



Presentation on :

Thematic Workshop on Water-Related Disaster & Its Management

PJT 2

PJT 2

Discussion Materials
on

Water-Related Disaster &
Its Management

Yogyakarta, Indonesia, 26-29 Nov 07

Presented by HERMAN IDRUS

Figure : Jatiluhur Dam, Purwakarta - Indonesia

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The Presentation Outline

1. Introduction.

2. Legal and Institutional Arrangement
3. Citarum River Basin Case
4. Closing Remark

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Chap. 1 : Introduction

About Indonesia

A tropical zone with high rate precipitation : 2500 – 3000 mm per annum.

The climate is divided by two distinct seasons, almost 70% of annual rainfall occurs during the rainy season and only 30% occurs during the dry season → subject to flood and drought.

Located in the volcanic range → vulnerable to natural disaster

INDONESIA

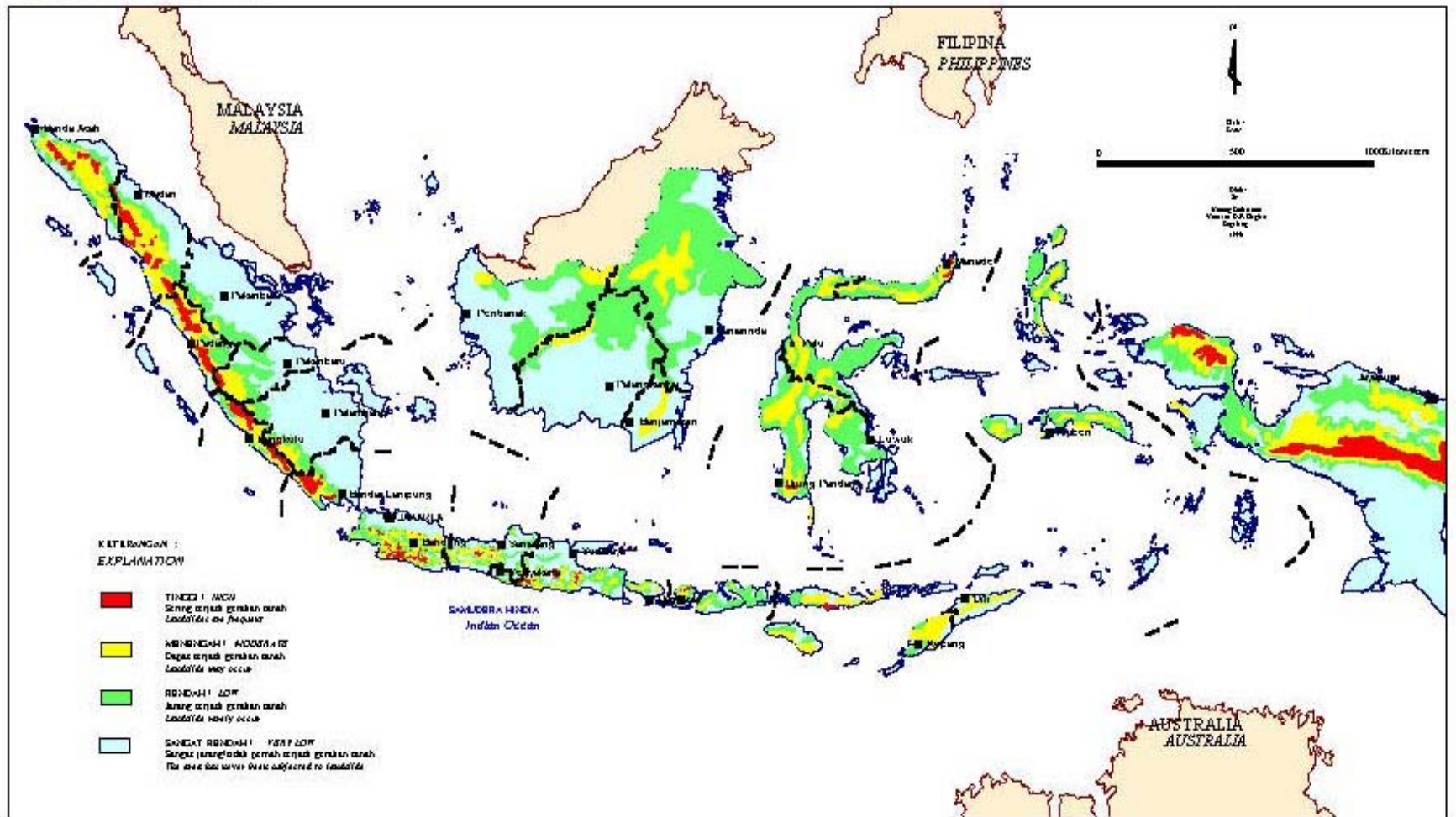


- LATITUDE = 06° NL – 11° SL
- LONGITUDE = 95° EA – 141° EA
- NORTH - SOUTH = 1.888 KM
- WEST – EAST = 5.110 KM
- TOTAL AREA = 5.193.252 KM²
- AREA OF LAND = 1.904.569 KM²
- AREA OF SEA = 3.288.683 KM²
- TOTAL OF ISLAND = 17.508 ISLANDS
- SHORE LINE = 80.000 KM
- MAIN OF RIVER BASIN = 136
- POPULATION (2000) = 203.456.000
- MAIN TRIBE = 370
- LANGUAGE = 67

POPULATION IN JAVA ISLAND

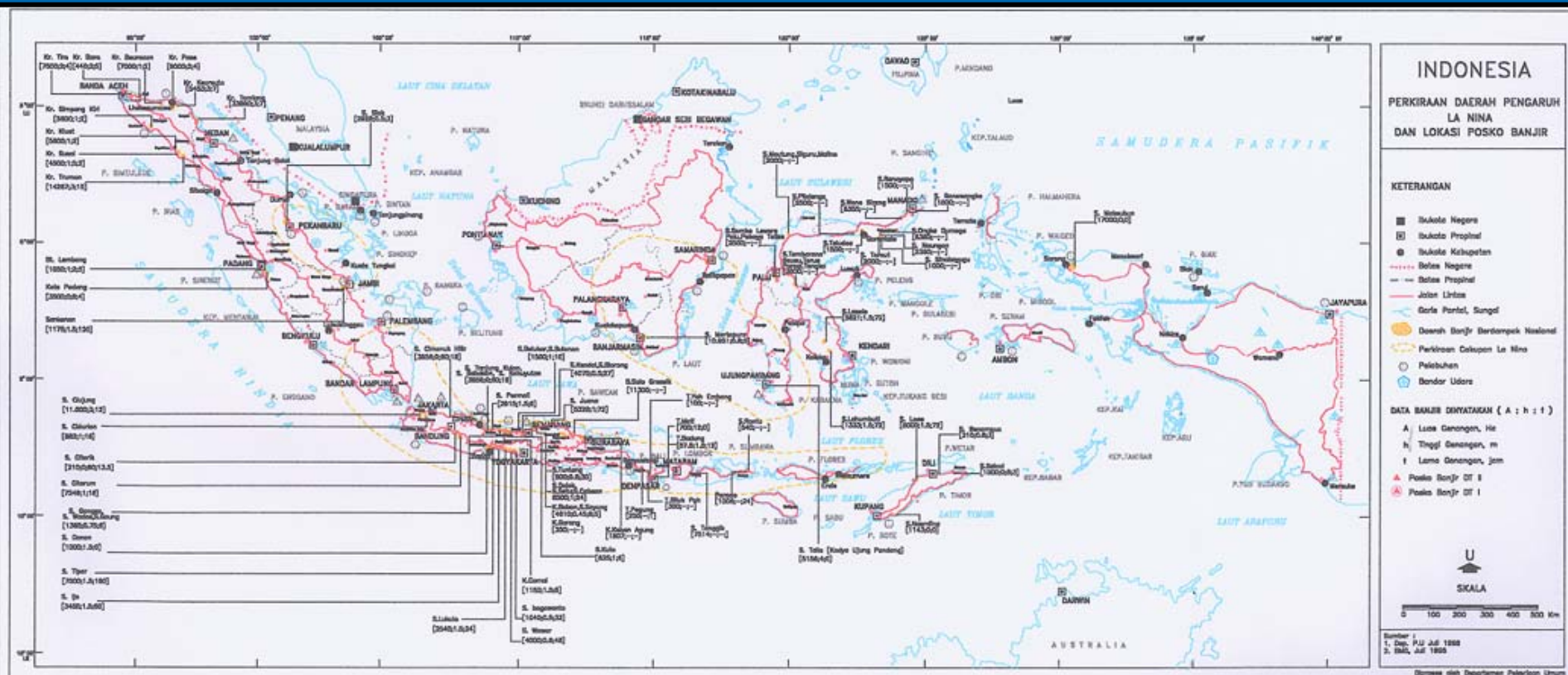
YR	POP	SOURCES
1785	3.500.000	Pelzer
1815	4.600.000	Raffles
1845	9.500.000	Bleekers
1860	12.500.000	Statistik
1895	23.370.000	Pelzer
1930	40.890.000	Sensus
1946	50.000.000	Pelzer
1961	63.059.700	Sensus
1971	76.086.327	Sensus
1980	91.269.528	Sensus
1990	107.581.000	Sensus
1996	114.734.000	Statistik

MAP OF LANDSLIDE AREA



Sumber : DESDM

MAP OF FLOODS HAZARD AREA

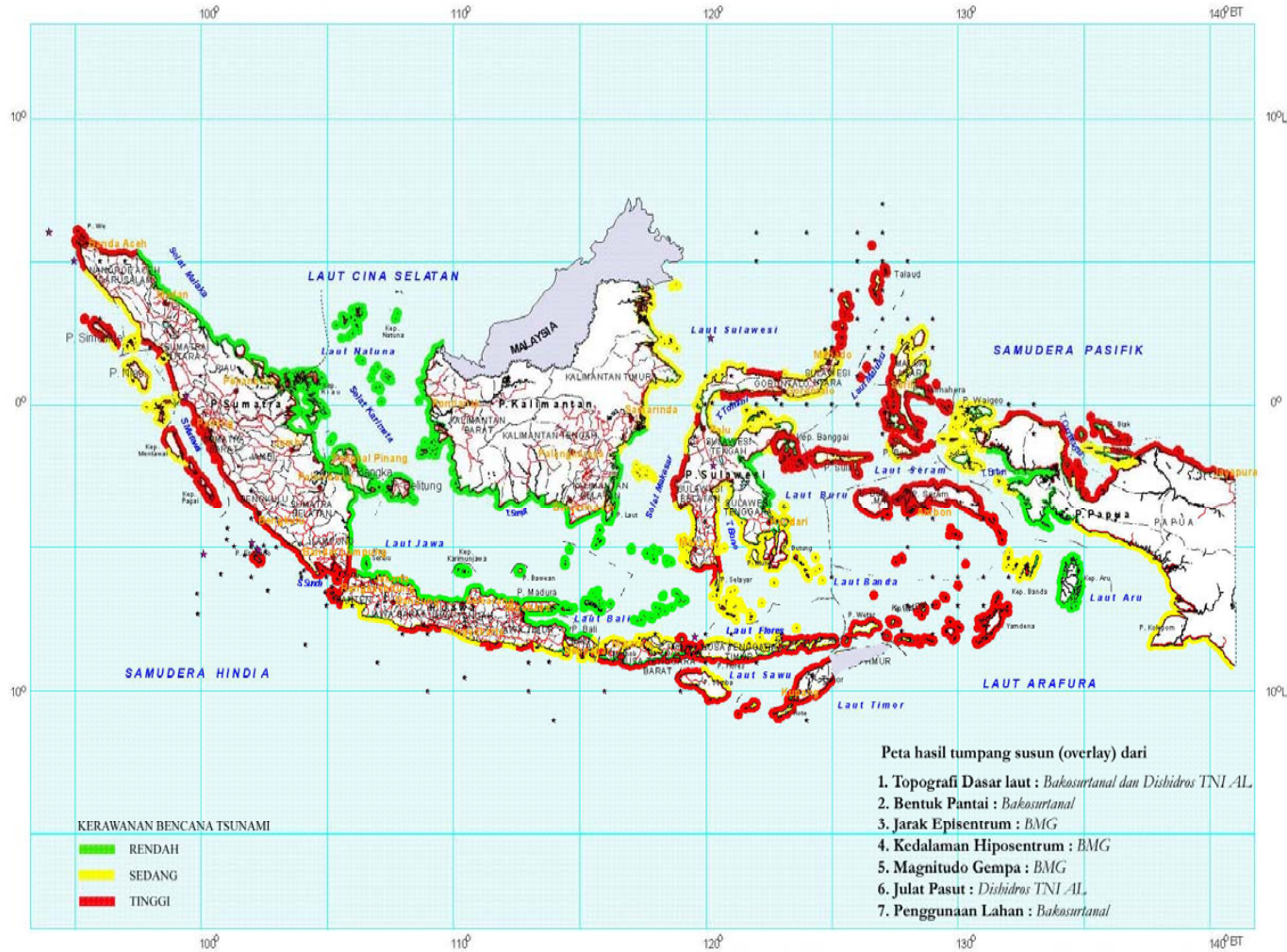


Sumber : Dep. PU


MAP OF TSUNAMI HAZARD AREA



PETA TINGKAT KERAWANAN BENCANA TSUNAMI INDONESIA



- Peta hasil tumpang susun (overlay) dari
1. Topografi Dasar laut : *Bakosurtanal dan Dishidros TNI AL*
 2. Bentuk Pantai : *Bakosurtanal*
 3. Jarak Episentrum : *BMG*
 4. Kedalaman Hiposentrum : *BMG*
 5. Magnitudo Gempa : *BMG*
 6. Julat Pasut : *Dishidros TNI AL*
 7. Penggunaan Lahan : *Bakosurtanal*


 Badan Koordinasi Survei dan Pemetaan Nasional
 (BAKOSURTANAL)

Kegiatan ini dilakukan melalui pengumpulan data dan peta tematik dari berbagai instansi yang terkait, seperti Direktorat Geologi Tata Lingkungan, Kimpraswil, BPN, BPS, Bakomas PRP dan instansi terkait lainnya. Data dan peta-peta tersebut digunakan sebagai bahan untuk penentuan sebaran daerah rawan bencana alam secara spasial dengan menggunakan bantuan Sistem Informasi Geografis. Berdasarkan analisis keruangan dan kajian mendalam, maka karakteristik, faktor-faktor penyebab bencana dan upaya mitigasi bencana alam dapat dirumuskan. Selanjutnya dilakukan penggabungan data spasial berupa peta dan data numerik berupa data sosial kependudukan dan berbagai fasilitas yang diperlukan dalam penanggulangan bencana untuk membentuk sistem informasi penanggulangan bencana.

Komponen-komponen penentu terjadinya tsunami yang digunakan dalam penelitian ini adalah: topografi dasar laut, bentuk pantai, jarak episentrum, kedalaman hiposentrum, magnitudo gempa, julat pasut dan penggunaan lahan.



Jalan Bukit Gading Raya dan Raya Boulevard Barat, Kelapa Gading, Jakarta Timur, dilihat dari udara saat pemantauan bersama Polda Metro Jaya, Minggu (4/2).



RUMAH TANGGA KEPRESIDENAN/DUDI ANUNG

Presiden Susilo Bambang Yudhoyono didampingi Menteri Koordinator Kesejahteraan Rakyat Aburizal Bakrie mengunjungi korban banjir di Jalan Jatinegara Barat, Kampung Melayu, Jakarta Timur, Jumat (2/2).



KOMPAS/DANU KUSWORO

Sejumlah anggota TNI AL mendorong perahu karet yang berisi pegawai dan pengunjung Rumah Sakit TNI AL Mintohardjo, Jakarta, yang terendam air, Selasa (6/2).



Sampah sisa banjir di Sungai Ciliwung yang merobohkan jembatan gantung penghubung kawasan Condet, Kramat Jati, Jakarta Timur, dengan Kampung Lebak, Pasar Minggu, Jakarta Selatan, Rabu (7/2), masih menumpuk dan belum diangkut.

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Chap. 1 : Introduction

Terminology of Natural Disaster

(Mentioned on the Law No.24 year of 2007 on Disaster Rehabilitation)

Natural disaster means an incident caused by natural behaviour that possibly damage public or community livelihood such as casualty, environmental damages, and losses of national and personal properties, etc.

Figure : Jatiluhur Dam, Purwakarta - Indonesia

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Chap. 1 : Introduction

Water Resources Management in Indonesia

- Based on the Concept of IWRM.
- According to Law No. 7 year of 2004.
- Managed by local government if the watershed is within the administrative boundary of district, provincial government for inter-district basins, and central government for inter-provincial and strategic basin through the River Basin Agencies / Organizations.

Figure : Jatiluhur Dam, Purwakarta - Indonesia

PHENOMENON OF DISASTER

- MAN MADE :**
- Un proper of Technology
 - Sectoral developement
 - Uneficiency water uses
 - Politic not frendly with..
 - Population mobilisatiion
 - Soc, Ec, Culture gap

NATURAL:
Exogen: flood, Endogen: Earth quake

CYCLE OF DISASTER MANAGEMENT

THREAT



RISK



ALERT



DISASTER

EMERGENCY COND

EMERGENCY HANDLING

REHABILITATION

RECOVERY

RECONSTRUCTION

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Chap. 1 : Introduction

The Citarum River Basin (CRB)

- One of strategic rivers that located (watershed) in the West Java Province, but the services including the capital city of Jakarta.
- The complexity of the CRB's problem on water-related disaster → represents the general condition of Indonesia on water-related disaster management.
- PJT II as the Citarum river basin operator

Figure : Jatiluhur Dam, Purwakarta - Indonesia

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Legal Basics

- Law No. 24 year of 2007 on Disaster Rehabilitation.
- The local government regulation such as governors and chief of district decrees.

The principles

- Based on wisdom, compassion, environmental and respectable technologies point of views.
- Should be executed immediately, well-analyzed priority, well-organized coordination, effective, etc

Figure : Jatiluhur Dam, Purwakarta - Indonesia

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Institutional Arrangement

- The Law stipulates that Central Government has authorization to establish the National Body on Disaster Rehabilitation (Named: BAKORNAS).

In the regional level, the Local Government establish Regional Bodies on Disaster Rehabilitation (Named: SATKOLIN, SATKORLAK and SATLAK).

- Tasks : → coordinates the agencies in the national / regional level, planning and execution of the rehabilitation including the report and the financial accountability.

Figure : Jatiluhur Dam, Purwakarta - Indonesia

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Chap. 3. Citarum River Basin Case

Basin Characteristics

- River Basin area \pm 13,000 km².
- Latitudes 7°57' and 7°15' South.
- Longitudes 106°50' and 108°07' East.
- Average annual rainfall varies from 1,500 mm (coastal) to 4,000 mm (mountainous)
- Average annual runoff volume : 16.5 billion m³.

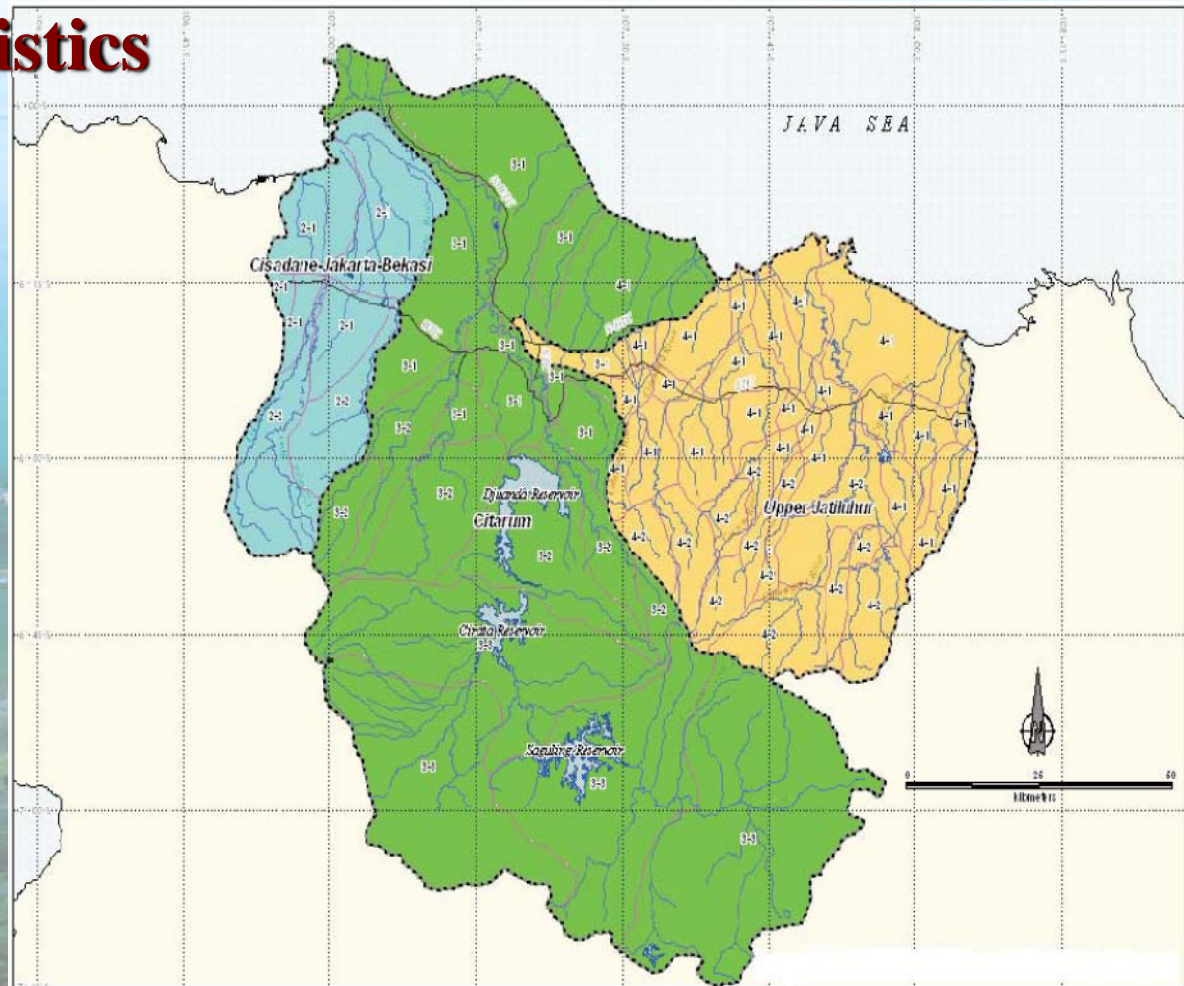


Figure : Jatiluhur Dam, Purwakarta - Indonesia

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Chap. 3. Citarum River Basin Case

Institutional / RBO / Agencies Concerned on observing climate and hydrology for disaster preparedness in CRB

1. BMG – Meteorology and Geophysic National Agency
2. Indonesia Power – The Dam Operator Agency for Saguling Reservoir
3. PJB – Pembangunan Jawa Bali, The Dam Operator for Cirata Reservoir
4. PJTII – Perum Jasa Tirta II, The Dam Operator for Jatiluhur
5. PSDA – Balai of Water Resources Management for Citarum River Basin

Figure : Jatiluhur Dam, Purwakarta - Indonesia

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Chap. 3. Citarum River Basin Case

The Agencies concerned on related-water disaster in the CRB

- Ministry of Public Works, i.e Balai Besar Wilayah Sungai Citarum,
- Provincial and District Disaster Coordination Team (SATKOLIN, SATKORLAK and SATLAK),
- and PJT II.

Figure : Jatiluhur Dam, Purwakarta - Indonesia

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Chap. 3. Citarum River Basin Case

The Disaster Management Activities:

Event	Activities
Prior	<ul style="list-style-type: none"> ▪ Making inventory of potential inundation area, and infrastructure for flood control ▪ Making inventory on flood monitoring points ▪ Flood water level estimation related to flood design ▪ Making manual for flood response ▪ Planning disaster response team planning during probable time of flood ▪ Making inventory on heavy equipments ▪ Making inventory on material for flood responses such as sandbags, piles, sealing sheets and fuels ▪ Cost estimation for flood response to allocate fund

Figure : Jatiluhur Dam, Purwakarta - Indonesia

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Chap. 3. Citarum River Basin Case

The Disaster Management Activities:

Event	Activities
During	<ul style="list-style-type: none"> ▪ Temporary construction at the critical flood spot. ▪ Water level monitoring by flood response team / tasks force ▪ Sends alert to local officers and local agency at the critical flood prone area ▪ Coordinate with other agencies
Pasca-	<ul style="list-style-type: none"> ▪ Protection of flood mitigation facility ▪ Inventory of damages including rehabilitation / restoration ▪ Temporary construction at damage sites due to flood ▪ Flood adaptation and future planning ▪ Report and coordinate the incidents to local government and related institutions

Figure : Jatiluhur Dam, Purwakarta - Indonesia

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Chap. 3. Citarum River Basin Case

Issues and Challenges

- ❖ General explanation on flood occurrences are:
 - poor drainage combined with high rainfall amounts
- ❖ The increase in maximum flood water level is the result of reduction in the discharge capacity of the river and this decrease in discharge capacity is caused by sedimentation of the river bed.
- ❖ Higher maximum flood water level is also due to higher run off coefficient due to deforestation in upper part of the river.

Figure : Jatiluhur Dam, Purwakarta - Indonesia

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Chap. 3. Citarum River Basin Case

Issues and Challenges

- ❖ Erosion control in the upper catchment by re-greening / reforestation and structural erosion control measures is considered to be an essential measure in the prevention of river bed sedimentation.
- ❖ Improving of drainage system in urban areas is necessary also to reduce flooding problems.
- ❖ But technical infrastructure on flood management is no longer the one and only solution. It creates no flexibility when it surpasses the design capacity. Therefore, giving more space for water is more suitable.

Figure : Jatiluhur Dam, Purwakarta - Indonesia

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Chap. 3. Citarum River Basin Case

Issues and Challenges

- ❖ Adequate information with sufficient lead time could have reduced the damages caused by several small to medium scale floods. Using flood forecasting and warning system is valuable to mitigate people and reducing casualties.
- ❖ Institutional arrangement to (1) encourage community to join to the flood response activities, (2) share the hydrologic data with other agencies, and (3) reinforcement of the working unit are challenges to improve disaster management, and also (4) financial generation

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Chap. 3. Citarum River Basin Case

Closing Remarks

- ❖ High rate precipitation but varied in time and location are subject to flood and drought.
- ❖ The main cause of the flooding generally the poor drainage combined with high rainfall amounts.
- ❖ The increased of maximum flood water level is the result of reduction in the discharge capacity of the canal caused by sedimentation of the river bed.
- ❖ The maximum flood water level is also amplified by increasing peak flow as consequences from deforestation.
- ❖ The backwater effects of the tributaries and give more severe the inundations.

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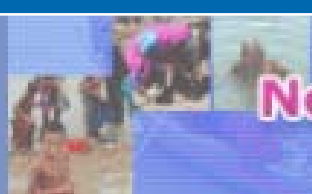
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Chap. 3. Citarum River Basin Case

Closing Remarks

- ❖ Water-related disaster management is related to planning, preparation, response, remedy, rescue, mitigation, and restoration.
- ❖ In order to mitigate the impact of disaster, preparedness of disaster that involved monitoring of climate and hydrology should be conducted.
- ❖ Institutional arrangement should be smoothly constructed to make an effective and optimal coordination.
- ❖ Financial mechanism helps the institutions to foster new restoration and rehabilitation.
- ❖ The technology proved to be helpful to mitigate such as telemetry system and early warning system.
- ❖ Community participation and empowerment are encouraged to help optimal disaster management results.

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Thank You

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