Policy of
Water-related Disaster Preparedness
in Indonesia

by :

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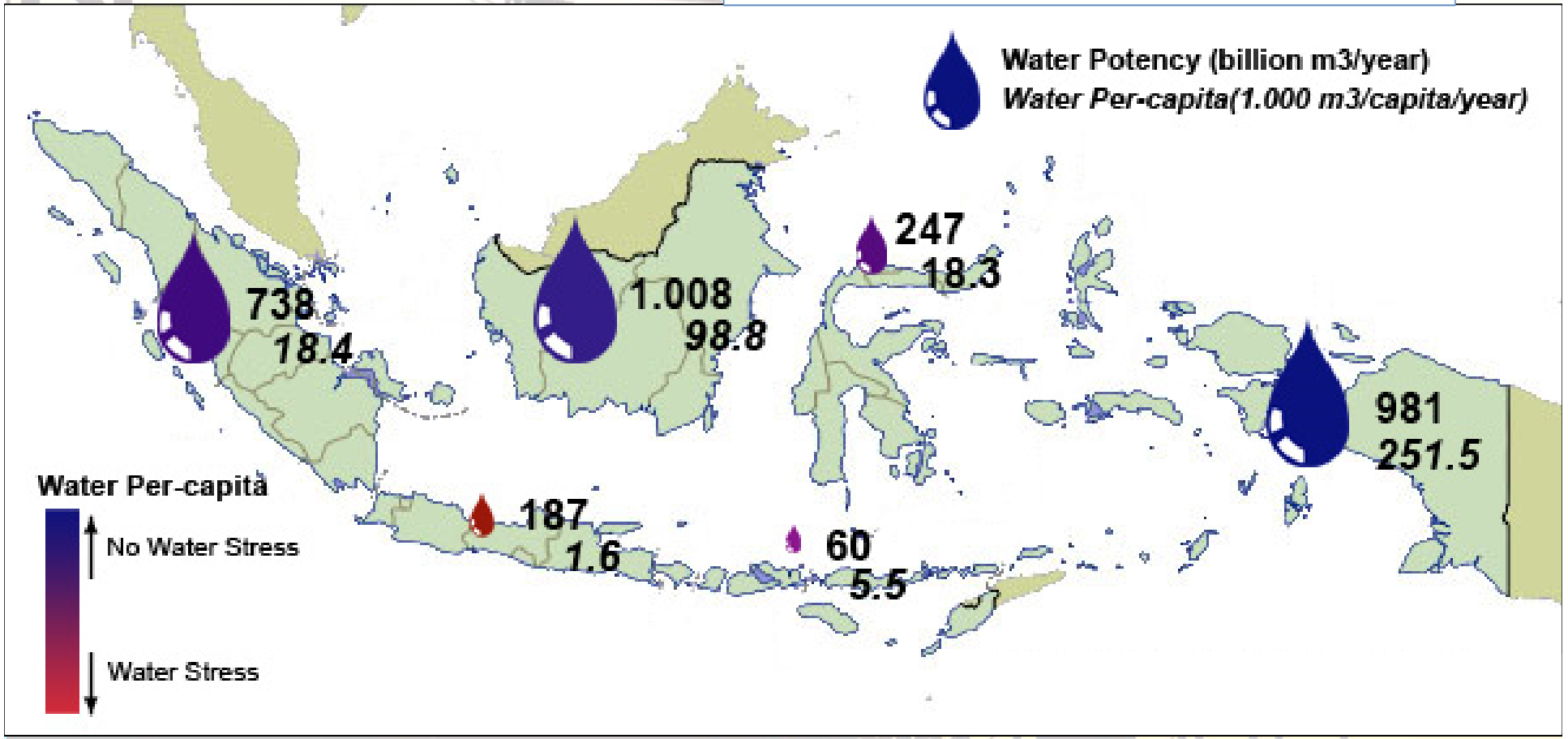
1. Potency of Water Resources in Indonesia

INDONESIA

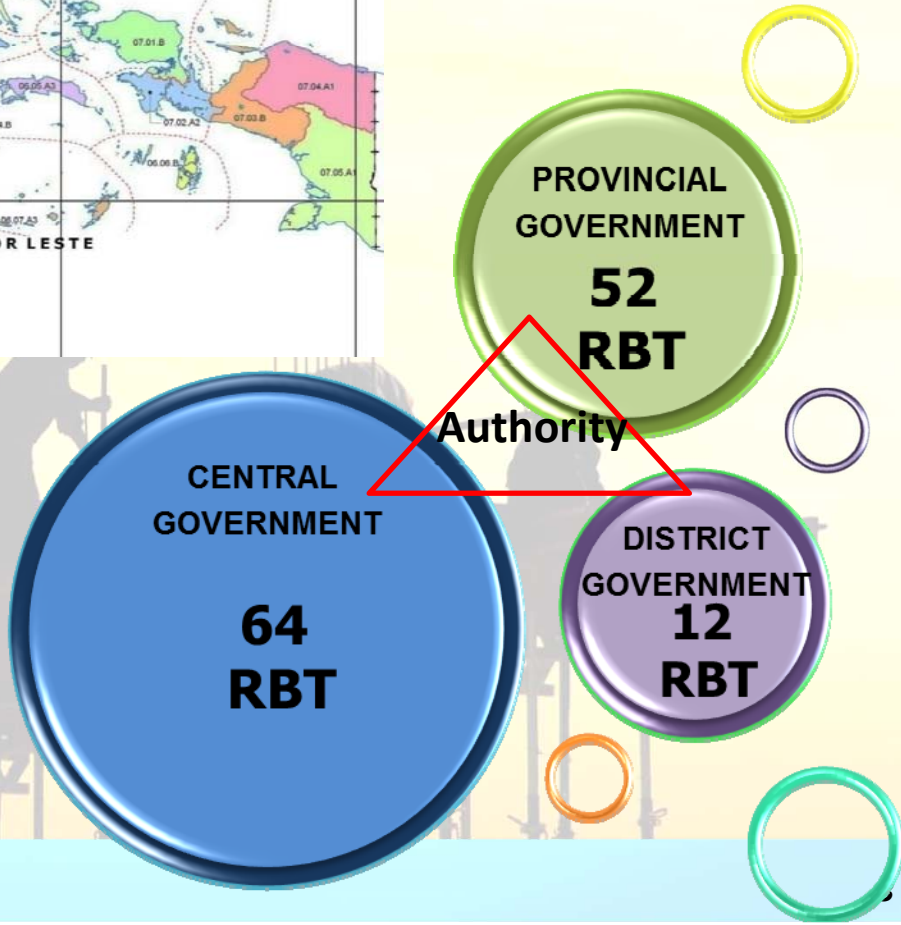
Total Potency : 3,9 trillion m^3 / year



2. River Basin-based Water Resources Management

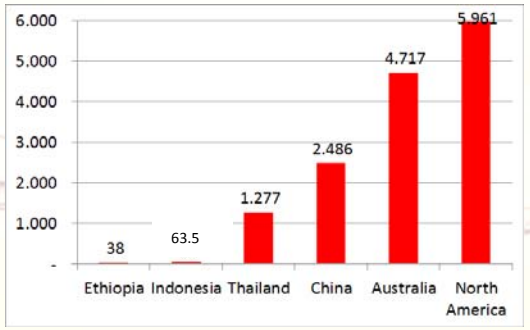
Map of River Basin Terithory (RBT) in Indonesia

No.	STATUS of RIVER BASIN TERRITORY (RBT)	AMOUNT
1	TRANS BOUNDARY	5
2	TRANS PROVINCE	31
3	NATIONAL STRATEGIC	28
4	TRANS DISTRICT	52
5	DISTRICT	12
TOTAL		**128**

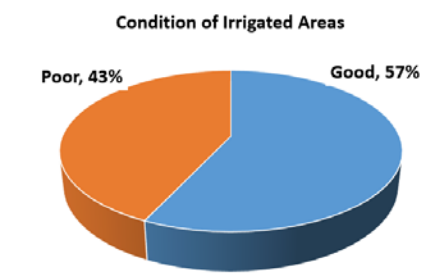


3. Strategic Issues: Existing Condition

1. The capacity of water storage per capita is about 63.5 m^3/ capita (much lower than Thailand, 1,277 m^3 / capita and one level above Ethiopia, 38 m^3 / capita).



2. Total Irrigated Areas: 7.145.168 ha, 43% of them are in poor condition.



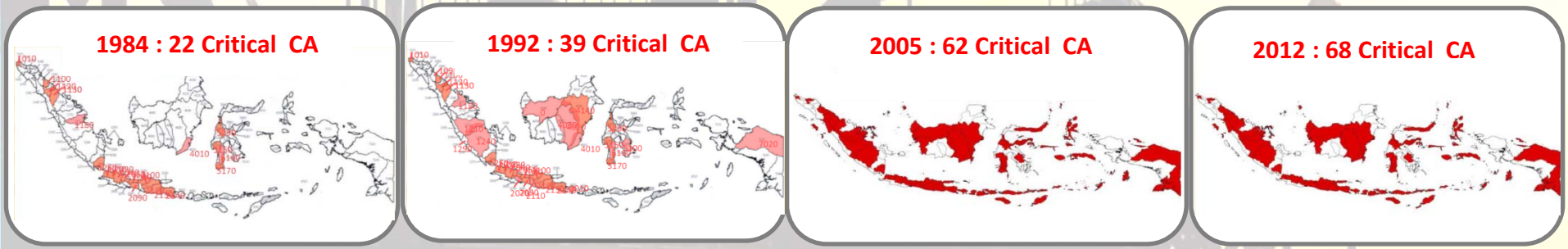
3. Up to 2014, the raw water capacity is 51.44 m^3 / sec) to serve about 66.35% of the population;

4. There are 34 existing dams that have the potential of Hidro-Power Plan (about 84.5 MW) to be developed.

5. **The frequency of floods in several large cities are still high:**
   - **Due to alteration in rainfall patterns and climate;**
   - **Watershed degradation due to land conversion;**
   - **Inconsistency of land use against spatial planning;**
   - **limited funding regarding flood protection;**

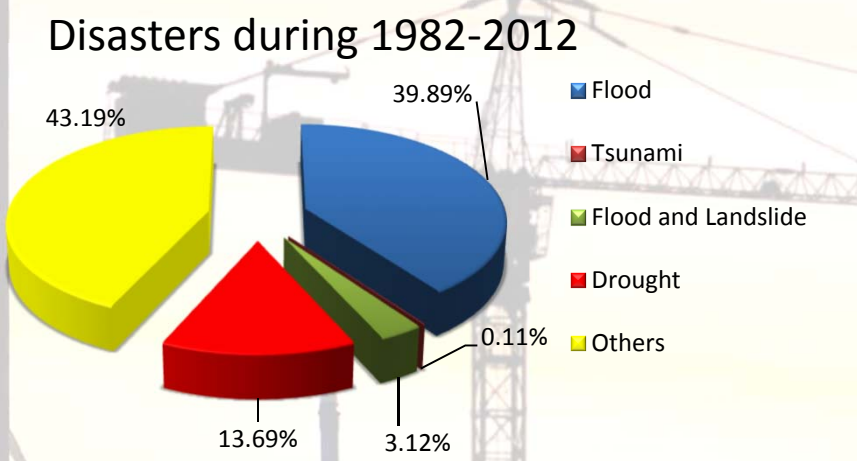
4. Driving Factors

1. Population growth leads to increased demand for water;
2. The conversion of rural into urban will increase the need for water (due to various activities in urban areas, urban needs outweigh those of rural);
3. Climate change , such as the alteration of rain frequency and intensity, leads to high intensity of flooding and drought in some regions;
4. Watershed and environmental damage strongly increase the level of erosion, sedimentation, and water pollution;



Increasing Number of Critical Catchment Area (CA)

5. Profile of Water-Related Disasters



Disaster	Location
Earthquake and tsunami, 2004	Aceh & North Sumatera
Earthquake and tsunami, 2006	Pangandaran, West Java
Big Flood, 2007 & 2013	Jakarta. Java

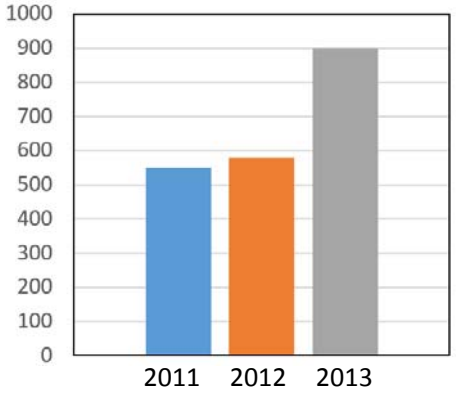
Most of the disasters occurred in Indonesia are hydro-meteorological disasters

Trend of Water Related Disaster in Indonesia

Cities Prone to Flood

1. Jakarta
2. Bandung
3. Surabaya
4. Solo
5. Medan
6. Padang
7. Pekanbaru
8. Jambi
9. Bd. Lampung
10. Pontianak
11. Samarinda
12. Makassar
13. Ambon
14. Manado
15. Gorontalo
16. Kendari
17. Palembang
18. Jayapura
19. Sorong
20. Palu

Flood Event Intensity



6. Mitigation Measures for Water-Related Disaster

NON STRUCTURAL MEASURES

- **Spatial plan**
- **Conservation**

  (Increase carrying capacity of critical watershed in upstream)
- **Develop disaster risk management**
- **Increase public awareness and participation**
- **Risks mapping**
- **Early Warning System**






STRUCTURAL MEASURES

- **Check Dam**
- **Flood protection (dam, dike)**
- **River improvement**
- **Sediment control**
- **Coastal protection**



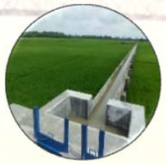
7. Policies of Water Resources 2015 - 2019

ROAD MAP OF WRM 2015-2019

EXISTING CONDITION	KEY AREAS	INTERVENTION (TIME FRAME 2015–2019)	PURPOSES
DRIVING FACTORS	Water Resources Development	Irrigation Development	irrigation increase rice production upto 88.7%
		Improvement Storage	Storage capacity 14 billion m3 and 56.56 m3/capita
			The utilization of potential energy : 142.52 MW of existing dams
		Raw Water Provision	Raw water to meet the needs of clean water
	Controlling the Destructive Force	Controlling of Floods, volcaninc mudflow, abrasion	Area protection of 200 thousand hectares
	Conservation		Area protection, restoration, revitalization
	Sustainability	Operation & Maintenance	increasing the sustainability of water resources and function of WR infrastructures
	IWRM	IWRM Implementation	increasing coordination, among stakeholders

CHALLENGES

DEVELOPMENT
1 million Ha



REHABILITATION
3 million Ha

65 DAMS

RAW WATER
118,96 m^3/sec

FLOOD PROTECTION
3.000 KM

COASTAL PROTECTION
500 KM

MUDFLOW CONTROL
300
Sabo dams

8. Programs toward Water-Related Disasters

STRATEGIC PLAN 2015-2019

- Managing the flood prone areas of about **200 thousand hectares spreading on 20 cities in Indonesia**
- Improving the conveyance of river with a length of about **3000 kilometers**
- Protecting coastal line from abrasion with a total length of about 500 km
- Development of sediment and lahar control structures at about **300 locations**
- Development of **infiltration wells, retention ponds** and **pump houses.**

9. Target and Budget for 'W-R' Disaster Preparedness

2016

IRRIGATION, SWAMP, POND, GROUNDWATER IRR

21% — 5.7 T

- DEVELOPMENT : 45,000 Ha
- REHABILITATION : 298,000 Ha

BIG DAMS & SMALL DAMS

24% — 6.3 T

- DEVELOPMENT :
  22 *on-going* dams, 8 new dams; 387 ponds/small dams
- REHABILITATION :
  - 5 dams, 69 ponds/small dams
- LAKE REVITALIZATION : 7 lakes

FLOODS, MUDFLOW, COASTAL

21% — 5.5 T

- DEVELOPMENT :
  - Flood Protection: 148 km
  - Volcanic Mudflow Protection : 27 SD
  - Coastal Protection: 20,49 km
  - Urban Drainage : 11 km
- REHABILITATION
  - Flood Protection: 23 km
  - Volcanic mudflow Protection : 14

OPERATION & MAINTENANCE

12% — 3.3 T

- O&M for WR infrastructures
- Emergency Response & equipment
- P3TGAI at 900 locations

GROUNDWATER, RAW WATER

12% — 3.2 T

- DEVELOPMENT : 6,27 m3/sec
- REHABILITATION : 0,92 m3/sec

OTHERS

10% — 2.6 T

- IWRM: Rp 459 M
- Management, BWS/BWS Rp 521 M
- Other supports: Rp 1,62 T [Salaries, etc.]

Total Budget = 26.6 T

10. Conclusion

Require:

1. **Investment in Floods Protection Infrastructures;**
2. **People's Awareness of Disaster Mitigation;**
3. **Installation of Appropriate Technology for Early Warning System;**
4. **Cooperation Among Countries for Experience Sharing;**
5. **Technical Assistance on Infrastructure Planning with regards to Climate Change.**

Terimakasih!