

1. Program Title: Program 1-4

Aquaculture Water Management

2. Location

Program Site: Whole Musi River Basin (59,932 km²)

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

Present Aquaculture Area of Fishpond (ha)

OKU	OKI	Muaraenim	Lahat	MURA
3,550	164	409	1,552	703
MUBA	PLB	Pagaralam	Prabumulih	Rejang L.
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
1-4	Aquaculture water management																												
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 km²)

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

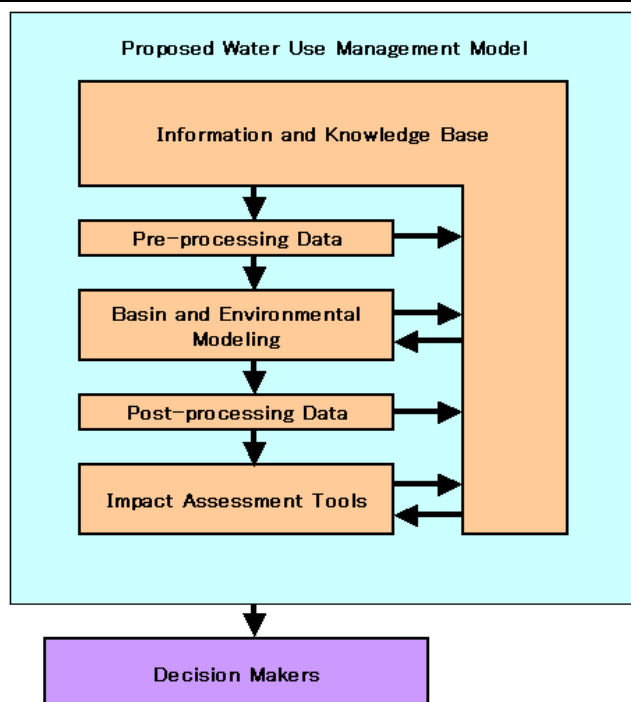
5. Program Description

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.



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.

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
1-6	Modeling of water use management																												
1-6-1	Information and knowledge base management																												
1-6-2	Basing modeling development																												
1-6-3	Environmental analysis and modeling																												

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

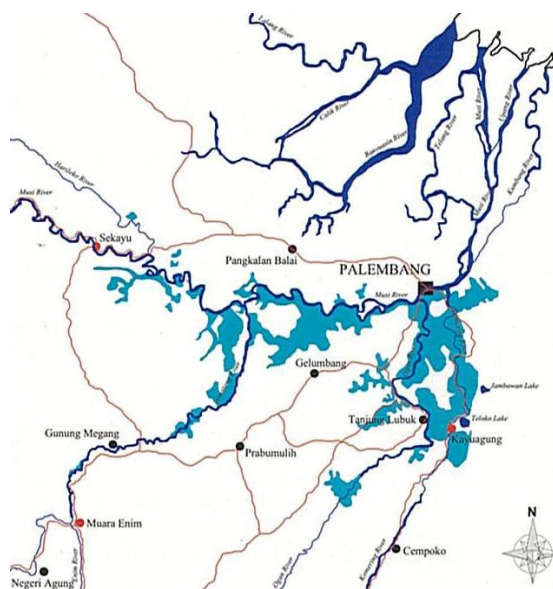
8. Others

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.

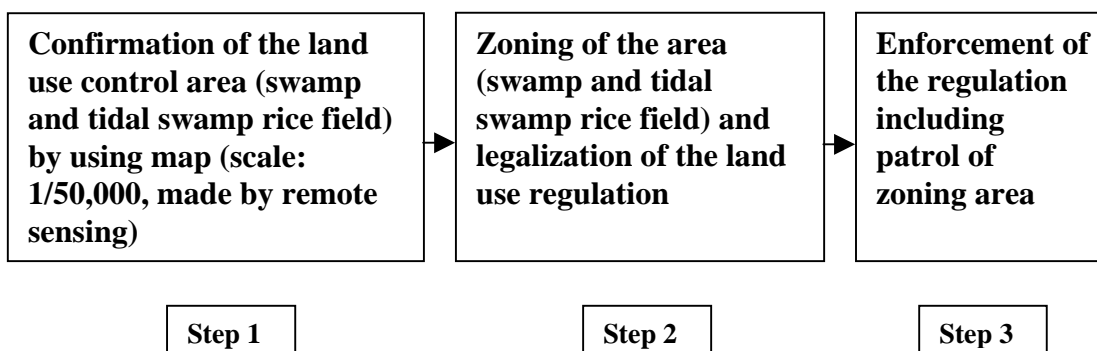
The program is composed of the following activities:

- 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	I	II	III	IV	I	II	III	IV	I	II	III	IV
2-1	Zoning and land use control program																												
2-1-1	Confirmation of the land use control area																												
2-1-2	Zoning of the area																												
2-1-3	Execution																												

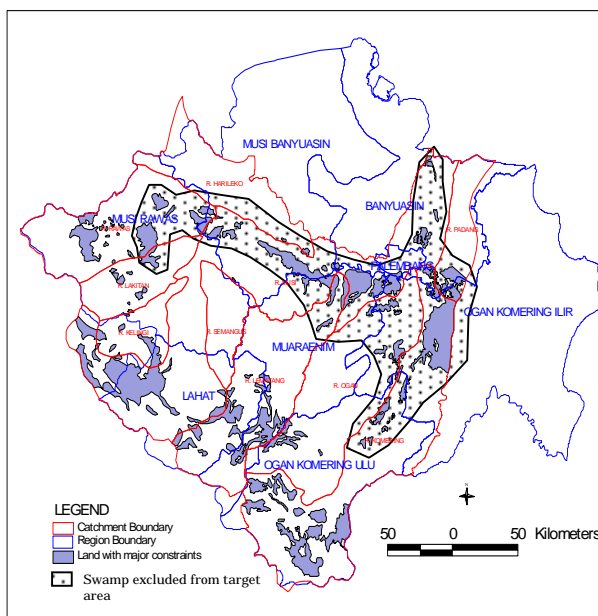
7. Program Cost

(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

Application of Agroforestry (tumpang sari) on land with major constraints

Subject sites are land with major constraints for agriculture, which is shown as the blue area in the map.



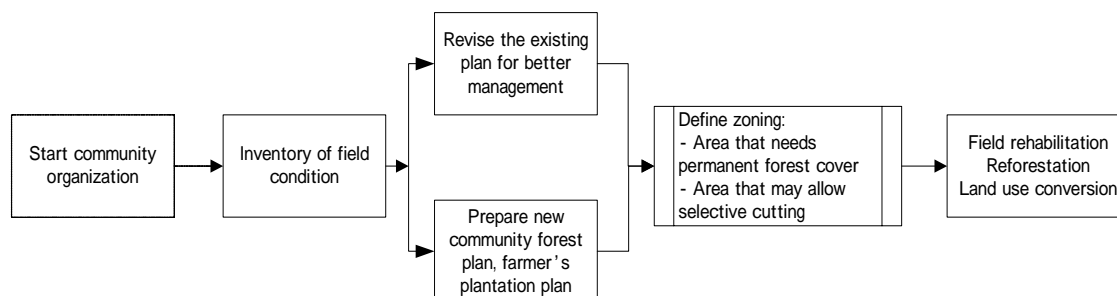
- To reduce soil erosion in farmer's plantation area
- To encourage farmers to introduce agroforestry method to use part of their house lot as home garden
- Lower farmer's temptation for short cycle of tree cutting (rubber and coffee plantations)
- Educate farmers in technique for soil conservation

- **Kabupaten- and Kecamatan-level Forest, Estate, and Agriculture Office:** Responsible for selection of project area, project planning, and provision of technical guidance to extensions.
- **Forest, Estate, and Agriculture Extension Offices:** Responsible for contribution for the project planning, cooperation with the farmers in the project execution, monitoring and reporting the achievement of the project to upper-level offices.
- **Provincial Forestry, Estate, and Agriculture Office:** Responsible for providing general guidelines, preparation of budget, and provision of outside expert.
- **Provincial- and Kabupaten-level BAPPEDA:** Responsible for legislative action for land use regulation on the land with steep slope and severe soil erosion.

- Planning and Design, Land Preparation,
- Nursery Preparation and Maintenance, Tree Plantation, Training.

5. Program Description (continuous)

Steps for introduction of agroforestry are as follows:



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	I	II	III	IV	I	II	III	IV	I	II	III	IV
3-1	Application of agroforestry in farmer's plantations																												
3-1-1	Project formulation -Form a task team-																												
	-Choose the project sites																												
	-Negotiate with the community leaders																												
3-1-2	Planning and design -Form a model project scheme																												
	-Start community organization																												
	-Inventory of field condition																												
	-Revise the existing plan for better management																												
	-Prepare new community forest plan, farmer's plantation plan																												
	-Define zoning in the plan																												
3-1-3	Project implementation -Training-																												
	-Land preparation																												
	-Check dam construction																												
	-Nursery preparation and maintenance																												
	-Tree planting																												
	-Forest /field maintenance																												
3-1-4	Monitoring and reporting -Develop monitoring and evaluation scheme																												
	-Develop monitoring and evaluation scheme																												
	-Conduct monitoring and reporting																												
	-Revision of project scheme																												
	-Sharing project experience in inter-project communication																												

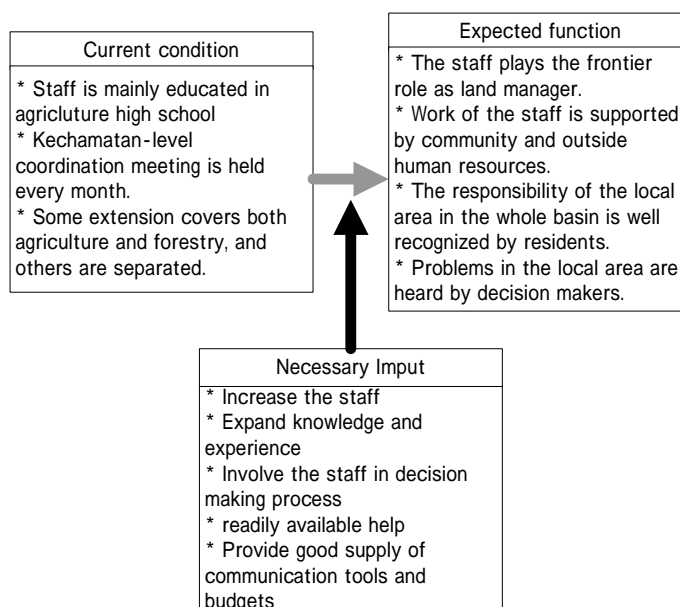
7. Program Cost (30 sites, 6,000 ha.)

Planning and Design	Rp. 2,155 million
Land Preparation	Rp. 27,240 million
Nursery Preparation and Maintenance	Rp. 1,148 million
Tree Plantation	Rp. 13,067 million
Training	Rp. 1,901 million
Total	Rp. 45,511 million

8. Others

5. Program Description (continuous)

Expected function and necessary input for agriculture/forestry extensions:



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	I	II	III	IV	I	II	III	IV	I	II	III	IV
3-3	Strengthening of agriculture/ estate/ forestry extension																												
3-3-1	Project formulation																												
	-Form a task team																												
	-Choose the project sites																												
	-Negotiate with the community leaders																												
3-3-2	Implementation																												

7. Program Cost

Technical training of opponent area management	Rp. 743 million
Provision of higher education (12 months)	Rp.2,160 million
Increase the number of staff	Rp.2,520 million
Establish/renovate new extensions	Rp. 310 million
Introduce necessary equipment	Rp. 930 million
Total	Rp.6,663 million

8. Others

1. Program Title: Program 3-4

Reforestation of Production Forest and Forest Estate

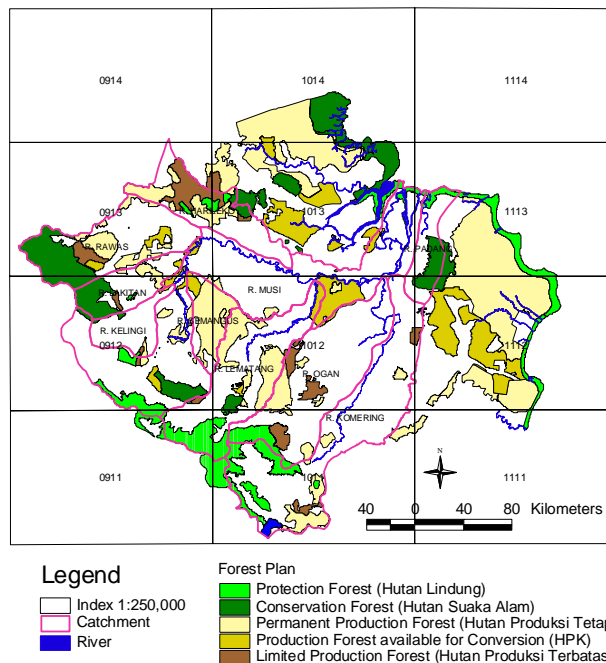
2. Location

Subject sites are the production forests that already received the Reforestation Fund in the past.

The map shows all the production forests (Permanent, Conversion, and Limited Production), together with Protection and Conservation Forests.

Priority 21 sites:

HP. Mangsang Mendis, HP Rawas Utara I, HP Rawas Lakitan, HPT Rawas Lakitan, HP Bukit Balai, HPT Bukit Balai, HL Bukit Balai, HPT Gumai Tebing Tinggi, HPT Isau-Isau, HP Air Empelu, HP Bukit Asam, HPT Saka, HPT Meranti S. Kapas S. Saka Suban, HPT. Meranti LB. Buah, HP. Meranti S. Bayat S. Bahar, HP. Meranti S. Merah, HP. Sungai Lalan, HP Simpangheran Beyuku, HP Mesuji III, HPT. Air Tebangka, HP. Saka.



3. Objectives

- To reduce soil erosion in Production Forest area
- To make sure that the obligation of reforestation by the forest companies are fulfilled as intended.
- To rehabilitate forest resource of the Province for sustainable use in the future.

4. Executing Agency

- Provincial Forestry office: Responsible for monitoring the reforestation fund and its recipient companies, providing reforestation guidances based on national and international guidelines, coordinating monitoring activities of tree growth using satellite images, consulting with Ministry of Forestry to establish stronger legal action to monitor the use of Reforestation Fund..
- Forest Police: Responsible for enforcing the forest law against illegal activities by forest companies.
- Kabupatens and agriculture extension offices: Responsible for monitoring of production forests in their regions.

5. Program Description

The program is composed of the following activities:

5. Program Description (continuous)

Guidance and communication

- The Provincial guidance for forest and plantation companies.
- Formation of investigation team that include members from forest industry, forestry research, environmental NGOs, and provincial and local government.

Encouraging Actions

- Merit for corporation that achieved its reforestation obligation.
- Additional provincial grant to support maintenance work for reforestation.

Enforcing Actions

- The timing of DR payment to be delayed to after-reforestation.
- Sabotage fine to be charged for those misconduct.
- Names of the companies that failed obligatory reforestation to be announced in mass media.
- Log production allowance to reflect amount of reforestation work achieved.

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	I	II	III	IV	I	II	III	IV	I	II	III	IV
3-4	Reforestation of production forest																												
3-4-1	Guidance and communication																												
	-Guidance for forest and plantation companies																												
	-Formation of investigation team																												
	-Monitoring of reforestation activities and achievement																												
3-4-2	Encouraging actions																												
	-Preparation of provincial legislations																												
3-4-3	Enforcing actions																												
	-Preparation of provincial legislations																												
	-Consultation with national government for stronger policies																												

7. Program Cost

Research of industry plantation forest for 21 sites for priority. Rp. 87.8 million

8. Others

1. Program Title: Program 3-6

Inner- and Inter-Basin Coordination

2. Location

Subject site is the whole Province.

Sub-basins may be grouped into 5 groups as follows:

- 1) Rawas, Lakitan,
- 2) Lematang,
- 3) Musi, Harileko, Semangus, Kelingi,
- 4) Ogan, Komering.



3. Objectives

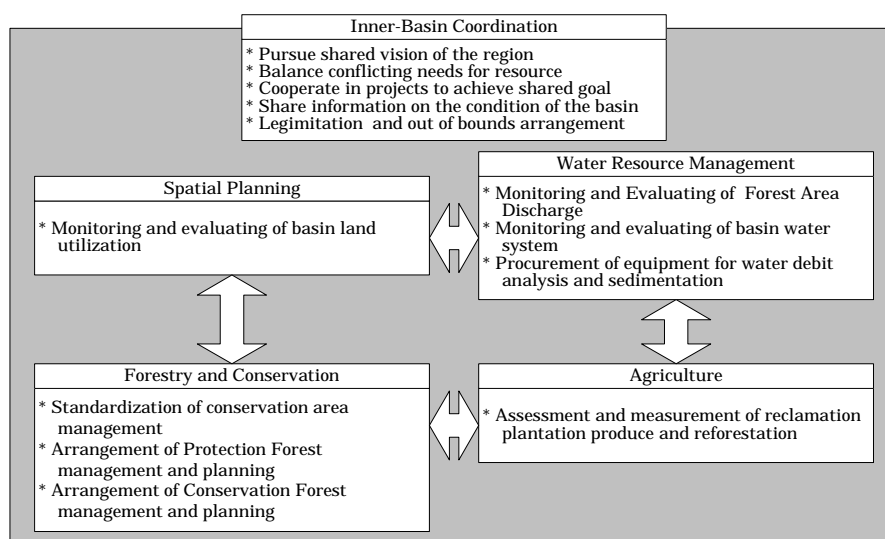
- To realize sound and comprehensive resource management of the Musi River Basin.
- To encourage local government manage their own resources in coordination with other government body within the same sub-basin.

4. Executing Agency

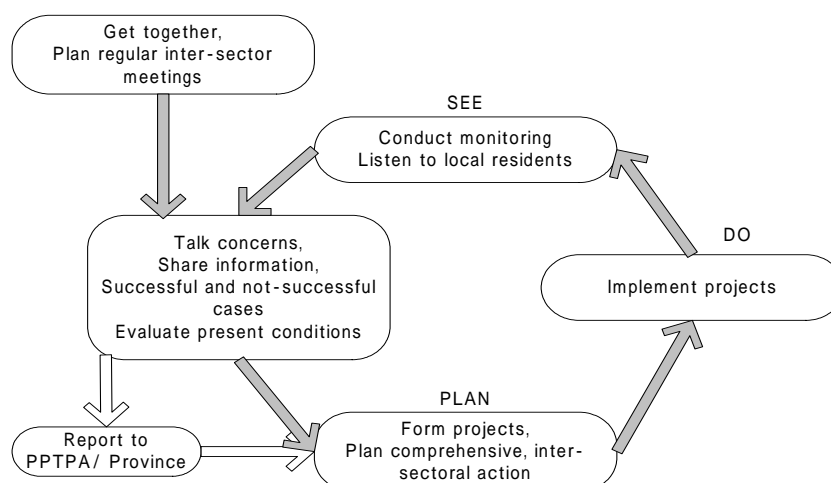
- The Governor's Office: Responsible for formation of Musi River Basin PPTPA, in cooperation with various related provincial office, academic researchers, and NGOs.
- Kabupatens: Responsible for sub-basin level organization similar to the PPTPA, with help from Provincial Governor's Office, and the PPTPA itself.

5. Program Description

Issues expected to be coordinated on the table of the coordinating bodies are as follows:



Expected activities of the coordinating bodies are as follows:



6. Implementation Schedule

Formation of sub-basin or Kabupaten level organization may be started prior to the PPTPA, or after, depending on willingness of Kabupatens.

7. Program Cost

Refer to Program 6-5-3.

8. Others