

CHAPTER 8

IMPLEMENTATION PLAN, COST ESTIMATES AND PROJECT EVALUATION FOR PRIORITY PROGRAMS

8.1 Implementation Plan

8.1.1 Implementation Schedule

Implementation schedule for the priority programs has been prepared considering the implementation plan of the programs and the relation between programs.

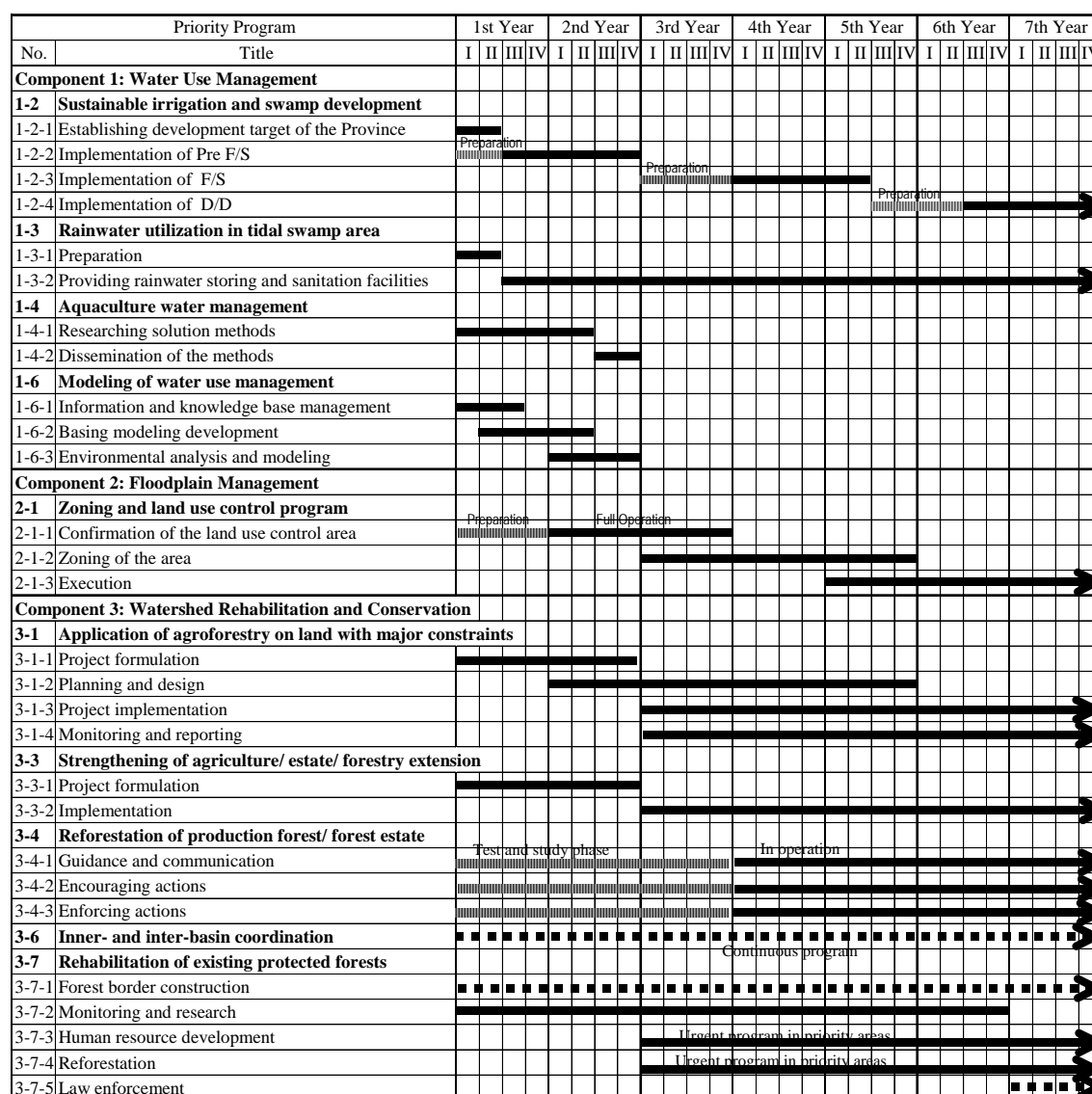


Figure 8.1.1 (1/2) Implementation Schedule

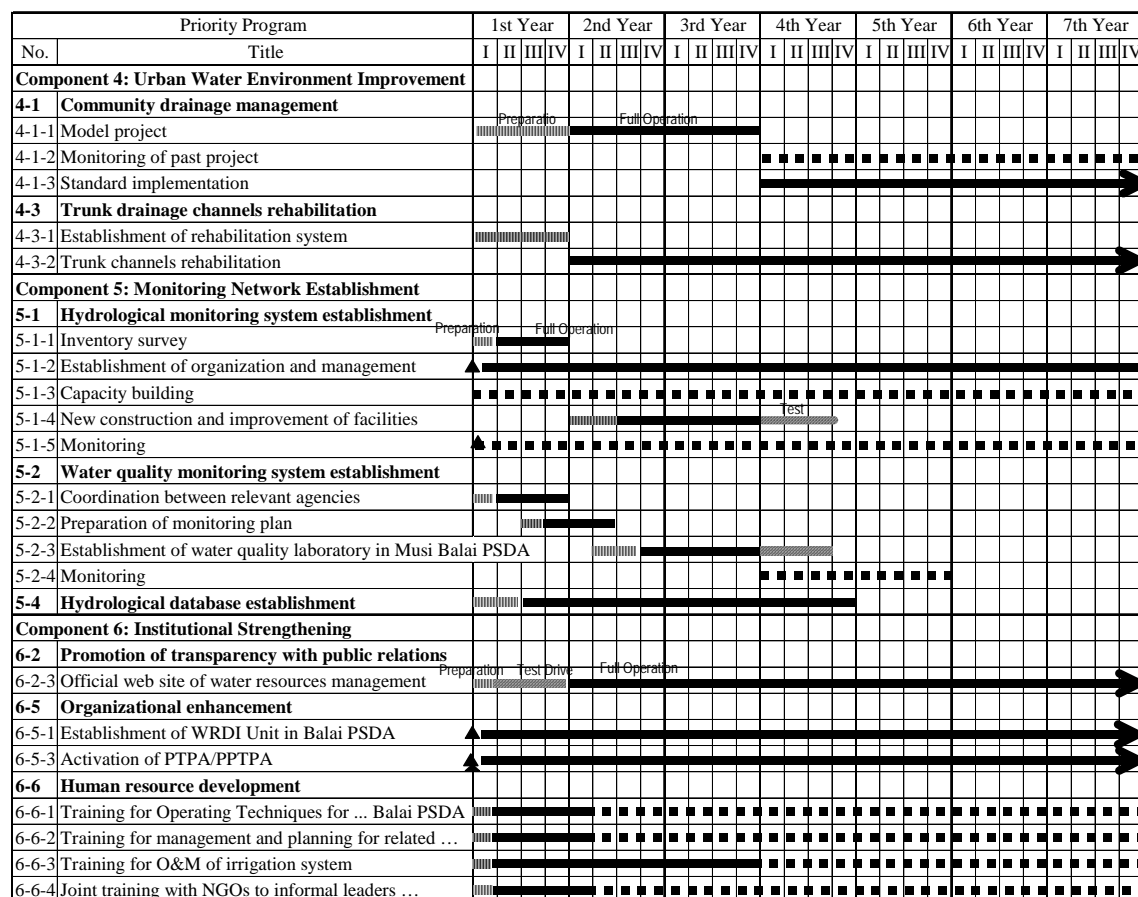


Figure 8.1.1 (2/2) Implementation Schedule

8.1.2 Implementation Organization and Tasks

For the implementation of the proposed management plan, it is recommended to hold periodical meetings hosted by BAPPEDA to evaluate the progress and problems for the implementation of the proposed management plan. Among others, tasks of the key organizations are summarized as follows:

- Governor of South Sumatra Province: Responsible for Musi River Basin comprehensive water management
- PTPA: Make recommendation to the Governor on matters declared in the New Government Regulation on Water Resources
- BAPPEDA: Conduct overall coordination and follow-up for the implementation of the proposed management plan.
- Dinas PU Pengairan: Act as a leading organization for the implementation of water management
- Musi Balai PSDA: Act as the operator for the water management
- Forest Service: Act as a leading organization for the implementation of Component 3: Watershed Rehabilitation and Conservation

- DGWR of Kimpraswil: Act as a leading organization for the implementation of national programs

Table 8.1.1 shows a matrix of executing, supporting and related agencies for each priority program.

Table 8.1.1 Executing, Supporting and Related Agency

Component and Program	DGWR	BMG	South Sumatra Province																											
			Governor's Office	BAPPEDA	Dinas PUP	Balai PSDA	Forest Service	Agriculture Service	Estate Service	Fisheries Service	UPTD	Balai KSDA	BAPEDALDA	PDAMs	Other Provinces	Kota Palembang	Kab. Muba	Kab. Banyuasin	Kab. Muara Enim	Kota Perabumulih	Kab. Lahat	Kota Pagaralam	Kba. Mura	Kota Lubuk Linggau	Kab. Oki	Kab. Oku	Private Company/setup	Community/NGOs		
Component 1: Water Use Management																														
1-2	Sustainable irrigation and swamp development	A	B	B											B	C	C	C	C	C	C	C	C	C	C	C	C			
1-3	Rainwater utilization in tidal swamp area			A												B	B								B					
1-4	Aquaculture water management			A		B		B						B	C	C	C	C	C	C	C	C	C	C	C	C	C	B		
1-6	Modeling of water use management	A	C		B	C			C					B																
Component 2: Floodplain Management																														
2-1	Zoning and land use control program			B	A	B	B								C	C	C		C		C		C		C					
Component 3: Watershed Rehabilitation and Conservation																														
3-1	Application of agroforestry on land with major constraints					A	B	B										B		B		B				B				
3-3	Strengthening of agriculture /estate /forestry extension					A	B	B										B		B		B				B				
3-4	Reforestation of production forest /forest estate					A										B	B	B		B		B		B	B	B	B	C		
3-6	Inner- and inter-basin coordination		A											B	B	B	B	B	B	B	B	B	B	B	B	B	B			
3-7	Rehabilitation of existing protected forests					B			A						B	B	B		B									C		
Component 4: Urban Water Environment Improvement																														
4-1	Community drainage management															A													B	
4-3	Trunk drainage channels rehabilitation															A														
Component 5: Monitoring Network Establishment																														
5-1	Hydrological monitoring system establishment		B			A										C	C	C	C	C	C	C	C	C	C	C	C			
5-2	Water quality monitoring system establishment					A						B	B		C	C	C	C	C	C	C	C	C	C	C	C	C			
5-4	Hydrological database establishment		B			A					B	B																		
Component 6: Institutional Strengthening																														
6-2-3	Official website of water resources management					A																								
6-5-1	Establishment of Water Resources Data and Information Unit in Balai PSDA					A	B																							
6-5-3	Activation of PTPA/PPTPA			A		B									B	B	B	B	B	B	B	B	B	B	B	B	B			
6-6-1	Training for operating techniques for government employees of Balai PSDA					A																								
6-6-2	Training for management and planning for related government employees					A																								
6-6-3	Training for operation & maintenance of irrigation system					A		B																						
6-6-4	Joint training with NGOs to informal leaders and selected people					A																							B	

Note: A: Leading Agency; B: Supporting Agency; C: Related Agency

Figure 8.1.2 illustrates different modes of priority program implementation. Some programs will be conducted mainly by a single organization, and some will be conducted through coordination between various organizations.

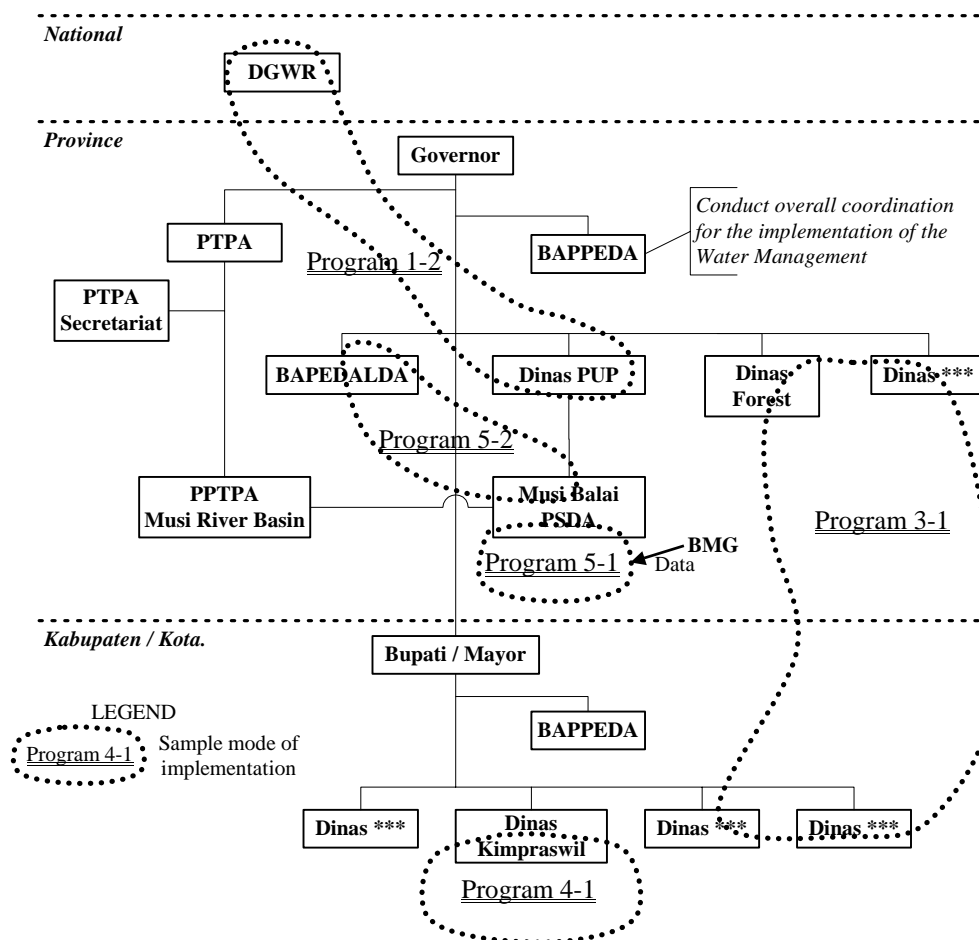


Figure 8.1.2 Image of Related Agencies for the Implementation of Priority Programs

8.1.3 Necessary Preconditions

Necessary preconditions for the implementation of the Musi River Basin Comprehensive Water Management are as follow:

- Maintenance of decentralization policy by the Government of Indonesia
- Execution of New Water Resources Law and New Government Regulation on Water Resources Management

8.2 Cost Estimates

Costs for priority programs have been estimated. The annual disbursement is presented in Table 8.2.1.

Table 8.2.1 Annual Budget for Priority Programs

(Unit: Rp. million)

Component and Program		Leading Agency	Year							
			1st	2nd	3rd	4th	5th	6th	7th	after
Component 1: Water Use Management										
1-2	Sustainable irrigation and swamp dev.	DGWR	664	1,270	0	14,000	7,000	13,650	27,300	40,950
1-3	Rainwater utilization in tidal swamp area	DPUP	19,870	19,870	19,870	19,870	19,870	19,870	19,870	59,610
1-4	Aquaculture water management	DPUP	36	37	6	6	6	6	6	→
1-6	Modeling of water use management	DGWR	6,773	6,772	12	12	12	12	12	→
Component 2: Floodplain Management										
2-1	Zoning and land use control program	DPUP		39	39					
Component 3: Watershed Rehabilitation and Conservation										
3-1	Application of agroforestry on land with major constraints	Forest Service	0	539	1,149	1,149	28,389	7,143	7,142	
3-3	Strengthening of agriculture /estate /forestry extension	Forest Service	-	-	1,333	1,333	1,333	1,333	1,331	
3-4	Reforestation of production forest /forest estate	Forest Service	29	29	30					
3-6	Inner- and inter-basin coordination	Governor	-	-	-	-	-	-	-	
3-7	Rehabilitation of existing protected forests	BKSDA	319	319	1,284	1,284	1,209	1,209	7,863	
Component 4: Urban Water Environment Improvement										
4-1	Community drainage management	Palemb.		220	220					
4-3	Trunk drainage channels rehabilitation	Palemb.	3,350	3,350	3,350	3,350	3,350	3,350	3,350	10,050
Component 5: Monitoring Network Establishment										
5-1	Hydrological monitoring system establishment	BPSDA	800	600	1,148	98	98	98	98	→
			5	98	98					
5-2	Water quality monitoring system establishment	BPSDA		3,042	3,042	291	291	291	291	→
5-4	Hydrological database establishment	BPSDA	100	303	125	125	125	125	125	→
Component 6: Institutional Strengthening										
6-2-3	Official website of water resources management	DPUP	205	72	72	72	72	72	72	→
6-5-1	Establishment of Water Resources Data and Information Unit in Balai PSDA	DPUP	-	-	-	-	-	-	-	-
6-5-3	Activation of PTPA/PPTPA	Governor	-	-	-	-	-	-	-	-
6-6-1	Training for operating techniques for government employees of Balai PSDA	DPUP	45							
6-6-2	Training for management and planning for related government employees	DPUP	45							
6-6-3	Training for operation & maintenance of irrigation system	DPUP	242	242	24					
6-6-4	Joint training with NGOs to informal leaders and selected people	DPUP	128							

Note: DPUP: Dinas PU Pengairan of South Sumatra Province; Forest Service: Forest Service of South Sumatra Province; Governor: Governor's Office of South Sumatra Province, BKSDA: Balai KSDA of South Sumatra Province; Palembang: Dinas Kimpraswil of Kota Palembang, BPSDA: Musi Balai PSDA

8.3 Evaluation of the Program

Project evaluation has been conducted for selected priority programs from the technical, economic, financial, and social viewpoints. All the priority programs for the comprehensive water management of the Musi River Basin are basically for the proper management of the river basin, and thus it can be said that these programs have been formulated so as not to give significant negative impacts in any aspects. The results of the evaluation of each program are summarized as shown in the **Main Report**

(Table 8.3.1). Overall evaluation for the whole Comprehensive Water Management Plan has been made as follows:

Technical Aspect: Sustainable irrigation and swamp development program contains Pre-F/S, F/S and D/D for large scale development, which is usually conducted using international consultants, and it is recommended to implement in the similar manner. Modeling of water use management program contains high technology and the technical assistance from the advanced country with much experience in basin water management modeling in the Asian monsoon regions is needed. There expect no distinct technical issues in the other programs.

Economic Aspect: Quantitative analysis has been conducted for Rainwater Utilization in Tidal Swamp Area; and for Drainage Program in Palembang City (see Table 8.3.1 of Main Report for EIRR, etc.). Expected benefits of the programs accrue from: increase of food production after implementation, improvement of living environment and economic development of the Province/Basin from component 1; prevention of flood damage increase and maintenance of river regime with less cost from component 2; dredging cost saving, increase of diversified farm products and reforestation from component 3; reduction of flood damage and water borne diseases from component 4; hydrological and water quality monitoring, and database establishment from component 5; and cost savings in communication, data collection and water use, and human resource development from component 6. As the result, some programs give direct economic effects, and others give indirect economic impacts. The economic benefit, both direct and indirect, is considered large. Economic evaluation by comparison of benefit and cost will be carried out in the implementation stage.

Financial Aspect: Financial evaluation of the programs is carried out from the viewpoint of relevant government agencies in order to confirm their capabilities of program implementation. The capability is studied by comparison of its annual budget size and annual program cost. As the result, some programs can be implemented using APBD, and some need additional input of APBN. For APBN, additional input from foreign countries in the form of loan or grant is also to be considered.

Social and Environmental Aspect: Programs are proposed considering public involvement, generally, no serious negative social impacts are anticipated and many positive impacts (strengthening of social solidarity of the local community, etc.) are expected. Environmental conservation and rehabilitation is the one of the objective of the master plan and much environmental benefit (rehabilitation of native ecosystem and biodiversity, etc.) is expected. Initial screening of environmental impacts is in Main Report.

8.4 Action Plan for the Start of Management Implementation

8.4.1 Action Plan for Each Priority Program

Action plan for the smooth implementation of each priority program has been proposed herewith as shown in Table 8.4.1.

8.4.2 Key Actions for the Start of Management Implementation

Priority programs have been selected considering the factors, e.g., prerequisite to the other programs, seriousness, necessity of early start, cost scale. Selected programs are thus those that need early implementation. For the smooth start of the implementation of the management plan, the following key actions are deemed important.

It is recommended that **BAPPEDA** of South Sumatra Province would coordinate for the following actions: (i) The proposed Comprehensive Water Management Plan should be legalized in the coming Strategic Plan 2004-2008, South Sumatra Province; and, (ii) Provincial Government Decree for the implementation of the proposed master plan should be prepared and adopted.

Program 1-6: Modeling of Water Use Management is the most urgently needed program since the Model is the basic tool for the proper water management. The implementation of the program needs a technical assistance from an advanced country with much experience in basin water management modeling in the Asian monsoon regions. **DGWR** is recommended to start preparation of TOR for the technical assistance.

Hydrological and water quality data are needed for the use in the Water Use Management Model as discussed above. Without these data, the model cannot be properly used; hence, close coordination with the water use management modeling is needed. It is recommended that **Musi Balai PSDA** with the coordination of Dinas PU Pengairan start discussion with BMG, BAPEDALDA, PDAMs for the future monitoring network in the Basin, and to prepare TOR to obtain APBN.

Floodplain management should be considered as a program in a long span of 50-100 years, but it should be started urgently before uncontrolled developments proceed in the floodplains. It can be said that the action of **Dinas PU Pengairan** greatly influences the future of the Musi River Basin. It is recommended to formulate a responsible group under Dinas PU Pengairan and to start necessary action.

Forest Service of South Sumatra Province can start leading action for the programs for watershed rehabilitation and conservation. Establishment of a task force and its activation is deemed urgent. It is also recommended to start discussion with Kimpraswil for the inclusion of the Musi River Basin into "List of Priority River Basins for Reforestation" prepared jointly by Ministry of Forest and Kimpraswil.

Dinas Kimpraswil of Palembang Municipality is recommended to start for the program implementation. Selection of NGOs who will be involved in the Community Drainage Management Program is deemed urgent. Proper schemes for the assistance of activities by NGOs should also be considered. **Dinas PU Pengairan** is recommended to identify the program covered by WISMP. It should be conducted continuously for the progress of the program in the Musi River Basin under the WISMP.

8.5 Program Summary for Priority Projects

Program summary for priority projects are as attached after Table 8.4.1.

Table 8.4.1 Action Plan for Priority Program Implementation

Component and Program		Starting action			Mid-term check	
		Timing	Action	Responsible organization	Timing	Check item
Component 1: Water Use Management						
1-2	Sustainable irrigation and swamp development	2004.01	Formulation of a responsible Group in DPUP	DPUP	2004.06	TOR for Pre-F/S be prepared
1-3	Rainwater utilization in tidal swamp area	2004.06	Start of financial source planning	DPUP	2004.12	Financial source be determined
1-4	Aquaculture water management	2004.06	Completion of an inventory survey	DPUP	2004.09	First meeting be held between WUA and aquaculture owner
1-6	Modeling of water use management	2004.01	Preparation of TOR	DGWR	2004.09	Study implementation scheme be determined
Component 2: Floodplain Management						
2-1	Zoning and land use control program	2004.01	Formulation of a responsible group in DPUP	DPUP	2004.03	Necessary LANDSAT Image be purchased
Component 3: Watershed Rehabilitation and Conservation						
3-1	Application of agroforestry in farmer's plantations	2004.01	Establishment of a Task Force	Forest	2005.12	A model project scheme be formulated
3-3	Strengthening of agriculture /estate /forestry extension	2004.01	Establishment of a Task Force	Forest	2004.12	Project sites be determined
3-4	Reforestation of production forest	2004.01	Formulation of a Investment Team	Forest	2004.12	Order to subject enterprise be submitted
3-6	Inner- and inter-basin coordination	2003.10	Confirmation of PTPA/PPTPA setup	Governor	--	--
3-7	Rehabilitation of existing protected forests	2004.01	Formulation of a responsible group in BKSDA	BKSDA	2005.12	Priority areas be determined
Component 4: Urban Water Environment Improvement						
4-1	Community drainage management	2003.10	Selection of NOGs who will be involved in the program	Palembang	2004.01	Financial source be determined
4-3	Trunk drainage channels rehabilitation	2003.10	Budget request for the program	Palembang	2004.01	Financial source be determined
Component 5: Monitoring Network Establishment						
5-1	Hydrological monitoring system establishment	2004.04	Confirmation of completed programs by IWIRIP and proposed programs for WISMP	BPSDA	2004.06	Coordination between BPSDA and BMG on rainfall data exchange be completed
5-2	Water quality monitoring system establishment	2004.04	Confirmation of completed programs by IWIRIP and proposed programs for WISMP	BPSDA	2004.06	Coordination between BPSDA and BAPEDALDA on water quality monitoring demarcation be completed
5-4	Hydrological database establishment	2004.01	Completion of an activity program for Water Resources Data and Information Unit	BPSDA	2004.03	ACCESS database operation be started

Component and Program		Starting action			Mid-term check	
		Timing	Action	Responsible organization	Timing	Check item
Component 6: Institutional Strengthening						
6-2-3	Official website of water resources management	2003.10	Formulation of a responsible group in DPUP	DPUP	2004.09	Trial use version be completed
6-5-1	Establishment of Water Resources Data and Information Unit in Balai PSDA	2003.10	Confirmation of Water Resources Data and Information Unit setup	DPUP	--	--
6-5-3	Activation of PTPA/PPTPA	2003.10	Confirmation of PTPA/PPTPA setup	Governor	--	--
6-6-1	Training for operating techniques for government employees of Balai PSDA	2003.10	Formulation of a responsible group in DPUP	DPUP	2004.01	Training be started
6-6-2	Training for management and planning for related government employees					
6-6-3	Training for operation & maintenance of irrigation system					
6-6-4	Joint training with NGOs to informal leaders and selected people					

Note: bil: billion; DPUP: Dinas PU Pengairan of South Sumatra Province; Forest: Forest Service of South Sumatra Province; Governor: Governor's Office of South Sumatra Province, BKSDA: Balai KSDA of South Sumatra Province; Palemb.: Kota Palembang, BPSDA: Musi Balai PSDA