



MINISTRY OF TRANSPORTATION, INDONESIA
DIRECTORATE GENERAL OF LAND TRANSPORT



RESILIENT TRANSPORT

An Indonesia's Experience

Presented in
The 7th Regional EST Forum in Asia
Bali, 22-25 April 2013

INTRODUCTION

BACKGROUND

1. Indonesia, due to its location, undoubtedly has to deal with disastrous situations.
2. Transportation plays a crucial role for Indonesia either in normal condition as well as in critical circumstances such as disaster situation.
3. To bring the adverse conditions into a minimum level during times of disaster, the resiliency of the transport is critical.

RESILIENT TRANSPORT

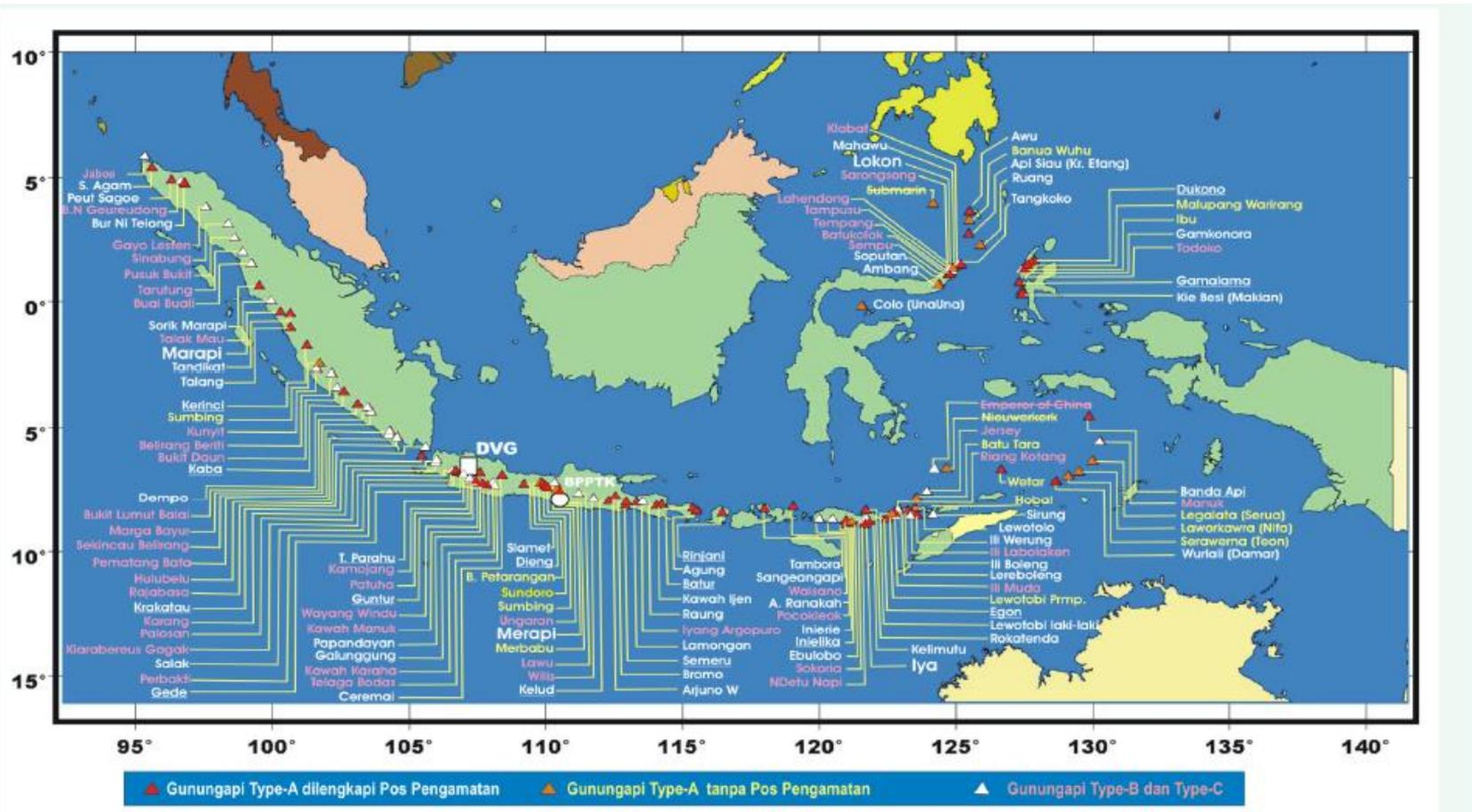
1. A characteristic that enables the system to **compensate for losses** and allows the system to function even when infrastructure is damaged or destroyed (**Battelle, 2007**).
2. The ability for the system to absorb the consequences of disruptions **to reduce the impacts of disruptions** and **maintain freight mobility** (Ta et al.,2009).
3. Resilience also called **reliability** and **risk management** that have many implications for planning in general, and transportation planning in particular.
4. Resilience Transportation is as a **system's ability to function before, during** and **after major disruptions** through reliance upon multiple mobility options.

WHY INDONESIA NEEDS TO ESTABLISH A RESILIENT TRANSPORT

NATURES OF INDONESIA

1. Located in the ring of fire:
 - a. The meeting of three world active lithospheres (Eurasia, Pacific, and Australia);
 - b. 127 volcanoes (13% of the active volcanoes in the world).
2. Frequent natural disasters (weather related and earthquakes that can cause tsunami).

VOLCANOES IN INDONESIA



Source : Ministry of Energy and Human Resources, 2012

TYPES OF VOLCANOES IN INDONESIA

Number of Volcanoes				
Region	Type A	Type B	Type C	Total
Sumatera	13	12	6	31
Jawa	21	9	5	35
Bali	2	-	-	2
Lombok	1	-	-	1
Flores	16	3	5	24
Laut Banda	8	1	-	9
Sulawesi	6	2	5	13
Sangihe islands	5	-	-	5
Halmahera	5	2	-	7
Total	77	29	21	127

VOLCANOES CATEGORY IN INDONESIA

Type A

Volcanoes who ever has magmatic eruption at least once after year 1600 AC

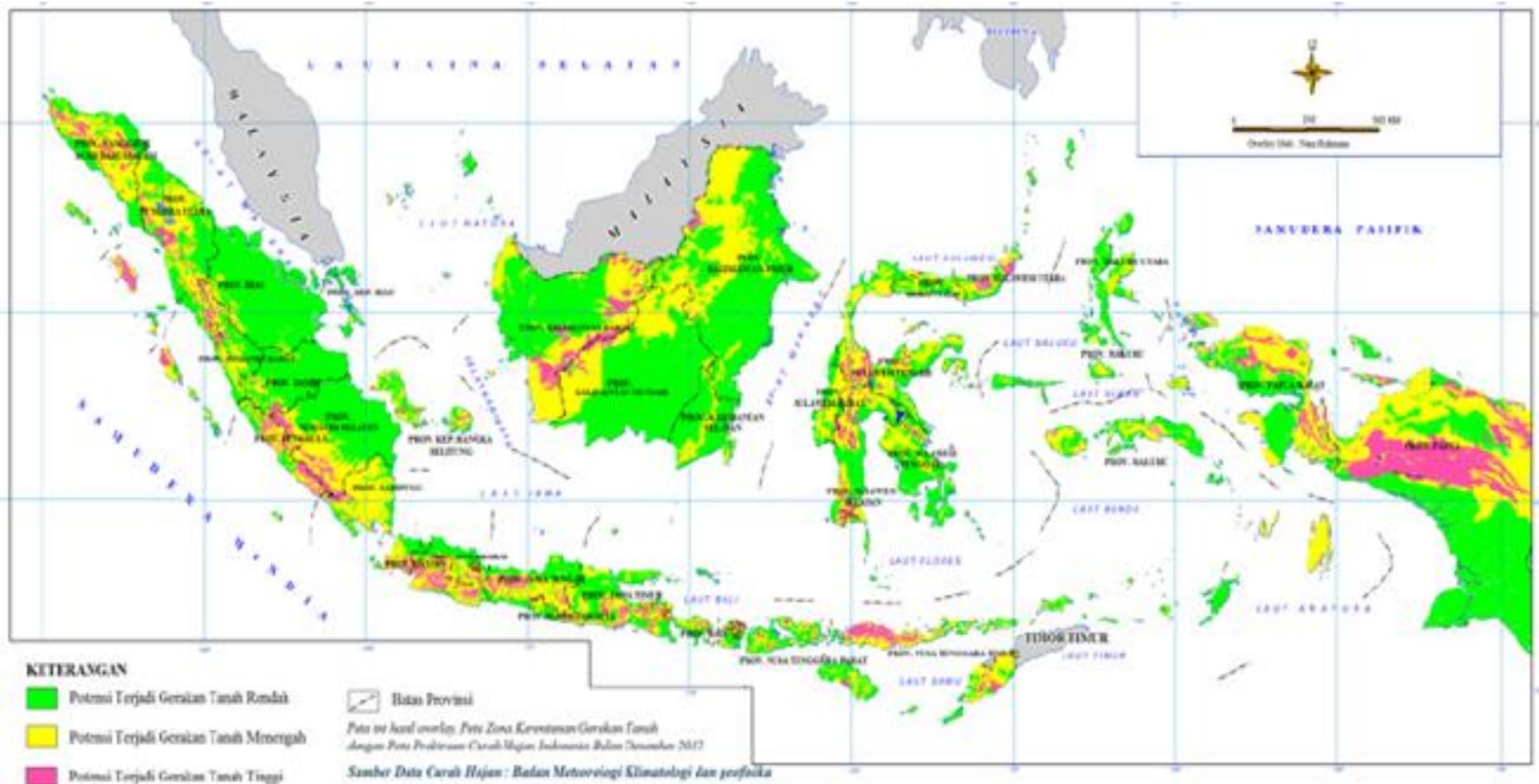
Type B

Volcanoes who after 1600 AC not yet has magmatic eruption, but still appear sympton of volcano action like solfatara

Type C

Volcanoes who the eruption never known in the history, but still has signs of the volcanoes activities in the past like solfatara/fumarola field in the low level.

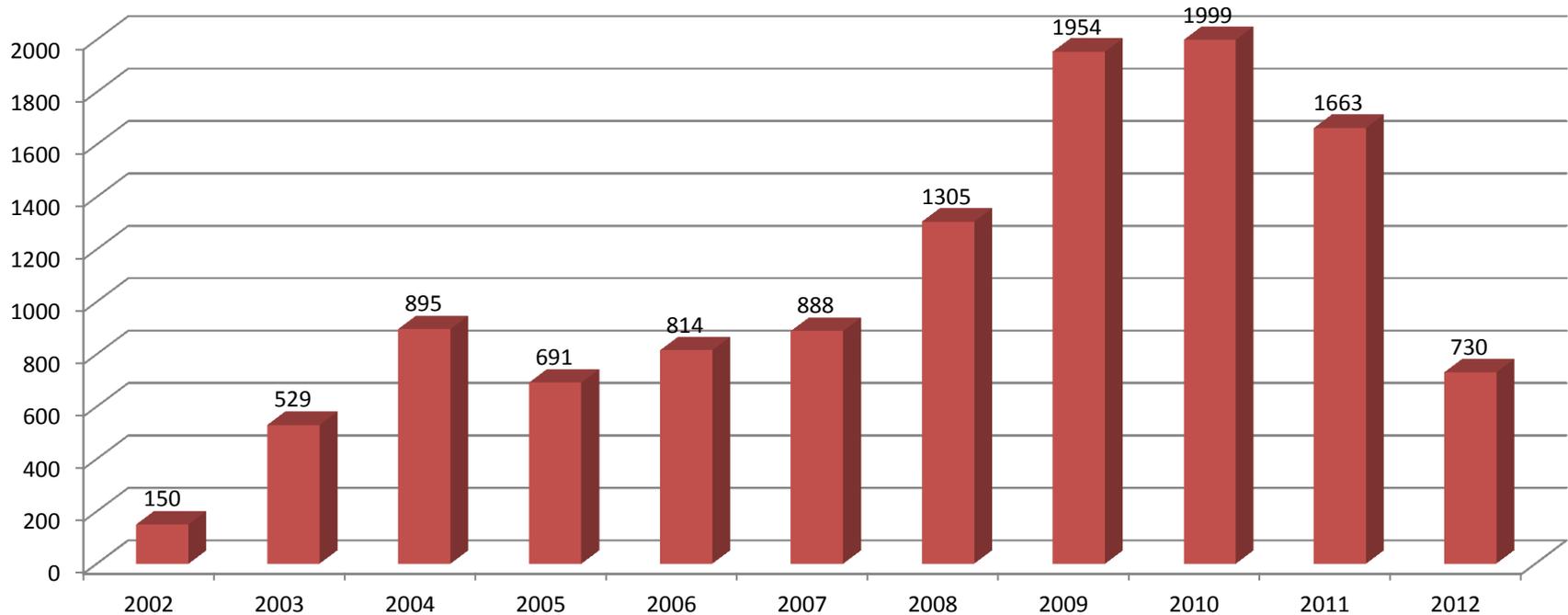
THE PREDICTION OF EARTHQUAKES IN INDONESIA



Source : Ministry of Energy and Human Resources, 2012

FACTS AND PROBLEMS

NATURAL DISASTER OCCURENCE IN INDONESIA



2012: 730 occurrence and **85%** is **hydrometeorology disaster** (flood (193 incident), landslide (138 incident), drought & taifun (259 occurrences) which caused 487 persons died, 675.798 people evacuated/suffered, and 33.847 houses broken (7.891 houses heavy broken, 4.587 medium broken, and 21.369 light broken).

NATURAL DISASTER OCCURENCE IN INDONESIA YEAR 2009

No	Occurence category	Rate of occurence/year
1	Flood	297
2	Drought	156
3	Fire	147
4	Taifun	110
5	Landslide	92
6	Flood and landslide	27
7	Tide waves	17
8	Transportation accident	14
9	Earthquakes	11
10	Fire of forest and fields	10
11	Social conflict/riot	6
12	Volcanoes eruption	4
13	Teror	4
14	Industrial accident	2
15	Earthquake and tsunami	0,25

Flood victims

5.232.081 persons

Total suffered
victims caused by
nature disaster
year 2009 is

5.552.166 persons

Earthquake victims
is **246.594 persons**

RESILIENT TRANSPORT TO DEAL WITH DISASTERS

ULTIMATE GOALS

1. To keep lives alive during emergency situation through:
 - a. providing appropriate medical evacuations and supports;
 - b. deploying skilled personels/volunteers; as well as
 - c. securing supply of stuff/logistics.
2. To bring the life back better by facilitating and supporting rehabilitation and reconstruction process.

TRANSPORT RELATED ACTIONS TO BE TAKEN IN DISASTER TIMES

1. Prepare means, facilities and its supporting.
2. Rehabilitate less destroyed facilities.
3. Facilitate and accommodate any resources, included international communities, to contribute in transportation activities.
4. Provide Human Resources.
5. Based on previous experience for prevention:
 - a. Provide plan for mitigation;
 - b. Undertake drills/excercises;
 - c. Establish social engineering for changing culture.

CROSS INSTITUTION COORDINATION

National Agency for Disaster Management (BNPB) coordinates with other institutions in central-provincial-local levels:

1. Police;
2. National SAR Agency;
3. Indonesian Red Cross;
4. Meteorology and Geology Agency;
5. Ministry of Forestry;
6. Ministry of Health;
7. Ministry of Social;
8. Ministry of Public Works;
9. Ministry of Transportation;
10. Communities, Private , etc.



ROLES OF TRANSPORT SECTOR IN MANAGING NATURAL DISASTER

1. Conduct **coordination** with other institutions in **managing disaster**: National Agency for Disaster Management, National SAR Agency, etc;



ROLES OF TRANSPORT SECTOR IN MANAGING NATURAL DISASTER

2. Prepare means, facilities and supportings to assist mobilization of aids and evacuation of survivals and victims;



ROLES OF TRANSPORT SECTOR IN MANAGING NATURAL DISASTER

3. Provide assistance such as transport equipments for logistic distribution to the disaster areas;
4. Installation of emergency road sign;
5. Distribute foods, evacuee tents, genset, lamps, medicines, etc.



MINISTRY OF TRANSPORTATION DUTIES IN MANAGING DISASTER

1. Conduct early detection and weather/meteorology information as well as planning in transportation and communication requirements;
2. Provide Quick Response Team with duties:
 - a. Prepare personnel to smooth land, sea and air transport flows in managing disaster;
 - b. Prepare needed equipments and supplements;
 - c. Coordinate potential sources of transport enterprises (bus/truck, airline and shipping);
 - d. Conduct monitoring and evaluation.

ACTION CONDUCTED DURING AND AFTER DISASTER

Contingency

Keeping and bringing survivals to a safer and healthier levels as soon as possible by mobilization of available transportation resources and by considering:

1. Area condition;
2. Disaster condition;
3. Condition of Transportation facilities and means;
4. Equipments;
5. Disaster information.

Rehabilitation

Efforts to recover transport facilities and means by considering priorities scales.

Reconstruction

Strengthening the infrastructure development in transportation in natural disaster risky areas.

THANK YOU



Ministry of Transportation
Directorate General of Land Transport

www.dephub.go.id