

**1. Program Title:** Program 1-4

Aquaculture Water Management

**2. Location**

Program Site: Whole Musi River Basin (59,932 km<sup>2</sup>)

At present, conflicts between aquaculture and irrigation occur in the Basin. The following table shows present aquaculture areas:

**Present Aquaculture Area of Fishpond (ha)**

<b>OKU</b>	<b>OKI</b>	<b>Muaraenim</b>	<b>Lahat</b>	<b>MURA</b>
3,550	164	409	1,552	703
<b>MUBA</b>	<b>PLB</b>	<b>Pagaralam</b>	<b>Prabumulih</b>	<b>Rejang L.</b>
275	29	169	12	545

**3. Objectives**

Aquaculture in paddy fields experiences severe conflicts with irrigation water use. Irrigation water cannot reach to the downstream of irrigation system due to aquaculture. On the other hand from aquaculture side, quantity and quality of water is not stable due to irrigation.

Aquaculture and irrigation are important from the viewpoint of their quantities of consumptive water uses as well as economic sectors. Those water use activities will be activated in the future. Therefore, methods for solving these conflicts are to be developed through bottom up approach.

In order to solve the conflicts, areas for aquaculture and irrigation are better to be separated from the viewpoint of water management, e.g., gate operation and farm conditions, etc. If land uses cannot be controlled, aquaculture areas are better to be gathered by reallocation or exchange of farm lots. Implementation of the program is to be carried out by each regency/municipality.

The objectives of this program are:

- To develop solving methods of conflicts between aquaculture and irrigation water uses
- To realize equitable and sustainable regional development

**4. Executing Agency**

- Water Resources Service, Agriculture Service and Fishery Service of South Sumatra Province with cooperation of Bengkulu Provincial Government
- Related Agency: Regency/Municipality Governments in the Basin

## 5. Program Description

In order to realize the objectives of the program, the main activities are:

### Sub-Program 1-4-1: Researching Solution Methods

- Holding public consultation
- Investigating situations of conflicts, including their background and history, locations, numbers of cases, land tenure system, etc.
- Surveying methods of reallocation or exchange of farm lots, consisting of (may be similar to the methods adopted in land consolidation):
  - Intension survey on reallocation or exchange of farm lots
  - Cadastral mapping
  - Evaluation of farm lots
  - Determination of prices of the lots
  - Liquidation methods
  - Registration of reallocated or exchanged lands

### Sub-Program 1-4-2: Disseminating of the Methods

- Disseminating the methods to regencies/municipalities

## 6. Implementation Schedule

Implementation period is 2 Years:

Priority Program		1st Year				2nd Year				3rd Year				4th Year				5th Year				6th Year				7th Year								
No.	Title	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	
<b>1-4</b>	<b>Aquaculture water management</b>																																	
1-4-1	Researching solution methods																																	
1-4-2	Dissemination of the methods																																	

## 7. Program Cost

PC: 100 (person• day) x 150,000 (Rp./ person• day) = Rp. 15 million

Research and dissemination: 3 (person) x 24 (month) x 5 (day/month) x 150,000 (Rp./ person• day) = Rp. 54 million

Administration (5%): Rp. 3.5 million

Total: Rp. 72.5 million

## 8. Others

**1. Program Title:** Program 1-6

Modeling of Water Use Management

**2. Location**

Program Site: Whole Musi River Basin (59,932 km<sup>2</sup>)

**3. Objectives**

Indonesia faces five major problems, and one of them is the slow process of economy recovery. Economic recovery is aimed to restore the economic growth and equity to a reasonable rate and to attain sustainable development. Propenas 2000-2004 stipulates that this aim can be realized only with the management of natural resources that ensures the preservation of the supporting capacity of the environment and the conservation of natural resources.

In order to achieve and realize the sustainable water management, equitable and balanced water uses, and conservation of environment in Musi River Basin, water management model is to be developed. In the modeling, people's participation is necessary in order to make this model sustainable. The objectives of this program are:

- To promote a mechanism to improve sustainable water management in the Musi River Basin
- To promote equitable and balanced water uses in the Musi River Basin
- To enhance conservation of environment of the Musi River Basin

**4. Executing Agency**

- DGWR of Ministry of Settlement and Regional Infrastructure, and Water Resources Service of South Sumatra Province with cooperation of Jambi, Bengkulu and Lampung Provincial Governments
- Related Agency: Forestry Service of South Sumatra Province, BMG and UPTD

**5. Program Description**

Sub-Program 1-6-1: Information and Knowledge Base Development

(1) Review of relevant programs; (2) Identify actual modeling needs and data requirement; (3) Determination of database structures, and computer and communication networks; (4) Determination of database access; (5) Preparation of procurement packages; (6) Information and knowledge base development; and (7) Holding of public consultation/workshop.

Sub-Program 1-6-2: Basin Modeling Development

(1) Hydrological review; (2) Review of historic water resources development and water use; (3) Review of available models; (4) Design of modeling structure; (5) Preparation of procurement packages; (6) Development of models; and (7) Holding of workshop.

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graph TD
    subgraph Model [Proposed Water Use Management Model]
        IKB[Information and Knowledge Base]
        PP[Pre-processing Data]
        BEM[Basin and Environmental Modeling]
        PSD[Post-processing Data]
        IAT[Impact Assessment Tools]
        IKB --> PP
        PP --> BEM
        BEM --> PSD
        PSD --> IAT
        IAT --> IKB
        IKB <--> BEM
        IKB <--> IAT
    end
    Model --> DM[Decision Makers]
    
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### 5. Program Description (continuous)

Sub-Program 1-6-3: Environmental Analysis and Modeling

- (1) Identification of data needs;
- (2) Tools for impact analysis;
- (3) Environmental assessments;
- (4) Scenario modeling and evaluation; and
- (5) Holding of workshop.

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### 6. Implementation Schedule

Implementation period is 2 Years:

Priority Program		1st Year				2nd Year				3rd Year				4th Year				5th Year				6th Year				7th Year			
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
<b>1-6</b>	<b>Modeling of water use management</b>																												
1-6-1	Information and knowledge base management	■	■	■	■																								
1-6-2	Basing modeling development					■	■	■	■																				
1-6-3	Environmental analysis and modeling									■	■	■	■																

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### 7. Program Cost

Engineering: 60 (MM) x 200 (Rp. million/MM) = Rp. 12,000 million  
Hardware, Software and Workshop: Rp. 900 million  
Administration (5%): Rp. 645 million  
Total: Rp. 13,545 million

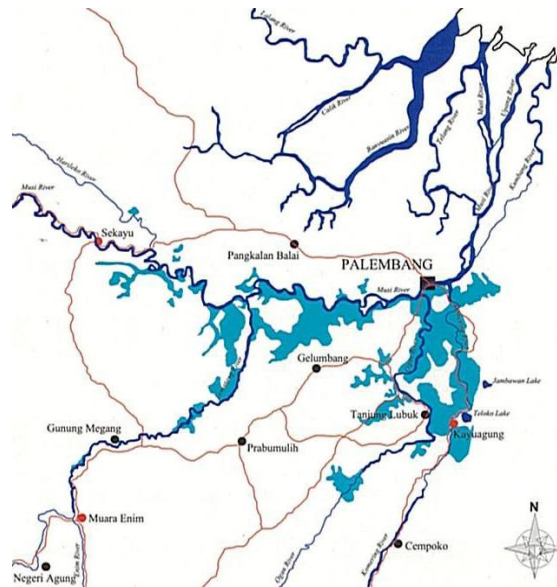
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### 8. Others

**1. Program Title:** Program 2-1  
Land Use and Zoning Program

**2. Location**

Subject site is mainly in the swamp and tidal swamp rice field area in Lower Musi River Basin.



**3. Objectives**

Floodplains are important for the water resources because they serve for flood and erosion control, help maintaining high water quality, and contribute to sustaining groundwater supplies.

The objectives of this program are:

- To maintain the present river regime and to manage river condition
- To maintain water-retarding function in floodplains (for water use, flood mitigation, environmental conservation, etc.)
- To conserve the swamp and tidal swamp rice field areas
- To prevent wanton development activities by zoning the land use control area

**4. Executing Agency**

- Dinas PU Pengairan Office, South Sumatra

**5. Program Description**

Existing laws and regulations already control the activities in the floodplains, thus needs is the actual zoning of floodplain areas in the Musi River Basin. This program clears zoning of floodplain areas.

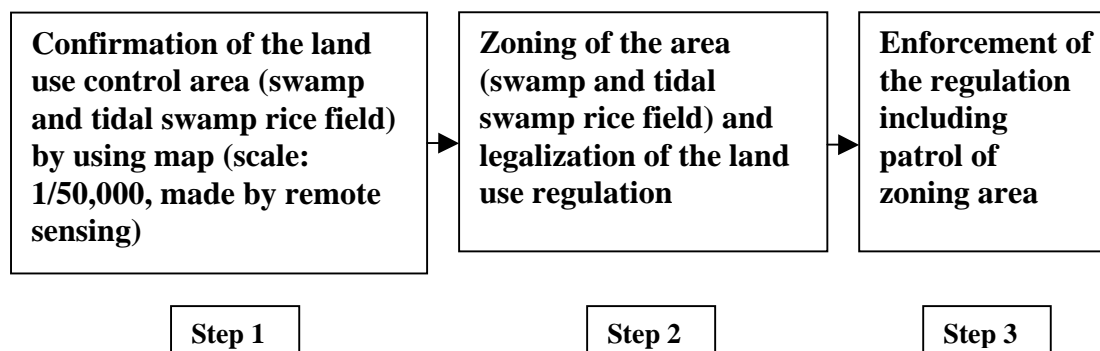
The program is composed of the following activities:

- Confirmation of the land use control area (swamp and tidal swamp rice field) by using map (scale: 1/50,000, made by remote sensing)
- Zoning of the area (swamp and tidal swamp rice field)

## 5. Program Description (continuous)

- Legalization of the land use regulation
- Enforcement of the regulation including patrol of zoning area

Steps of the program are as follows:



After the confirmation of the area, zoning shall be conducted in the spatial plan of the relevant Kabupaten and Kotamadya. Socialization of the spatial plan and explanation to the public for the necessity and importance of the floodplain management is important. Then, land use control shall be executed. The subject floodplains are basically maintained for the present use of non-tidal irrigation, swamps, etc., thus these areas shall better be incorporated into the provincial rice production designated areas for sustainable maintenance.

## 6. Implementation Schedule

Implementation schedule is as follows:

Priority Program		1st Year		2nd Year		3rd Year		4th Year		5th Year		6th Year		7th Year			
No.	Title	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
<b>2-1</b>	<b>Zoning and land use control program</b>																
2-1-1	Confirmation of the land use control area	Preparation				Full Operation											
2-1-2	Zoning of the area																
2-1-3	Execution																

## 7. Program Cost

(1) Direct Cost		
Confirmation of the land control area	Rp.	71,000,000
Zoning of the area	Rp.	-
(2) Indirect Cost		
Physical Contingency	Rp.	7,000,000
(3) Total	Rp.	78,000,000

## 8. Others