

EXPERIENCES
on
RIVER BASIN MANAGEMENT
in
INDONESIAN'S RBOs

SYNTHESIS PAPER

Jasa Tirta I Public Corporation of Brantas River Basin
Jasa Tirta II Public Corporation of Citarum River Basin
BWRMU of Jragung-Tuntang River Basin



ORIENTATION MAP



Western part of the world



Indonesian Archipelago



Java island

Central Java Province

West Java Province

East Java Province

GEOGRAPHICAL AND CLIMATIC CONDITION

- ❖ INDONESIA IS LOCATED IN TROPICAL ZONE, 6°08' north latitude to 11°15' south latitude and 94°45' to 141°05' eastern longitude;
- ❖ TWO SEASONS EVERY YEAR, wet season (October-March) and dry season (April-September) with high rate precipitation: 3,000 mm in western part and 2,500 mm in eastern part of the country; 70% falls during wet season and 30% during dry season;
- ❖ Temperature 25°C in low land and 18°C mountainous area;
- ❖ Relative humidity 80%;



WATER RESOURCES IN INDONESIA

- ❑ Surface water availability 1,200 (?) cubic-m/capita/year since the world 600 cubic-m/capita/year;
- ❑ Java island is about 7% of Indonesian area, however water availability is only 4,5%, inhabitant 58% of total population, seriously suffered from water pressure;
- ❑ Significant discrepancy of water availability between wet season and dry season;
- ❑ Water quality degradation due to industrial, domestic, and agricultural waste pollutions, increase scarcity of water.



RIVER BASIN IN INDONESIA

- ❑ 90 River Basins based on Ministry Of Public Work Regulation No.48 Of 1989;
- ❑ 17 Basins considered Strategic and has Potential National Economic Value, managed by Central Government;
 - ❖ 10 Basins in developing stages;
 - ❖ 4 Basins under preparation of establishing RBO;
 - ❖ 3 Basins managed by public corporation
- ❑ 73 Basins entrusted to Provincial Government;



JAVA ISLAND

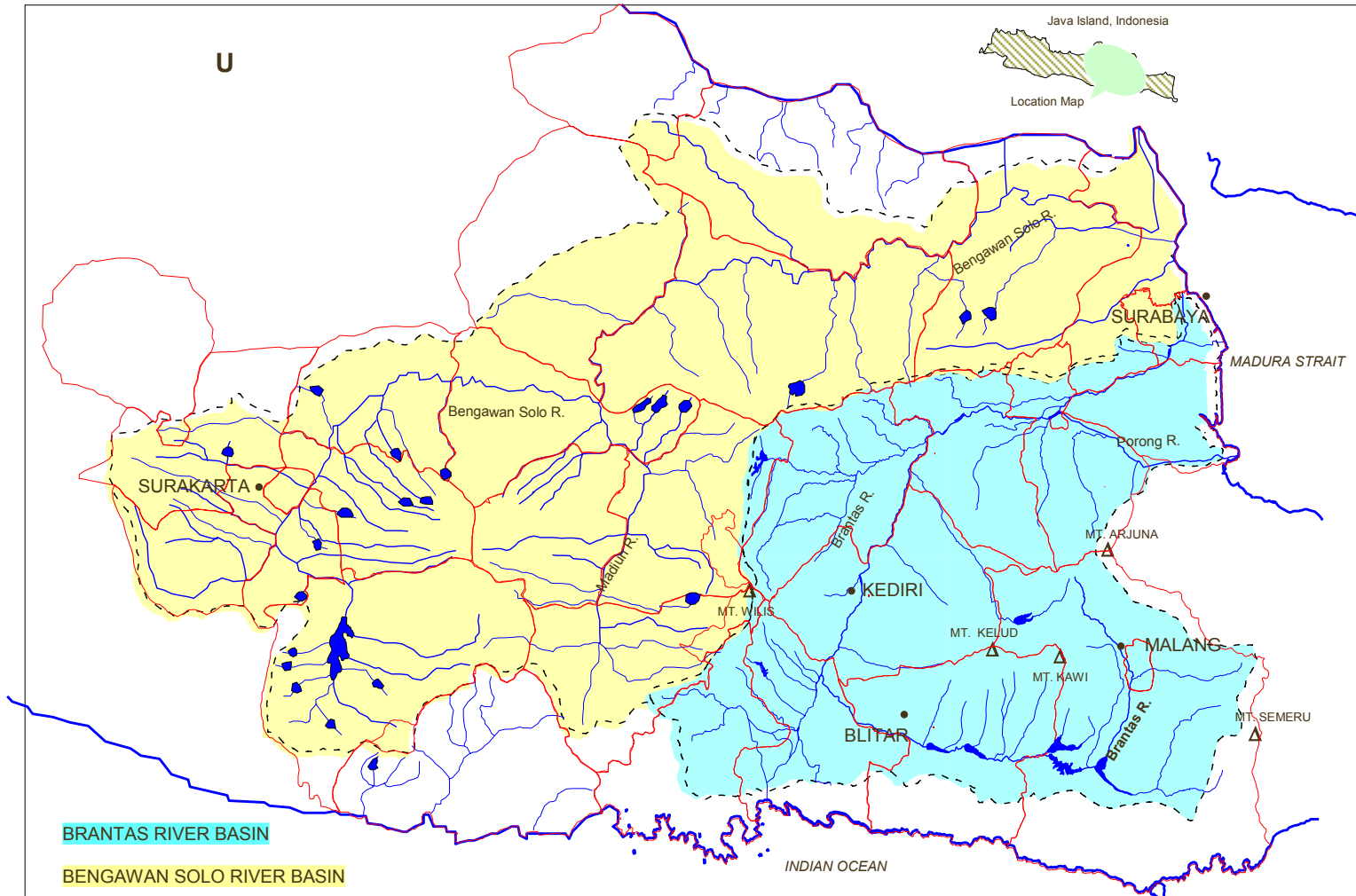
- The most densely populated area, 124 million people (58%), and the most developed island in Indonesia;
- Fertile land mostly due to volcanic debris; and most of the volcanoes mountains located in center of the island spread from east to west, the highest mountain is in East Java (Mount Semeru +3086 msl);
- Three river basins has been developed and managed by RBO in the form of Public Corporation those are PJT I for Brantas-Bengawan Solo and PJT II for Citarum River Basin and the rest are managed by BWRMU.
- PJT II (formerly Jatiluhur Authority Public Corporation) is considered as the first establishment of river basin organization in Indonesia based on Government Regulation No. 20 of 1970.
- Jragung-Tuntang BWRMU is considered as an embryonic of the next Jasa Tirta Public Corporation.



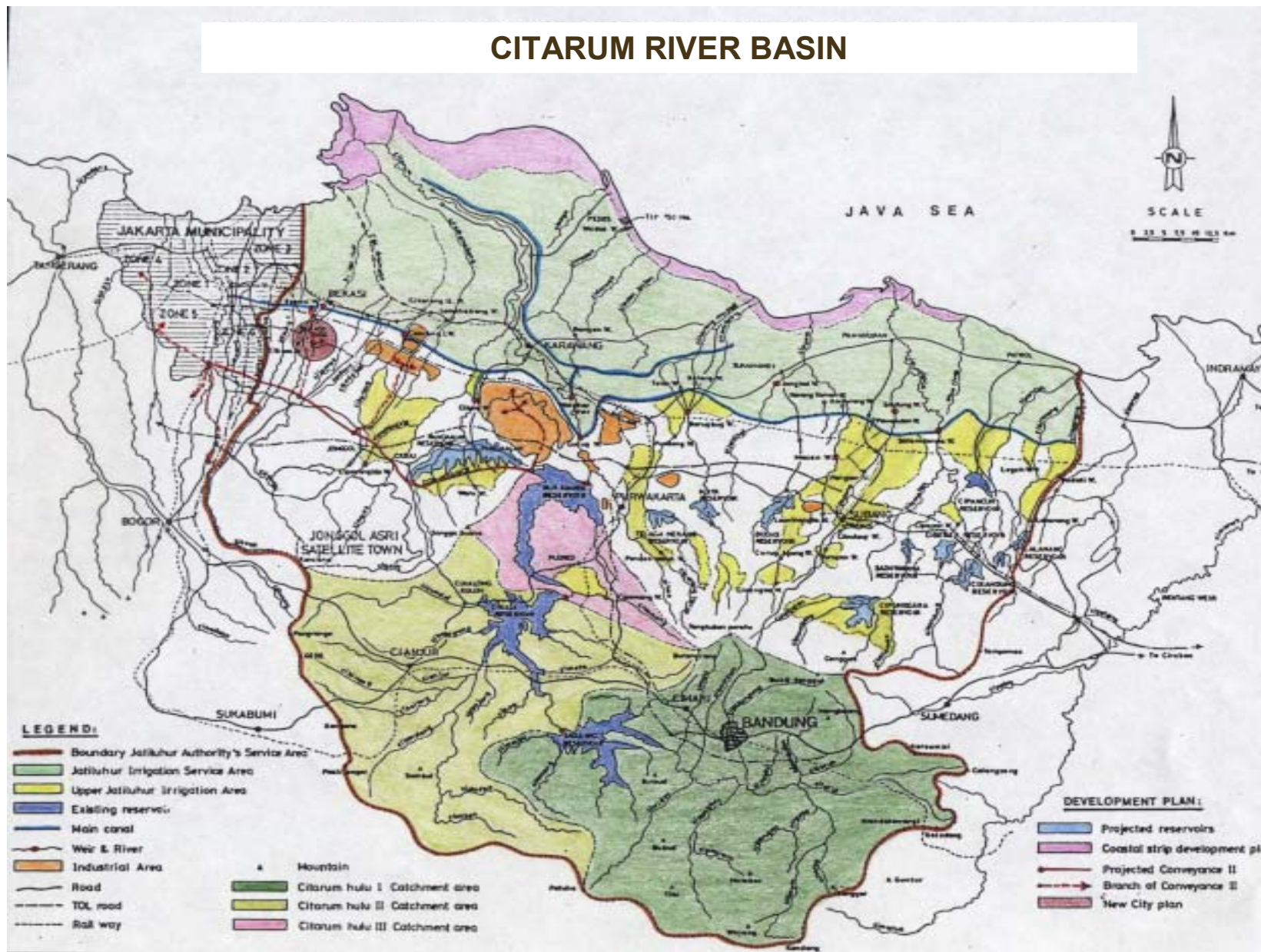
RIVER BASIN IN JAVA ISLAND



WORKING AREA OF JASA TIRTA I PUBLIC CORPORATION



CITARUM RIVER BASIN



PETA SUNGAI LINTAS KABUPATEN / KOTA BALAI PSDA JRAGUNG-TUNTANG



PHYSICAL, LEGAL, AND INSTITUTIONAL ASPECT

Comparison of PJT I, PJT II, and Jragung-Tuntang BWRMU

IDENTIFICATION	BRANTAS-BS	CITARUM	JRATUN
Administrative location	East Java Province	West Java Province	Central Java Province
Type and Name of RBO	Public Corporation Jasa Tirta I	Public Corporation Jasa Tirta II	BWRMU Jragung-Tuntang
Establishment	Government Regulation No. 93/1999	Government Regulation No. 94/1999	Provincial Regulation No. 1/2002
Number of employees	550	2300	250
Watershed (sq-km)	12,000	12,000	4,300
Surface water availability (Bm ³ /year)	12	12.95	5.62
Surface water utilization (Bm ³ /year)	2.9344	5.915	1.770
Irrigation Area (ha)	No obligation (83,000/304,000)	296,000	31,083
HEP Production (in Million kWh/year)	910	850 (4,500)	0.024
Revenue (Billion)	Rp. 50 (2003)	Rp. 132 (2002)	NONE

PRE AND POST DEVELOPMENT IN THE BASINS

Comparison of PJT I, PJT II, and Jragung-Tuntang BWRMU

IDENTIFICATION	BRANTAS-BS		CITARUM		JRATUN	
Beginning of Development	1960		1956		1970	
<i>Comparison</i>	<i>1960</i>	<i>2000</i>	<i>1956</i>	<i>2003</i>	<i>1970</i>	<i>2002</i>
Flood control (ha)	60,000	None	20,000	None		50,500
Cropping intensity per year	0.8	2.2	1.2	2.2		1.7
HEP Production (in Million kWh/year)	710	1,200	None (450)*	850 (4500)*	(?)	0.024
Raw Water for DMI (in million m ³ /year)	123	335	None	752	None	55

* HEP production in Citarum River Basin which operated and managed by the State Electricity Enterprise



TYPES OF RBO

- ❑ JASA TIRTA PUBLIC CORPORATION (JTPC):
 - ❑ Basin with high potential of national economic value,
 - ❑ Able to manage the basin independently in term of O&M cost recovery;
 - ❑ Established by Government Regulation,
 - ❑ As basin operator in operation and maintenance of water resources infrastructures

- ❑ BASIN WATER RESOURCES MANAGEMENT UNIT (BWRMU) :
 - ❑ Less developed basin;
 - ❑ Unable to manage the basin independently due to willingness and ability to pay for operation and maintenance are still limited,
 - ❑ Implementation unit of Provincial Water Resources Management Agency,
 - ❑ Established based on Ministry of Home Affair Decree



TASK AND RESPONSIBILITIES OF JTPC

❖ SOCIAL FUNCTIONS:

- a. Conservation, maintain sustainability of water resources;
- b. Provide information, extension, and recommendation dealing with water resources in the basin;
- c. Provide and allocate water for various uses;
- d. Flood and drought management;
- e. Water quality management;

❖ COMMERCIAL FUNCTIONS:

- a. Provide raw water for domestic, municipal, and industries
- b. Provide water for agriculture industries;
- c. Provide water for hydro-electric power generation;
- d. Others : tourism, water quality analysis services, technical assistance, etc.



CONSTRAINTS AND CHALLENGES

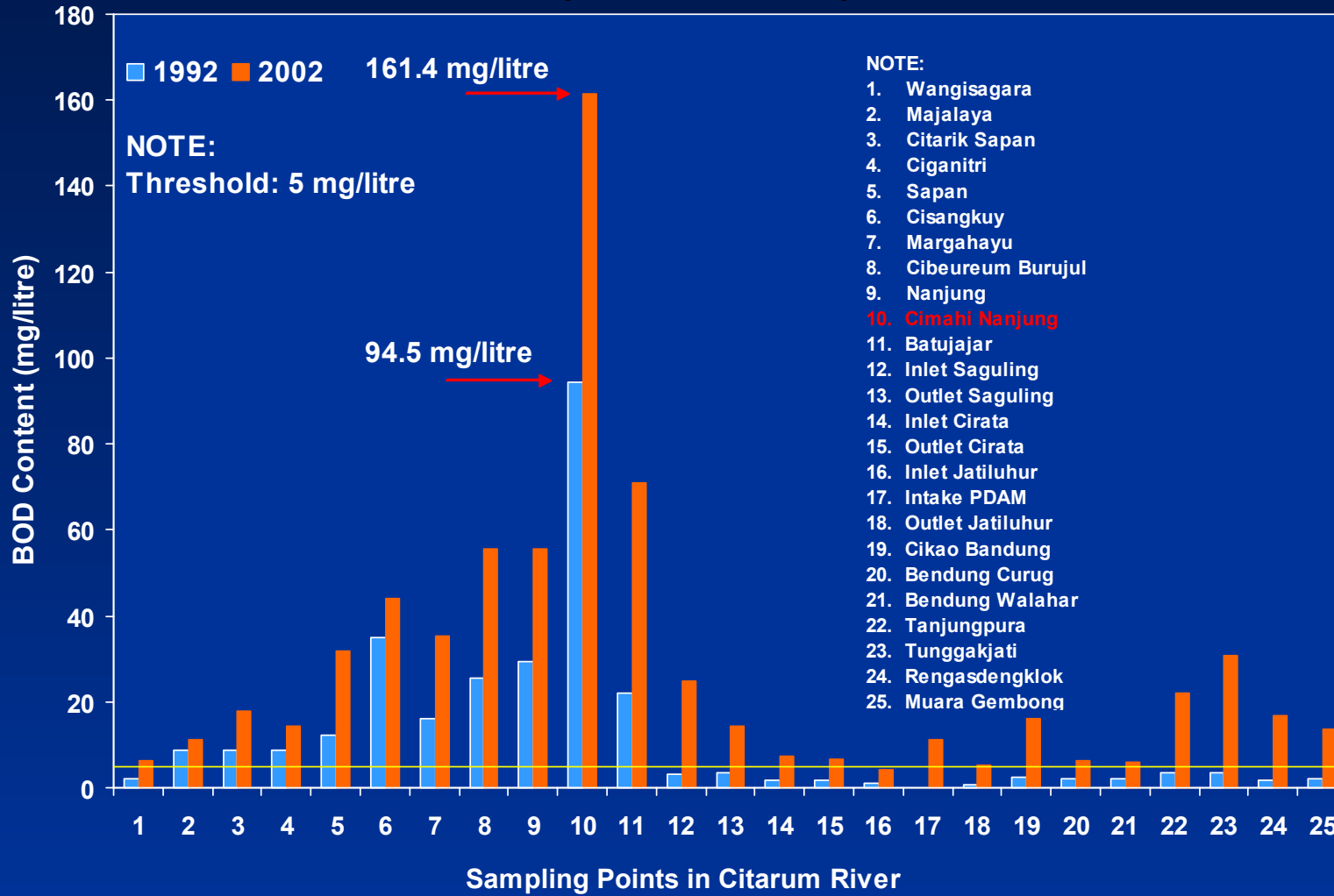
Technical Issues

- Watershed degradation
- Erosion and sedimentation
- Limited water availability
- Water quality degradation
- Flood and drought hazard
- Threatened river environment
- Decreasing of water resources infrastructures functions.

Cause : *Unbalance between water supply and demand, lead to conflict of interest among beneficiaries.*



BOD CONTENT IN CITARUM RIVER (1992 – 2002)





RIVER CONDITION

Debris blocked Intake of Water Supply to Jakarta
Upstream of Bekasi Weir in Bekasi River









CBL ESTUARY



CITARUM SPRING AT WAYANG MOUNTAIN

CITARUM UPSTREAM

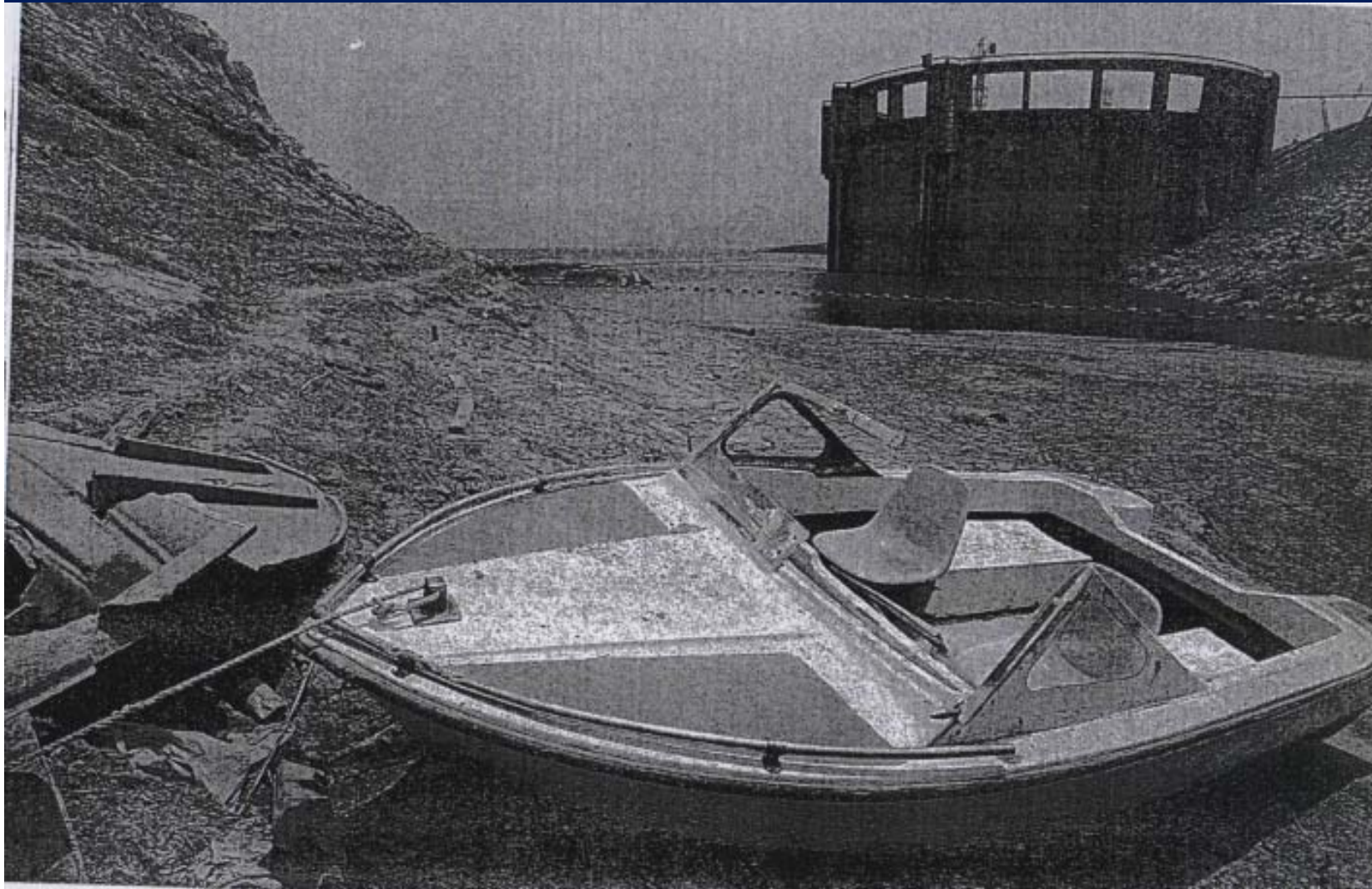




Ir.H.Djuanda Reservoir
September 4, 2003



Ir. H. Djuanda reservoir on September 29, 2003 El. + 77.04 msl
El. minimum for power generation +75.00 msl



**CIPANCUH RESERVOIR
INDRAMAYU DISTRICT, WEST JAVA PROVINCE
SEPTEMBER 2003**



Impounding capacity	8.56 Mm ³
Effective Storage	8.27 Mm ³
Commanded Irrigation Area	4,000 ha

CONSTRAINTS AND CHALLENGES (2)

Legal and Institutional Issues

- Law enforcement is weak
- Various local and central government institutions;
- Un-appropriate synergy of public sector, private sector, and community;
- Un-adequate integration of land, water, and related resources management;

Cause:

Problem in sharing roles and responsibilities characterized by overlapping mandate.



CONSTRAINTS AND CHALLENGES (3)

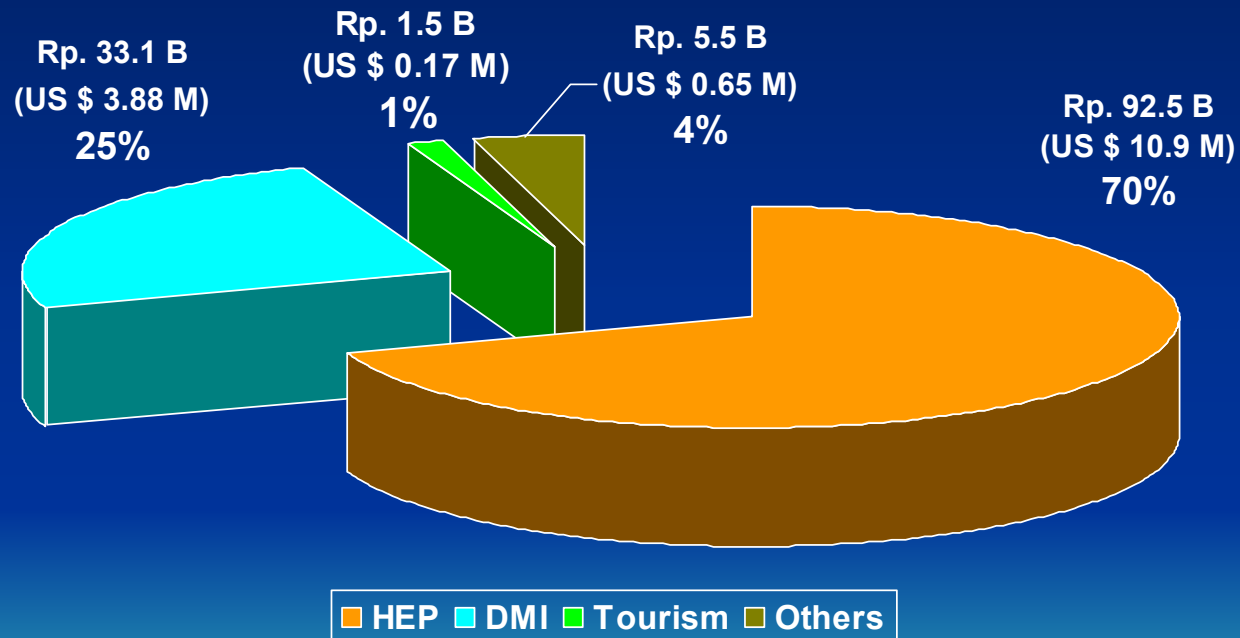
Financial Issues

- User pays principle has not been applied optimally;
- Water tax burden plays more dominant than water tariff.
- Tariffs of products (electric power) and services (raw water for domestic, municipalities, and industries) are too low;
- Irrigation consume 90% of water but as a “free-rider”;
- Polluter pays principle has also not been applied.

Caused : *Inadequate O&M and cost recovery, lead to improper of IWRM implementation.*

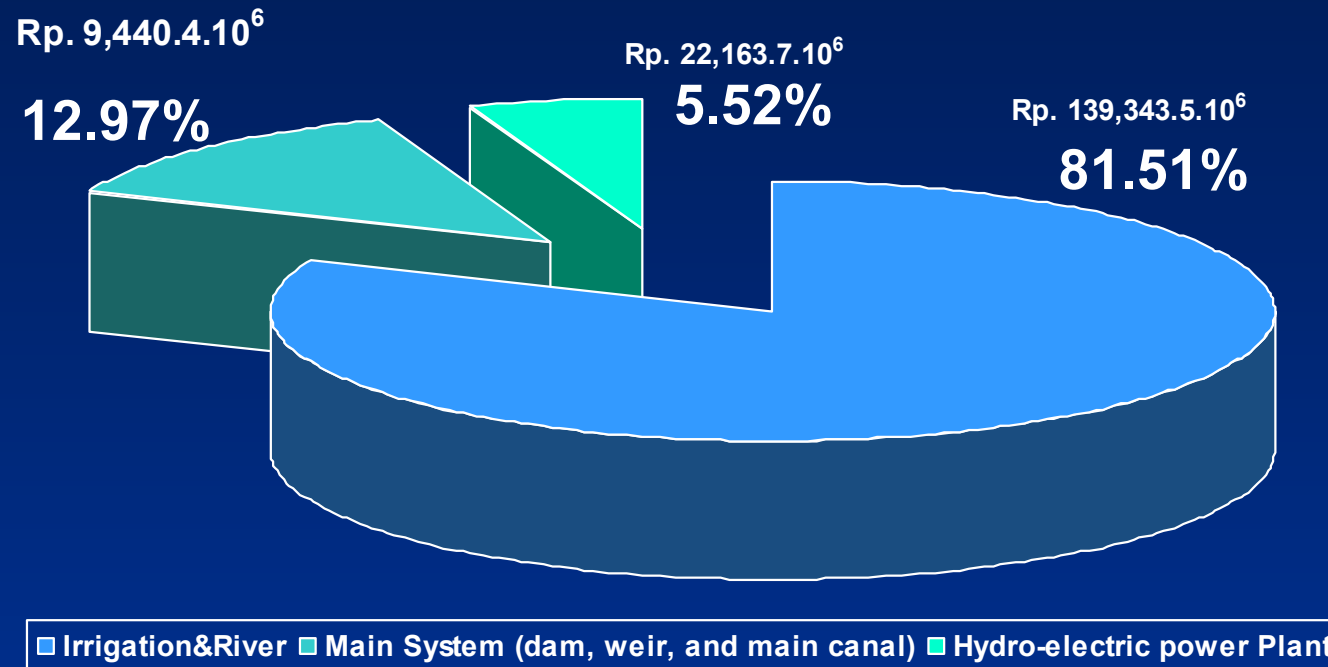


REVENUE OF JASA TIRTA II PUBLIC CORPORATION (in 2002)



Revenue in 2002
Rp. 132.6 Billion
equal to USD ±15.6 Million

IDEAL COST FOR OPERATION AND MAINTENANCE OF WATER
RESOURCES INFRASTRUCTURE
JASA TIRTA II PUBLIC CORPORATION
+/- Rp. 171 Billions (1999)



**JASA TIRTA II PUBLIC CORPORATION
ONLY ABLE TO PROVIDE 30-40% OF IDEAL COST**

SHIFT OF PARADIGM

- Water is a social good, its economic value is increasing even the social function couldn't be avoided;
- Government role from provider to enabler;
- Government responsibilities from centralization to decentralization;
- Development from single to multi sector approach;
- Private and community role from a less participation towards broader participation;



WATER RESOURCES SECTOR REFORMATION PROGRAM

- 4 objectives of water resources and irrigation reformation program policy:
 - Improve the national institutional framework for water resources development and management
 - *Improving the organizational and administrative framework for river basin management*
 - Improve regional water quality management regulatory institutions and implementation;
 - Improve irrigation management policy, institutions, and regulations.



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 four river basin corporations (Sekampung-Seputih, Jeneberang, Jratunseluna, and Serayu-Bogowonto).
- Formation of fully functioning Provincial River Basin Management Units (Balai PSDA) in key basins in about 8 provinces.



PROPOSED NARBO'S ACTION PLAN

Since *“IWRM is a process which promotes the coordinated development and management of water, land, and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystem”* [GWP-TAC, Background Paper No. 4]

while RBOs in Indonesia have not been implemented properly, thus it needs:

- Advocacy and raising awareness for IWRM among RBOs and related Sector
- Sharing information, good practices, lesson learned for IWRM:
 - Training (HRD)
 - Exchange of expertise (R&D)
 - Database Management



PROPOSED NARBO'S ACTION PLAN (2)

- Advocacy and raising awareness for IWRM among RBOs and related Sector
 - Community development in improving and maintaining the sustainability of conservation capacity.
 - Raising awareness of transferring incentive from downstream to upstream.
 - Reduce pollution from upstream area and implement Polluter Pays Principle



PROPOSED NARBO'S ACTION PLAN (3)

- **SHARING INFORMATION, GOOD PRACTICES, LESSON LEARNED FOR IWRM:**
 - *Watershed Management* : use of GIS for watershed monitoring and evaluation, hydrological database standardization;
 - *Flood Management* : Advance flood forecasting capability, improve early warning system;
 - *Water Quantity Management* : implementation of water use efficiency, re-use and recycle of water;
 - *Water Quality Management* : improve technology for wastewater treatment plant;
 - *Financial Support and Funding* : calculation of water use tariff and pollution fee, promoting government obligation on public services



CONCLUSION

- RBO in Indonesia has been established since 1970, that is Jatiluhur Authority Public Corporation of Citarum River Basin.
- Various local and central government involved caused problem in sharing tasks and responsibilities characterized by unclear mandates which leads to overlapping and gap.
- Technical, legal, institutional, and financial issues have revealed. Endeavors to overcome the problems is especially focusing on creating a common vision of integrated water resources management. Furthermore to find the most appropriate legal, institutional, and financial conditions.
- Networking is required in term of human resources development, research and development, and database management.



TERIMA KASIH

ARIGATO

