

INTRODUCTION OF JASA TIRTA I & II PUBLIC CORPORATION



CURRENT STATUS , ISSUES, FUTURE VISSION



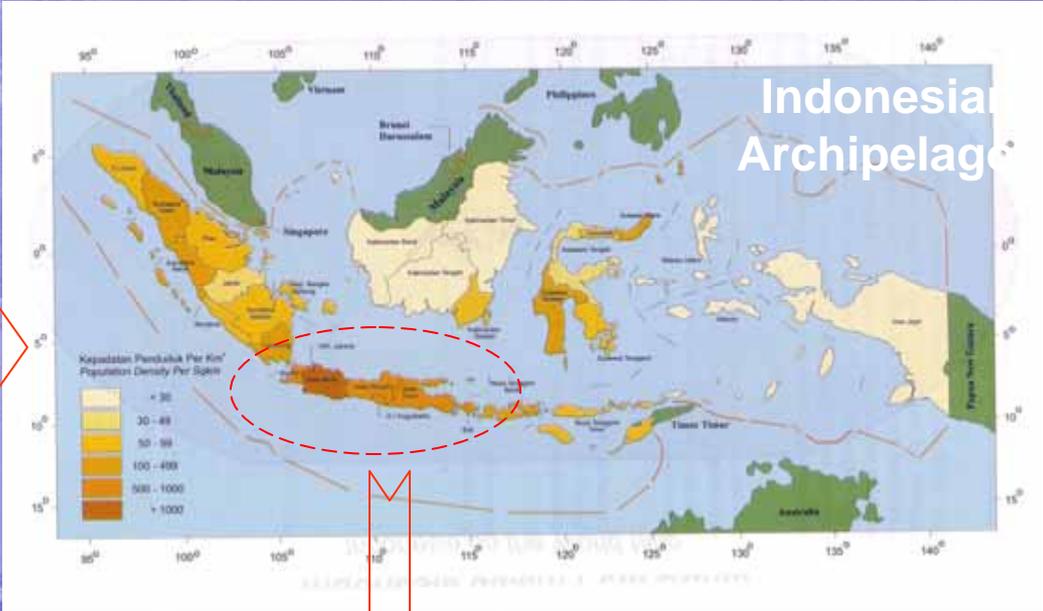
Presented By Alfian Rianto

NARBO



Network of Asian River Basin Organizations

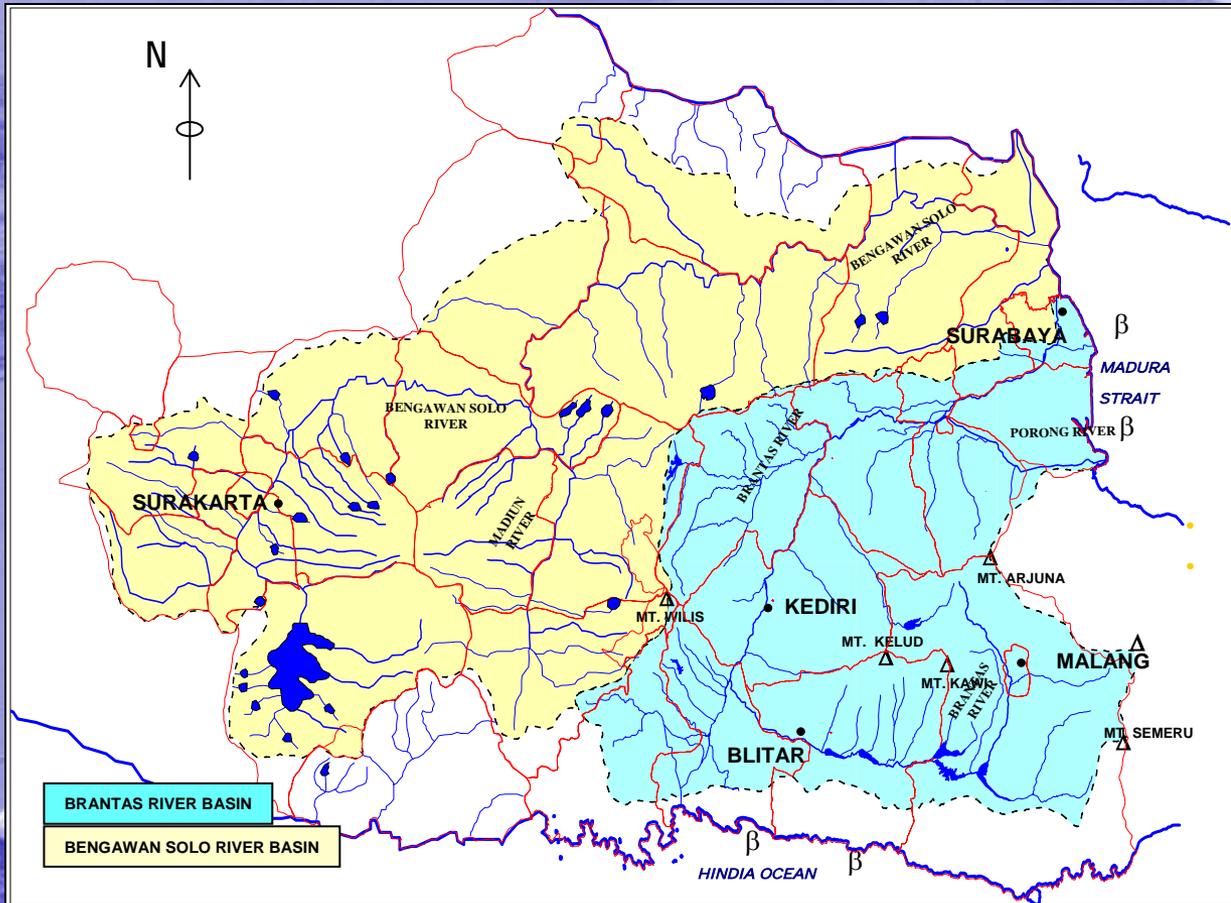
ORIENTATION MAP



Description of River Basin



- Support regional and national development benefits: GRDP Brantas Rp. 150,630 billion – approx. US\$ 17.66 billion – 59% GRDP E. Java – 8% GRDP National



- Basin Area : 11,800 km² (25% of E. Java)
- Population (2003) : 15.5 million (43% of E. Java)
- Average Rainfall : 2,000 mm/year
- Water Potentials : 12 billion m³/year
- River Length : 320 km

Active volcanoes: Mt. Kelud & Mt. Semeru

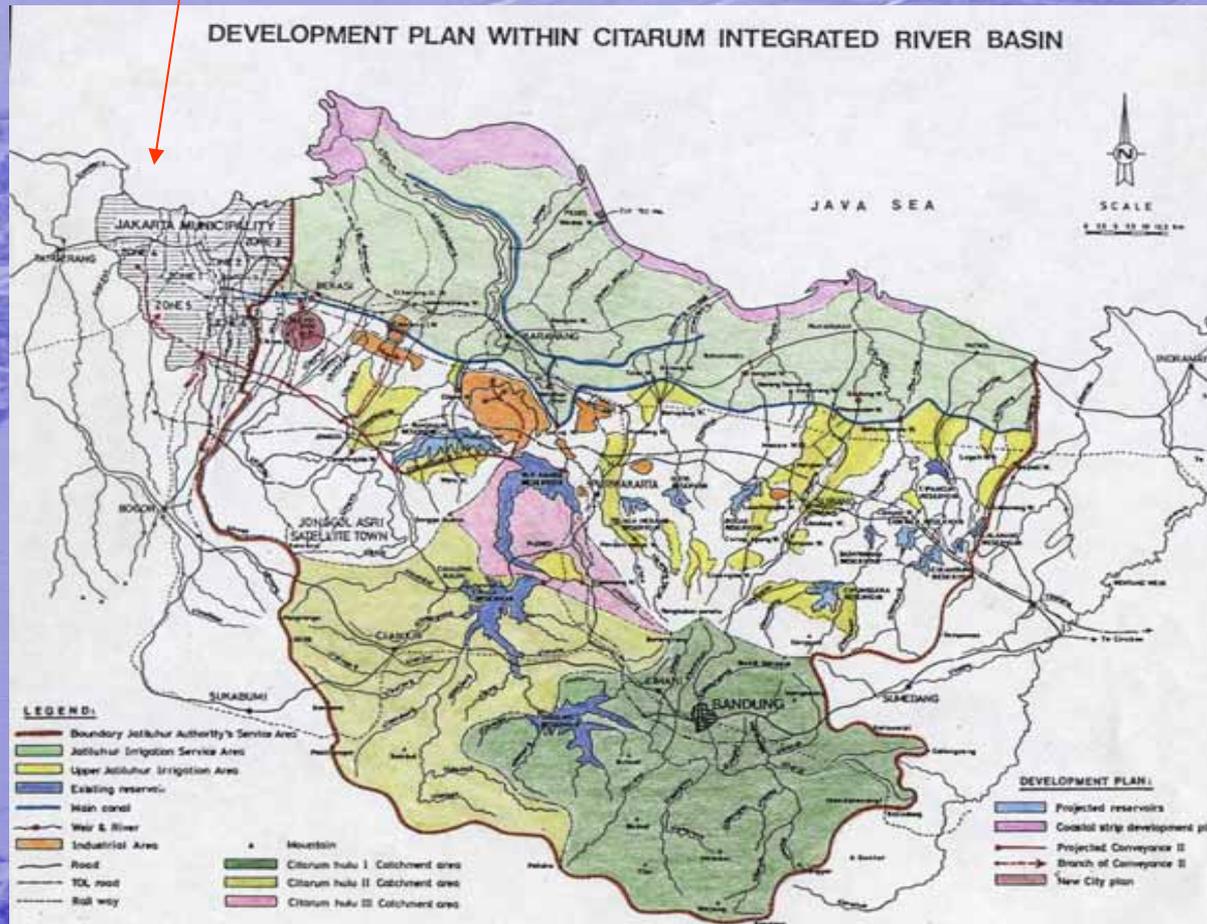
- Land Use (2004) :
- paddy field :39.0%
 - dry land 12.0%
 - plantation 22.0%
 - forest 11.0%
 - settlements 12.0%
 - others 4.0%



Description of River Basin



DEVELOPMENT PLAN WITHIN CITARUM INTEGRATED RIVER BASIN



- Basin Area: 12,000 km² (22% of W. Java)
- Population (2003): 15.5 million (43% of E. Java)
- Average Rainfall: 3,000 mm/year
- Water Potentials: 12.95 billion m³/year
- River Length : 300 km

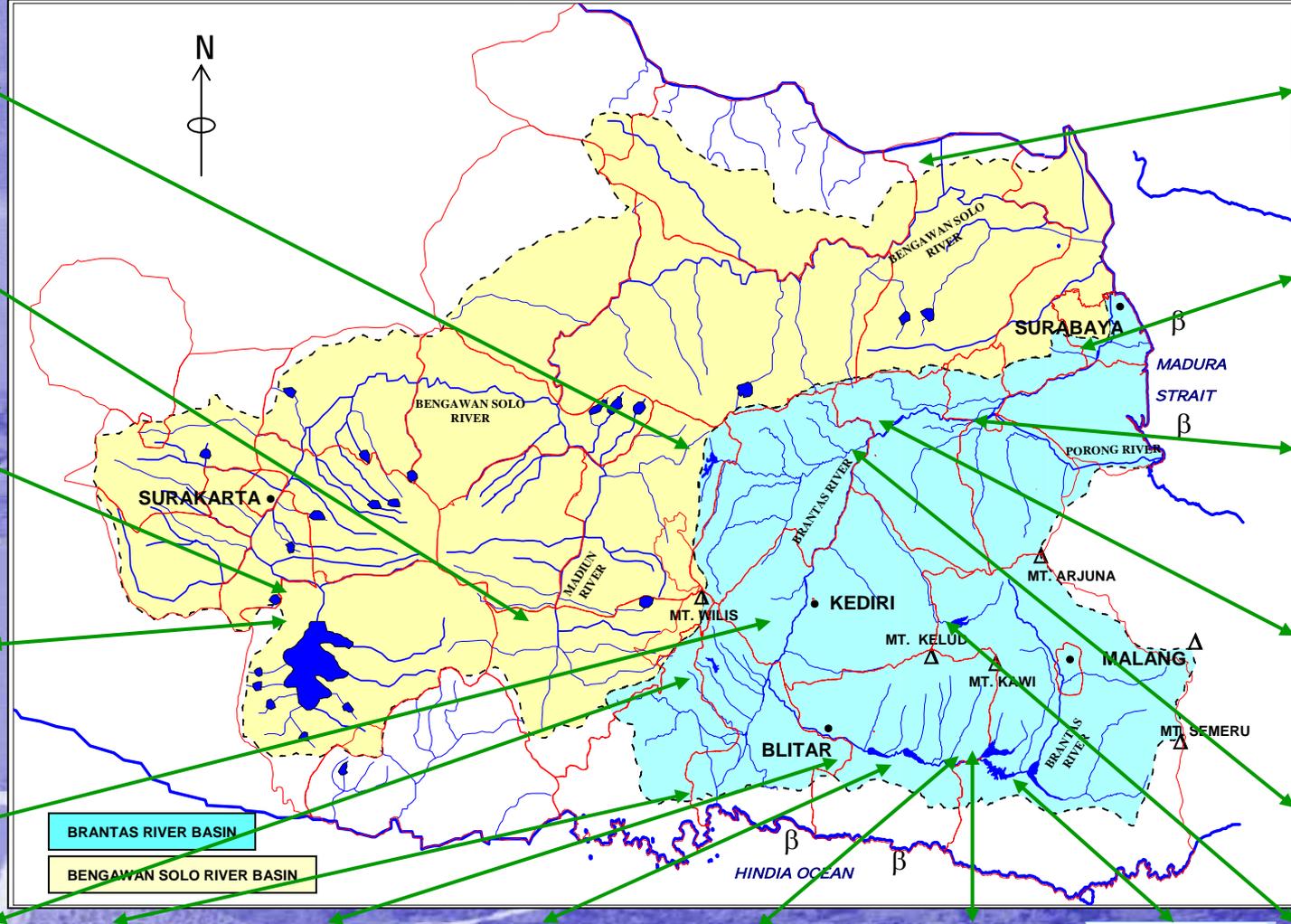
Background of Integrated Development Concept

- Some area in the basin had been severely hurt by flooding in rainy season and drought in dry season
- Construction of several water resources infrastructures has lead to the necessity to develop an overall plan for the Brantas basin
- Water resources development in the basin is decided to be conducted at a basin-wide level with integration of various aspects

Post Construction Problems (1990)

- No permanent institution for O & M
- Limited budget available for O & M
- Water Resources Infrastructures Degradation

WATER RESOURCES INFRASTRUCTURE



Bening Dam



Jati Rubber Dam



Colo Barrage



Wongiri Dam



Mrican Barrage



Wonorejo Dam



T. Agung Coastal Hydro Electric Power



Lodoyo Barrage



Wlingi Barrage



Sutami Dam



Lahor Dam



Sengguh Dam



Selorejo Dam



Floodway Sedayulawas



Gunungsari Barrage



New Lengkonng Barrage



Menturus Rubber Dam



Jatimlerek Rubber Dam

WATER RESOURCES INFRASTRUCTURE (PJT II)



Curug Dam



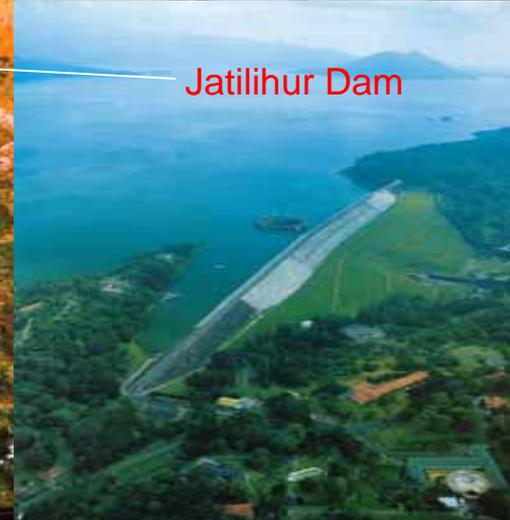
Walahar Weir



Cirata Dam



Mechanical Water Pump



Jatilihur Dam



Saguling Dam

**Both of Saguling and Cirata Dam
Managed by The Power Electricity
Owned**

Development Benefits

IDENTIFICATION	BRANTAS-B.SOLO		CITARUM	
Beginning of Development	1960		1956	
Comparison	1960	2000	1956	2000
Flood control (ha)	60,000	Maintenance Flow = 204 Mm ³ /year And Flood Control 50 years Return Period = 60,000 ha 	20,000	None 
Cropping intensity per year	0.8	2.2 	1.2	2.2 
HEP Production (in Million kWh/year)	170	1,200 	None	850 
Raw Water for DMI (in million m ³ /year)	123	370 	None	752 



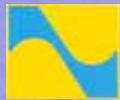
Corporatization

Jasa Tirta I Public Corporation (1/4)

Basic Law



Jasa Tirta I Public Corporation was established by Indonesian Government to manage Brantas River and its 39 tributaries, according to Government Regulation No. 5 of 1990. This regulation was amended by Government Regulation No. 93 of 1999. Then Presidential Decree No. 129 of 2000 stipulating additional basin of Bengawan Solo to be managed.



Jatiluhur Authority Corporation (POJ) was established in line with Government Regulation No. 20 of 1970 which the it adapted with the Government regulation N0 35/1980 and Government regulation No 13/1998 regarding with Public Corporation , the POJ with renamed as Jasa Tirta II Public Corporation (PJT II) in line with regulation No 94/1999.

Corporatization Jasa Tirta I & II Public Corporation (2/4)

Vision



Jasa Tirta I

Government Owned Corporation that capable to manage water resources in professional, innovative and sustainable manner supported by all stakeholders.



Jasa Tirta II

Government Owned Corporation that capable to realize a well known and high quality company in water resource for wide service in water supply to the various requirement and contributions to national food sufficiency

Corporatization Jasa Tirta I Public Corporation (3/4)

• Performing operation and maintenance activities of water resources infrastructures.

• Economic dealings in water utilization.

• Conducting rehabilitation of water resources infrastructures according to capability of the corporate body.

• Conducting river basin management including water resources conservation, development and utilization.

Corporatization

Jasa Tirta I Public Corporation (4/4)

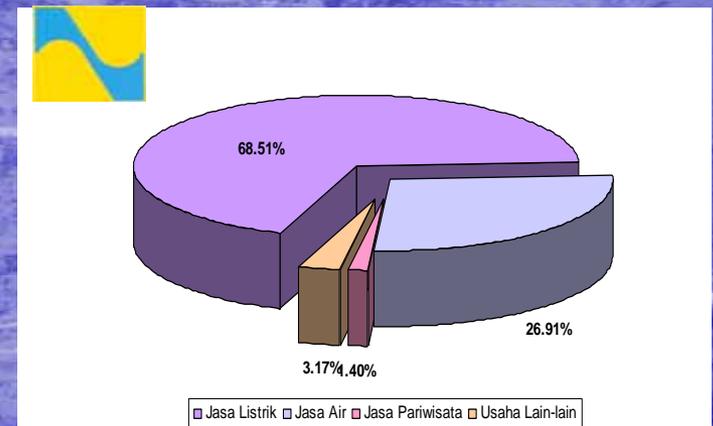
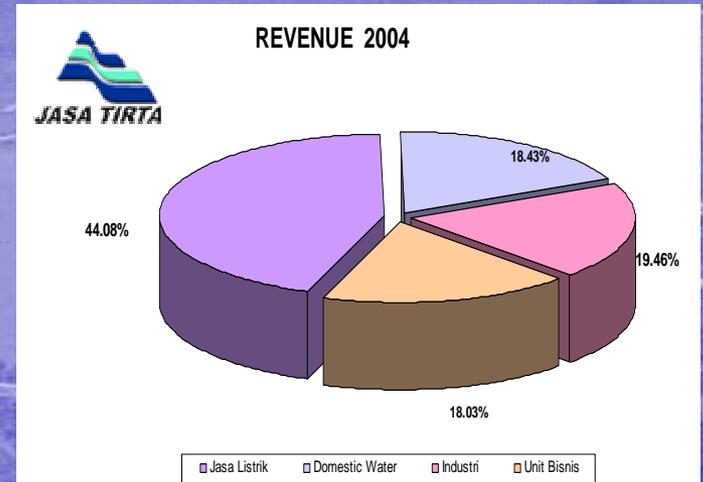
Financial Sources

- Beneficiaries Pay Principle

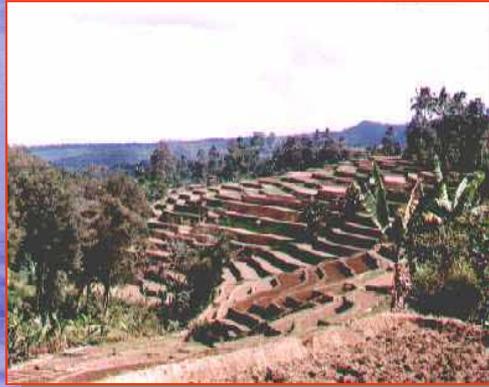
Beneficiaries pay for water services, rendered in form of water service fee. (except farmers)

- Government Obligation Principle

Government finances for social services such as for flood control, water quality control and water resources conservation



Scope of Water Resources Management (1/6 Watershed Management)



TERRACING

Action to preserve watershed and to control erosion and sedimentation in cooperation with related agencies



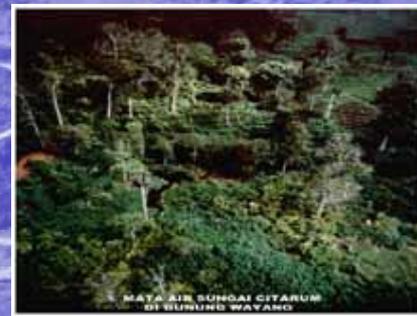
REFORESTATION



CONSERVATION



CONSERVATION OF BRANTAS & CILIWUNG ORIGIN



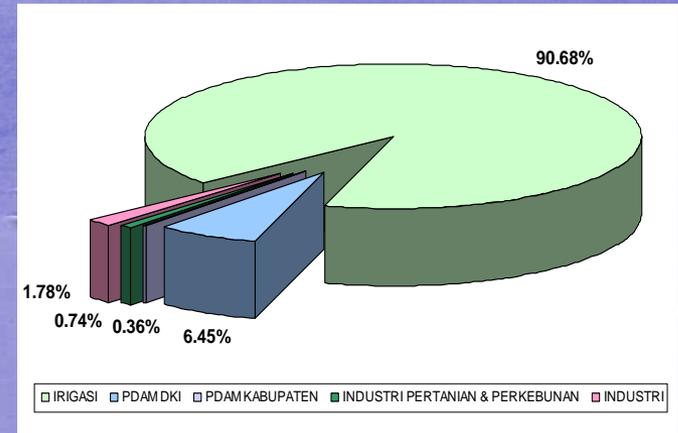
MATA AIR SUNGAI CITARUM
DI SUNGUNG WAYANG



CHECK DAM

Scope of Water Resources Management (2/6 Water Quantity Management)

Action to provide water supply for all stakeholders in fair and transparent manner based on water allocation agreed by water resources management committee



Scope of Water Resources Management

(2/6 Water Quantity Management)

Operation of Infrastructures

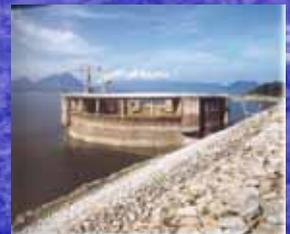


Action to maintain functions of infrastructures to meet its lifetime



Menturus R.D (93)

To sustain of the function water resources infrastructure the plan of operation and maintenance must be prepare basically by adopt of quality system ISO 9001 : 2001



Scope of Water Resources Management

(2/6 Water Quantity Management)

Water for Power Generation

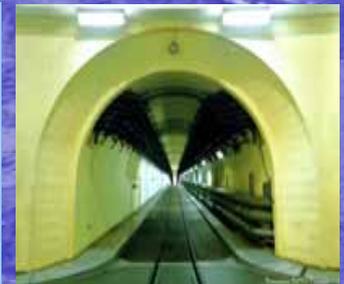
HYDRO ELECTRIC POWER

PJT I

1100 Million
Kwh/Year

PJT II

900 Million
Kwh/Year



Scope of Water Resources Management

(2/6 Water Quantity Management)

Water for Domestic Supply & Industri

Industrial Water supply	PJT I	PJT II
	146 million m3	201 Million m3

Domestic Water Supply	PJT I	PJT II
	273 Million M3	431 Million m3



Scope of Water Resources Management (3/6 Water Quality Management)

LEGEND

Location of proposed real time water quality monitoring stations (23 stations)

< Location of existing manual monitoring (60 stations)



Jasa Tirta participates
In seeking to create the
River Water quality
condition

As one of the pollution
Control effort, Jasa tirta
Constructed a Telemetry
System for Water Quality
Monitoring In The Brantas
River Basin also
constructed:
Water Quality Laboratory
in
Malang and Mojokerto

THE ACTIVITIES OF THE WATER QUALITY MONITORING :

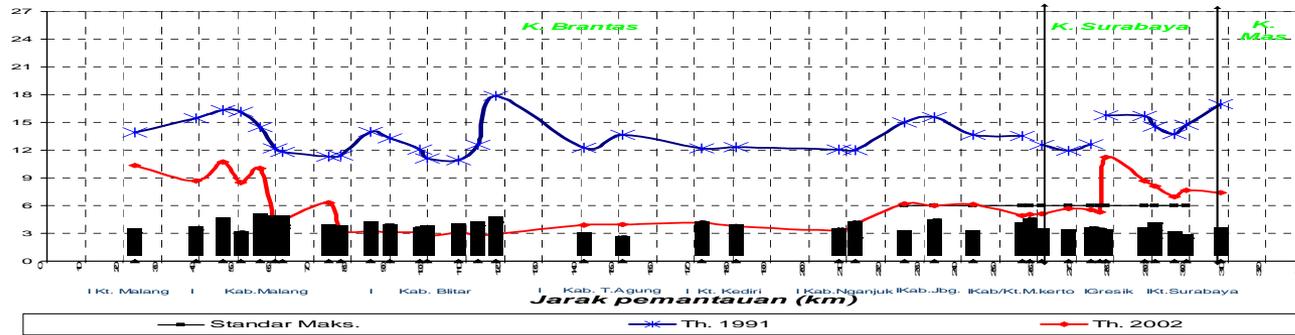
1. Real time water quality monitoring taken from 23 Water Quality Monitoring Station
2. Routine Monitoring :
 - 60 location on the long section of River and Tributaries
 - 57 Location of Industrial waste
 - 11 location of Hospital waste
3. Public Service



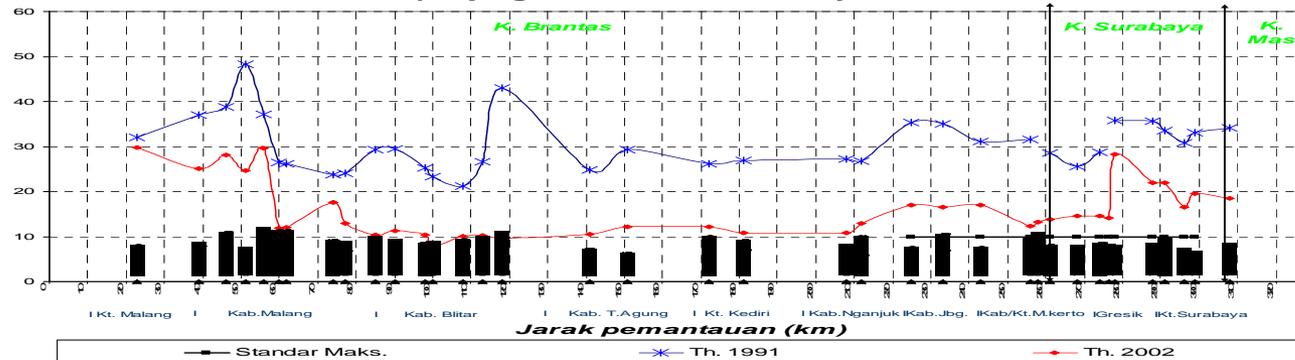
SAMPLING

Scope of Water Resources Management (3/6 Water Quality Management)

**AVERAGE CONCENTRATION OF BOD
ALONG THE RIVER (K. Brantas, K. Surabaya & K. Mas)**

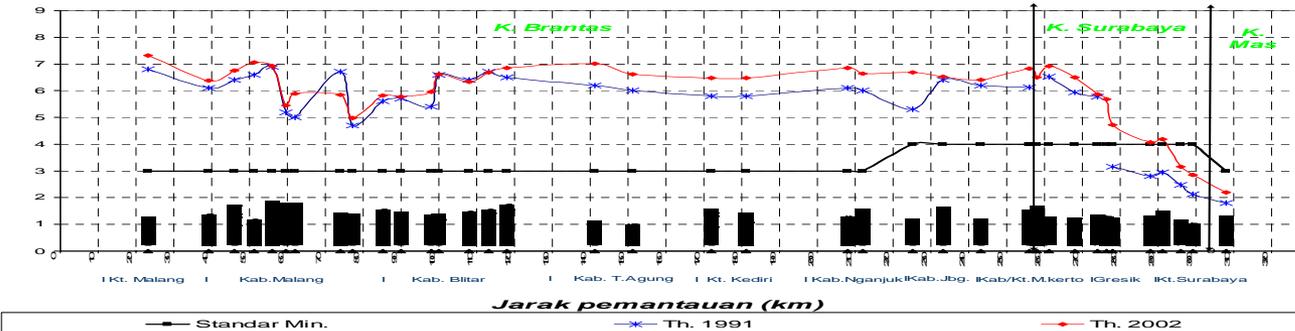


**RATA-2 TAHUNAN KONSENTRASI COD
Di sepanjang K. Brantas, K. Surabaya & K. Mas**



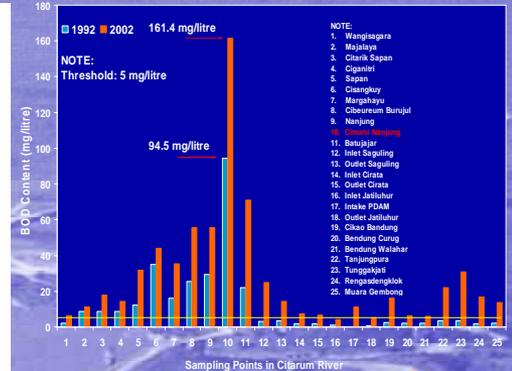
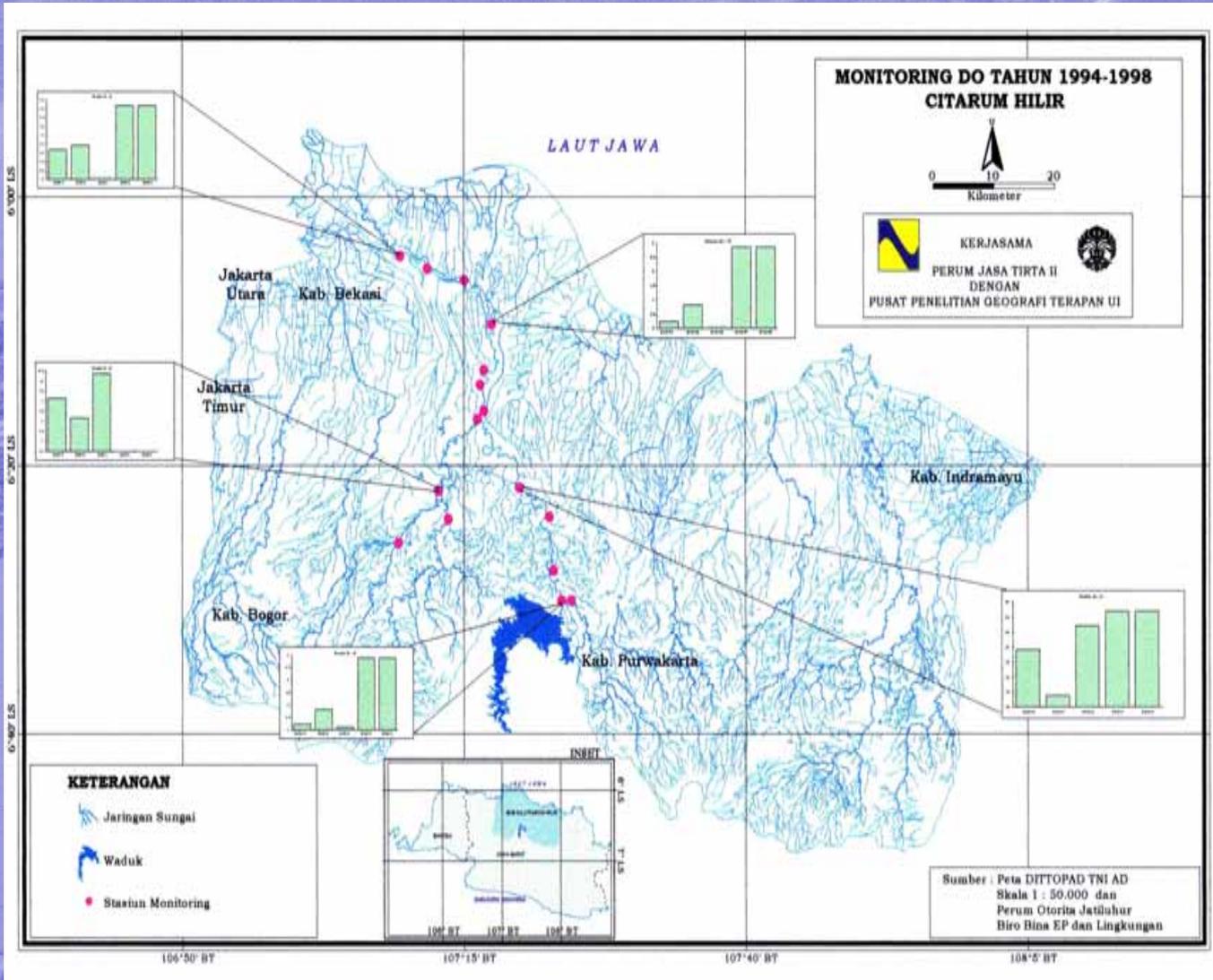
LABORATORY TEST

**RATA-2 TAHUNAN KONSENTRASI DO
Di sepanjang K. Brantas, K. Surabaya & K. Mas**



To sustain of the function water quality monitoring the operation of quality laboratory had prepared basically by adopt of quality system ISO 17025

Scope of Water Resources Management (3/6 Water Quality Management)



LABORATORY TEST



RAISING PUBLIC AWARENESS



FIELD STUDY

Scope of Water Resources Management (4/6 Flood Control)



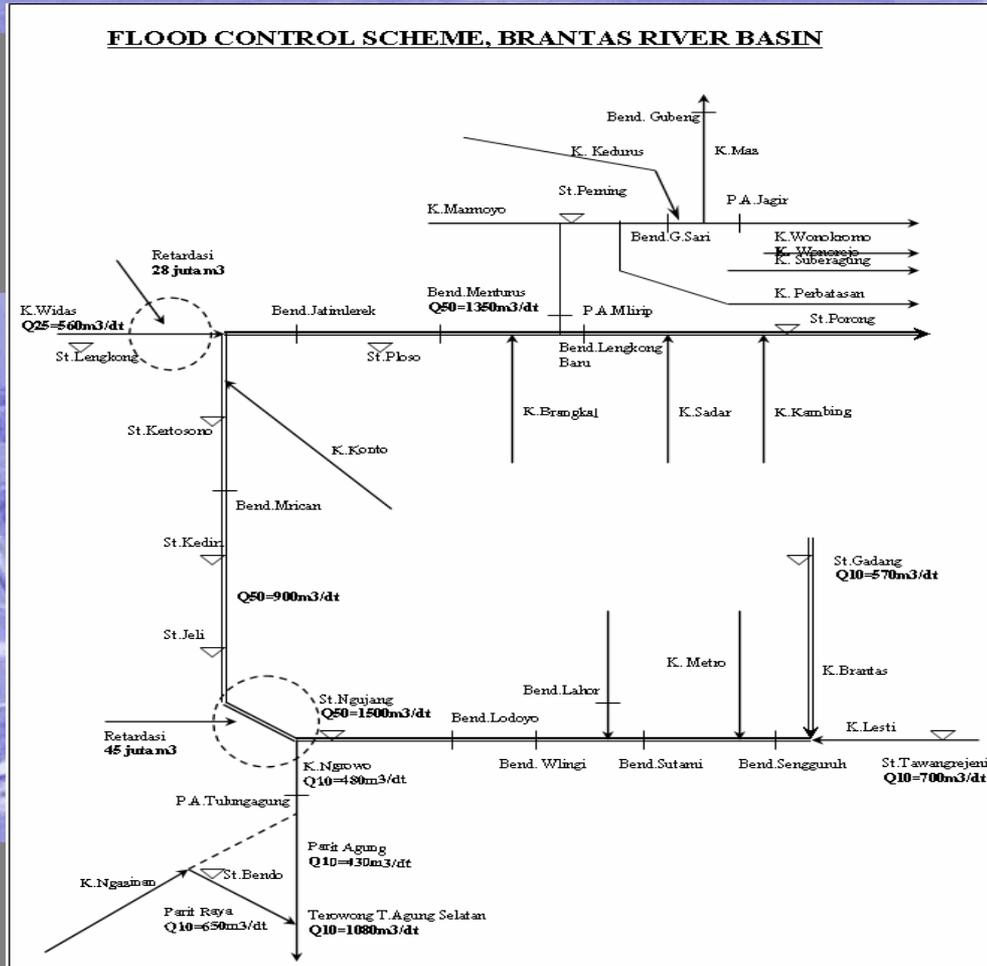
CONTROL DAM



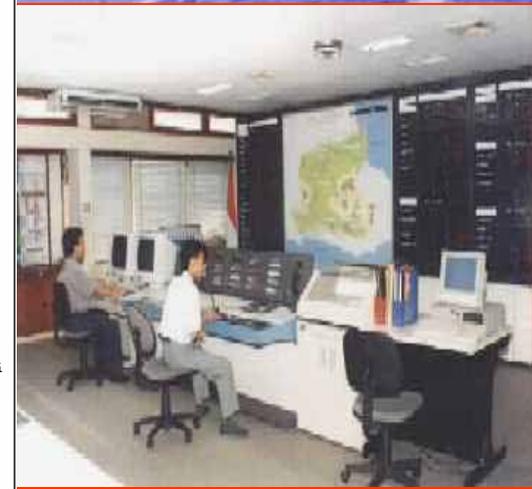
WATER LEVEL GAUGING



MITIGATION

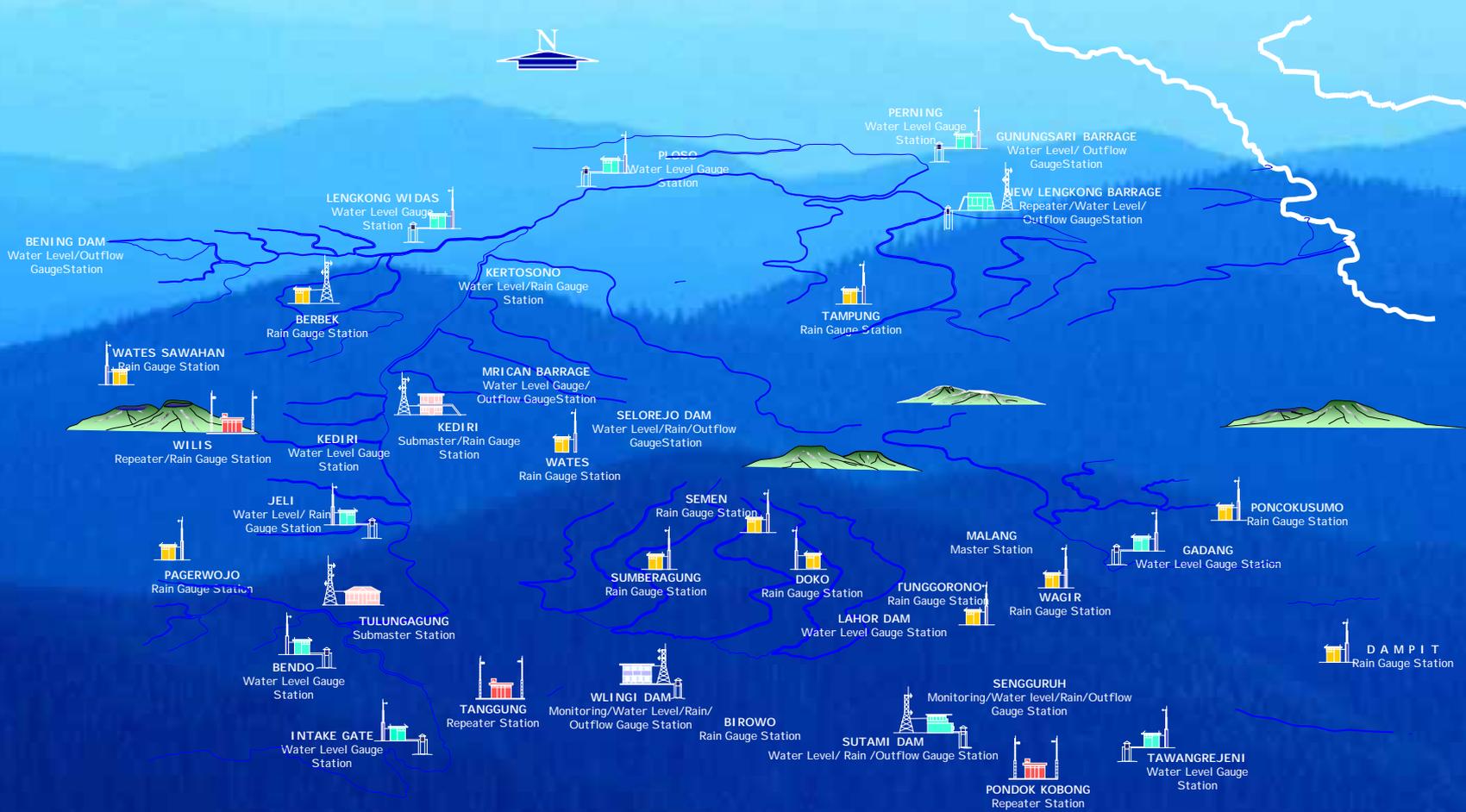


RAINFALL GAUGING



MASTER STATION

Action to control and mitigate flood in cooperation with related agencies

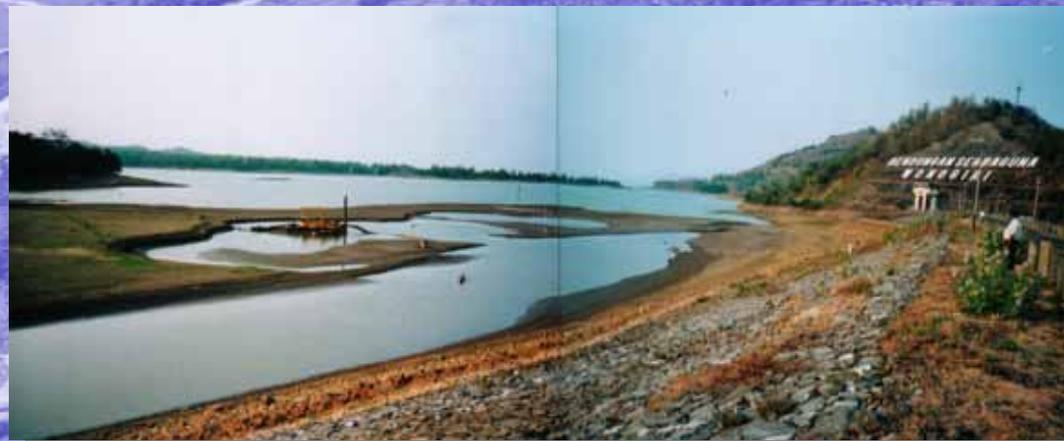


Scope of Water Resources Management (5/6 Maintenance of Infrastructures)



Maintenance work of the water infrastructures done by Jasa Tirta in 2004 consist of :

- Sediment dredging in reservoir
- Sediment dredging in intake Power Generated & Industry Water treatment plan Drinking Water
- Repair of revetment in many stretches of River and tributaries
- Repair of mechanical & Electrical Equipment
- River Normalization



Scope of Water Resources Management (6/6 River Environment & Tourism Management)



**WATER
SPORT**



**Action to maintain bio-diversity
and to have benefit for sport,
tourism activities etc.**



RIVER CLEANING



Achievement (1/3)

Technical Aspect

- Comprehensive Master Plans have been developed in sequence and coordinated with related inter-sectoral agencies
- Water allocation is carried out in fair and transparent manner through coordination and consultation with all stakeholders
- River environment and water quality management are consulted to the government agencies, main stakeholders and experts

Achievement (2/3)

Financial Aspect

- Step wisely implement the principle of cost recovery
- Tariff of the rendered water service fee is decided mutually, based on agreement among the stakeholders based on Government guidelines

Achievement (3/3)

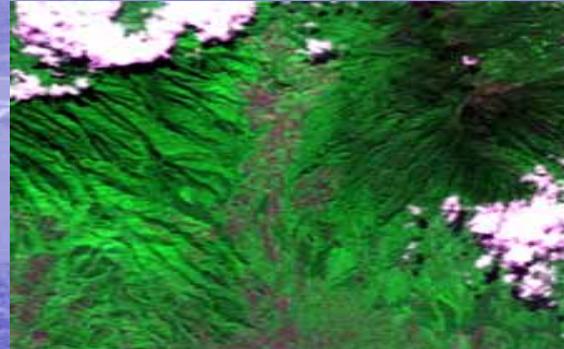
Management Aspect

- During the last 15 years operation, the corporation, is positioning it self better, in form of a consolidated water resources management system.
- Success in implementing Quality Management System of **ISO 9001-2000** (had been certified since 1997) and **ISO 17025-2000** (certified in 2004)

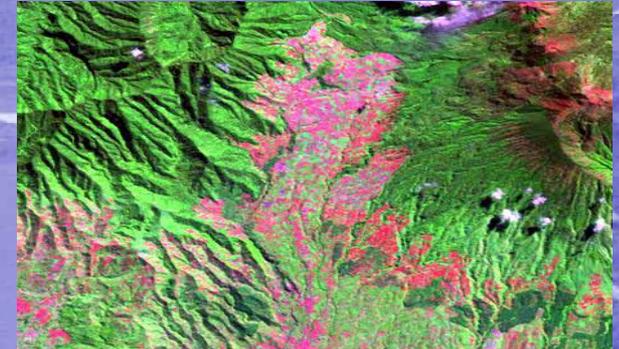


Relevant Technical Issues in the Basin (1/6)

Watershed Degradation



ADEOS/AVNIR, 1997



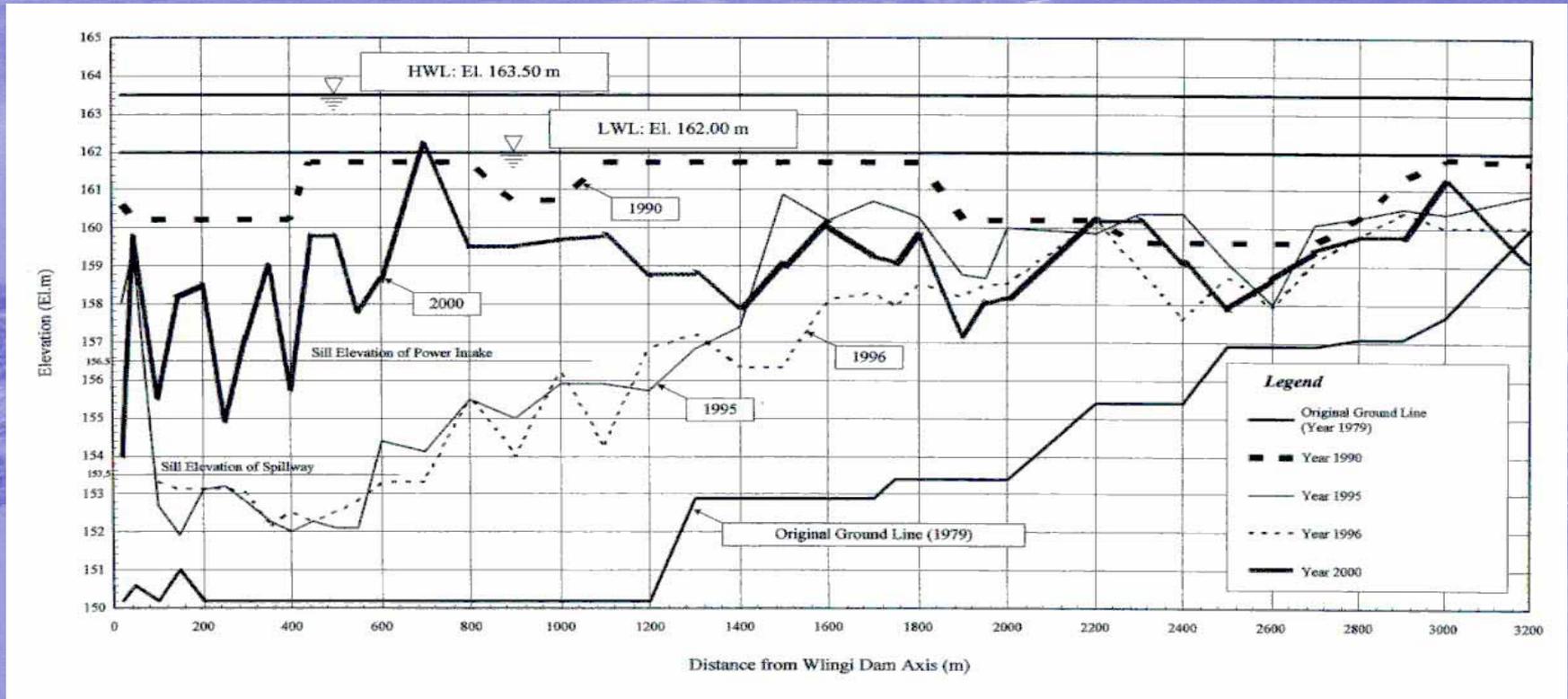
LANDSAT/ETM+, 2002

⇒ Cause Erosion and Reservoir & River Sedimentation



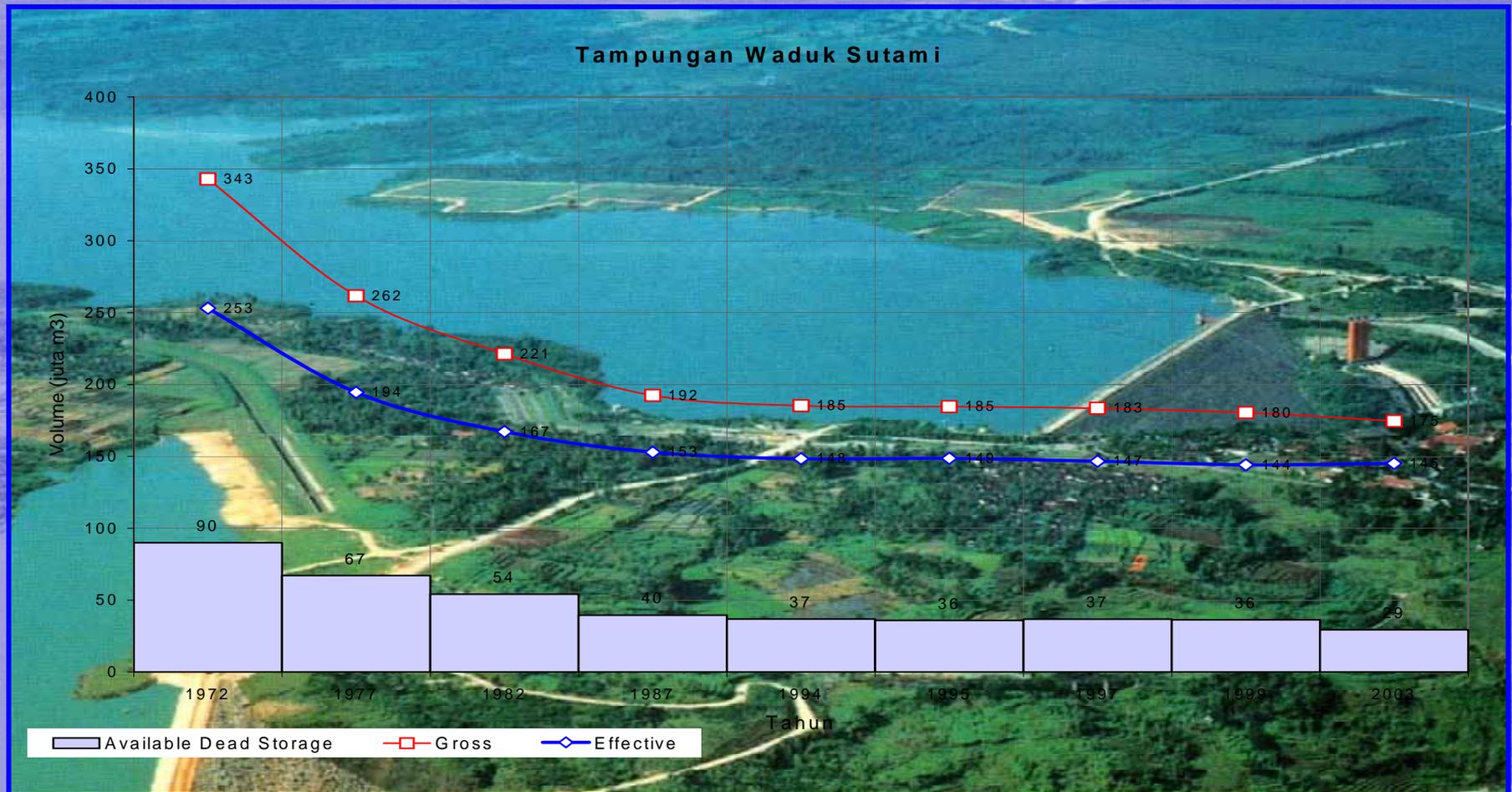
Relevant Technical Issues in the Basin (2/6)

Effect of Volcanic Eruption on Reservoir Sedimentation



Relevant Technical Issues in the Basin (2/6)

Reservoir Sedimentation



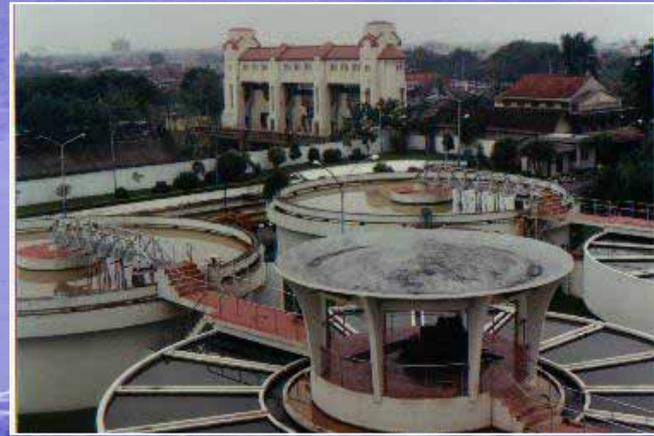
As an example in Sutami Dam, total storage capacity decreasing from 343 mil m³ in 1972 to 174.6 mil m³ in 2003 with sediment rate 5.40 mil m³/year

Relevant Technical Issues in the Basin (3/6)

Limited water availability



Irrigation



Water Supply (PDAM)

- Increasing in water demand and limited in supply capacity
 - ⇒ Impeding an out-of-balance condition that cause conflict interest between users
 - ⇒ Inefficiencies for irrigation sistem has estimated around 27 %
 - ⇒ Inefficiencies for domestic water use estimated to be 35 %

Relevant Technical Issues in the Basin (4/6)

Flood Hazard



- lack of urban drainage facilities
- degradation of recharge area
- sedimentation in most dams in the basin

⇒ Flooding occurs back

Relevant Technical Issues in the Basin (5/6)

Water Quality Degradation



Waste discharge

Pollution from domestic, industrial and agricultural sources has polluted the river and the reservoir



Reservoir Eutrophication



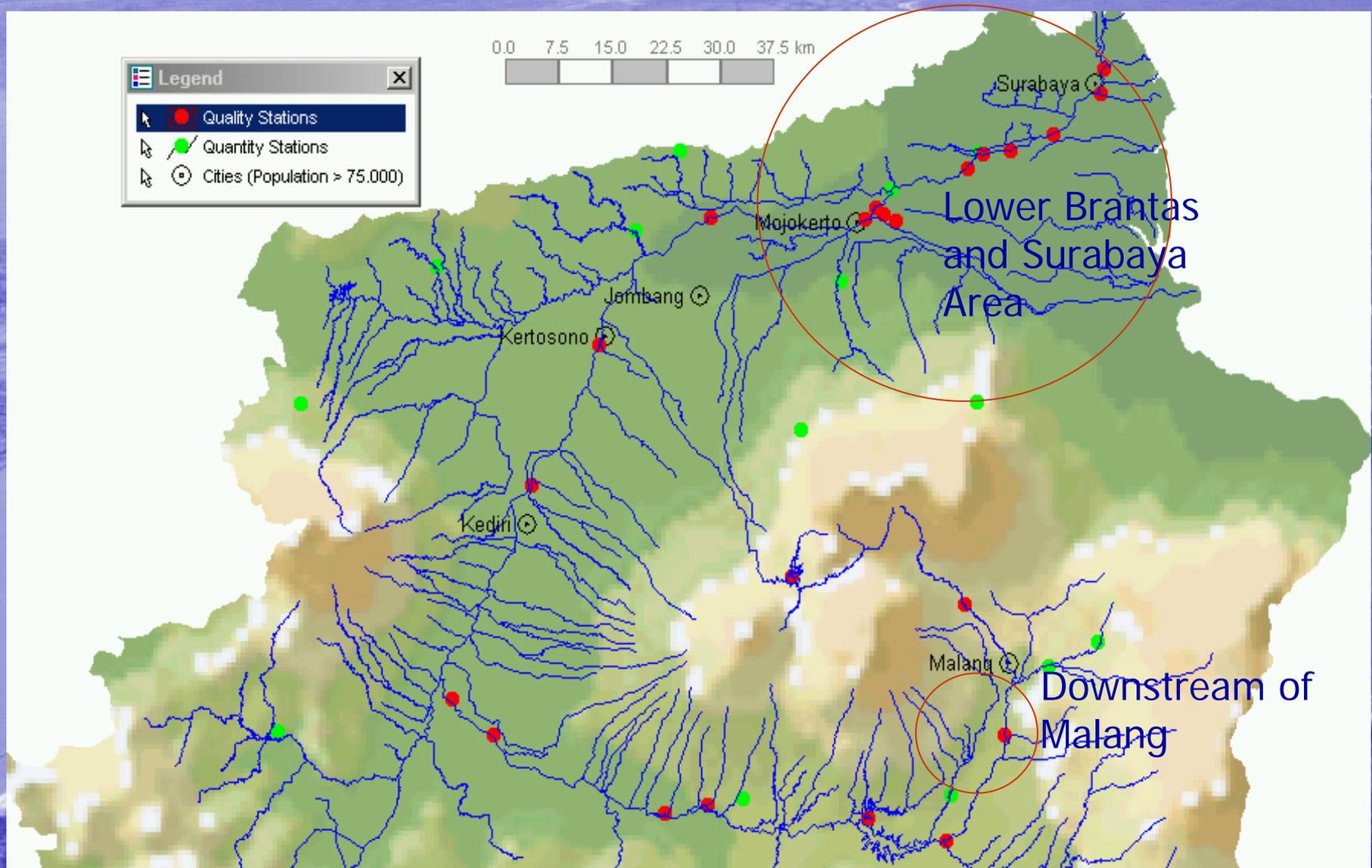
Creates a span with the designed standards



Polluted river



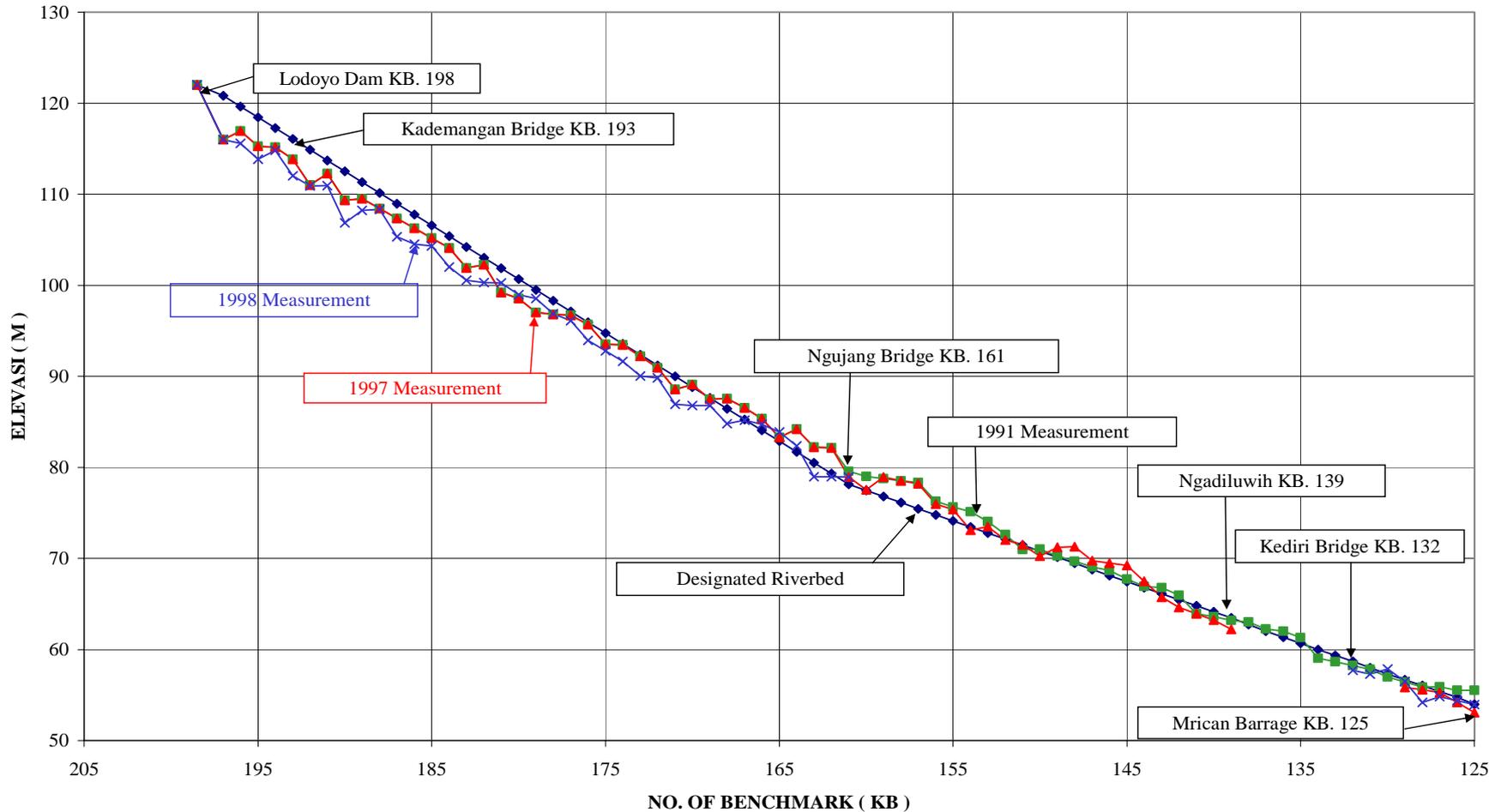
Zones of Poor Water Quality in Brantas Basin



Relevant Technical Issues in the Basin (6/6)

River degradation

KALI BRANTAS LONGTIDUNAL SECTION



Relevant Technical Issues in the Basin (6/6)

River degradation

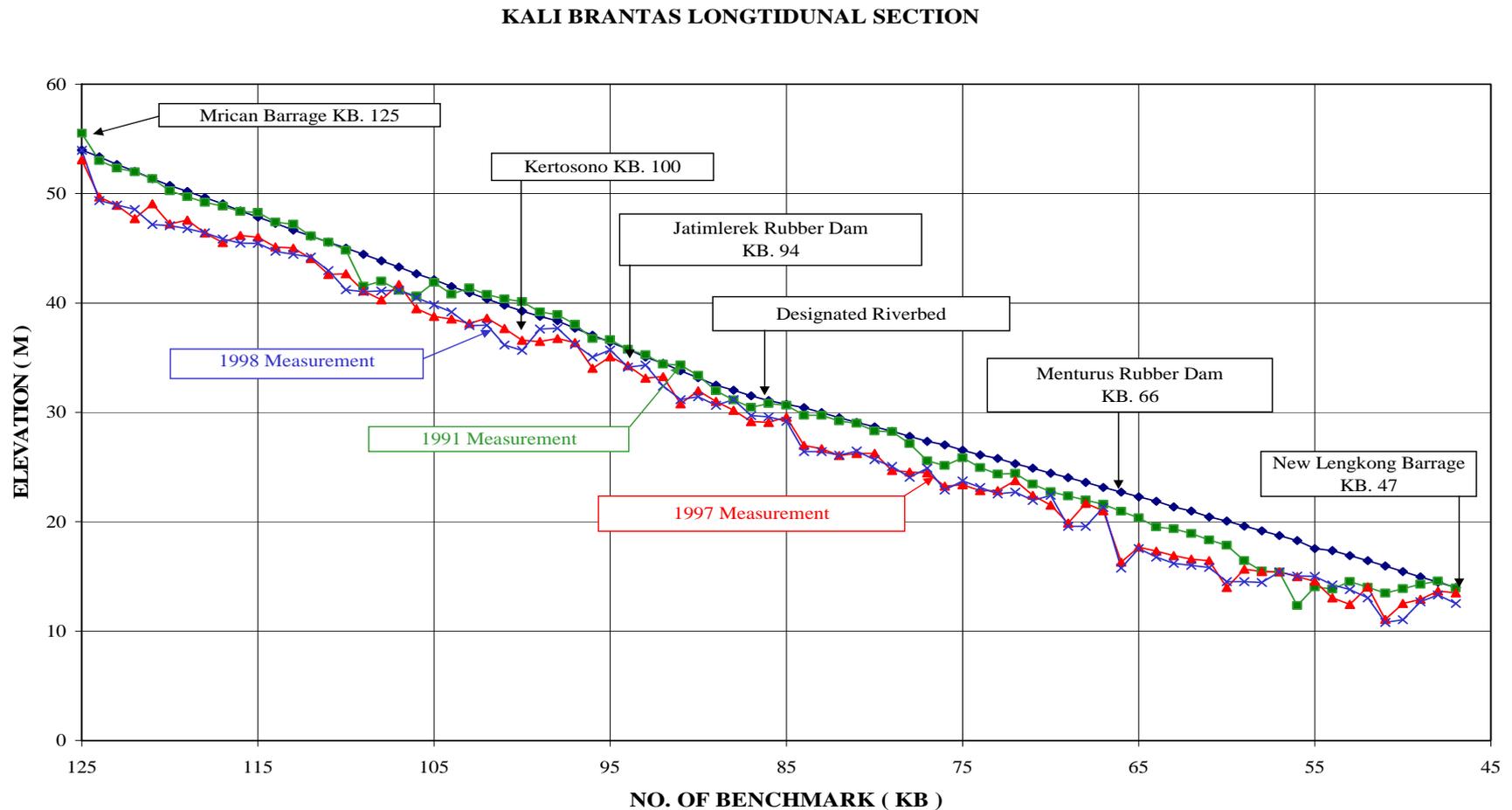
No	Administrativ Area	Illegal Sand Mining (m ³ /year)		
		Manual	Pump	Total
1	Tulungagung	0	188.900	188.900
2	Kota Kediri	47.900	182.800	230.700
3	Kediri	200.800	135.700	336.500
4	Nganjuk	267.100	383.000	650.100
5	Jombang	822.600	168.200	990.800
6	Mojokerto	151.500	111.000	262.500
7	Sidoarjo	42.500	0	42.500
	Total	1.532.400	1.169.600	2.702.000



Amount of sediment on the river bed excavated by people due to decreasing of river bed elevation

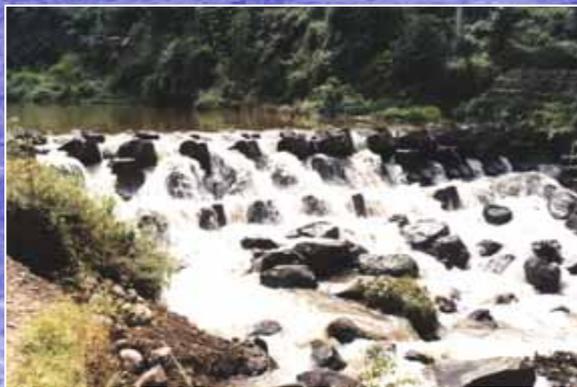
Relevant Technical Issues in the Basin (6/6)

River degradation



Relevant Financial Issues in the Basin

- Less financial support from the beneficiaries for the sustainable water resources management
- Less funding of water resources management for the welfare and safety of the people and conservation
- Reaching only 40 % of O&M Cost Recovery causes deferred maintenance, and finally degradation of water resources infrastructures occurs



degradation of water resources infrastructures

Measures have been done (1/6)

To cope with watershed degradation

- ✓ Reservoir dredging
- ✓ Promoting public initiatives on re-greening and re-forestation
- ✓ Reducing sheet erosion by terracing and constructing sediment control structures
- ✓ Reviewing Catchment Management Plan
- ✓ Research sheet erosion and re-greening

▪ Terracing and Re-greening



▪ Reservoir Dredging



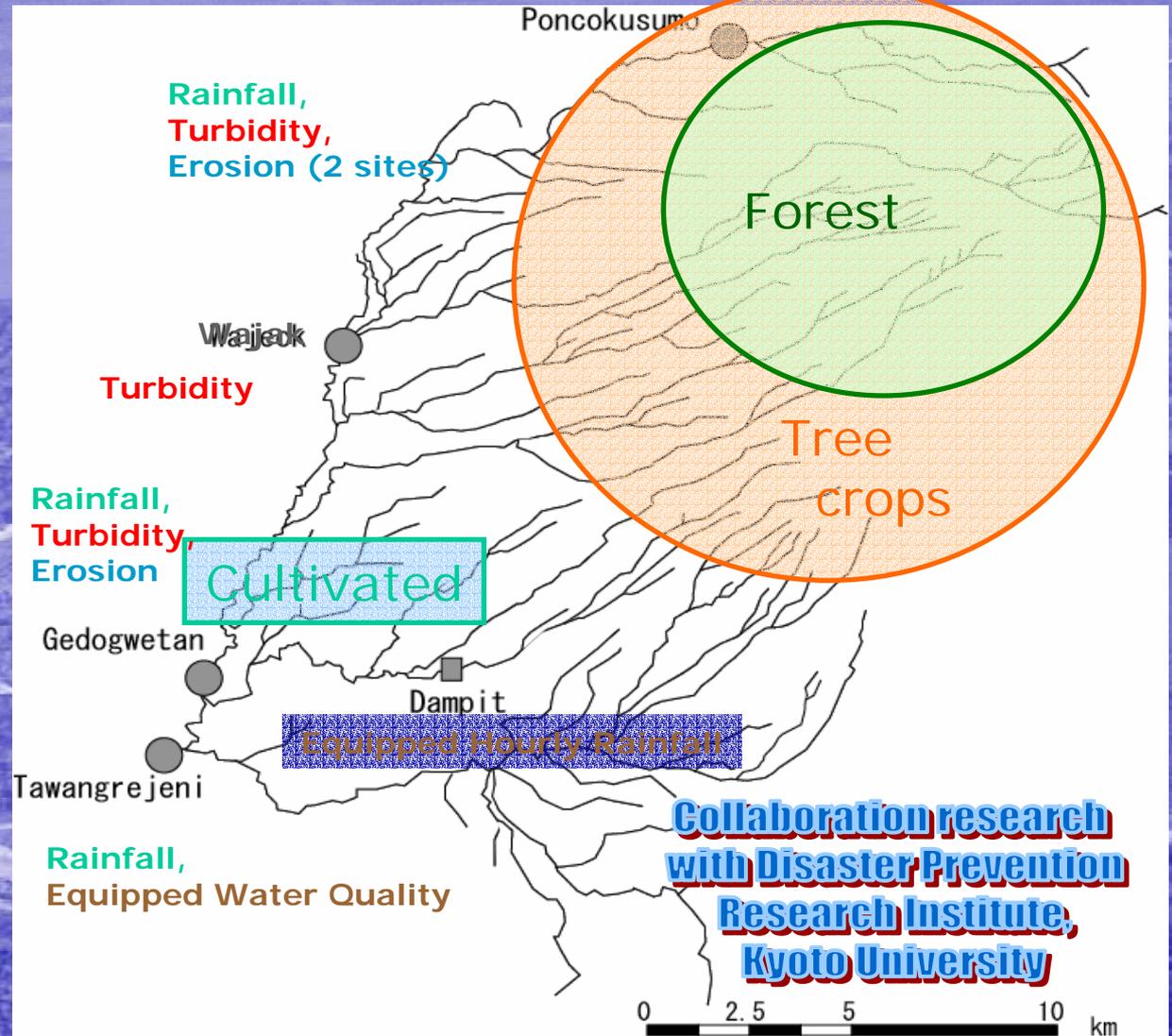
Measures have been done (1/6)

To cope with watershed degradation

Research of Sheet Erosion

Scope of Observations

1. Rainfall Observations
2. Turbidity Observation
3. Erosion Observations
4. Erosion image at Gedogwetan
5. Equipped Water Quality Data



Measures have been done (2/6)

To cope with limited water availability

- ✓ introducing progressive water service fee for hydropower generation, domestic and industrial water supply
- ✓ promoting efficient use of water on any sectors
- ✓ implementing transparent and fair water allocation to decrease potential conflict between sectors and users
- ✓ improving existing telemetry system to support real time water allocation
- ✓ proposed to construct new water storage (Beng Dam: 9.5 m³/sec and Kedungwarak 3.5 m³/sec in 2010 and 2015 in order to meet the water demand in 2020)

Measures have been done (3/6)

To cope with flood hazard

- ✓ implementing Flood Forecasting and Warning System (FFWS)
- ✓ improving river flow capacity by dredging, riverbank aligning etc
- ✓ promoting coordination among related agencies in mitigating flood hazard

■ Implementation of Flood Forecasting and Warning System



FFWS master station



Rainfall gauging station



Water level gauging station

Measures have been done (4/6)

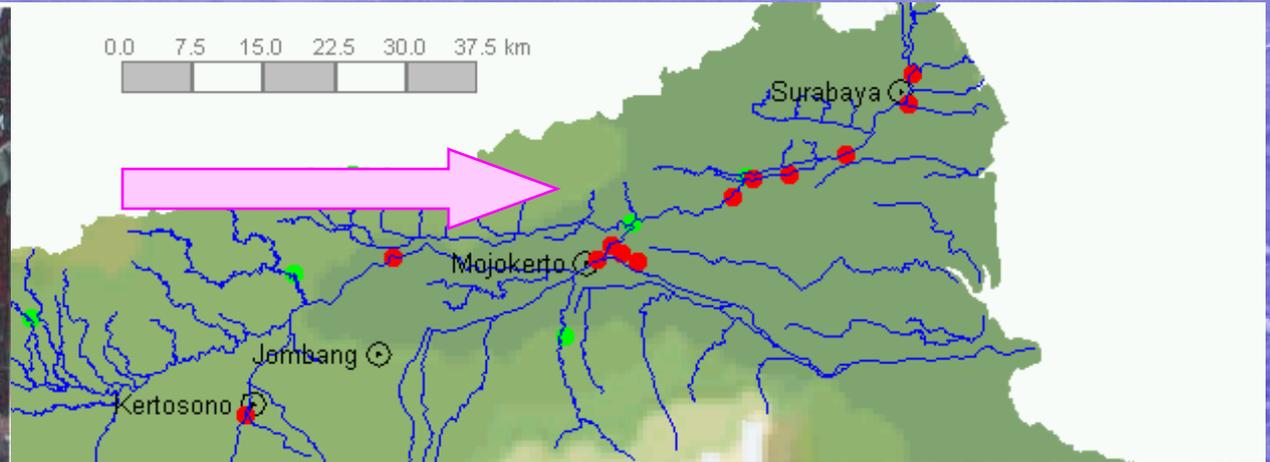
To cope with water quality degradation issue

- ✓ reviewing Water Quality and Pollution Control Master Plan
 - ✓ initiating public awareness in environment issues
 - ✓ improving monitoring facilities (real-time system and laboratories facilities)
 - ✓ implementing waste water discharge license
 - ✓ controlling major industrial pollution sources strictly
 - ✓ constructing small scale centralized domestic waste water treatment plant in selected urban area
- **Water Quality Monitoring and Restoration**



Measures have been done (5/6)

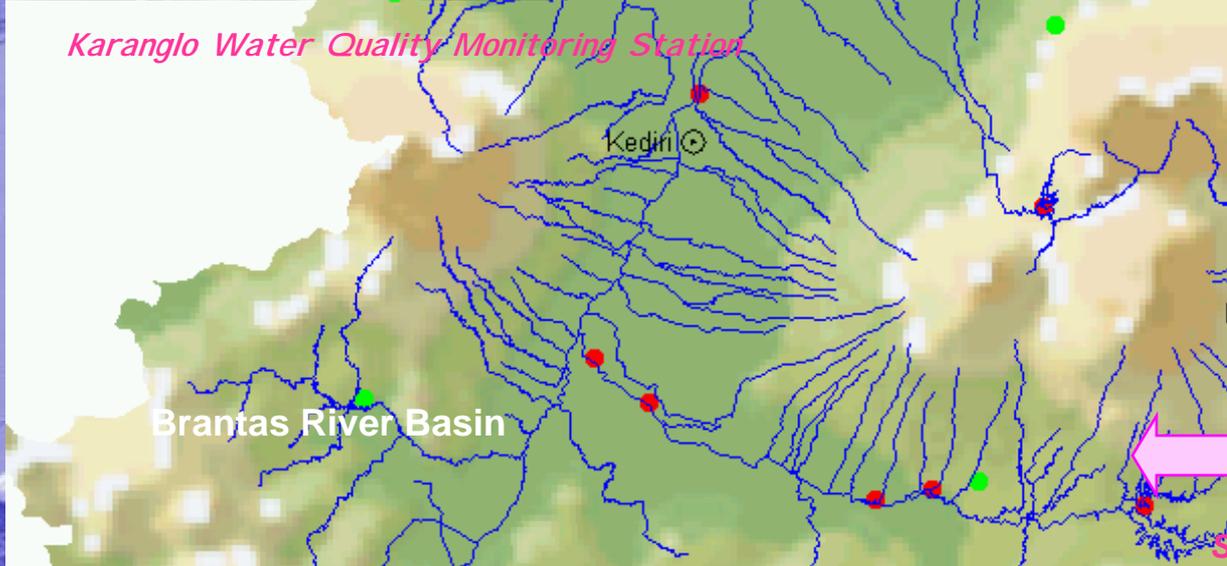
- Water Quality Online-Monitoring System



Karanglo Water Quality Monitoring Station



Suci Water Quality Monitoring Station



Measures have been done (6/6)

To cope with financial issue

- ✓ Promoting cost recovery principle by implementing beneficiaries pay principle for commercial users (electricity, domestic and industrial water supply) and government obligation principle for social users and public welfare (irrigation, flood control and pollution control)
- ✓ Preparing government regulation and ministerial decree relating to financing system on water resources management
- ✓ Law enforcement: dissemination of water resources law, draft of environment law etc.

FUTURE ACTION

IMPROVING THE ORGANIZATIONAL AND ADMINISTRATIVE FRAMEWORK FOR RIVER BASIN MANAGEMENT

Proposed Reformation



- Revise legal basis for PJT I (Brantas) and PJT II (Citarum) to strengthen financial management and provincial role and functions in governance of the corporations.
- Formation of 3 river basin corporations (Jeneberang, Jratunseluna, and Serayu-Bogowonto) become a new RBO.
- Formation of fully functioning Provincial River Basin Management Units (Balai PSDA) in key basins in about 8 provinces.

FUTURE ACTION

IMPROVING THE ORGANIZATIONAL BY DEVELOPING OF UNIT BISNIS

Development of Construction & Consulting

Construction Work consist of :

- Dredging Work for Reservoir, Rivers and offshore
- Foundation Improvement by Steel Sheet Pile



Foundation Improvement
Work on the Circle Combine
Power Project



FUTURE ACTION

Development of Construction & Consulting



Kind of Dredging work :

- Reservoir
- Intake Steam Power plan
- Rivers and Canal
- Retarding Basin
- Estuary River



FUTURE ACTION

Heavy Equipment Rental



To improved of development benefit after construction of water resources infrastructure and to assure of sustainable that construction, the heavy equipment can use for other user with rental system

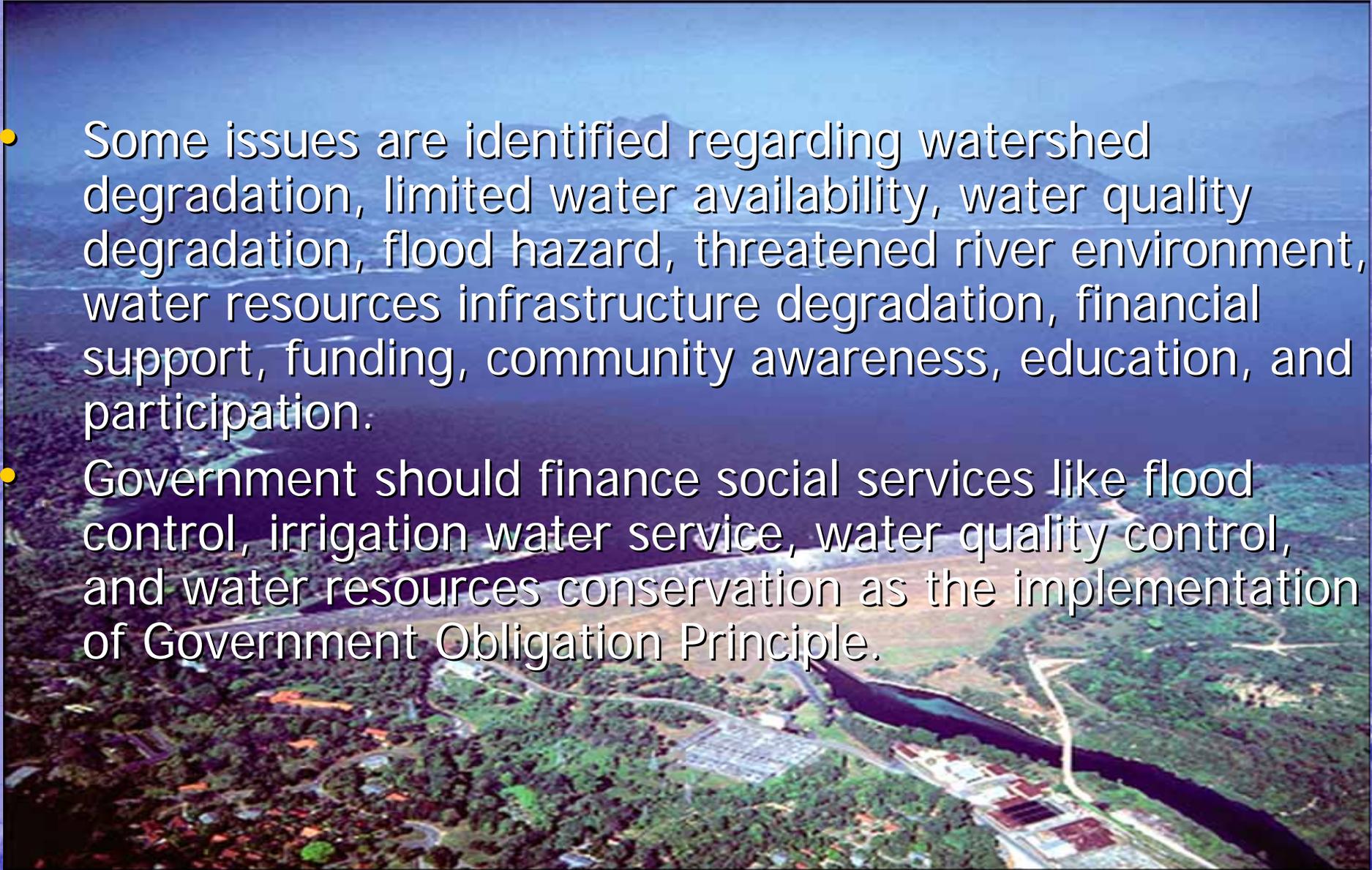


Conclusions (1/3)

- Jasa Tirta I & II has experienced integrated water resources development for flood control, power generation, irrigation and bulk water supply, etc. The development is carried out based on “One River, One Plan” principle and based on a series of master plans that involves stage-wise planning in accordance to the national development requirements.
- Jasa Tirta I & II Public Corporation is responsible to develop a proper management system in the Brantas, Solo & Citarum River Basin. Purpose of the corporation covers technical aspects, financial aspect, and management aspect.

Conclusions (2/3)

- Some issues are identified regarding watershed degradation, limited water availability, water quality degradation, flood hazard, threatened river environment, water resources infrastructure degradation, financial support, funding, community awareness, education, and participation.
- Government should finance social services like flood control, irrigation water service, water quality control, and water resources conservation as the implementation of Government Obligation Principle.



Conclusions (3/3)

- Water demand will increase significantly while the supply remains limited in the future due to the pressure of the population growth and squeeze of the industrialization pace. It is important to develop new sources of surface water.
- It is necessary to strengthen the legal aspect in order to establish an effective water resources management in the Brantas Basin.
- Developing of Unit Bisnis (consist of : Construction & consulting work ,tourism, heavy equipment rental will increase significantly of revenue up to 20 % and then to subsidiary of operating system Jasa Tirta

An aerial photograph of a large dam and reservoir, overlaid with a semi-transparent blue filter. The dam is a long, straight structure extending from the left side of the frame towards the center. The reservoir is a large body of water behind the dam. The surrounding landscape is a mix of green fields and brownish terrain. The text "Thank you very much" is written in large, white, sans-serif font across the middle of the image.

Thank you very much

Terimakasih

ありがとうございます