

Implementation of IWRM Principles and Processes for Management and Development of Indonesian Water Resources



**MINISTRY OF SETTLEMENT AND REGIONAL INFRASTRUCTURES
DIRECTORATE GENERAL OF WATER RESOURCES**



1. INTRODUCTION

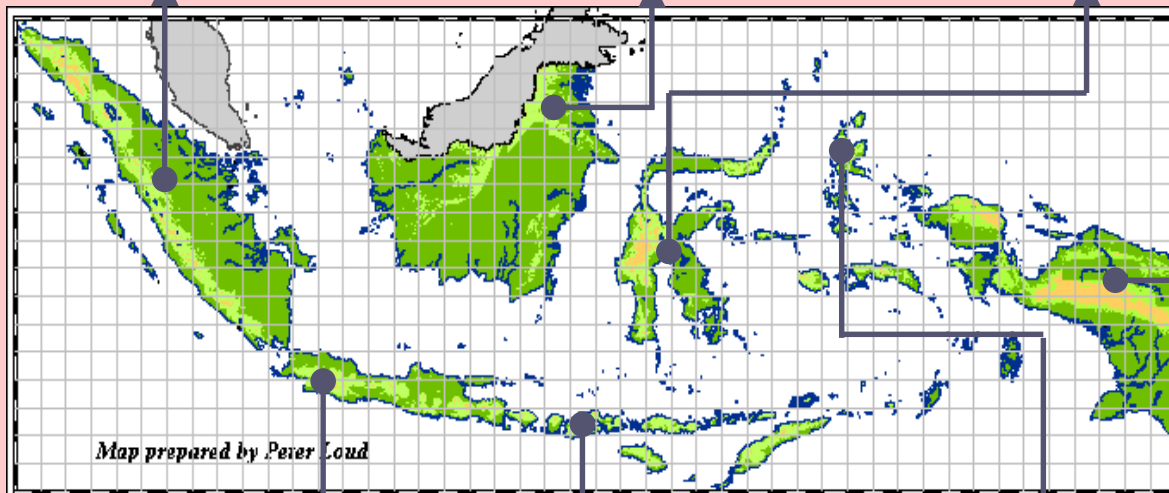
A. Issues of environmental quality and sustainability:

- ✓ Adverse impact of population growth, urbanization and industrialization
- ✓ costs and risks of continued degradation.

B. Issues of water resources management:

Java	Off Java
overpopulation, resources degradation/ depletion.	deforestation, improper mining/ plantation practices.

PULAU SUMATERA		PULAU KALIMANTAN		PULAU SULAWESI	
KETERSEDIAAN AIR TOTAL		KETERSEDIAAN AIR TOTAL		KETERSEDIAAN AIR TOTAL	
480,968.0 (Juta m ³) 25 % Tot. Nas		556,699.0 (Juta m ³) 28 % Tot. Nas		143,778.0 (Juta m ³) 7 % Tot. Nas	
MUSIM HUJAN	MUSIM KEMARAU	MUSIM HUJAN	MUSIM KEMARAU	MUSIM HUJAN	MUSIM KEMARAU
384,774.4 (Juta m ³)	96,193.6 (Juta m ³)	389,689.3 (Juta m ³)	167,009.7 (Juta m ³)	129,400.2 (Juta m ³)	14,377.8 (Juta m ³)
KEBUTUHAN AIR TOTAL		KEBUTUHAN AIR TOTAL		KEBUTUHAN AIR TOTAL	
19,965.7 (Juta m ³) 18 % Tot. Nas		4,898.0 (Juta m ³) 4 % Tot. Nas		15,440.0 (Juta m ³) 14 % Tot. Nas	
MUSIM HUJAN	MUSIM KEMARAU	MUSIM HUJAN	MUSIM KEMARAU	MUSIM HUJAN	MUSIM KEMARAU
8,319.0 (Juta m ³)	11,646.7 (Juta m ³)	2,040.8 (Juta m ³)	2,857.2 (Juta m ³)	6,433.3 (Juta m ³)	9,006.7 (Juta m ³)
SURPLUS	SURPLUS	SURPLUS	SURPLUS	SURPLUS	SURPLUS



WATER BALANCE BY ISLAND YR. 2003

PULAU PAPUA	
KETERSEDIAAN AIR TOTAL	
545,377.0 (Juta m ³) 28 % Tot. Nas	
MUSIM HUJAN	MUSIM KEMARAU
381,763.9 (Juta m ³)	163,613.1 (Juta m ³)
KEBUTUHAN AIR TOTAL	
137.2 (Juta m ³) 0.1 % Tot. Nas	
MUSIM HUJAN	MUSIM KEMARAU
57.2 (Juta m ³)	80.0 (Juta m ³)
SURPLUS	SURPLUS

PULAU JAWA DAN BALI		PULAU NUSA TENGGARA		PULAU MALUKU	
KETERSEDIAAN AIR TOTAL		KETERSEDIAAN AIR TOTAL		KETERSEDIAAN AIR TOTAL	
126,451.0 (Juta m ³) 7 % Tot. Nas		42,156.0 (Juta m ³) 2 % Tot. Nas		61,776.0 (Juta m ³) 4 % Tot. Nas	
MUSIM HUJAN	MUSIM KEMARAU	MUSIM HUJAN	MUSIM KEMARAU	MUSIM HUJAN	MUSIM KEMARAU
101,160.8 (Juta m ³)	25,290.2 (Juta m ³)	37,940.4 (Juta m ³)	4,215.6 (Juta m ³)	49,420.8 (Juta m ³)	12,355.2 (Juta m ³)
KEBUTUHAN AIR TOTAL		KEBUTUHAN AIR TOTAL		KEBUTUHAN AIR TOTAL	
65,839.1 (Juta m ³) 59 % Tot. Nas		5,760.0 (Juta m ³) 5 % Tot. Nas		235.7 (Juta m ³) 0.2 Tot. Nas	
MUSIM HUJAN	MUSIM KEMARAU	MUSIM HUJAN	MUSIM KEMARAU	MUSIM HUJAN	MUSIM KEMARAU
27,432.9 (Juta m ³)	38,406.1 (Juta m ³)	1,440.0 (Juta m ³)	4,320.0 (Juta m ³)	98.2 (Juta m ³)	137.5 (Juta m ³)
SURPLUS	DEFISIT	SURPLUS	DEFISIT	SURPLUS	SURPLUS

Efforts On Water Resources Development

- 5.5 million Ha technical irrigation systems and 1.6 million Ha village irrigation systems, more than 200 reservoirs and 13,000 weirs
- 5,000 MW of hydropower generation (20 % nation capacity),
- Urban and Rural water supply systems of 100,000 l/sec (40%),
- Reclamation of 3.3 million ha of swampland,
- More than 18,000 ha of fishponds,
- 1.96 million ha of flood protected lowland & urban area,
- More than 25 kilometers of coastal protection.

Despite all these efforts, problems arise from the adverse impacts of population growth, urbanization and industrialization.

2. NEED OF WATER RESOURCES POLICY REFORM

A. Water Resources Problems:

- local scarcity of water allocation due to growth of non-irrigation water demand;**
- inadequate urban access to piped water supply;**
- water pollution: untreated wastewater discharge, industrial and mining effluent disposal;**
- increasing flood peaks causing economic damages, decreasing dry season flow, and water infrastructure damages;**
- adverse environmental impacts of poorly planned swampland development.**

2. NEED FOR WATER RESOURCES POLICY REFORM

B. CONSTRAINTS IN ACHIEVING FOOD SECURITY AND SUSTAINABLE IRRIGATION

- **Inadequate budget allocation for O&M irrigation facilities.**
- **Deferral of routine maintenance.**
- **Reliance on periodic externally aided investment for rehabilitation works.**

2. NEED FOR WATER RESOURCES POLICY REFORM

C. INSTITUTIONAL CONSTRAINTS

- 1. Growing inadequacy of both legal and regulatory framework;**
- 2. Non-implementation of legal provisions;**
- 3. Weak sector institutions for integrated water resources policy formulation;**
- 4. Inadequate coordination of government agencies;**
- 5. Complexities of human resources deployment; and**
- 6. Absence of appropriate mechanisms for stakeholder consultation.**

3. INDONESIAN WATER RESOURCES POLICY REFORM

1) OBJECTIVE

- a. To improve the national institutional framework including the existing water resources law**
- b. 2. To improve the organizational and financial framework for river basin management**
- c. 3. To improve regional water quality management, regulatory institutions and implementation**
- d. 4. To improve irrigation management policy, institutions and regulations**

2) Sector Reform Objective in Purview of IWRM

A. The Enabling Environment

A1 Policies

A1.1 Preparation of a national water resources policy

- adoption and implementation of a binding National Water Policy to guide sector planning, programming, budgeting real-time management and regulation;

A2 Legislative Framework

A2.1 Water rights

- introducing a water rights system for secure, equitable and efficient water allocation

A2.2 Legislation for water quality

- establishing institutional frameworks for enforceable water pollution control;

A2.3 Reform of existing legislation

- Improve the national institutional framework including the existing water resources law

A3 Financing and Incentive Structures

A3.2 Public Sector Institutional Reform

- ensuring fiscal sustainability and efficiency of O&M and rehabilitation of irrigation schemes;
- reorganization of irrigation services administration.

2) Sector Reform Objective in Purview of IWRM

B. Institutional Roles

B1 Creating Organisational Framework

B1.2 National Apex bodies

- establishment of a national intergovernmental water resources and irrigation management coordination framework;

B1.2 River basin organisations

- establishing effective management organizations in strategic river basins;

B1.4 Regulatory bodies and enforcement

- fostering integrated management and regulation of river basin water resources;

B2 Building Institutional Capacity

B2.1 Participatory management and empowerment

- establishment of institutions and procedures for involvement of stakeholders and water resources service beneficiaries in river basin management policy formation and decision-making;
- transparent empowerment of farmer irrigation organizations with governance and financial powers to manage irrigation networks

2) Sector Reform Objective in Purview of IWRM

C. Management Instruments

C4 Social Change Instruments

C4.6 Broadening participation in water resources mangmt.

- establishment of institutions and procedures for involvement of stakeholders and water resources service beneficiaries in river basin management policy formation and decision-making;
- transparent empowerment of farmer irrigation organizations with governance and financial powers to manage irrigation networks

C6 Regulatory Instruments

C6.1 Regulations for water quality

- Improve regional water quality management, regulatory institutions and implementation

C8 Information Management, Exchange and Data Sharing

C8.1 Information management system

C8.2 Data sharing-national and international

- improving national water resources management information and decision-support data systems and networks;

3) Lesson Learned (1)

- **The gap between current reform agenda & process and IWRM principles can be identify by comparing them to the structure of the GWP ToolBox→ A (10 items); B (11 items); C (28)**
- **The important elements of the enabling environment and the institutional roles have been covered**
- **On the management instruments → economic instruments, water resources assessment, demand management and plans for IWRM implementation are not well covered**

3) Lesson Learned (2)

- **Economic instruments that are not well covered: 1) water use right can not be transferred, 2) role of private only for urban drinking water, 3) free of charge policy for irrigation water use→discourage efficient use**
- **Coordination mechanism still need to be strengthened**
- **A big gap between IWRM principles and actual legislative framework shows that appreciation of law makers & stakeholders to IWRM is still weak**

3) Lesson Learned (3)

- **A capacity building in IWRM is required for law makers and all component of stakeholders**
- **A IWRM implementation plan at national, provincial and river basin levels are required**
- **It was found that the coverage of the GWP ToolBox is also still limited→ it does not address risks management for flood & drought**

4. STRATEGIES FOR INTEGRATED WATER RESOURCES MANAGEMENT

- A. Introduction of a *water rights framework* for water allocation;
- B. Improving *water utilization efficiency*, particularly for irrigation;
- C. Attaining regional surface and ground *water quality levels* that are compatible with both socio-economic development and environmental sustainability;
- D. Developing *participatory institutions* for prioritized, integrated spatial and river basin planning processes;

4. STRATEGIES FOR INTEGRATED WATER RESOURCES MANAGEMENT

- F. Establishing an *enabling mechanisms* for community management and financing of irrigation networks;
- G. Establishing a *sustainable* planning, programming and budgeting system;
- H. Creating a national and regional water resources management structure to support and implement *integrated river basin management*;
- I. Improving *coordination* between forestry, agriculture, conservation and water resources sector; and
- J. Establishing a specific integrated policy for *environmentally sustainable wetland and swampland* development.
- ~~K. Promoting corporation of government water service by ensuring that new corporations have adequate revenue~~

5. Policy Implementations

a). *Integrated Management in Less-Developed River Basins.*



Establishment
of 41 BPSDAs

b). *Strategic Developed River Basins.*



Establishment of Public
Corporation 2 →6 river basins

c). **Secure, Equitable and efficient Water Allocation**



Introduction of
a water use
right

5. Policy Implementations

d). Water Pollution Control Framework and Institutions.



e). Improving public irrigation network sustainability.



f). People's empowerment for responsible water use and conservation



5. Policy Implementations

g). Establishing Gender Equity.



h). Raising Public Awareness.



6. THE GENERALIZED PROCESS TOWARD IWRM

Indonesia position:

- ☑ Establish goals and agendas → water resources reform agenda already exist**
- ☑ Build commitment to reform process → presidential decree for guidance in place**
- ☑ Analyze gaps → partly completed and need to be continued**
- ☑ Prepare strategy and action plan → still need to be done**
- ☑ Build commitment to actions → the new water resources law just enacted last week**
- ☑ Implement frameworks → frameworks need to be established**
- ☑ Monitor and evaluate progress → impact, process and performance indicators need to be established**

7. Framework of NARBO Action Plans

A. The Enabling Environment

- Policies for water use, protection and conservation**
- Financing and incentive structures-allocating financial resources to meet water needs**

B. Institutional Roles

- Institutional capacity building**

C. Management Instruments

- Water resources assessment**
- Demand management**
- Conflict resolution**
- Economic instruments**