development of extension program	.....				
5. Project evaluation					
1) Baseline study	.....				
2) Monitoring and evaluation		.....			
		(continually as required)			

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### Annex III Function and Composition of the Joint Committee

1. The functions of the Committee are as follows:

- a. Formulation of annual work plan for the Project,
- b. Review of annual work plan of the Project,
- c. Review of exchange of views on major issues of all problems arising in connection with the technical cooperation,
- d. Examination of local budget-draft necessary for the Project,
- e. Staffing of the Project, and
- f. Other matters as appropriate.

2. The composition of the Committee is as follows:

- a. Chairperson of the Committee: Director General of Fisheries.
- b. Members:

Indonesian side:

- Director of Seed Development, Directorate General of Fisheries (hereinafter referred to as "DGF")
- Director of Planning, DGF
- Representative of Freshwater Seed Sub-Directorate, Seed Development Directorate, DGF
- Head of Regional Freshwater Aquaculture Development Center in Jambi
- Representative of the organization for aquaculture extension and training.
- Representative of the organization for aquaculture research.
- Representative(s) of other related organization(s), if necessary.

Japan side:

- Team Leader
- Coordinator
- Technical Experts assigned to the Project
- Resident Representative of JICA in the Republic of Indonesia
- Other personnel concerned, to be dispatched by JICA, if necessary.

Note: Official(s) of the Embassy of Japan may attend the meeting of the Joint Committee as observer(s).



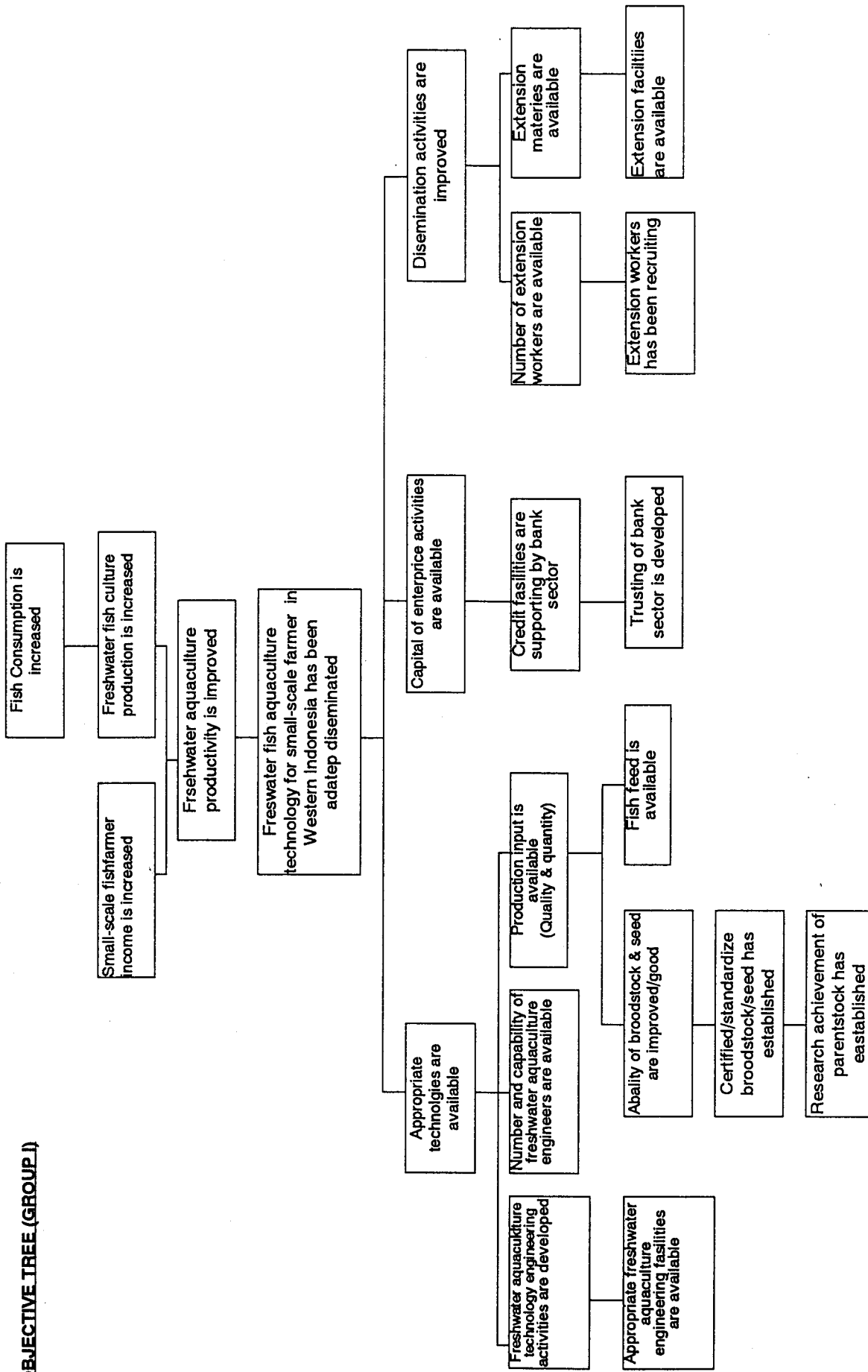
## 付属資料 2

PCM ワークショップにて作成した

目的系図、PDM

(グループ別)

**OBJECTIVE TREE (GROUP I)**



**Group I**

Project name : Fresh water Aquaculture Development in western Indonesia;

Duration : 2000 - 2005;

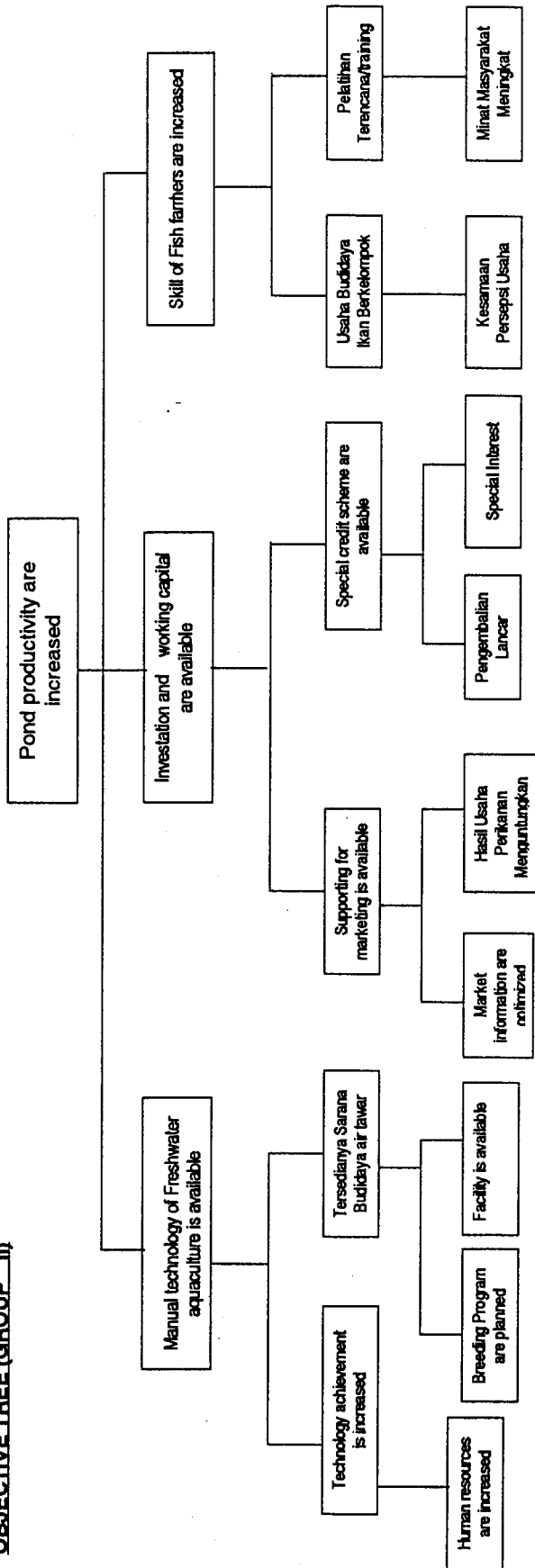
Project area :

Date :

Narrative Summary :	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><b>Overall Goal :</b> Welfare and income of small-scale fish farmer are improved;</p>	<p>- Income of small scale fish farmer increased;</p>	<p>Project report on Socio economic survey;</p>	
<p><b>Project Purpose :</b> Sustainable small scale freshwater aquaculture Development in western Indonesia;</p>	<p>- Number of small-scale fish farmers are increased;</p>	<p>- Statistic record from DGF and the respective provinces regency;</p>	<p>- Fish market price does not drop; - National economic condition is favorable;</p>
<p><b>Outputs :</b></p> <ol style="list-style-type: none"> <li>1. Appropriate technology for small scale fresh water aquaculture ;</li> <li>2. Broodstock quality is improved;</li> <li>3. INS is available;</li> <li>4. Trainers and extension worker's skill are improved;</li> <li>5. Small scale farmer's skill are improved;</li> <li>6. Availability of better broodstock quality;</li> </ol>	<ol style="list-style-type: none"> <li>1.1. Applicable fish culture manual for 5 important commercial fish species;</li> <li>1.2. Productivity &amp; production increase;</li> <li>2. Increase of growth rate ( %), survival rate ( %) , resistance disease, late maturity;</li> <li>3. INS of (total 30 INS) <ul style="list-style-type: none"> <li>- 5 strain of common carp;</li> <li>- 2 strain of Nile tilapia;</li> <li>- 1 strain of patin;</li> <li>- 1 strain of lele;</li> <li>- 1 strain of gourami;</li> </ul> </li> <li>4. Number of professional aquaculture extension workers increase (%);</li> <li>5. Number of small-scale farmer skill increase;</li> <li>6. - Better quality of common carp BS: 2800 kg (1400 of fish); <ul style="list-style-type: none"> <li>- Better quality of Tilapia BS: 1700 kg (5600 of fish);</li> <li>- Better quality of Patin BS : 1.800 kg (600 of fish);</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>1.1. Project records of DGF;</li> <li>1.2. Project records from field test;</li> <li>2. Project record from field test;</li> <li>3. Approval number from National Standardization Board;</li> <li>4. Training record from fisheries province level;</li> <li>5. Training record from fisheries province level;</li> <li>6. Annual report from BBIS in each fisheries province;</li> </ol>	<ul style="list-style-type: none"> <li>- Financial support to exist for fish farmers;</li> <li>- Assurance of Aquaculture security;</li> <li>- Water supply is sufficient for all the year around;</li> <li>- No disaster (outbreak of disease, pollution etc) occur;</li> </ul>

<p><b>Activities :</b></p> <ol style="list-style-type: none"> <li>1.1. To improve fresh water aquaculture technology;</li> <li>1.2. To improve hatchery &amp; lab equipment;</li> <li>2.1. Genetic improvement of broodstock;</li> <li>2.2. Introduction of better strain of fish;</li> <li>2.3. Broodstock management;</li> <li>3.1 .To formulate INS;</li> <li>3.2. Biological characterization of strain species ;</li> <li>3.3. To control the quality the quality of broodstock;</li> <li>4.1. To conduct the training course for trainers and extension workers;</li> <li>4.2. To produce teaching material for course;</li> <li>5.1. To conduct the training course for farmers;</li> <li>5.2. To produce teaching material for course;</li> <li>6.1. To produce good broodstock quality;</li> <li>6.2. To distribute the high quality of brood stock ;</li> <li>7. To conduct socio-economic survey;</li> </ol>	<p><b>INPUT :</b></p> <p>Japan;</p> <p>Personal :</p> <p>Expert :</p> <ul style="list-style-type: none"> <li>- Project leader, 60MM;</li> <li>- Project coordinator, 60 MM;</li> <li>- Fish breeding, 60 MM;</li> <li>- Extension, 12 MM;</li> <li>- Feed Nutrition, 60 MM;</li> <li>- Fish genetic, 60 MM;</li> <li>- Fish disease, 36 MM;</li> </ul> <p>Equipment :</p> <ul style="list-style-type: none"> <li>- Laboratory equipment;</li> <li>- Hatchery equipment;</li> <li>- Vehicle;</li> <li>- Broodstock transportation (truck);</li> </ul> <p>Counterpart Training:</p> <ul style="list-style-type: none"> <li>- person per year;</li> </ul> <p>Fellowship :</p> <ul style="list-style-type: none"> <li>- person for master degree;</li> </ul> <p>Local cost for:</p> <ul style="list-style-type: none"> <li>- Facilities;</li> <li>- Extension support;</li> <li>- Technical Exchange;</li> <li>- etc;</li> </ul>	<p style="text-align: center;"><b>INDONESIA</b></p> <p>Counterpart Budget and ;</p> <ul style="list-style-type: none"> <li>- Project Manager, 60 MM;</li> <li>- Project Coordinator, 60 MM;</li> <li>- Project Secretary, 60 MM;</li> <li>- Counterpart Expert, 360MM</li> </ul> <ul style="list-style-type: none"> <li>- Office building;</li> <li>- Hatchery Building;</li> <li>- Fish pond;</li> </ul> <p><b>Precondition :</b></p> <ul style="list-style-type: none"> <li>- Dinas, BBIS, and BBI cooperate with the project</li> <li>- Facilities of Loka Jambi, BBIS, BBI has been prepared for the project;</li> </ul> <p>- Participation of the farmers to the project is good;</p> <ul style="list-style-type: none"> <li>- Trained fish farmers continue working on fish culture sector;</li> <li>- Supporting for local government is exist;</li> </ul>
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**OBJECTIVE TREE (GROUP II)**



**GROUP : 2**

**Project Name** : Small Scale Freshwater productivity Development Project

**Project Area** : 13 Province

**Project Duration** : 2000 - 2004

**Target Group** : Small Scale Farmers

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><b>Overall Goal</b> Freshwater Aquaculture Technology in Western Indonesia is Disseminated</p>	<p>Technology implementing on fish farmer level is increasing 5 % per year from early 2004.</p>	<p>Statistic Report from District, Province, and DGF.</p>	
<p><b>Project Purpose</b> Freshwater aquaculture technology achievement are increased</p>	<p>1. Productivity in Java increased up to 20 % 2. Productivity in Sumatra increased up to 50 %</p>	<p>1. Collecting Data from Target Group 2. Statistical Data</p>	<p>Fish of Freshwater still there</p>
<p><b>Outputs</b> 1. Freshwater Aquaculture technology is available. 2. Freshwater aquaculture facilities are available. 3. Qualified of Human Resources are available.</p>	<p>1.1. Technology need assessment result is available on 2000 1.2. Number of Technology brochures is available 2, 3, 4, 3, and 2 on 2000, 01,02, 03,04. 1.3. Carrying out of Fish farm Demonstration. for new technology on 2002,2003,2004 1.4. Carrying out fish farmers meeting on fish farm area in 13 provinces X 20 persons X 3 times per year 2.1 Inventory facilities need result is available. 2.2. Laboratories facilities completely on 2001 2.3. Pond equipment in BBI/UPBAT are available on 2001 3.1. Target Group Inventory Result in available On 2000 3.2. Training need inventory is available on 2000 3.3. Training facilities in 13 Province are available on 2001 3.4. Freshwater aquaculture are carrying out on : 2001:390; 2002:390; 2003:390 persons. 3.5. Comparative Study: 2000:130; 2001:130; 2002:130; 2003:130; 2004:130 persons. 3.6. Improved Training program is available on 2000 3.7. Carrying out of Impact Survey on 2000-2004.</p>	<p>1. Project Report 2. Project Progress Report 3. Activities Conducted Report 4. Evaluation Project report</p>	<p>Technology still needed by Fish farmers</p>

Activities	Input	
<p>1.1. To carry out of technology need Inventory.</p> <p>1.2. To do fish farm demonstration</p> <p>1.3. Introducing new technology</p> <p>1.4. To Carry out of Field meeting</p> <p>2.1 Inventory survey of freshwater Aq. facilities need</p> <p>2.2. To complete of Lab. Units</p> <p>2.3. To complete of pond equipment</p> <p>2.4. To complete of transportation facilities</p> <p>3.1. Training need assessment</p> <p>3.2. Improving training program</p> <p>3.3. To carry out of Fish farmers Training</p> <p>3.4. To carry out official Training</p> <p>3.5. Comparative study for fish farmers and government official.</p>	<p>Japan Side</p> <p>1. Budget: 90 %</p> <p>2. Team Leader (Long Term) 1</p> <p>3. Fish Breeding Expert (Short Term) 1</p> <p>4. Fish Disease Exp (Short Term) 1</p> <p>5. Fish Gen. Exp. (Short Term) 1</p> <p>6. Fish Feed Nutrition Exp (ST) 1</p> <p>7. Extension Expert (ST) 1</p> <p>8. Car: 20 Units</p> <p>9. Motorcycle : 30 Units</p> <p>10. Lab. Equipment: 13 Locations</p> <p>11. Training Equipment: 13 Location</p> <p>12. Stationary: 13 Locations</p> <p>13. Local Staff: 3 Persons</p> <p>14. BBI/UPBAT Rehabilitation: 13 Loc.</p>	<p>Indonesia Side</p> <p>1. Budget: 10 %</p> <p>2. Counter Part 30 Persons</p> <p>3. Equipment: Existing</p>

**Group 3**

**Project name :** Fresh water Aquaculture Development in western Indonesia;

**Duration :** 2000 - 2005;

**Project area :**

**Date :**

Narrative summary	Objectively variable Indicators	Means of Verification	Important assumptions
<b>Overall Goal:</b> 1. Freshwater aquaculture production is increased 2. Freshwater aquaculture productivity is increased	Freshwater aquaculture production increase about 50% in year 2005	1. Annual report of Dinas Perikanan Province 2. Survey report	Government policy is not change
<b>Project propose</b> Freshwater aquaculture technology for small-scale fish farmer in western Indonesia is disseminated	1. Number of private hatchery unit implemented freshwater aquaculture technology achieved 50 % in year 2005 2. Intensive area to implement the freshwater aquaculture technology increase 25% in year 2005	1. Survey report	Regional planning for aquaculture master plan is not change
<b>Output :</b> 1. Good quality of fish seed are available  2. Good quality of fish feed are available  3. Facility and equipment aquaculture are available  4. Chemical material and hormone are available	1.1 Fish seed production increase 50% in year 2005 in western Indonesia 1.2 Availability of seed and broodstock under INS increased 25% in year 2005 2. High quality of fish feed are available 50% in quantity in year 2005 3. Number of private fish hatchery achieved 50% on hatchery equipment standard in year 2005 4. Hormone and chemical material utilization on INS achieved 50% in year 2005	1. Seed inspector report  2. Aquaculture inspector report  3. Fish pest and parasite inspector report  4. Survey and monitoring report	1. Supporting of environmental condition are exist 2. Raw material for fish are available



<p><b>ACTIVITES</b></p> <p>1.1 Training on freshwater aquaculture of fish Farmer</p> <p>1.2 Good quality of broodstock supply</p> <p>1.3 INS applied on broodstock and seed</p> <p>2.1 Training on fish feed preparation for fish farmer</p> <p>2.2 Fish feed machine supply</p> <p>2.3 Applied and fish feed certification</p> <p>3.1 Equipment supply</p> <p>3.2 Fish transportation equipment supply</p> <p>4.1 Hormone and chemical material supply</p> <p>5.1 Information net-work supply</p> <p>6. Survey and monitoring</p>	<p><b>INPUT :</b></p> <p>Japan</p> <p>1. Personnel</p> <ul style="list-style-type: none"> <li>- Project leader 60 M/M</li> <li>- Project coordinator 60 M/M</li> <li>- Extension and training 60 M/M</li> <li>- Seed production Tech. 60 M/M</li> <li>- Culture Tech. 60 M/M</li> <li>- Sort term expert + Feed development + Assistant required</li> </ul> <p>2. Equipment</p> <p>3. Training in japan about 30 person</p> <p>Indonesia (13 Tk. I)</p> <p>1. Personnel</p> <ul style="list-style-type: none"> <li>- Koordinator di Pusat</li> <li>- Pimpro Tk. I</li> <li>- Bendpro Tk. I</li> <li>- Sekpro Tk. I</li> </ul> <p>2. Facilities</p> <ul style="list-style-type: none"> <li>- Petugas</li> <li>- Latihan</li> <li>- Laboratorium</li> </ul> <p>3. Dana Lokal</p> <ul style="list-style-type: none"> <li>- Pusat</li> <li>- Tk. I</li> </ul>	<p>1. Rupia currency is stable.</p> <p>2. Supporting by local peoples</p> <p><b>Precondition</b></p> <p>BBI, Loka and BBIS are available</p>
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## 付属資料 3

ジャンビ淡水養殖開発地域センター

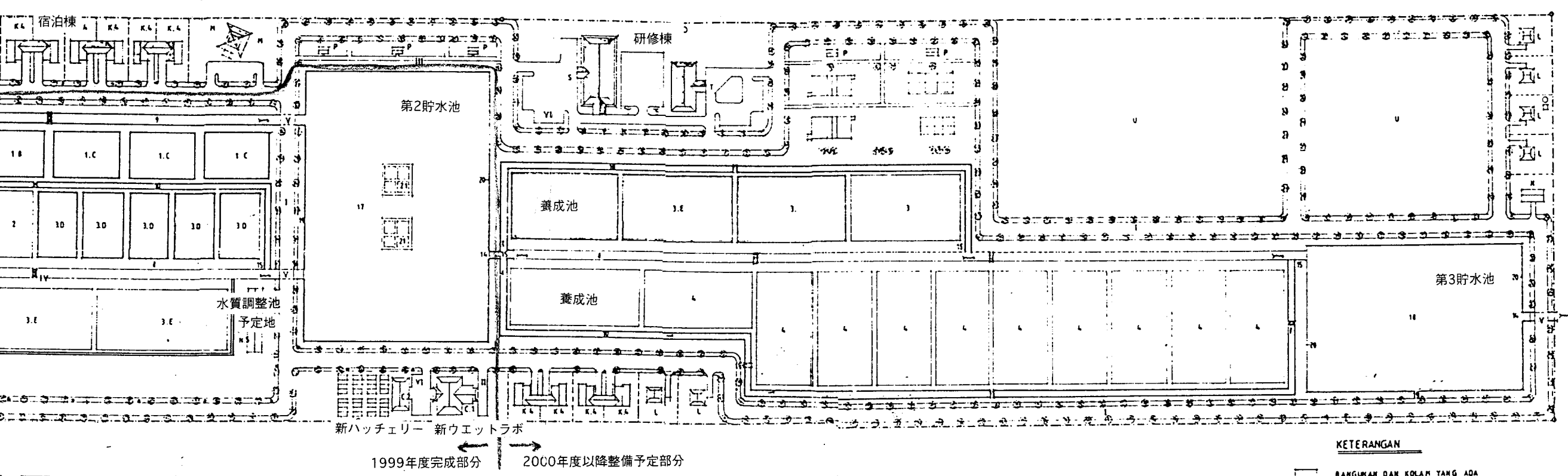
施工計画図面

(1999年11月現在)



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
M	Gudang	24 m <sup>2</sup>	3 Unit																			Gdy Pohon Asli
O	Rumah Genset	24 m <sup>2</sup>	1 Unit				12 m <sup>2</sup>	1 Unit	16 m <sup>2</sup>	1 Unit	26 m <sup>2</sup>	1 Unit										
P	Garasi	9 m <sup>2</sup>	8 Unit																			
R	Menara Air																					
S	KANTOR EXPERT	300 m <sup>2</sup>	1 Unit																			
JALAN LISTRIK DAN SAB																						
1	Jaringan Listrik Induk							1 Unit			1 Unit											
2	Jaringan Listrik Pembagi																					
3	Lamp Penerangan TL 20 Watt																					
4	Sumer Dan Lever							1 Unit														
5	Air Induk Air Bersih										1 Unit											
6	Jar. Pembagi Air Bersih																					

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
JALAN																						
I	An. Lingkungan Lokasi L. 6 m	3750 m <sup>2</sup>		200 m <sup>2</sup>																		
II	An. Lingkungan Bangunan L. 4 m	1025 m <sup>2</sup>																				
III	An. Setapak L. 2 m	500 m <sup>2</sup>																				
IV	Jembatan Penhubung									16 Unit												
V	Jemb. / Box Culvert 5 m									5 Unit												
VI	Parkir Area																					
VII	Gerang-Gerang Ø 100 cm	36 m <sup>2</sup>																				
VIII	Gerang-Gerang Ø 80 cm	214 m <sup>2</sup>																				
S	Aula/Ged. Pertemuan	340 m <sup>2</sup>																				
T	Ged. Labor. Biologi	220 m <sup>2</sup>																				



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
14	Pulu Air			3 Unit																		1 Unit
15	Bangunan Intake			6 Unit																		
16	Reservoir	17000 m <sup>2</sup>		1 Unit																		
17	Reservoir	6000 m <sup>2</sup>		1 Unit																		
18	Reservoir	3500 m <sup>2</sup>		1 Unit																		
19	Tanggul																					
20	Turap Beton Tanggul	550 m <sup>2</sup>																				140 m <sup>2</sup>
21	Jaringan Apung			4 Unit																		2 Unit

° SITE PLAN  
SKALA 1 : 1000

- KETERANGAN :
- : APBN TAHUN ANGGARAN 1995/1996
  - : APBN TAHUN ANGGARAN 1998/1999
  - : APBN TAHUN ANGGARAN 1996/1997
  - : ZEE TAHUN ANGGARAN 1996/1997
  - : APBN TAHUN ANGGARAN 1997/1998
  - : SPL-OECF TAHUN ANGGARAN 1999/2000
  - : APBN TAHUN ANGGARAN 1998/1999
  - : USULAN SPL-OECF TAHUN ANGGARAN 2000/2001

KETERANGAN

DIREKTOR BINA PERBENDIHAN  
DIREKTORAT JENDERAL PERIKANAN

W. SRI KARTATI RAMELAN  
NIP. 880 017 877

CATATAN      TGL      PARAF

PROYEK

BAGIAN PROYEK PEMBANGUNAN DAN  
PENGEMBANGAN LOKA BUDDAYA AIR  
TAWAR JAMBI

PEKERJAAN

PEMBANGUNAN SARANA LOKA BUDDAYA  
AIR TAWAR JAMBI

LOKASI

SUNGAI GELAM

MENYETUJUI  
PENGABDIAN PROYEK PEMBANGUNAN DAN  
PENGEMBANGAN LOKA BUDDAYA AIR  
TAWAR JAMBI

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MENGETAHUI

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TAWAR JAMBI

IR. HASRUL  
NIP. 880 017 877

KASUBCHIN CPDA KARYA  
KINERJA PU DATU. I PROP. JAMBI

W. SETIA BSO  
NIP. 740 020 426

PERENCANA

DIGAMBAR	DIPERIKSA	DISETUJUI
A. RACHIM	IR. ERI DAHLAN	IR. YURNALIS
NAMA GAMBAR	SKALA	
SITE PLAN	1 : 1000	

NOMOR	KODE	JUMLAH
01	MCS.01.040598	22

## 付属資料 4

インドネシア西部における

淡水養殖の経営事例

(淡水養殖現状調査より)

## インドネシア西部における淡水養殖の経営事例

事例1： ジャンビ市 パティン池中養殖 (1999年11月18日調査)

Loka Jambi の技術研修を受講した後、パイナップル畑を養殖池に転用した。

- ・ 養殖池の状態： 素掘り 水交換と通気は無し  
1面 200 m<sup>2</sup> 水深 1.5m 計6面
- ・ 養殖期間： 4～5ヶ月 年に2サイクル
- ・ 種苗： サイズ 1.5～3.0 インチ (30日目) 175～275 ルピア/尾
- ・ 養殖密度： 1,900 尾/200 m<sup>2</sup>池
- ・ 生残率： 90%
- ・ 収穫サイズ： 500～600 g/尾
- ・ 飼料： 自家配合 (鶏用配合主体) を投餌 1,500 ルピア/kg  
(市販配合飼料は、2,500 ルピア/kg)
- ・ 増肉係数： 2.0～2.5
- ・ 生産者価格： 7,000 ルピア/kg

経営収支： 1サイクル/池1面 (200 m<sup>2</sup>) 当たり

### (1) 収入

生産量	940.5 kg	1900 尾×0.9×0.55 kg
収入計	6,583,500 ルピア	940.5kg×7,000 ルピア

### (2) 支出

種苗代	380,000 ルピア	1,900 尾×200 ルピア
飼料代	3,172,500 ルピア	940kg×2.25×1,500 ルピア
肥料代	10,000 ルピア	尿素、鶏糞
その他	200,000 ルピア	資機材、消耗品、修繕など
人件費	なし	家内労働
池造成費	200,000 ルピア	5年間で償却 2,000,000 ルピア/5年/2回
金利	696,000 ルピア	銀行融資 5,800,000 ルピア×0.12
支出計	4,658,5000 ルピア	

### (3) 利益 (1サイクル：4～5ヶ月)

1,925,000 ルピア (約 30,000 円)

事例2： 西スマトラ州 コイの箱生簀養殖 (1999年11月25日調査)

水量が豊富な灌漑用水路に箱生簀を設置し、集約的に養殖を行う。

- ・箱生簀： 木枠と網地による直方体の簡易型生簀 5m×2m×1m
- ・養殖期間： 4ヶ月
- ・種苗： 中間育成（稲田育成）された種苗を民間より購入  
8～12 cmサイズ 200 ルピア/尾
- ・養殖密度： 2,500 尾/箱生簀
- ・生残率： 90%
- ・収穫サイズ： 3 尾/kg (300～400g/尾)
- ・飼料： 市販配合飼料を使用 2,500 ルピア/kg
- ・増肉係数： 2.0
- ・生産者価格： 7,000～12,000 ルピア/kg

経営収支 (1 サイクル/箱生簀)

(1) 収入

生産量	740kg	2,500 尾×0.9×0.33kg
収入	5,920,000 ルピア	740kg×8,000 ルピア

(2) 支出

種苗代	500,000 ルピア	2,500 尾×200 ルピア
飼料代	3,700,000 ルピア	740kg×2.0×2,500 ルピア
雑費	200,000 ルピア	消耗品 など
人件費	なし	家内労働
箱生簀製作費	1,170,000 ルピア	製作費 3,500,000 ルピア/3年
金利	なし	自己資金
支出計	5,570,000 ルピア	

(3) 利益 (1 サイクル:4ヶ月)

1,320,000 ルピア (約 20,000 円)

事例3： リアウ州 コイの箱生簀養殖 (1999年11月26日調査)

天然河川に大型の箱生簀を設置し、養殖を行う。

- ・箱生簀： 船型 (流木による破損防止の為) 3m×10m×1.5m
- ・養殖期間： 1年
- ・種苗： ジャンビ州より大型種苗を購入 300ルピア/尾
- ・養殖密度： 1,000尾/箱生簀
- ・生残率： 90%
- ・収穫サイズ： 600kg/尾
- ・飼料： 市販飼料 2,500ルピア/kg
- ・増肉係数： 2.5
- ・生産者価格： 17,000～13,500ルピア

経営収支 (1サイクル/箱生簀)

(1) 収入

生産量	540kg	1,000尾×0.9×0.6kg
収入	7,290,000ルピア	540kg×13,500ルピア

(2) 支出

種苗代	300,000ルピア	300ルピア×1,000尾
飼料代	3,375,000ルピア	540kg×2.5×2,500ルピア
雑費	500,000ルピア	資機材、消耗品、修繕 など
人件費	なし	家内労働
箱生簀製作費	1,170,000ルピア	製作費 3,500,000ルピア/3年
支出計	5,345,000ルピア	

(3) 利益 (1サイクル：1年)

1,945,000ルピア (約30,000円)