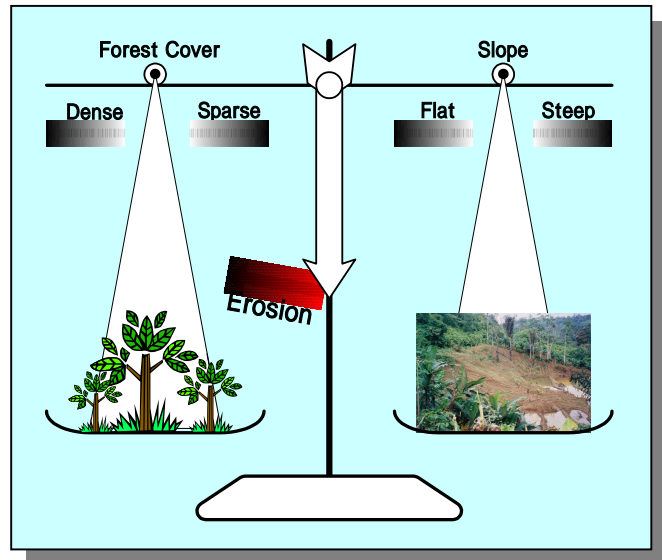


WATERSHED MANAGEMENT (Part 1)

Why we need Watershed Management?

- Natural Forest in the Musi River Basin is decreasing very much from 11,505 km² in 1980 to 4,364 km² in 2000.
- Forests are decreasing, and bare lands are increasing. Now, soil erosion in the bare lands is the serious problem in the Basin.
- The illustration shows: Erosion increases when the slope of the land becomes steep. Erosion increase when the forest cover becomes sparse.
- Watershed rehabilitation and conservation in the Musi River Basin is important and urgent.



What is the purpose?

- To decrease flood, and to stabilize water regime.
- To decrease soil erosion in the watershed and hence reduce sedimentation in the river.
- To conserve and rehabilitate ecological resources

What are the programs?

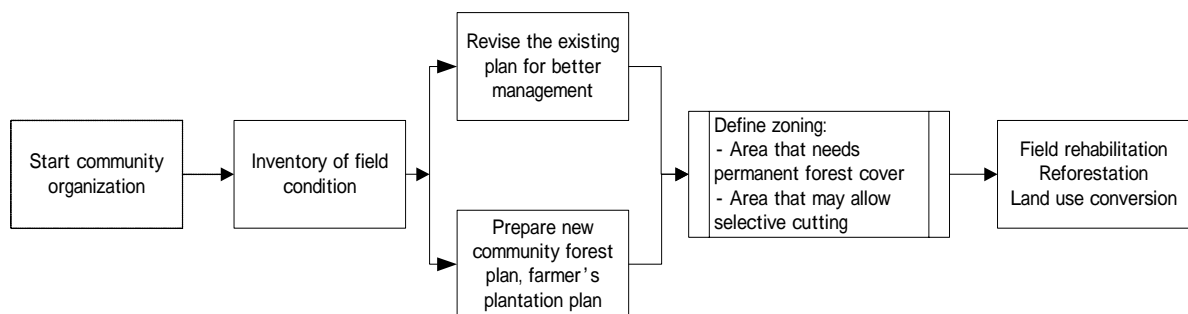
- Application of agroforestry on land with major constraints to reduce soil erosion in steep slope areas.
- Strengthening of agriculture/estate/forestry extensions: to provide attention and advise for local farmers for better land management; to encourage farmers to introduce agroforestry method to use part of their house lot as home garden: to educate farmers in technique for soil conservation.

Who conduct the program?

- Dinas Forest of South Sumatra Province is the leading agency for the implementation of priority programs.



- Active involvement of the farmers themselves is necessary.
- Various agencies shall support: Dinas Estate, Dinas Agriculture, Kabupaten and Kecamatan level forest, estate, agriculture offices, etc.



What is the benefit?

- Empowering local municipalities and promoting public communication.
- Supporting local population by a stable and reliable income source
- Preventing soil erosion with semi-permanent ground cover with trees

What the community should do?

- Participating in establishing development target (target areas, locations and year)
- Participation in land preparation, seed source conservation, nursery management, and crop/tree planting
- Support for local Extension Offices with information feed back
- Provision of higher education/training for current staff of the extensions

WATERSHED MANAGEMENT (Part 2)

What is needed more?

Reforestation of production forest is urgent to stop erosion and to rehabilitate natural condition in the Musi River Basin. Reforestation should be conducted in production forests that already received Reforestation Fund. Giving priorities to the following 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*



What is the purpose?

- To reduce soil erosion in production forest area
- To make sure that the obligation of reforestation is realized as intended

Who conduct the program?

Dinas Forest of Sumsel is the leading agency with the assistant of Forest Police, Regencies and Agriculture Extension Offices. Companies responsible for management of production forests and estates will the operators.

What are the activities?

- Formation of investigation team that includes members from forest industry, forestry research, environmental NGOs, and provincial and local governments.
- Timing of Reforestation Fund payment to be delayed to after-reforestation
- Announcing names of the companies that failed obligatory reforestation through mass media

What the community should do?

- Cooperation with Forest Police in monitoring reforestation activities

URBAN WATER ENVIRONMENT IMPROVEMENT (Part 1)

Why we need the Urban Water Environment Improvement?

Urban areas in the Musi River Basin have various problems related water and living environment. Palembang, as a capital of South Sumatra Province, has a population of over 1.4 million and it is about 20% of the population of the whole Musi River Basin. Urban water environment problem is characterized in Palembang.

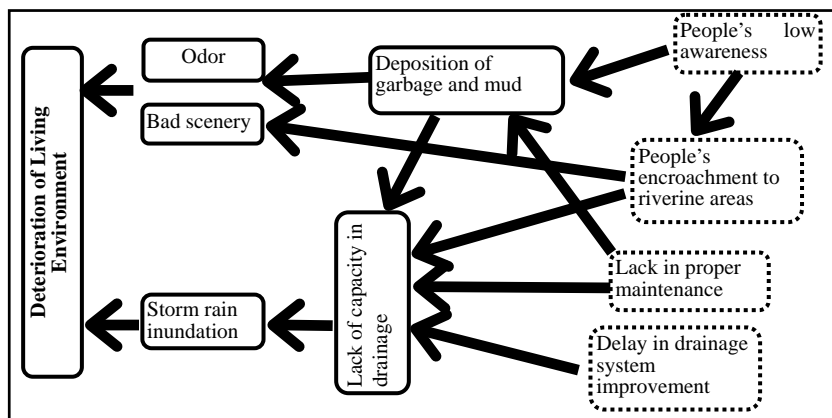


If we can solve the problem in Palembang,

we can apply the same procedure to the other urban areas in the Basin.

The problems include:

- Inundation of rainfall in roads and residential areas



- Odor and bad scenery of drainage channels
- Water born disease (diarrhea, etc.) due to bad quality of living water

What program we do urgently?

It is important to establish the system to improve the water environment and maintain the drainage facilities in all the levels; community level to the local government level.

- Community drainage management
- Trunk drainage channels rehabilitation

Who conduct the program



- Dinas Kimpraswil of Kotamadya Palembang with assistance of NGOs
- Active participation of the residents is very important for the success of the program

What are the activities for Community Drainage Management?

The residents are the main players for the Community Drainage Management.

- To hold public consultation meetings to discuss current issues, measures to be taken, implementation method etc.
- Storage and gathering of household garbage
- Periodical removal of garbage and sediment from drainage channels
- Public information for prevention of garbage dumping
- To hold meetings to evaluate the activities
- To spread the activities to other drainage areas by transferring know-how obtained through the model project



What are the benefits?

- Flood damages to houses and household properties can be reduced by smoother water flow and shorter inundation.
- Waterborne diseases can be reduced and medical cost can be saved
- Inconvenience of people's livelihood and mental stress due to frequent inundation can be eased



URBAN WATER ENVIRONMENT IMPROVEMENT (Part 2)

- Community activity with residents participation may give incentive for people to keep the rivers and drainages clean
- Cost of emergency measures taken by local government for flood fighting and assisting affected people can be reduced
- River O&M cost of the local government can be saved

What the community should do?

Community members are the main players of the Program. The roles of community are:

- To give ideas to improve water environment in public consultation meetings
- To participate the activities to improve water environment
- To evaluate the activities in the meetings
- To participate the activities to spread the know-how to other communities

What is the purpose of Trunk Drainage Channels Rehabilitation?

- To improve urban water environment by drainage system rehabilitation
- To establish a system for drainage system rehabilitation
- To strengthen regular maintenance capacity of the drainage facilities



Who conduct the work?

Dinas Kimpraswil of Kotamadja Palembang

What are the activities?

The Program consists of the following major activities:

- To investigate and design necessary drainage facilities and estimate project cost
- To select contractor to undertake the rehabilitation works
- To conduct rehabilitation works including rehabilitation of drainage facilities, excavation of garbage and sediment
- To conduct regular maintenance of the drainage channels

Benefits

- Flood damages to houses and household properties can be mitigated by smoother water flow and shorter inundation
- Waterborne diseases can be mitigated and medical cost can be saved
- Inconvenience of people's livelihood and mental stress due to frequent inundation can be eased
- Cost of emergency measures taken by local government for flood fighting and assisting affected people can be reduced
- River O&M cost of the local government can be saved

What the community should do?

The roles of community are:

- To give ideas to improve water environment
- To participate the activities to maintain the channels clean
- To report water environmental issues to the city authority such as illegal garbage dump



MONITORING NETWORK ESTABLISHMENT

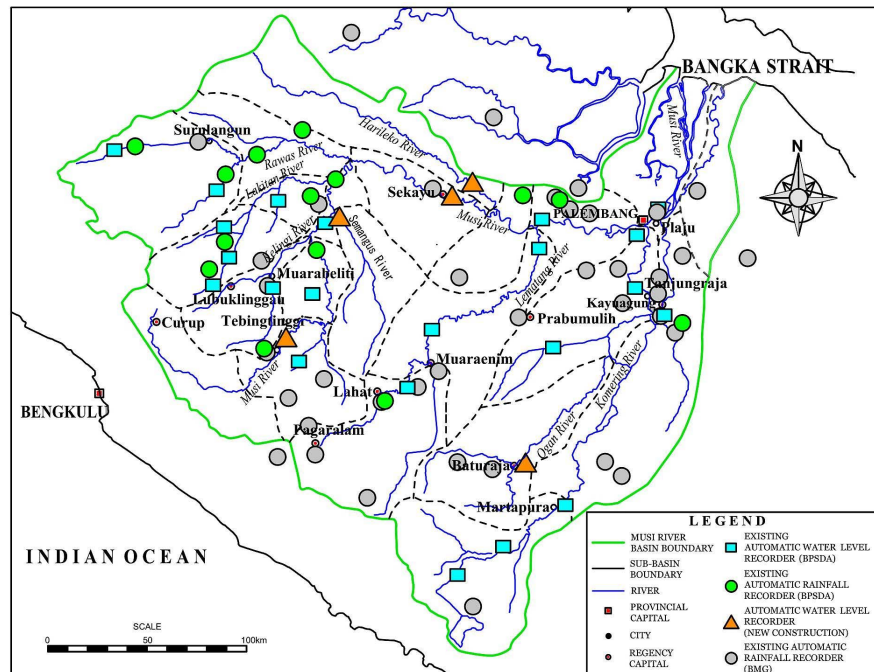
Why we need monitoring?

We have to conduct Comprehensive Water Management in the Musi River Basin. Data is the basis for the water management in a river basin. What kind of data is needed for the water management?

- Temperature
- Rainfall
- River flow
- Water quality
- Water use
- Etc.

Monitoring and data accumulation are very basic and sometimes boring work, but without

such data, we cannot conduct water management. Steady work is needed and there is no short cut in the monitoring work.



What is the purpose of the programs?

The purpose is to rationalize the monitoring network with proper observation system for collection of hydrological data (meteorology, rainfall, river water level, river water flow, river sediment discharge) and water quality data, and to establish and maintain database.

Who conducts the programs?

Musi Balai PSDA under Dinas PU Pengairan will be the leading agency. Water Resources Data and Information Unit that will be established in Musi Balai PSDA will be in charge for database management.

What are the activities of Hydrological Monitoring?

- Establish Data and Information Unit in Musi Balai PSDA. Coordination with BMG is very important for the proper data sharing especially for rainfall data.
- New construction of monitoring stations and rehabilitation of existing stations shall be conducted.
- Monitoring work in the field shall be conducted every two months for data retrieval, river flow measurement, river sediment discharge measurement, etc. Staffing shall be: Chief Hydrographer 1, Assistant Hydrographer 2, Supporting Staff 2. Necessary equipment shall be Vehicle 2, Boat 1, Flow Measurement Equipment 1, Bed Load Measurement Equipment 1.

What are the activities of Water Quality Monitoring?

- Musi Balai PSDA shall be responsible for the water quality monitoring for the purpose of basin water management. Coordination with Provincial and Municipal BAPEDALDAs and PDAMs is very important to avoid duplicated work.
- Water Quality Laboratory shall be established in Musi Balai PSDA.
- Monitoring work shall be conducted at 55 locations in the Basin. Three monitoring groups are needed to conduct monitoring every month at these locations.
- For basic parameters, field measurement and laboratory analysis shall be conducted every month, while for the other parameters, laboratory analysis shall be conducted every six months.

What are the activities of Hydrological Database Establishment?

- Establishment of Numerical Database (rainfall, water level and water quality data)
- Establishment of GIS Database (Musi River Basin GIS Database has already established, and the GIS technology has been transferred by the Study)
 - Storing GIS database and GIS application in computer hardware
 - GIS environment (GIS group) is proposed:

INSTITUTIONAL STRENGTHENING

Introduction of Incentive Mechanism into Basin Water Management

Objectives

The key to the certain and firm implementation of water resources management is the incentive of government employees in charge of water resources management. Nothing can be changed with any elaborated plans if they do not have incentives on their jobs. Thus, proposed programs should be structured to support and enhance their incentives on water resources management.



If the government employees have no incentives for their job, ...



Many people will get in troubles!!

Institutional development is designed to establish systems and procedures to support the incentive mechanisms, considering the following principles:

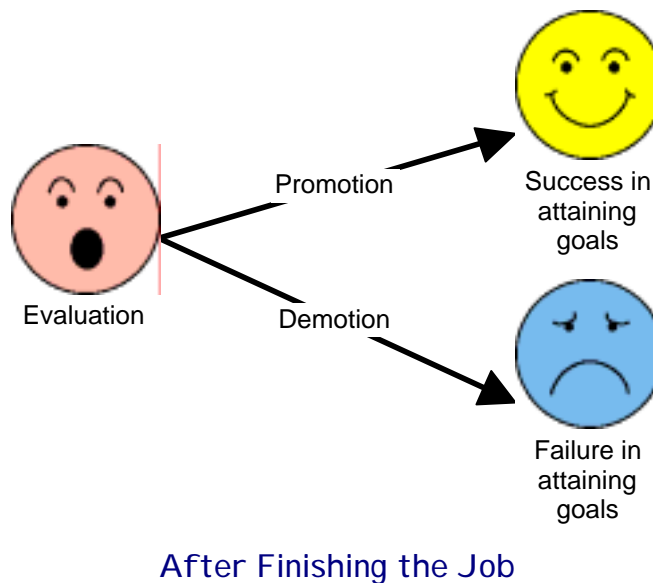
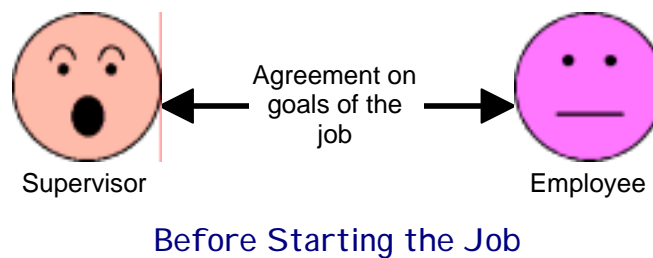
- **Transparency.** If the behavior of a person in charge is known to people, he/she cannot do wrong things. If a person in charge does wrong things, his/her supervisor has to punish him/her, considering the public opinion. On the other hand, if a person in charge does good things, his/her supervisor has to give promotion to him/her.
- **Participation.** It guarantees that the public opinion affects the decision of a person in charge as well as his/her supervisor.
- **Disclosure.** It secures the transparency of the activities of a person in charge. People should be able to access government information easily in terms of cost and convenience.

Program Description

Programs for the Institutional Strengthening related each other. Let's look at them one by one.

Incentive mechanism is proposed to be introduced in the Personnel Management with Personnel Evaluation System. At the same time supervisors must be acquaint with know-how on personnel management by incentives.

[An example of incentives]



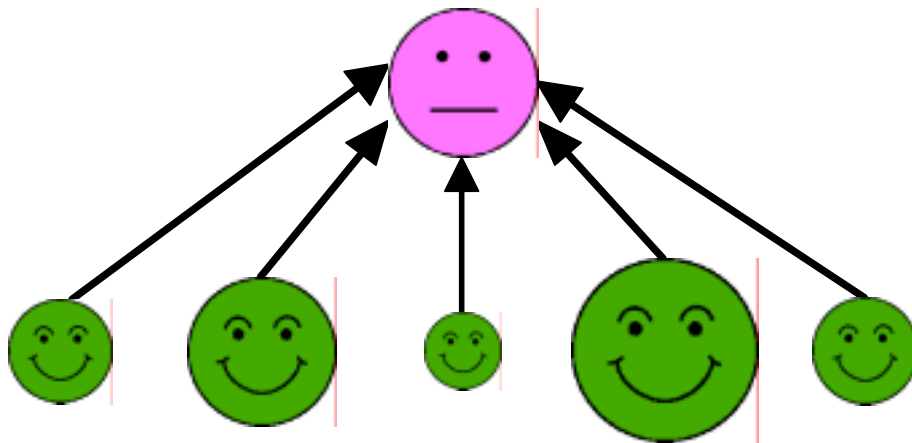
Transparency

supports the incentive mechanism by exposing their behavior to the people. When government information is released not only by Annual Report and Picture Booklet, but also by the



Official Web Site of Water Resources Management in the Internet, they are exposed to the people in the world.

Government officials have to keep in mind that their performance is always watched around the world. On the other d, releasing government information arouses the people and promotes their participation. The Official Web Site of Water Resources Management can bear multiple functions such as a low cost infrastructure of Disclosure System, data and information collection/supply by Water Resources Data and Information Unit in Balai PSDA, and Establishment of Coordinating Network for Related Agencies for Daily Jobs.



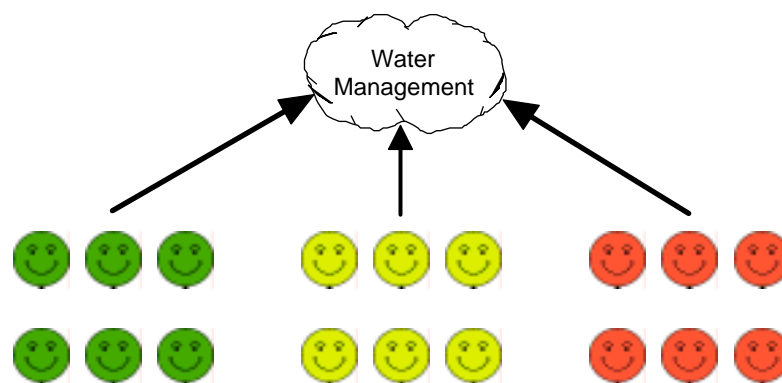
People can know what the government employees are doing.

Participatory procedure guarantees incentive

mechanism. The people can participate in decision-making process by public consultation, which checks government activities. In order to secure proper procedures, government employees have to observe Public Consultation Guideline for Water Resources Management. At the same time, people have to be provided with enough government information for proper decision-making by transparency and should acquire good skills for presentation and discussion of their needs and demands for effective participation.



At

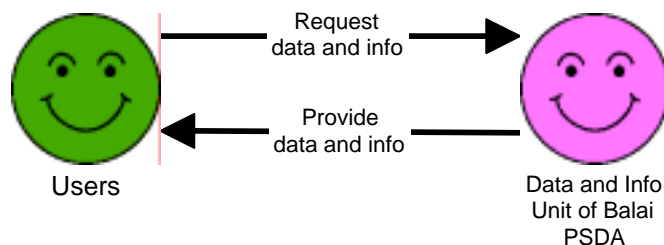


Various kinds of people can participate in the process of water management.

Disclosure system guarantees transparency of government



activities. It should be operated with low cost and convenient for distant people. The official Web Site in the Internet provides proper infrastructure for disclosure system. Water Resources Data and Information Unit in Balai PSDA will be a center for this system according to the new Government Regulation.

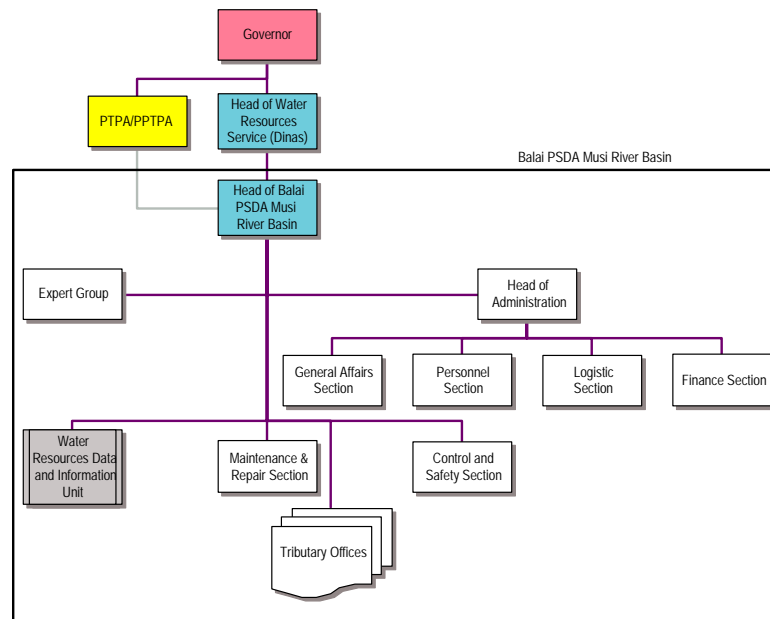


Users can get data and information with reasonable cost.

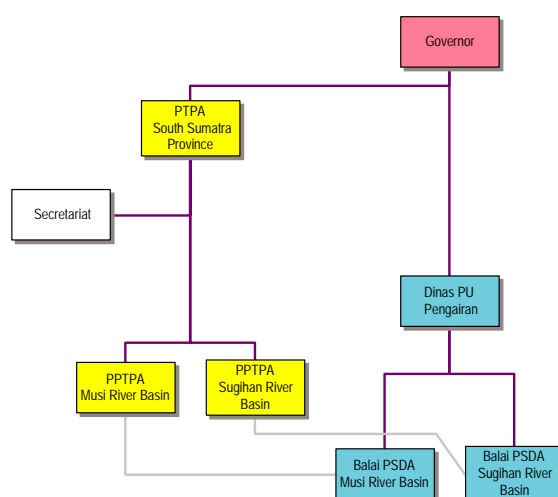
Organizational

enhancement supports disclosure system with Water Resources Data and Information Unit in Balai PSDA, and indirectly with coordinating network for related agencies for daily jobs.

Establishment of Provincial Water Coordination Committee and River Basin Water Coordination Committee (PTPA/PPTPA) is an instrument of promoting transparency. Enhancement of WUAs promotes farmers participation to decision-making.



Establishment of Water Resources Data and Information Unit in the Balai PSDA



Establishment of PTPA/PPTPA for the coordination of River Basin Management

Human resources development supports

organization enhancement in turn such as

- Training for Operating Techniques for Government Employees of Balai PSDA,
- Training for Management and Planning for Related Government Employees,
- Training for Operation & Maintenance of Irrigation System for WUA Members, and
- Joint Training with NGOs to Informal Leaders and Selected People.



Structure of proposed programs is illustrated below. The **New Law and Government Regulation on Water Resources Management** will be the foundation of water resources management.

