

FACILITATING IWRM IN PLANNING and IMPLEMENTATION



FEBRUARY 2008



DEPARTEMEN PEKERJAAN UMUM
DIREKTORAT JENDERAL SUMBER DAYA AIR
BALAI BESAR WILAYAH SUNGAI BENGAWAN SOLO

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FLOWCHART OF PRESENTATION

Big Flood Disaster in 1966

Bengawan Solo River Basin Agency is established, 1969

Bengawan Solo River Basin Development Master Plan, 1974 (OTCA)

Review Master Plan, 1974 (OTCA) is CDMP(Comprehensive Development and Management Plan) 2001

1. Wonogiri Multipurpose Dam (1982)
2. Wonogiri Irrig. Project (1987)
3. Wonogiri Irrig. Extension (1990)
4. Various irrig. dam constr. Proj
5. Various irrig. Rehab. Projects
6. Upper Solo R. Improv.Proj (1994)
7. Madiun R. Urgent Flood Control Project (1995)
8. Lower Solo River Improvement Project (2003)

5 Components, 29 activities:

1. Promote Water Resources Development
2. Strengthen Watershed Management
3. Strengthen Water Quality Management
4. Strengthen Flood Control Management
5. Strengthen Institutional Framework of Water Resources Management

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Some Activities :

1. Urgent Countermeasure For Sedimentation of Wonogiri Multipurpose dam Reservoir
2. Studi on Countermeasure For Sedimentation of Wonogiri Multipurpose dam Reservoir

Some Results of the study :

1. Document of Village Land Conservation Plan in 29 Villages, Gemawang Village is included
2. This plan is done by Participatory Rural Approach (PRA) methode. Persepsi is a NGO who appointed as partnership institution in the process of Village Land Conservation Plan

Implementation of the Village Land Conservation Land by GNKPA

Bengawan Solo River Basin:

- The Bengawan Solo River is the largest river on the island of Java. It drains a watershed area of around 16,100 km², discharging into the Java Sea to the north of Surabaya after travelling about 600 km from the Sewu mountain ranges to the south-west of Surakarta.
- The Bengawan Solo River basin is geographically divided the upstream basin into two sub-basins, namely the Upper Solo River basin of 6,072 km² in the west and the Madiun River basin of 3,755 km² in the east. The downstream basin is called the Lower Solo River basin with a drainage area of 6,273 km² and a river length of 300 km from Ngawi to its outfall.

Bengawan Solo River Basin Territory

- These adjacent river basins are components of Bengawan Solo River basin territory, called the Satuan Wilayah Sungai (SWS) Bengawan Solo as shown in the Location Map. The total area amounts to around 19,780 km² comprising major watershed areas:
 - a. Bengawan Solo River basin of 16,100 km²,
 - b. Grindulu and Lorog River basins in Pacitan of 1,520 km²,
 - c. Small river basins in the north coastal area of 1,440 km², and
 - d. Lamong River basin of 720 km².

Bengawan Solo River Basin Territory



No.	River Basin	River basin Area
1.	Bengawan Solo River Basin	16.100 Km ²
2.	Grindulu, Teleng and . Lorog River Basin	1.520 Km ²
3.	Lamong River Basin	720 Km ²
4.	Small river basins in the north coastal area	1.440 km ²

Bengawan Solo River Basin Territory

No	Province	Regency / Municipality
1.	Central Java (9 regencies/ municipalities)	Regencies : Boyolali, Klaten, Sukoharjo, Wonogiri, Karanganyar, Sragen, Blora, Rembang, Municipality : Surakarta ,
2.	East Java (11 regencies/ municipalities)	Regencies : Pacitan, Ponorogo, Madiun, Magetan, Ngawi, Bojonegoro, Tuban, Lamongan, Gersik, Municipalities : Madiun, and Surabaya,

Master Plan in 1974

- The Master Plan in 1974 (OTCA) emphasized basin-wide water resources development comprising various multipurpose dam projects, irrigation and agricultural development projects, river improvement and flood control projects, hydropower projects, sand prevention projects, and lowland development projects.

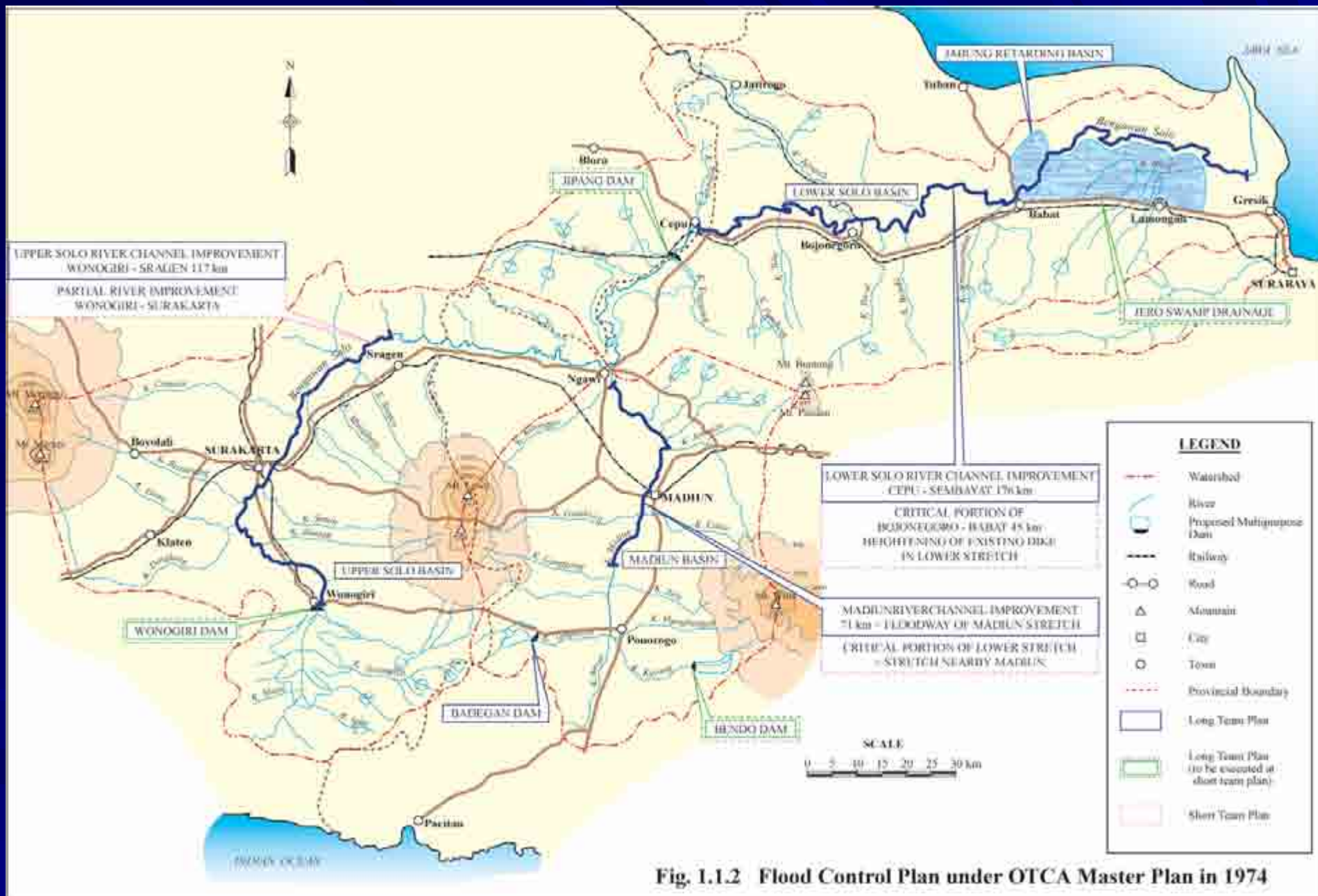


Fig. 1.1.2 Flood Control Plan under OTCA Master Plan in 1974

Realization of Master Plan 1974:

- Wonogiri Multipurpose Dam Project (completed in 1982)
- Wonogiri Irrigation Project (completed in 1987)
- Wonogiri Irrigation Extension Project (completed in 1990)
- Various irrigation dam construction projects
- Various irrigation rehabilitation projects
- Upper Solo River Improvement Project (completed in 1994)
- Madiun River Urgent Flood Control Project (completed in 1995)
- Lower Solo River Improvement Project (2003)

Necessity of Master Plan 1974 Update.

- During 1974 up to 1999, social and economic conditions within the Bengawan Solo River basin have changed significantly and the river morphology has also been modified
- Such a development strategy for the Bengawan Solo River basin basically might remain unchanged, but there is a need for review and updating, duly considering recent national concerns as summarized below :

- Water resources development, in particular reservoir-type projects, will inevitably cause social and natural environmental impacts.
- Rapid industrialization and urbanization demands more water, hence exploitation of water resources becomes a priority. Public water supply should be developed to improve social well-being and support industrial development in the nation.

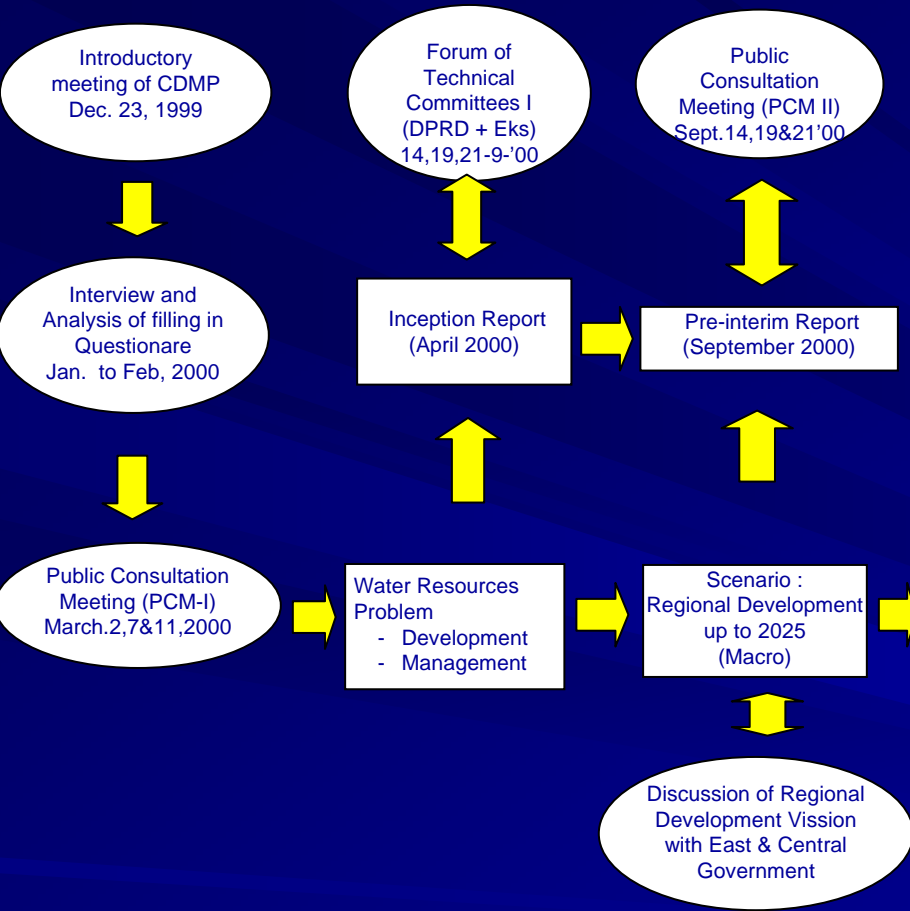
- There are important changes and trends with regard to institutions of water resources sectors at the national, provincial and kabupaten levels under the new framework of regional autonomy. These trends relate to decentralization, coordination, consultation and legislative reform. The basic policy of decentralization is also proceeding in the water resources sector. Intensified and increased public consultation and a greater focus on a “bottom-up” planning approach is expected as a basis to guide water resources development in a more equitable and sustainable manner.

Comprehensive Water Resources Development and Management Plan (CDMP) for the Bengawan Solo River Basin / Master Plan 2001.

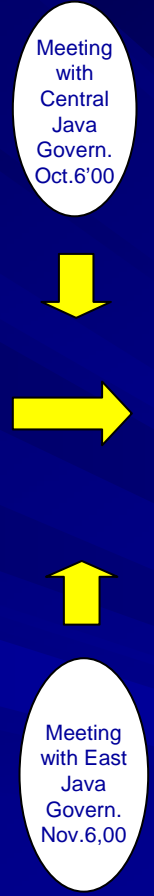
During CDMP Study broadly comprises the following two phases:

- Phase I: Review of the Existing Plans and Studies, and Basic Studies
- Phase II: Formulation of Water Resources Development and Management Master Plan

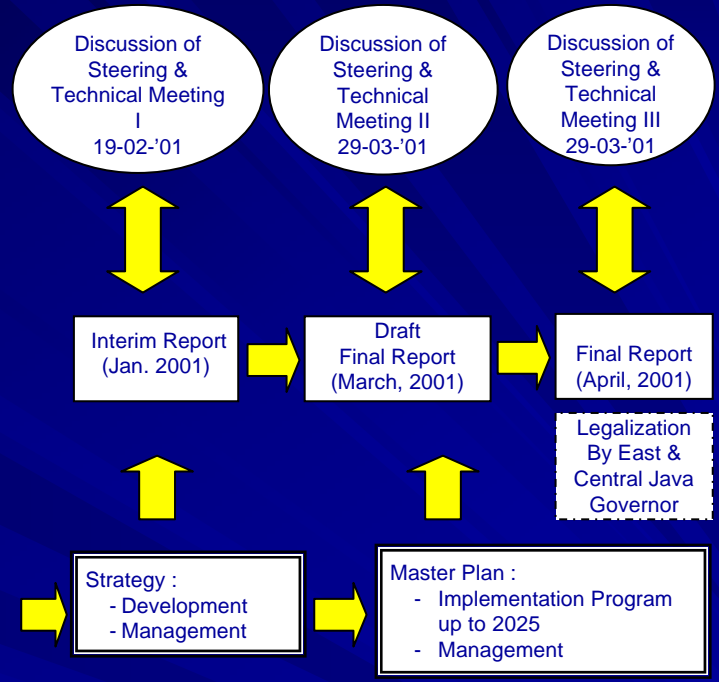
Phase I : Review of Master Plan and Stakeholder Aspiration Controlling of Water Resources



Intermediate Meeting (Vision similarity)



Phase II : Formulation of Comprehensive Water Resources Development and Management Master Plan



**BENGAWAN SOLO - CDMP STUDY
ACTIVITIES FRAME**

- The Master Plan was established taking into account local, regional and national needs and aspirations for water resources development and management based on a participatory “bottom-up” approach to involvement of stakeholders.
- In the early part of Phase I, the first basin-wide Public Consultation Meetings (PCMs) were held at the 3 selected locations within the basin in March 2000 to incorporate various opinions, constraints, proposals and aspirations in water resources development and management from communities and stakeholders into the master planning process.

In conclusion, five key issues can be identified as shown below.

- **Key Issue No.1: Water Resources Potential Distribution Gap**
- Key Issue No.2: Increasing Trend of Diversifying Water Demand and Clean Water Requirement
- **Key Issue No.3: Increasing Water Use Conflicts and Negative Phenomena among Basins/Communities/Use Sectors/Sub-Sectors.**
- **Key Issue No.4: Progressive Environmental Degradation in Less Developed Areas**
- **Key Issue No.5: Limited Development Potential due to Topographical and Geographical Constraints**

- The second PCMs were held at 3 locations within the basin late in September 2000. Highlight of second PCMs was to discuss with and obtain comments from the stakeholders on the suggested regional development scenario to the year 2025 (socio-economic macro-frame) and water resources development and management master plan targets as well as its plan components.

Steering Committee and Technical Committee, Central Level

BAPPENAS

Ministri of Home Affairs

Ministry of Housing and Regional Development

Technical Committee, Regional Level

Pengairan

PPSDA

Jawa Tengah

Dinas Pengairan TK I

Bappeda TK I

Jawa Timur

Dinas Pengairan TK I

Bappeda TK I

Public Consultation Meeting

PIPWS
Bengawan

CDMP Study
Team

Balai PSDA
Upper Solo
River

PPTPA
Upper Solo
River

Balai PSDA
Madiun River

Balai PSDA
Lower Solo
River

PPTPA
Madiun River

PPTPA
Lower Solo
River

Stakeholders
Representatives of various
water users

Kabupaten/
Kotamadya

Farmer's Group

NGO

University

Organization Relationship for CDMP Study Implementation

Master Plan Composition

Plan Component	Name of Project
Component 1 : Promote Water Resources Development	
<i>Domestic and Industrial Water Supply Plan:</i>	
1	Lower Solo Long-Channel Storage Project
2	Greater Surakarta Water Supply Project
3	PDAM Water Supply System Development Project
4	Rembang Water Supply Project

Irrigation Development and Rehabilitation Plan:

5	Solo Vallei Werken Project
6	Upper Solo Nine Tributary Irrigation Dams Project
7	Madiun Three Tributary Irrigation Dams Project
8	Lower Solo Sixteen Tributary Irrigation Dams Project
9	Kd. Bendo Irrigation Dam Project
10	Rehabilitation and Improvement Projects of Irrigation Systems
11	Bendo Multipurpose Dam Project
12	Badegan Multipurpose Dam Project
13	Pidekso Dam Project
14	Tlg. Ngebel Rehabilitation Project

Component 2 : Strengthen Watershed Management

Watershed Conservation and Management Plan:

- | | |
|----|---|
| 15 | Urgent Countermeasure Project for Sedimentation in Wonogiri Reservoir |
| 16 | Wonogiri Reservoir Rehabilitation and Watershed Management Project |
| 17 | Critical Land Rehabilitation and Management Project in Six Watersheds |

Component 3 : Strengthen Water Quality Management

Water Quality Management Plan:

- | | |
|----|---|
| 18 | Establishment of Water Quality Management Framework in the Bengawan Solo River Basin |
| 19 | Study of Enforcement of Effluent Discharge Standards in the Bengawan Solo River Basin |

Component 4 : Strengthen Flood Control Management

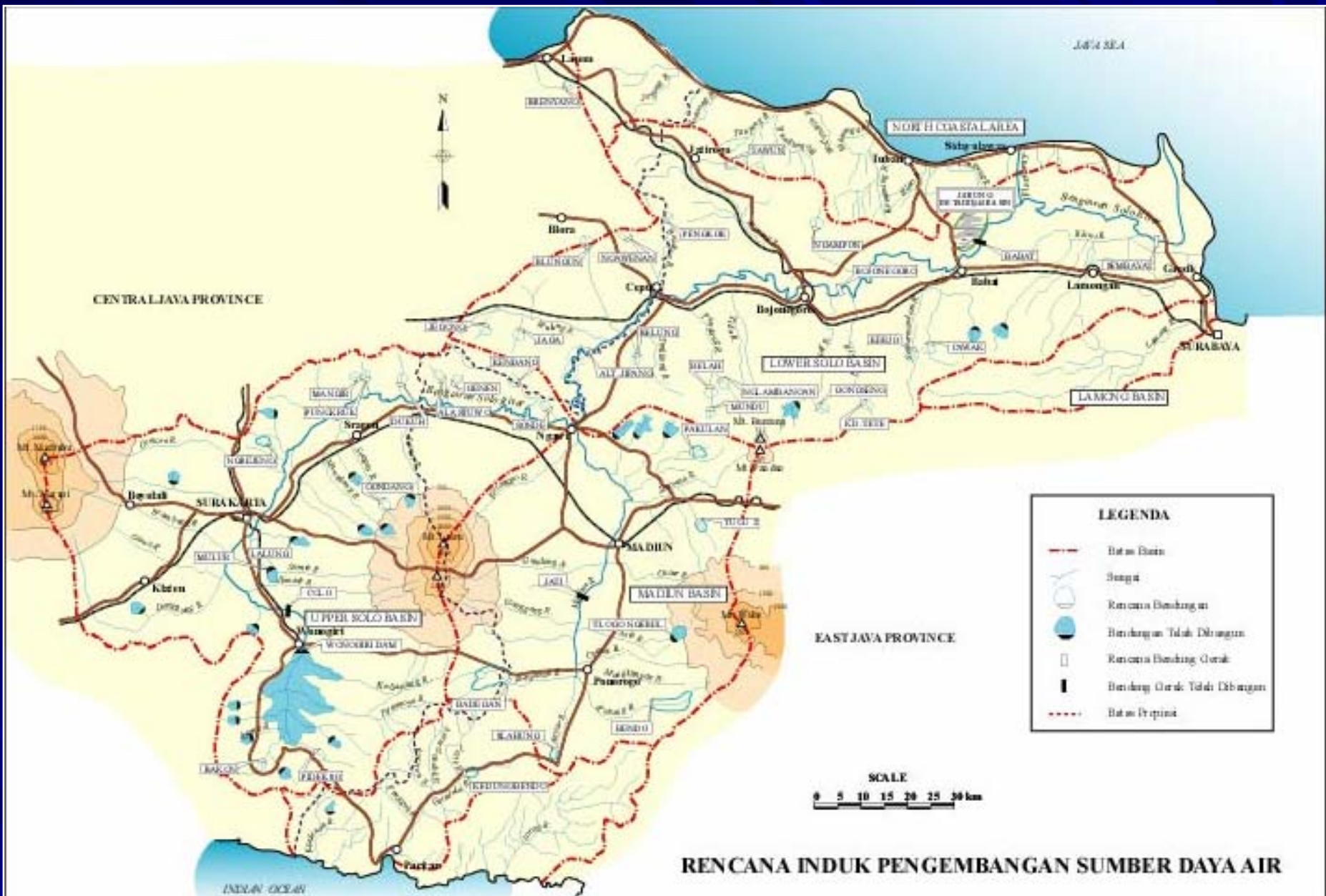
Flood Control Management Plan:

20	Lower Solo River Improvement Project, Phase II
21	Upper Solo River Improvement Project, Phase II
22	Madiun River Improvement Project, Phase II and III
23	Study on Grindulu River Improvement
24	Study on Lamong River Improvement
25	Jero Swamp Development Project
26	Study on Urban Drainage Improvement
27	Rehabilitation of Existing River Structures
28	Bengawan Solo FFWS Project

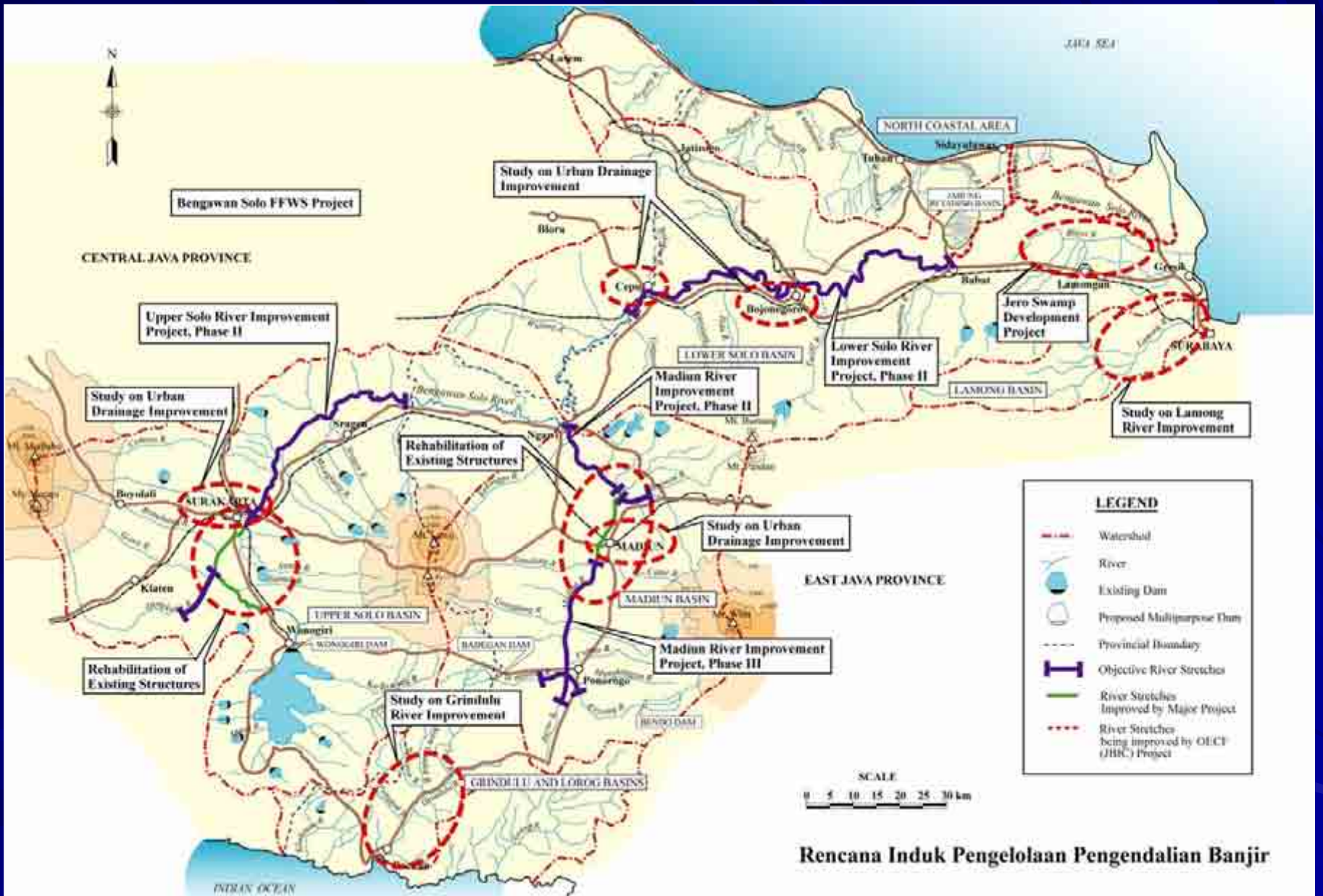
Component 5 : Strengthen Institutional Framework of Water Resources Management

Strengthening and Improvement Plan of Institutional Framework of Water Resources Management:

29	Institutional Capacity Building in Water Resources Management within the Bengawan Solo River Basin
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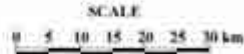


RENCANA INDUK PENGEMBANGAN SUMBER DAYA AIR

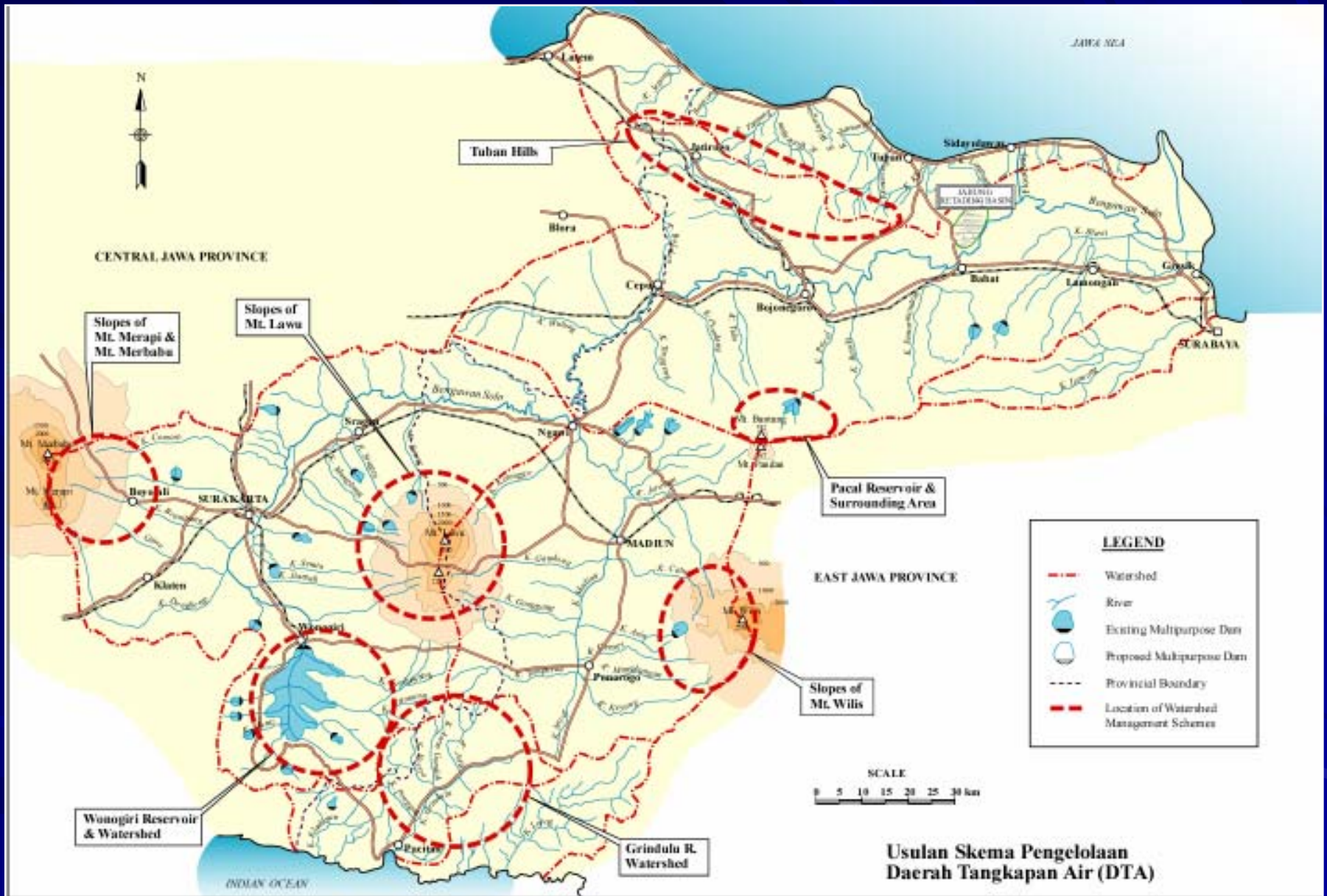


LEGEND

- Watershed
- River
- Existing Dam
- Proposed Multipurpose Dam
- Provincial Boundary
- Objective River Stretches
- River Stretches Improved by Major Project
- River Stretches being improved by OECD (JIRC) Project



Rencana Induk Pengelolaan Pengendalian Banjir





**Sistem Sungai yang dikelola oleh PJT-I
Bengawan Solo (Keppres 129/2000)**



PEMERINTAH PROPINSI JAWA TENGAH
DAN
PEMERINTAH PROPINSI JAWA TIMUR



**RENCANA INDUK (2001)
PENGEMBANGAN DAN PENGELOLAAN SUMBERDAYA AIR
SATUAN WILAYAH SUNGAI BENGAWAN SOLO**

*RENCANA INDUK INI TELAH DIDISKUSIKAN BERSAMA DALAM
FORUM PENGARAH STUDI KOMPREHENSIF RENCANA INDUK PENGEMBANGAN
DAN PENGELOLAAN SUMBERDAYA AIR SWS BENGAWAN SOLO,
PROPINSI JAWA TENGAH DAN PROPINSI JAWA TIMUR*

Surabaya, 18 Juni 2002

Mengetahui / Mengesahkan :
An. GUBERNUR JAWA TENGAH
Kepala BAPPEDA,



Prof. Dr. MIYASTO
Pembina Utama Muda
NIP. 130516585

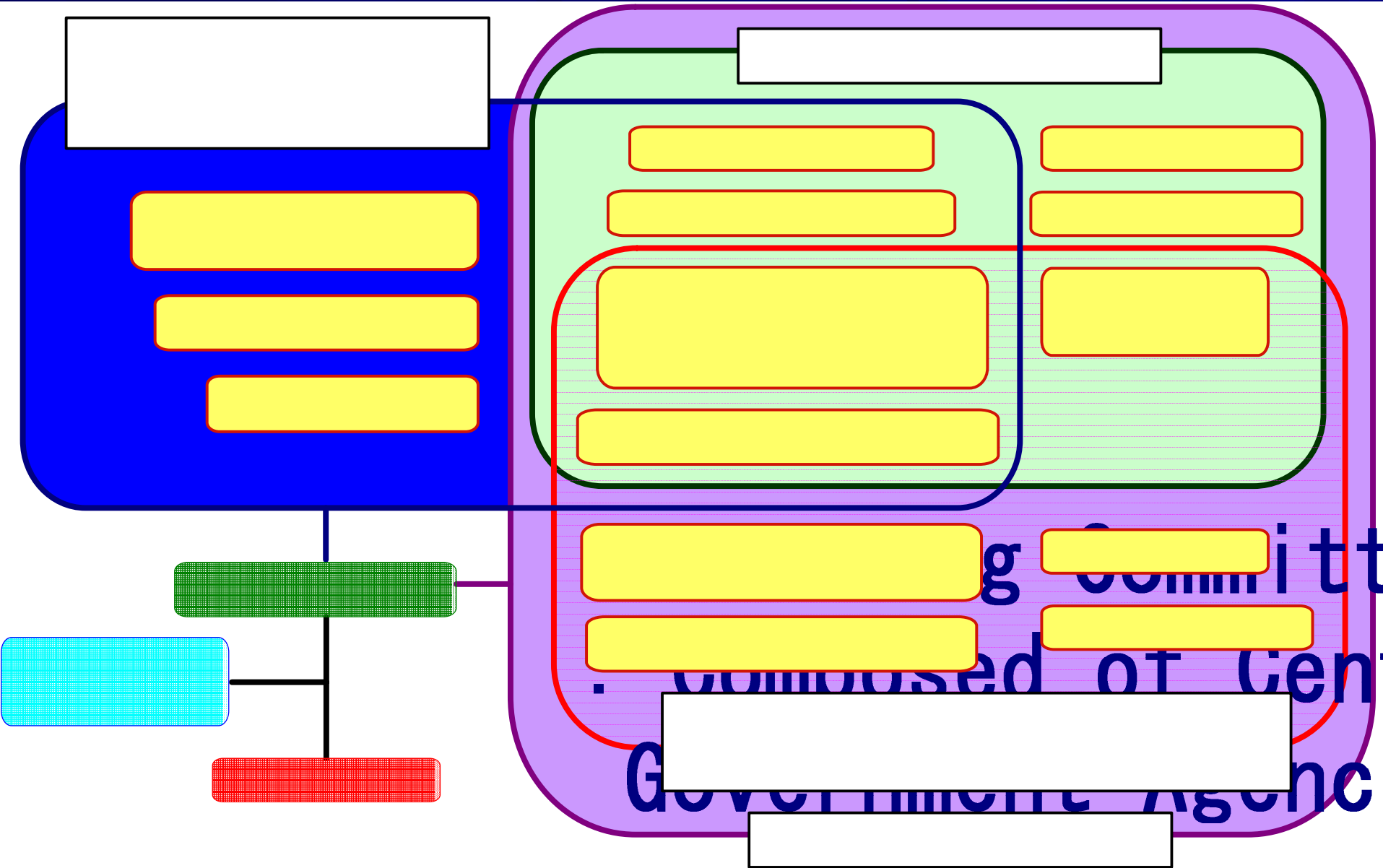
Mengetahui / Mengesahkan :
An. GUBERNUR JAWA TIMUR
Kepala BAPPEPROP,



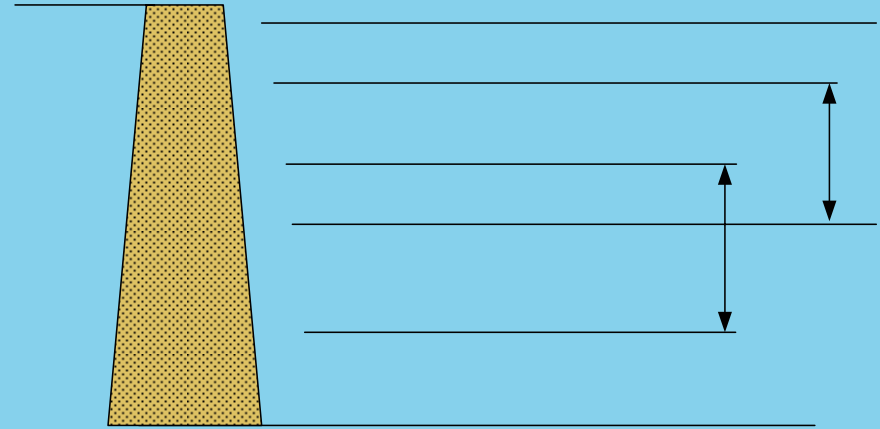
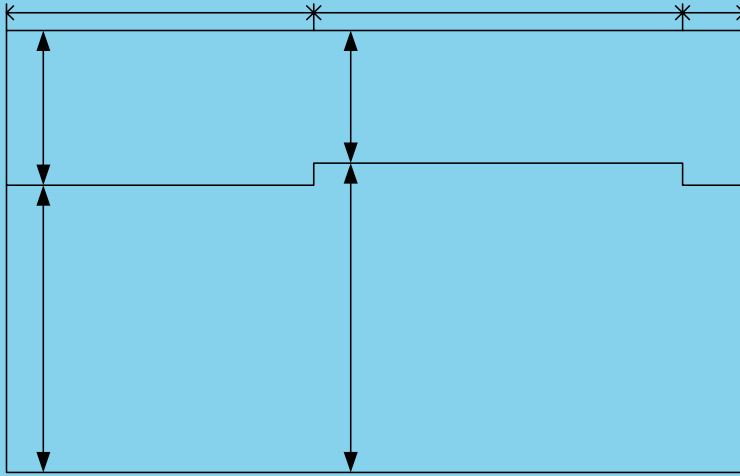
Drs. SAPARI RANUWIDJAJA, M.Sc.
Pembina Utama Madya
NIP. 010082718

The Study on Countermeasures for Sedimentation in the Wonogiri Multipurpose Dam Reservoir

Related Institution in the Study



- The Wonogiri Multipurpose Dam is the sole large reservoir in the mainstream of the Bengawan Solo River, aiming at flood control, irrigation water supply and hydropower generation.
- The Wonogiri Dam was constructed in 1982 under the technical cooperation of OTCA (the former JICA) and financial assistance of OECF (the former JBIC).
- Reservoir, it would lose its functions such as water supply, flood control because of decrease of the storage capacity in the near future



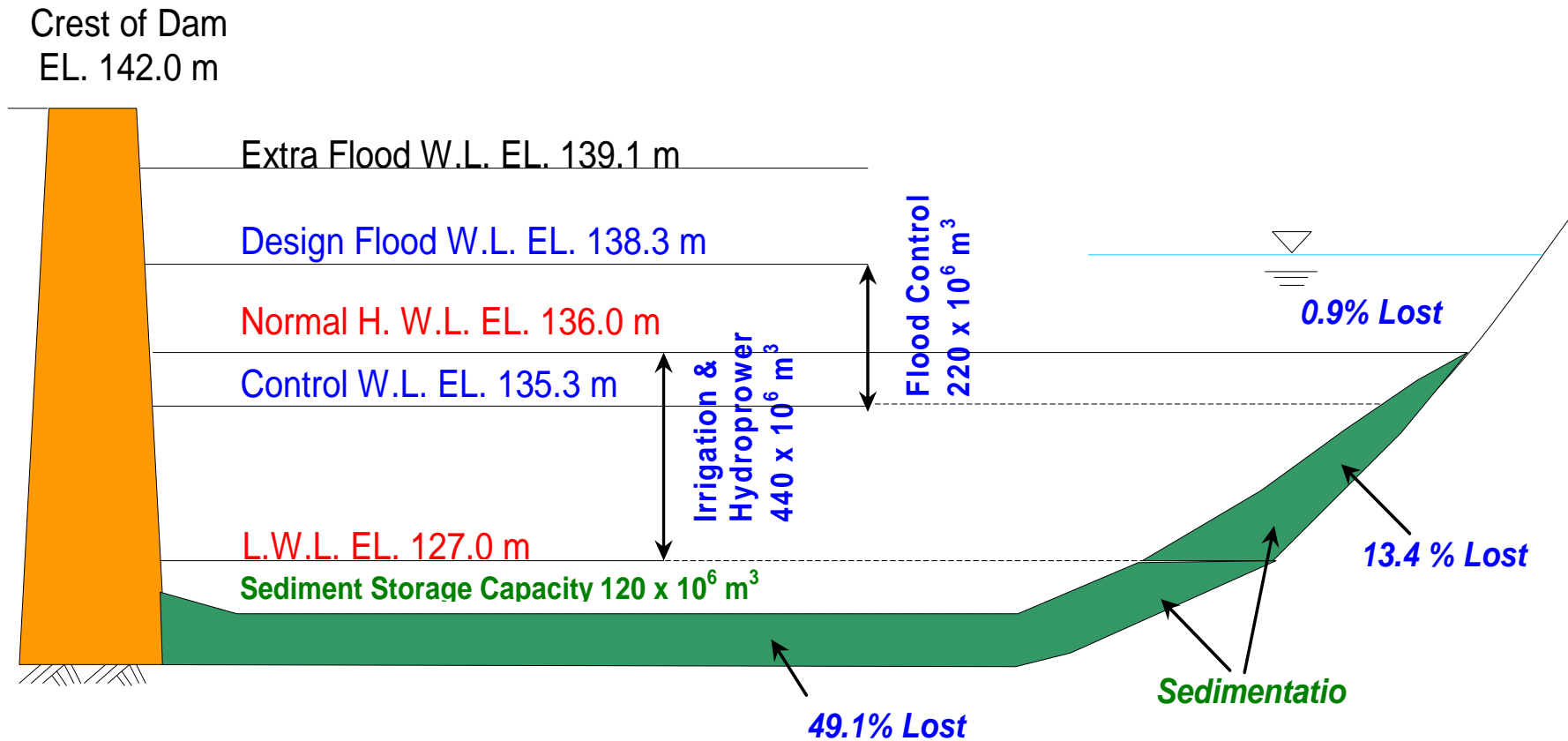
Flood

No

Flood Control
 $220 \times 10^6 \text{ m}^3$

Flood
 175

Sedimentasi Waduk Serbaguna Wonogiri pada th 2005



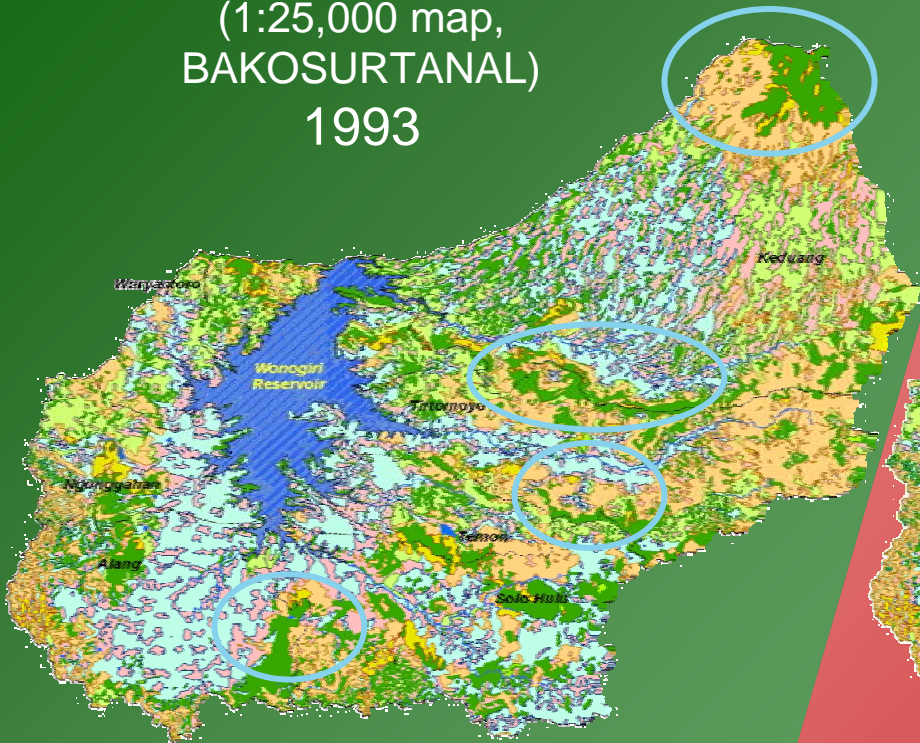
Kapasitas Tampung-an-Efektif : → 375 juta m³ pada th 2005
440 juta m³ pada th 1980

Inflow Sedimen Rata-2 (1980-2005): 4,6 juta m³/tahun

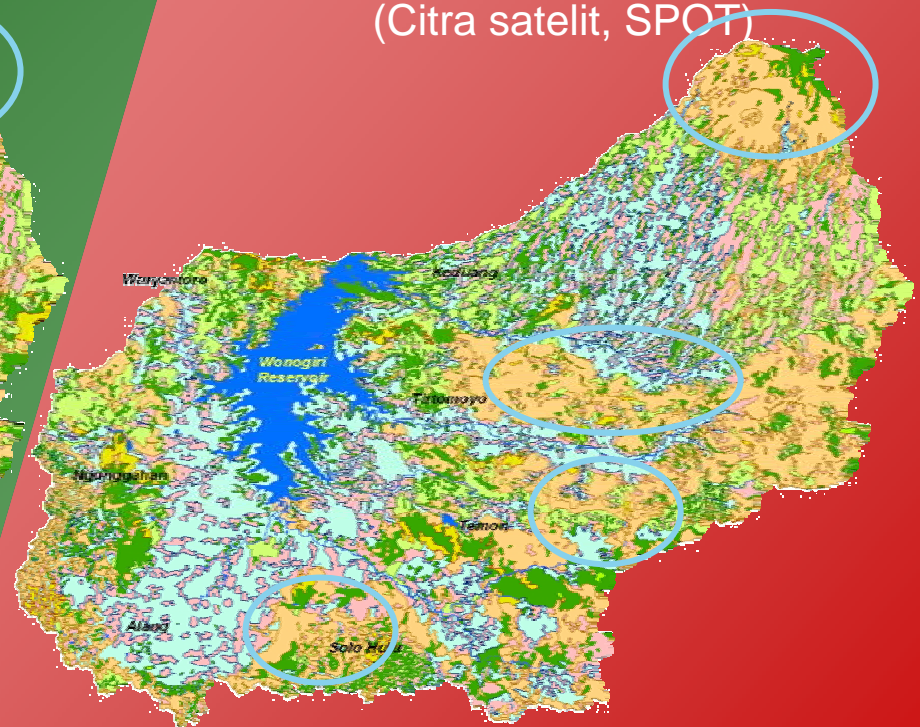
Watershed Conservation and Management

Land use Changes

Peta DRBI I-2001
(1:25,000 map,
BAKOSURTANAL)
1993

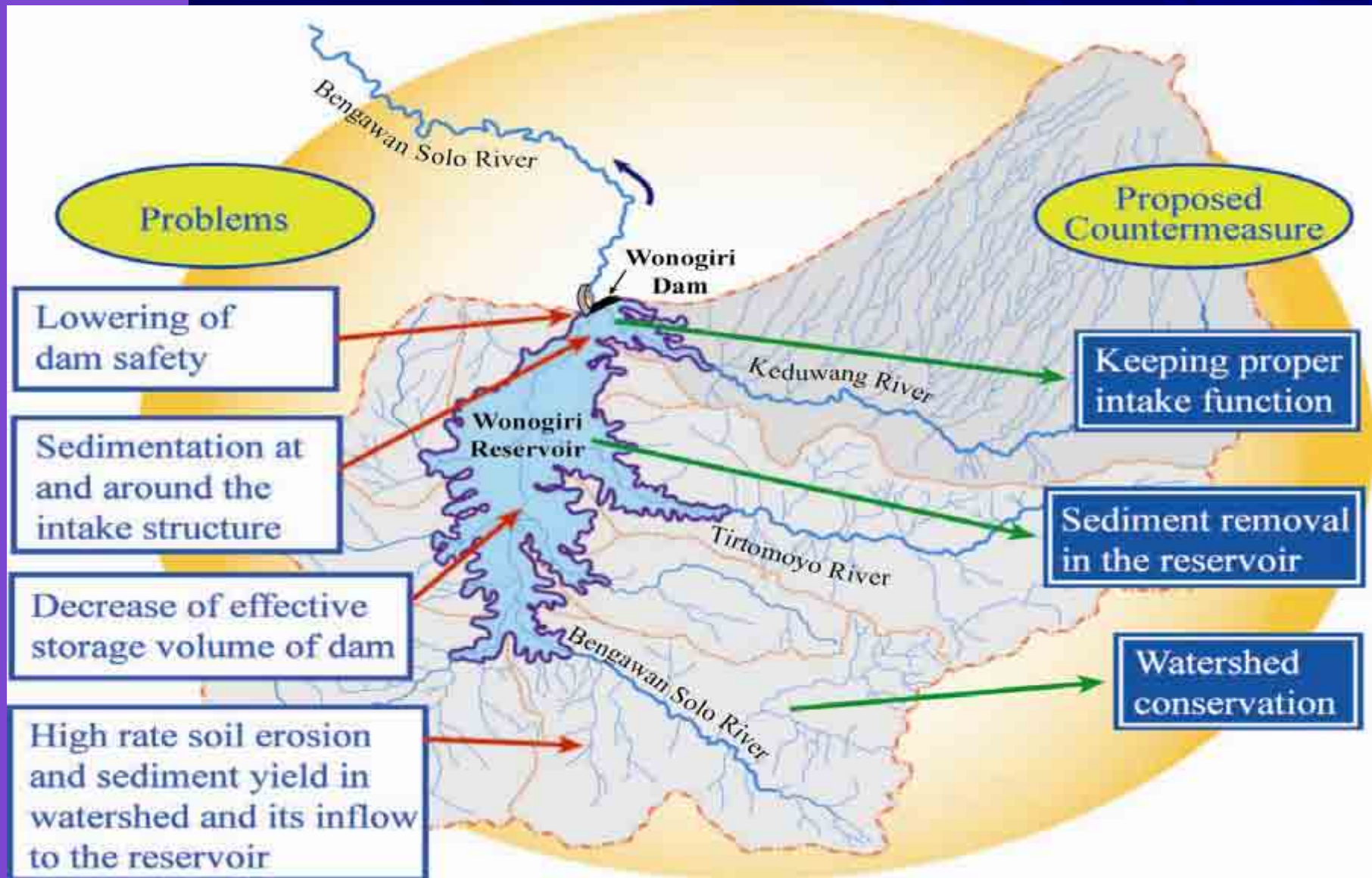


2003
(Citra satelit, SPOT)



Forest in the high slope area decrease !!

Countermeasure of sedimentation Scheme



Garbage from K. Keduang



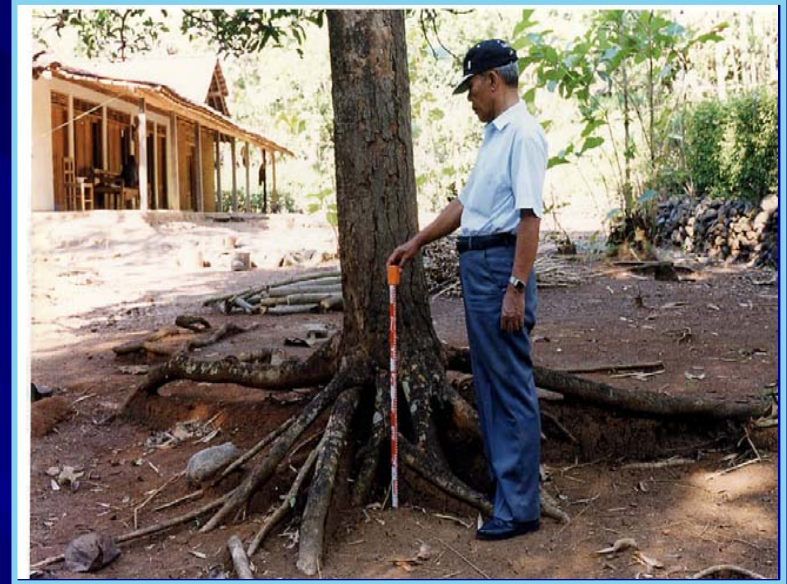
Garbage Problems at Intake



Dec. 2004

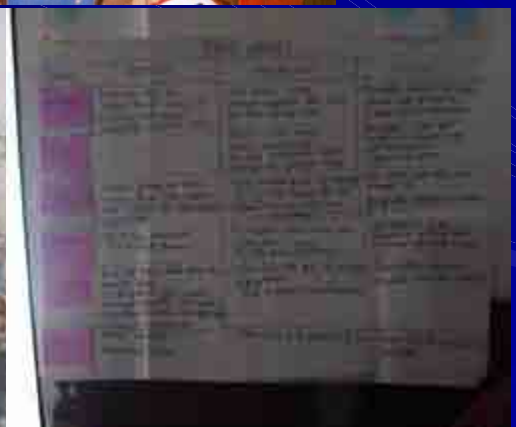
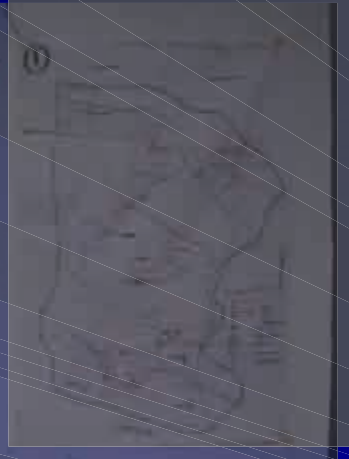


Jan. 2004



Village Land Conservation Plan

- Persepsi is a NGO who appointed by JICA Study Team for facilitating community participation in the planning process by Participatory Rural Approach (PRA) process



General Problem

1. Economic Sector
2. Institutional Sector
3. Social and Politic Sectors

Erosion Problems

1. Rill /Sheet Erosion
2. Bank Erosion
3. Gully Erosion
4. Land Sliding Erosion

The Important Factors for Village Soil Conservation Efforts

1. Supporting Factors

- The availability of vegetation for conservation that grows and develop and well managed by the community.
- The cattle effort managed by the farmers at domestic scale that enable to motivate the slopping grassing in land terraces.
- The experiences of basic conservation techniques to handle the village conservation works.
- The availability of local workers that ready to use in the implementation of soil conservation action plan.

The Important Factors for Village Soil Conservation Efforts

2. *Barriers or Obstacles Factors*

- Low surplus of community's income that allocable for village conservation aims.
- Low capacity of conservational groups to handle and implement integrated planning combined the conservational aspect and economic income generating one in the village.
- Incompatible policies on management of state forest and community one.
- Strong understanding that land conservation are Government issue, not community one.

National Friendship Movement on Water Safety Guard (*Gerakan Nasional Kemitraan Penyelamatan Air – GN- KPA*)

- GNKPA established on March 22, 2005.
- GNKPA is a national movement aiming to revitalize the balancing of hydrological cycles in the watershed.

- GNKPA level are central, provincial, district. The member of each level are from all stakeholder who in charge in water safety, both government and non government. The activities of GNKPA are facilitating GNKPA establishment, facilitating community development, facilitating planning and implementation, technical assistance in the watershed conservation and management toward water safety guard

Thanks you very much

