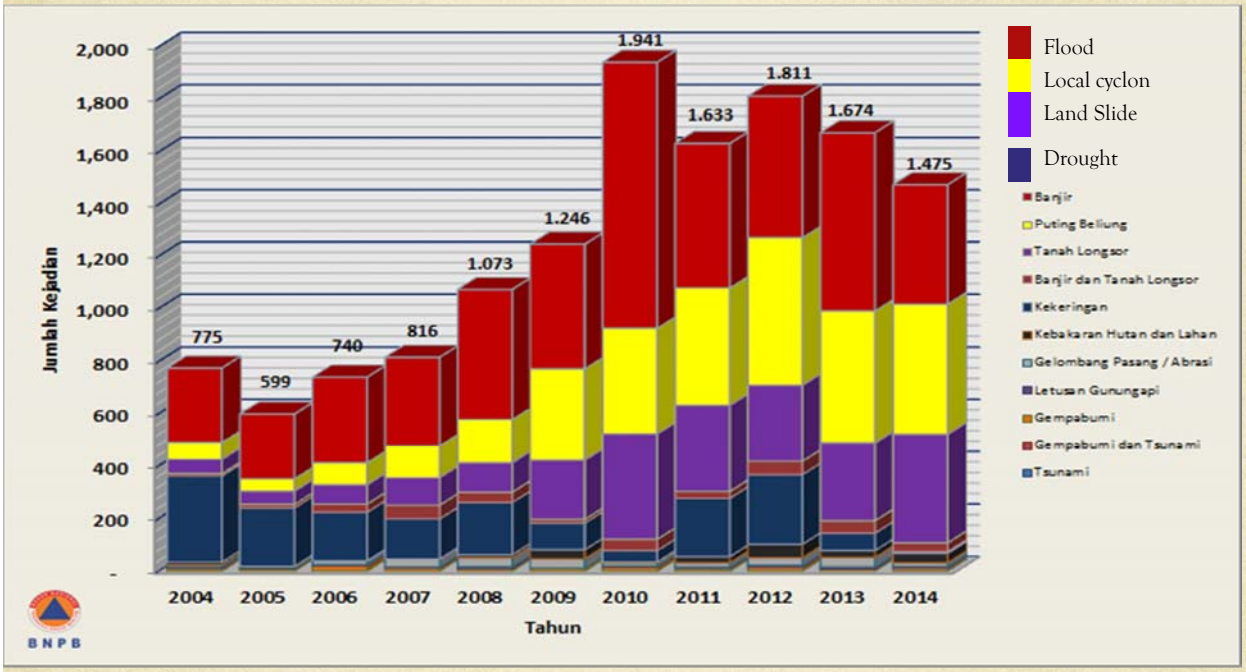
INDONESIA TSUNAMI RISK REDUCTION PLAN

Dody Ruswandi
National Disaster Management Authority (BNPB)

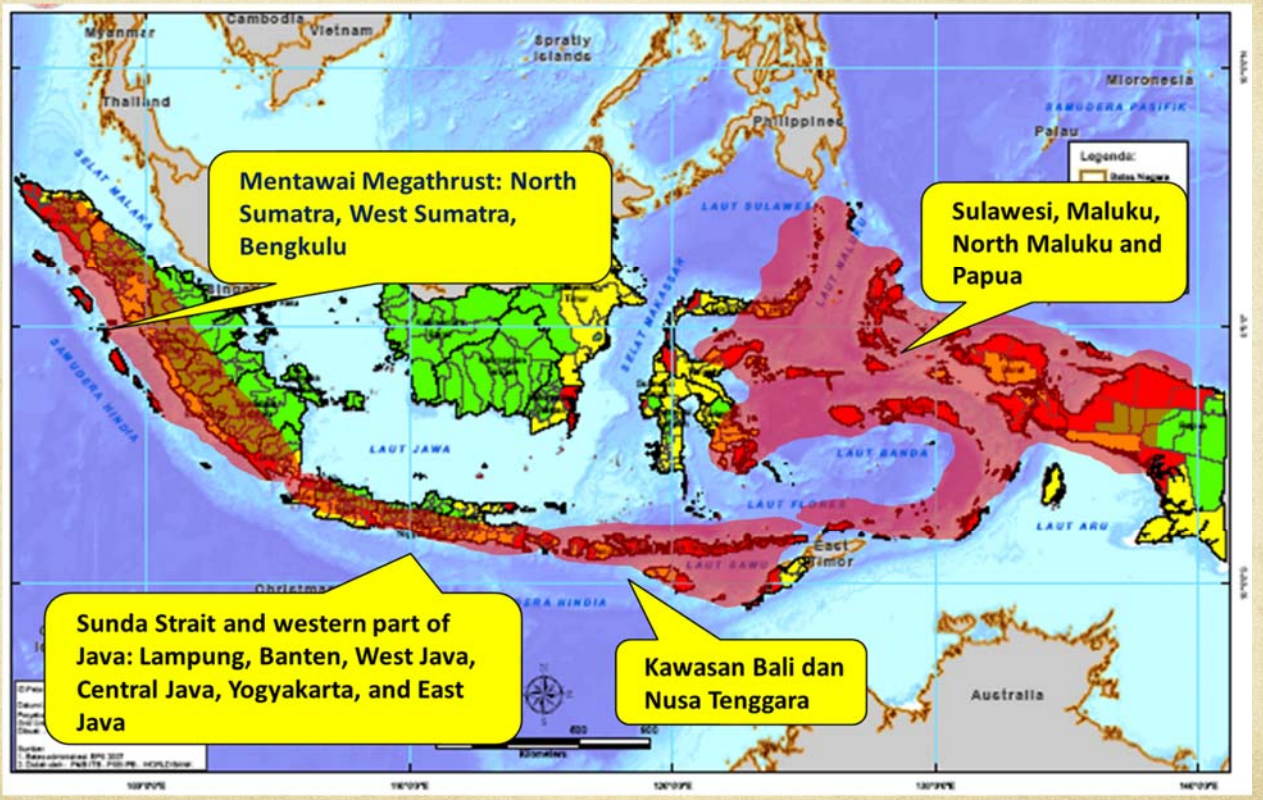
Taipei 27 July 2015

DISASTER OCCURENCES 2005-2014

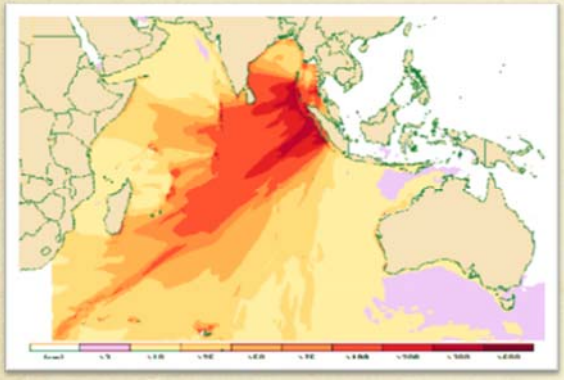


The average incidence of 1.295 events/year. Since 2008 the number of occurrences is more than 1,000 times/year.

TSUNAMI HAZARD MAP



2004 INDIAN OCEAN TSUNAMI AS TURNING POINT.....



- 00:59 UTC, 26 December 2004
- 9.1 magnitude undersea earthquake off the coast of Northern Sumatra, Indonesia near the city of Banda Aceh
- Megathrust, 1300 km rupture, over 12 minutes
- Surface energy = 1500 x Hiroshima atomic bomb

impact

- Loss of over 230,000 lives
- The displacement of over 1.6 million people around the Indian Ocean,
- Environmental Damage
- Psychological trauma
- estimated economic losses of $14 billion.

DISASTER MANAGEMENT LAW 24/2007

1. The role of National and Local Governments;
2. Establishment of BNPB and BPBDs (local disaster management offices);
3. Roles and Responsibility of Community in DM;
4. Roles of Private sectors and International in DM;
5. DM Implementation: pre-disaster, emergency response, and post-disaster;
6. Funding and Relief Assistance Management;
7. Controlling, Monitoring & Evaluation of DM implementation.

National Plan for Disaster Risk Management 2015-2019

NATIONAL PLAN FOR DISASTER RISK MANAGEMENT 2015-2019 "TECHNOCRATIC"

NATIONAL PLAN FOR DISASTER RISK MANAGEMENT 2015-2019 "Final"

IRBI
(results of disaster risk studies)

Action Plans

DISASTER RISK MANAGEMENT

TARGET
The reduction of **disaster risk index** in growth economic centers with high risk potentials

STRATEGIES

1. To internalize disaster risk reduction within sustainable development framework, both in central and local governments;
2. To decrease the disaster vulnerability level;
3. To enhance the capacities of central government, local government and community in disaster management.

GENERAL PROGRAMS
(designed for all types of disaster)

SPECIFIC PROGRAMS
(designed for each type of disaster)

- Master Plan for Tsunami Risk Reduction
- Master Plan for Earthquake Risk Reduction
- Master Plan for Volcanic Risk Reduction
- Master Plan for Flood Risk Reduction
- Master Plan for Landslide Risk Reduction
- Master Plan for Drought Risk Reduction
- Master Plan for ...

2012-2016 in progress

ESTABLISHMENT OF INATEWS 2008..

- InaTEWS stand for Indonesia Tsunami Early Warning System
- Inaugurated on Nov 11,2008
- Produces Earthquake Information and Tsunami Warning
- Required to disseminate eq inform and tsunami Warning within 5 minutes after the earthquake occurred

PUBLIC INFORMATION PROVIDED BY InaTEWS

Earthquake Information,

- 5 minutes after earthquake consists of earthquake parameters (location, origin time, magnitude and depth)

Tsunami Warning Messages

Major Warning, Major, Advisory

MULTIMODE DISSEMINATION

SMS

GSM → SMS
→ CBS (plan)

FACSIMILE

WARNING RECEIVER SYSTEM
241 → 205 one way ; 36 two way

Television
Radio and
media on
line, Loc
DMO

SOCIAL NETWORKs

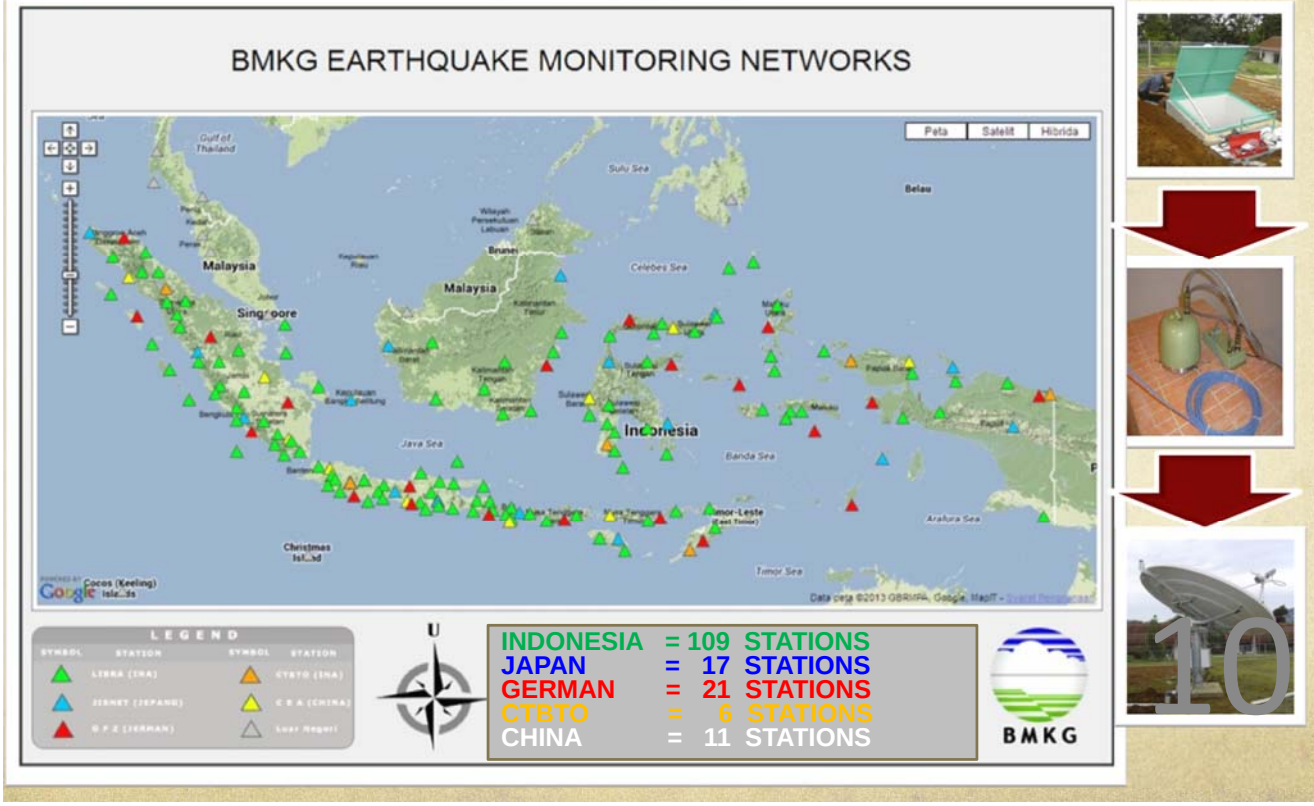
Internet (email, website, social network →Twtter1.600.000 follower, facebook 220.000 followers)

SIRENs

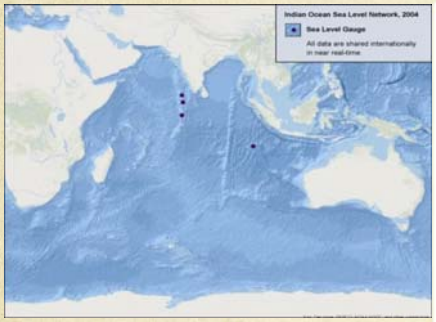
(34 existing 13 plan)

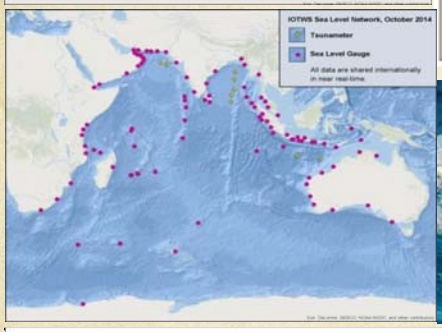
Real Time Seismic monitoring

Seismograph, 164 BB



ACHIEVEMENTS cont..
Real-time Sea Level Monitoring

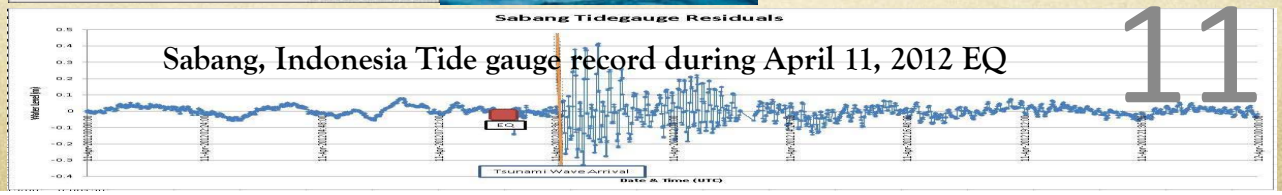




Pre-2004: Only four real-time tide-gauges in the Indian Ocean

Currently : several countries operate real-time Bottom Pressure Recorders and Tide gauge networks

All TSPs and a few NTWCs are capable of monitoring real-time sea-level data (tsunami confirmation within 30-60 min)



11

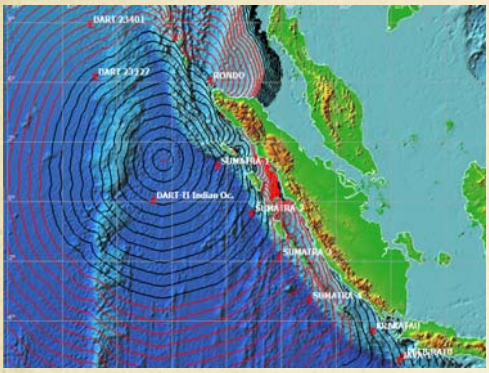
Real-time Sea level Monitoring

Tide Gauges, 58 stations

12

DART-Buoy, 2 buoys (2010)

TSUNAMI DRR PLAN



An 8,5 SR Earthquake occured in Aceh on 11 April 2012

strongly felt in Aceh, & West Sumatra

BACKGROUND

1. Early warning system was not working well when needed (sirens failed to work)
2. Existing Tsunami Evacuation Shelter (TES) was not used by communities
3. Lack of capability in responding to the tsunami hazard both by local government as well as communities at risk;
4. Dependency on non-local early warning product instruments
5. Lack in numbers of required infrastructure i.e. Temporary Evacuation Shelters; EOC; sirenes; communication systems.

BACKGROUND

.

An 8.5 SR earthquake occured in Aceh on 11 April 2012

Lack of Community Preparedness for earhquake and tsunami

Presidential Directive on 16 April 2012 at Breakfast Meeting in Bogor Palace

1. To evaluate the current tsunami early warning system and the mechanism to anticipate the future hazards
2. BNPB with relevant line ministries/agencies to develop the Tsunami Risk Reduction Plan
3. All relevant line ministries/agencies to provide support to BNPB
4. To establish temporary evacuation shelter (TES) during the period of 2013-2014
5. The Tsunami Risk Reduction Plan must be completed within 2 months and should be presented at the Presidential-Cabinet Meeting, and finally approved by The President

PROGRAM PRIORITIES

1. Strengthening the early warning system chain

2. Establishment and enhancement of temporary evacuation shelter

Tsunami DRR Plan
Program Priorities

3. Strengthening preparedness and disaster risk reduction capacities

4. Establishment of self-supporting industries on disaster-related instruments

NATIONAL COORDINATING BOARD FOR TSUNAMI DRR PLAN

Team Coordinator
Secretary General - BNPB

Secretariat for Implementing Coordination
Head of Planning Bureau - BNPB

Program Coordinator I Deputy Chief for Geophysics – National Agency for Meteorology, Climatology and Geophysics	Program Coordinator II Director General of Cipta Karya – Min. Public Works	Program Coordinator II Deputy Chief for Prevention and Preparedness – National Agency for Disaster Management (BNPB)	Program Coordinator IV Deputy Minister for Science and Technology Utilization – Ministry of Research and Technology
Relevant Institutions	**Relevant Institutions**	**Relevant institutions**	**Relevant Institutions**
Data & Information Center and Public Relations - BNPB	Directorate of Building and Environmental Planning - MPW	Directorate of Preparedness - BNPB	Agency for the Assessment and Application of Technology (BPPT), Indonesian Institute of Sciences (LIPI), etc
Provincial Agency for Disaster Management	Directorate of Spatial Planning - MPW	Directorate of Disaster Risk Reduction - BNPB	
District/Municipality Agency for Disaster Management	Directorate of Coastal Management	Directorate of Community Empowerment - BNPB	
	Provincial Agency for Disaster Management	EOC/Data & Information Center and Public Relations - BNPB	
	District/Municipality Agency for Disaster Management	Directorate of Logistics - BNPB	
		Directorate of Equipment - BNPB	
		Education and Training Center - BNPB	
		Provincial Agency for Disaster Management	
		District/Municipality Agency for Disaster Management	

Note:
Each Program Coordinator includes team experts , academica, NGO/CSO, community leaders.

LIST OF ACTIVITIES

No.	Activity	Areas of Implementation	
		# of District/City	# of Provinces
1.	Development of Evacuation Route Map	28	11
2.	Provision of evacuation route map and evacuation steps/stairs	14	6
3.	Evacuation signboards & warning boards	45	10
4.	Socialization & dissemination of Evacuation Shelter	30	10
5.	Resilient Villages Program	15	10
6.	Selection of volunteers groups & strengthening volunteers capacity	15	10
7.	Provision of required logistics & equipment	24	4
8.	Development of EOC	17	4
9.	Installment of community sirens warning with modest technology	21	6
10.	Constructing of Tsunami Evacuation Shelter (TES)	9	7

LIST OF ACTIVITIES

No.	Providing: Regulation/Guidelines/ SOP
1.	Planning evacuation route & evacuation sign board
2.	Development of Tsunami Risk Map at County/City level
3.	Management of Tsunami Evacuation Shelter (TES)
4.	Community-Based Risk Reduction Program to anticipate earthquake & tsunami
5.	Planning for the installation of community-based EWS
6.	Simulation Exercise for Community Preparedness
7.	Integration of DRR into spatial planning
8.	Guidelines of Construction of Tsunami Evacuation Shelters (TES)

LIST OF ACTIVITIES

No.	Conduct Training/Simulation/Exercise
1.	Training of Facilitators for Formulation of DM Planning and Contingency Planning at Village level
2.	Mentawai Megathrust DiREx 2013 (involving 12 Countries)
	• Table Top Exercise
	• Command Post Exercise
	• Field Training Exercise
	• Community Self-Evacuation

TSUNAMI EVACUATION SHELTERS

LOCATIONS CONSTRUCTION PROJECT 2014

: Physical construction on progress, 9 units, 2014
: Cancelled physical construction, 9 unit, 2014
: Detail Engineering Design Phase, 12 units
: Detail Engineering Design Phase, 18 units

TSUNAMI EVACUATION SHELTERS

NATIONAL DISASTER MANAGEMENT AUTHORITY (BNPB)
MINISTRY OF PUBLIC WORK & COMMUNITY HOUSING

Construction of Pilot Project of Evacuation Shelters

Shelter Bangsal, Lombok Utara District, Nusa Tenggaran Barat

TSUNAMI EVACUATION SHELTERS

Location of Evacuation Shelters

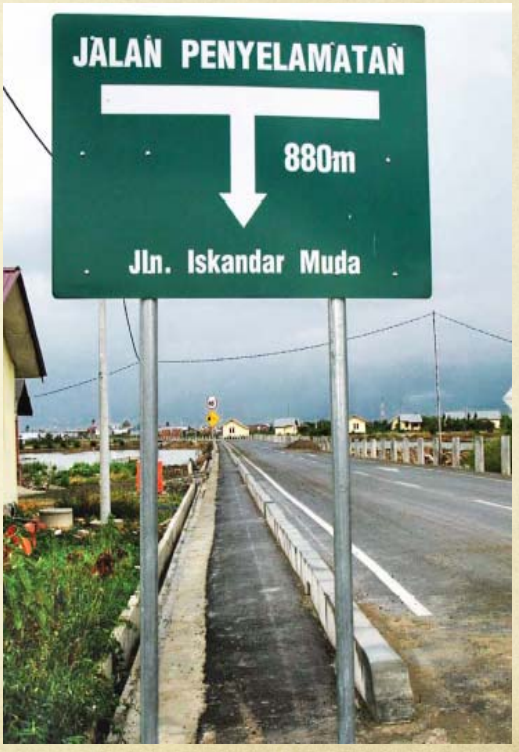
2014 Pilot Project

1. **Shelter Koto Tangah 1,** City of Padang, Province of West Sumatera (0°54'26.4"N, 100°20'54.6"E)
2. **Shelter Koto Tangah 2,** City of Padang, Province of West Sumatera (0°52'51.00"S, 100°20'38.2"E)

3. **Shelter Teluk Sepang**, City of Bengkulu , Province of Bengkulu (3°56'3.90"S, 102°17'15.54"E)
4. **Shelter Rawa Indah**, County of Seluma, Province of Bengkulu (4°11'51.8"S, 102°36'23.9"E)

Future Disaster Risk Reduction Plan

1. Flood Risk Reduction Plan (on-going program)
2. Earthquake Risk Reduction Plan
3. Volcanic Eruption Risk Reduction Plan
4. Forest Fires Risk Reduction Plan
5. Land slide Risk Reduction Plan (process)



Challenges

1. Tsunami is real and existing threats that can struck anytime ,
2. There are 3,5 million people who live in at high risk tsunami prone areas.
3. In most areas, the distance from coastal line to the high ground areas is more than 5 Km , it is not enough to fulfill the minimun response time to evacuate from coastal lines, it needs to construct tsunami evacuation shelters in the areas between 0.5 km up to 1 km from coastal lines
4. Vast coverage areas, including small islands in remote areas with limited access
5. Local Government's lack of resources
6. National resources (e.g., human resource, budget/funding allocation, etc.) outside of MP Tsunami budget are available but scattered in various line ministries/agencies

Economic Advantages

- 1. Properties price has increased and back to normal price . The properties price was drop aftermath of 2009 Sumatera Earthquake. After the completion of such a Evacuation Shelter , currently community feels comfortable and secure and their livelihood is back to normal.
- 2. Families who have moved already to other cities aftermath of 2009 Sumatera Earthquake, now they have come back again to home town, because by having evacuation shelter they feel much more secure and know where to go when the EQ occur.
- By developing such a System ; Integrated cross-sectors Planning, EWS from national to community level, Education/training/regular, community participation from planning phase to implementation phase, the outcome is not only to safe people life but also increase economic growth in the area.

- According to the result of tsunami simulation drill conducted at Evacuation shelter in the City of Padang , the average response time to evacuate to reach to top floor of the nearby evacuation shelter was only 6 minutes, it is still within 10 -15 minutes possible time for tsunami to hit the areas after major EQ occcur, according to tsunami research conducted by ITB.

BNPB RISTEKDIKTI BMKG

THANK YOU

WE NEED YOUR COMMENTS AND SUGGESTIONS

Website : www.bnpb.go.id
Facebook : www.facebook.com/bnpb.indonesia
Twitter : @BNPB_Indonesia