Risk Communication for Disaster Preparedness of Earthquake and Volcanic Eruption

case study: Yogyakarta, Indonesia

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Outline

1. Introduction and Disasters in 2006: Earthquake and Volcanic Eruption
2. Role of Risk Communication
3. Social Vulnerability near Merapi Volcano and Bantul
4. Participatory Approach for Risk Communication
5. From Local to Global: Implication to Yogyakarta Metropolitan Area
6. Future Work

Introduction

Introduction

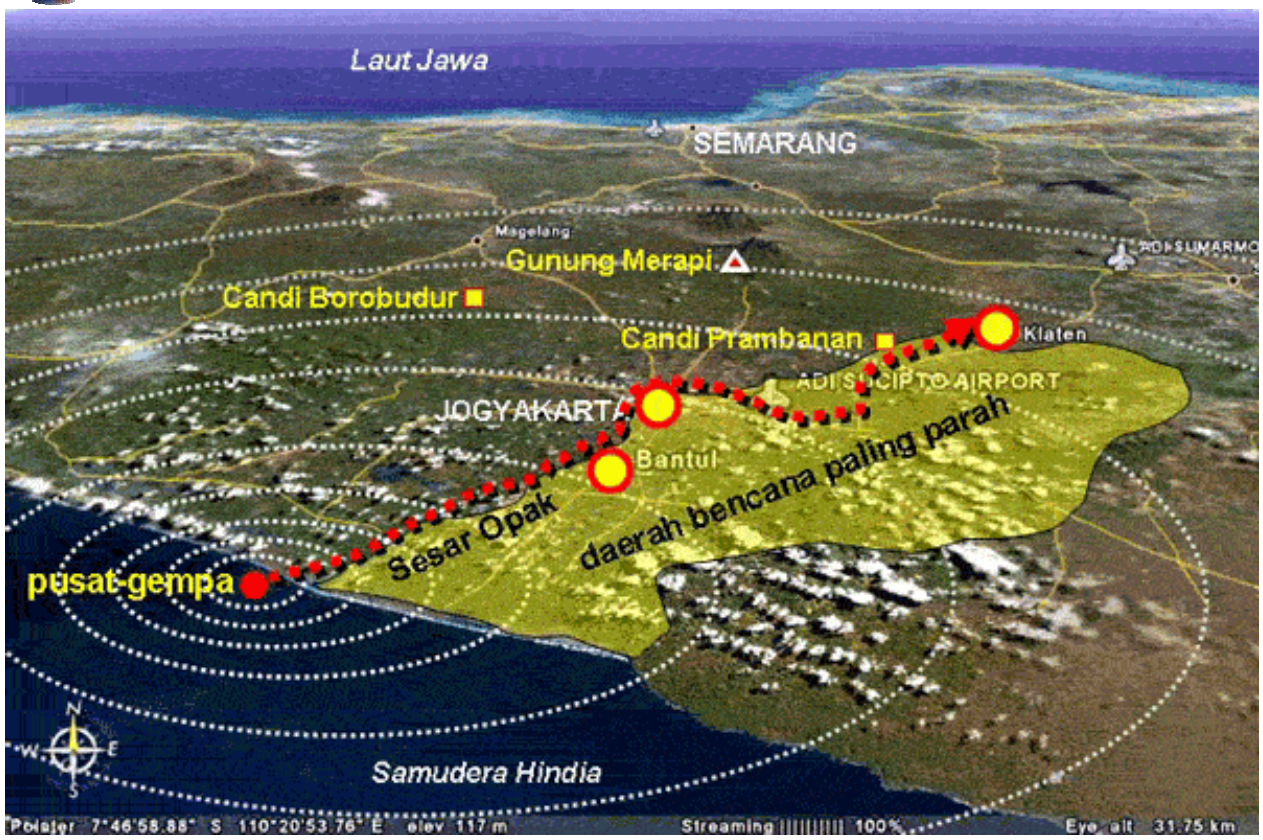
- The uses of risk communication depend enormously on the socio-cultural context of the society and the scale of the community, be it in rural, small city or megacities.
- Adjustments should be made before communicating the risks to the community, i.e.: the language, process to do it, etc
- The problems of risk communication in two case study locations for different type of hazards: earthquake and volcano

Characteristics of the Cities

- In total, about 3 million people living in this conurbation
- High density mainly in Yogyakarta City, as the capital city of Yogyakarta province
- Second place for a tourist destination in Indonesia
- A lot of migration takes place in/out the city: studying, jobs.

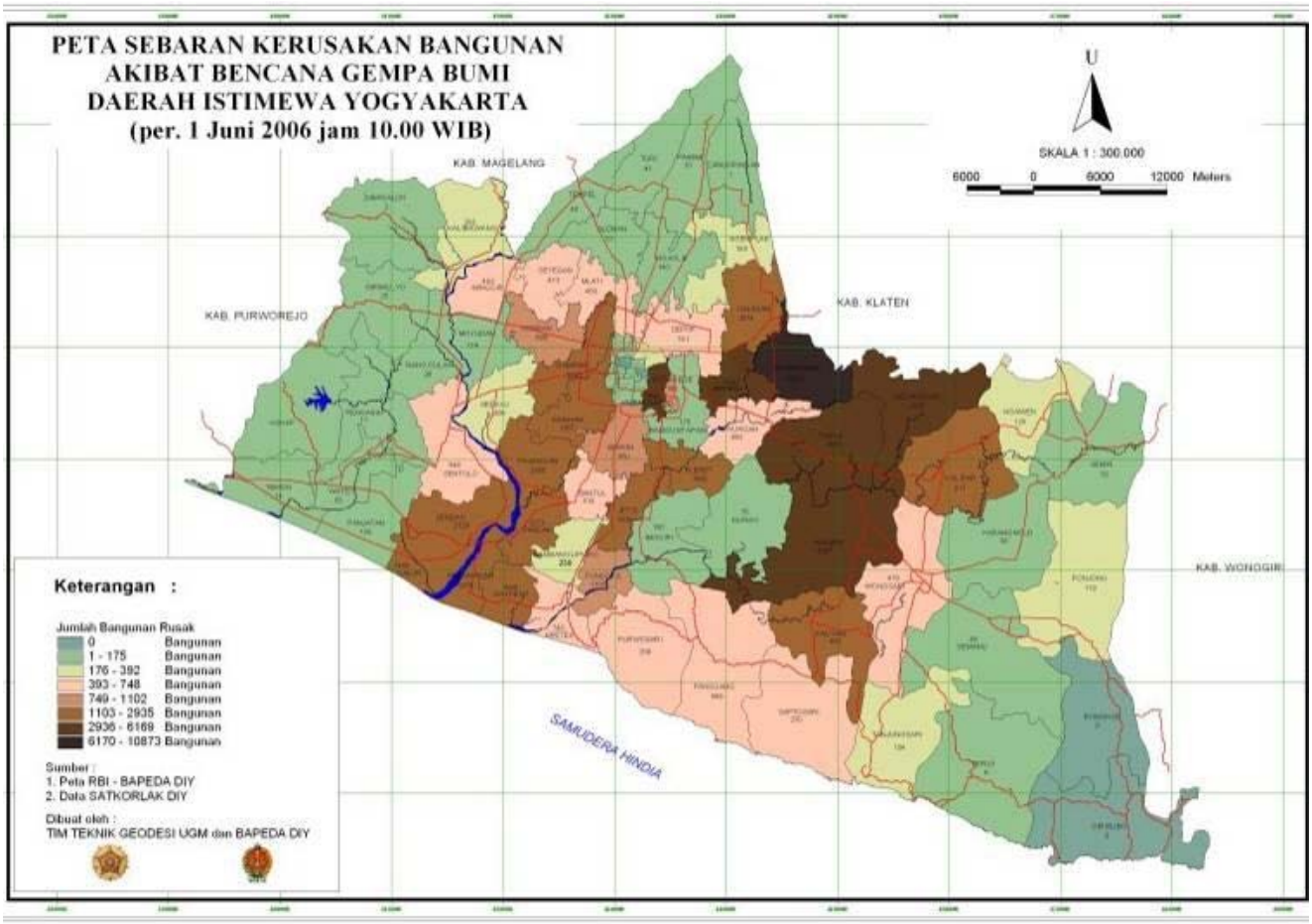
Disasters in 2006

Earthquake – May 27th 2006 on 5:47 am, 5.9 R

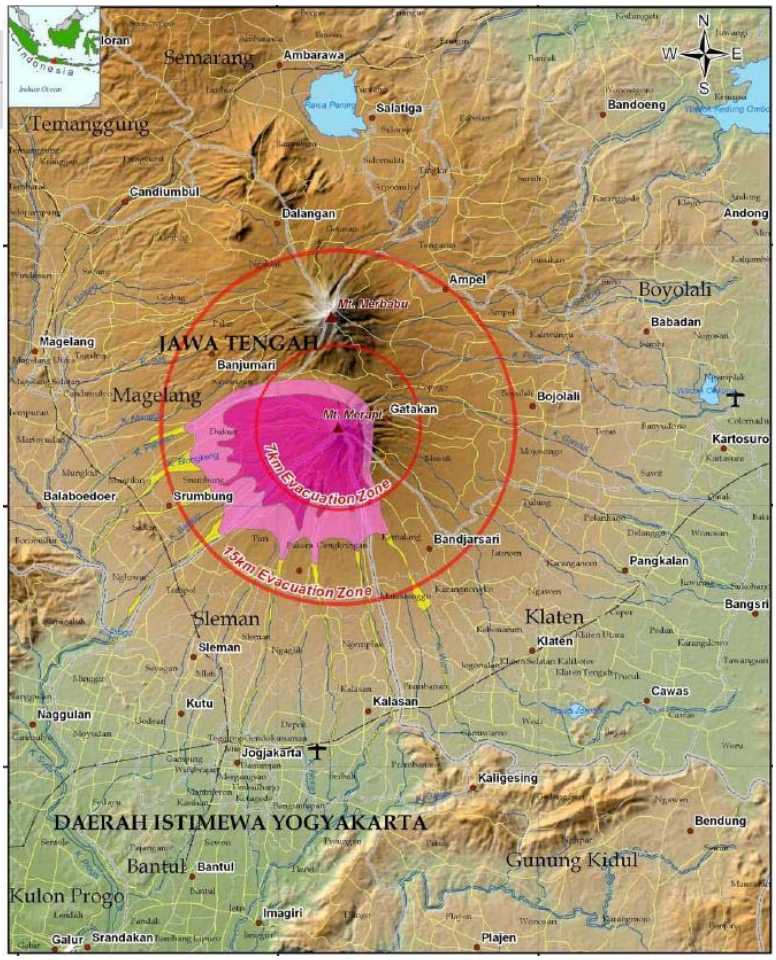


Earthquake – May 27th 2006 on 5:47 am, 5.9 R

- More than 5,000 lost of lives while 37,000 – 50,000 injured
- About hundred thousands of houses were destroyed (200,000 ; 500,000)



- 2965 m, 30 km north of Yogyakarta City
- 1.1 million people (Thouret and Lavigne, 2005)
- Mt Merapi: the most active volcano in the world (Lavigne *et al.*, 2000)
  - 23 major eruptions 1500s - 1990



Source: www.reliefweb.int, 2007

Question

1. Could pre-disaster initiatives, such as risk communication increase disaster awareness and reduce disaster risk?
2. What can action at local level contribute to global level?

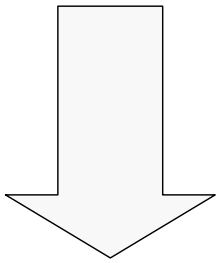
Role of Risk Communication

Risk Communication: Warning

- Warning (Lindel et al 2007):
  - One form of risk communication
  - Risk communication about imminent event
  - Intended to produce appropriate disaster response

Mileti and O'Brien (1992)

- Hear
- Confirm
- Understand
- Belief
- Personalization



- Hear
-
-
-
- Personalization

Long term process

Trust

- Trust is influenced by views and attitudes of the public, authorities and scientists
- Wisner (2003)
  - Trust between individuals
  - Trust between institutions of civil society and formal institution
  - Trust between individuals and organs of government
  - Trust between individuals and NGOs
- Lack of trust to warning by government

Mt Merapi Eruption in 2006

- Took almost two months before it erupted April – May 2006
- Local people's reaction:
  - Some people evacuated, but after waiting some (2000 people) started to return to their places on the slopes of Mt Merapi

    "According to one refugee: the volcano would not get worse, she would rather be home than in a refugee camp / evacuation shelter (BBC, 2006)"
  - Some people did not evacuate!!!

Local Knowledge

- Mr. Marijan, Mt Merapi "Gate Keeper"
- In last Mt Merapi eruption (2006), he insisted to stay at his place and therefore the villagers nearby did not evacuate
- In the end, Mt Merapi did not erupt as adversely as what was predicted by scientists and local authorities
- This local knowledge is failed to be included with existing Warning System

Social Vulnerability

Social Vulnerability

- For the implementation of disaster preparedness, …, a prominent factor in selecting what methods of risk communication.
- Social vulnerability is the product of social inequalities and is defined as the susceptibility of social groups to the impacts of hazards, … (Cutter and Emrich, 2006)

Social Vulnerability issues in Merapi Volcano

- *My husband needs to daily commute from the evacuation shelter to our house because he needs to look after our belongings. Therefore we must spend money for his travel to come here and return home again (Kompas, 2006a).*
- *During the evacuation the living costs become very high. Therefore, we decide to come back home despite the government has told us to stay (Kompas, 2006a).*
- *We leave the place because we are bored of the foods. If the volcano would erupt, let it erupt because if it erupts we can stay home safe (BBC, 2006).*

Social Vulnerability (Warner 2007)

- People
- Complex System
- Considering Non-structural Solutions

Question

1. *Could pre-disaster initiatives, such as risk communication increase disaster awareness and reduce disaster risk in Yogyakarta?*

- Yes / No
- Earthquake: 'difficult' → rare event and no historical record and would be costly and there was no belief
- Volcano: yes people were aware but 'difficult' → conflict between the community and local government during evacuation process

Question

2. *What can action at local level contribute to global level?*

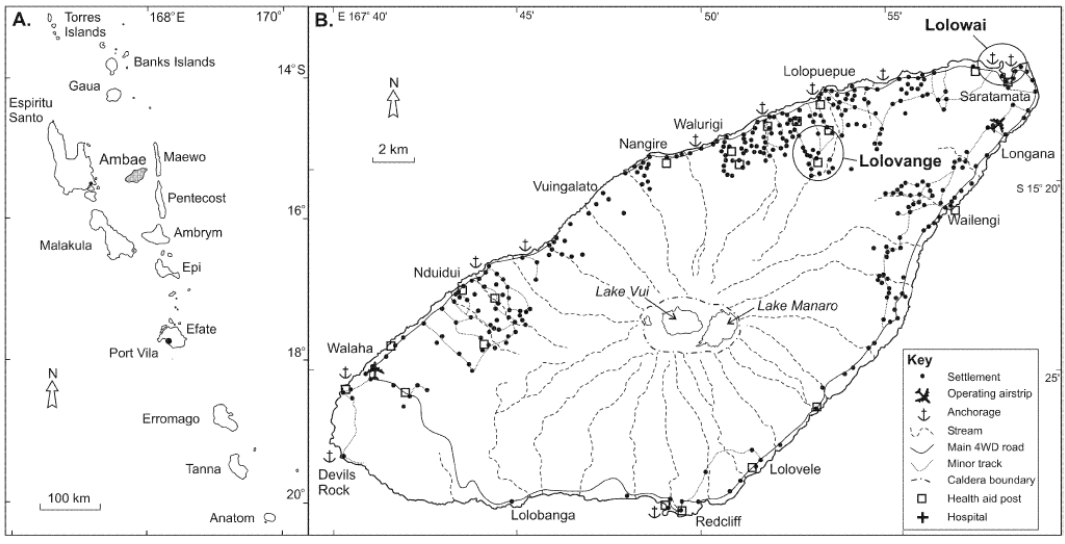
It is important to consider what individuals do in both small and mega cities (Cross 2001)

Education on disaster preparedness should start from individual

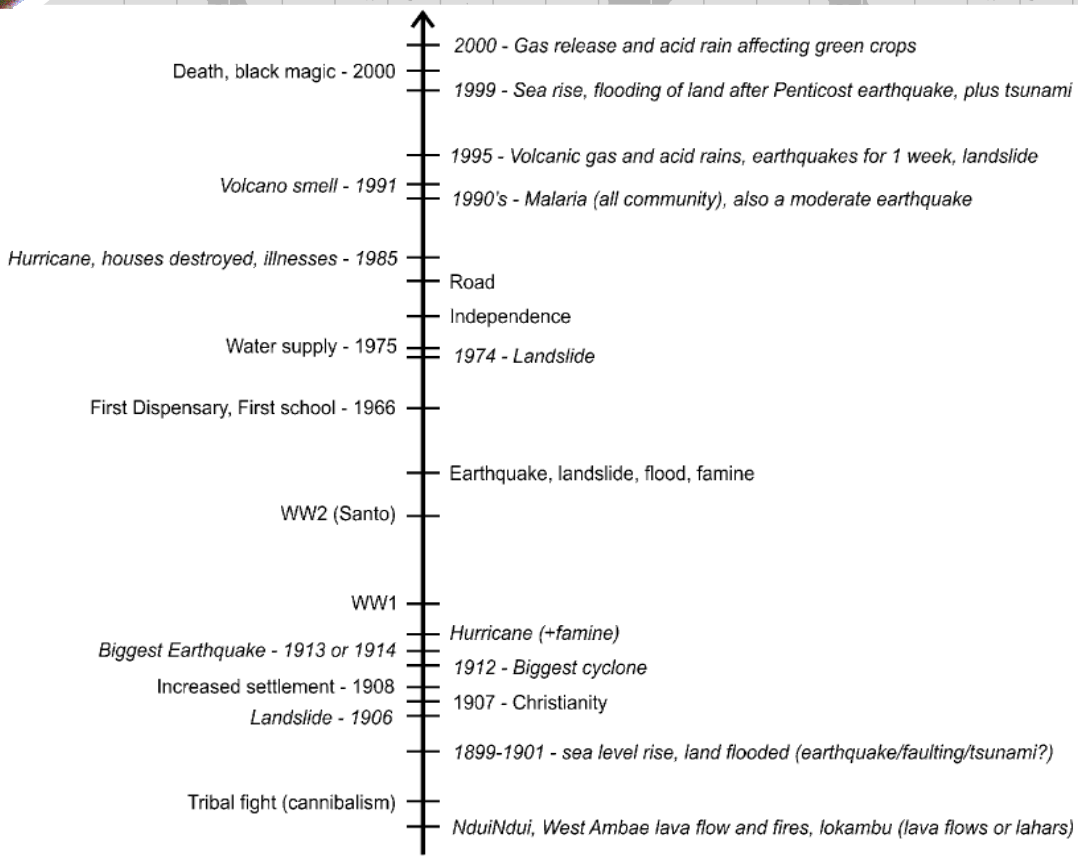
Participatory Approach for Risk Communication

Participatory Approach

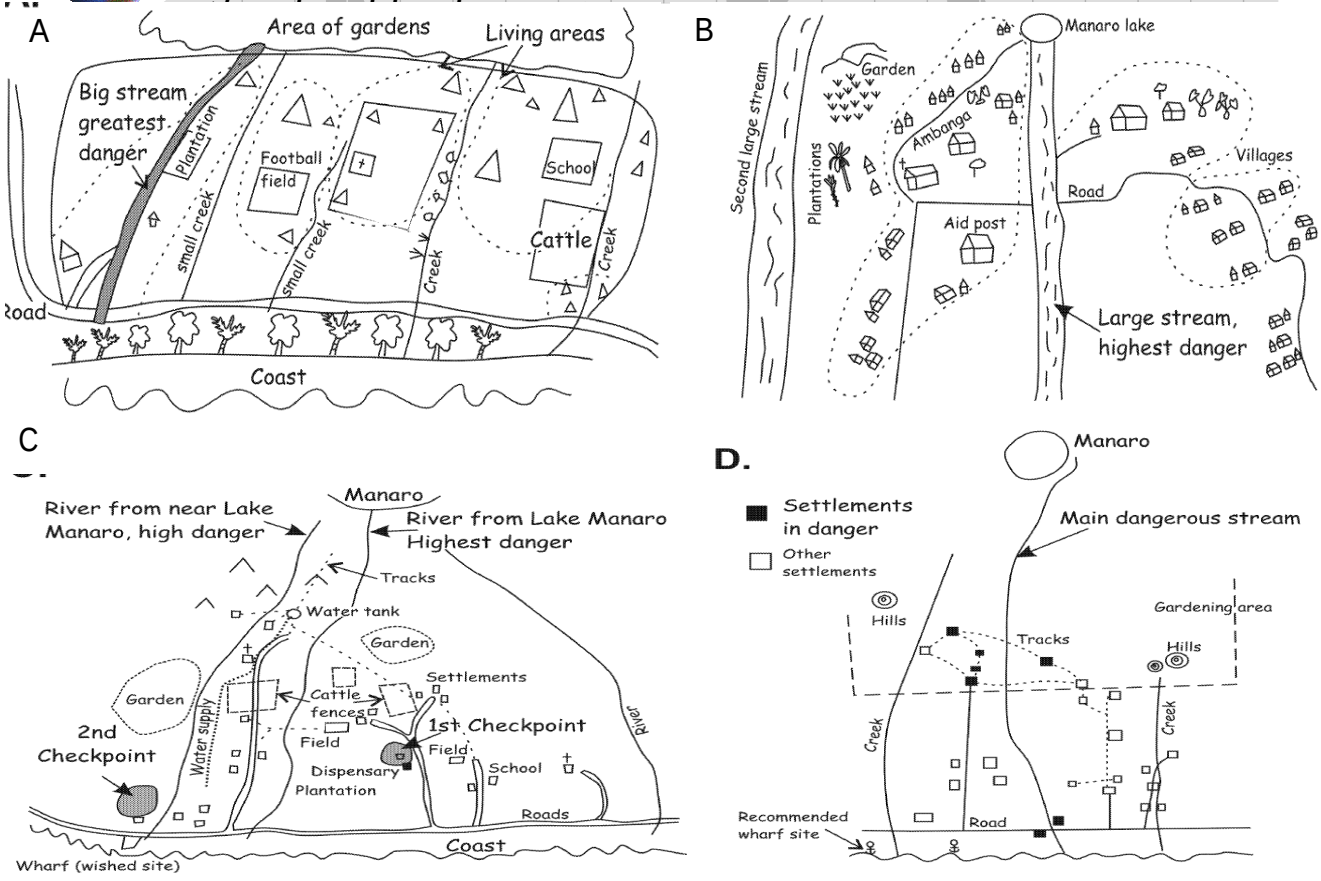
- Cronin et al 2004 provide an example use of participatory approach (PRA) as a risk communication
- Together with local people in Ambae Island, Republic of Vanuatu, Pacific Islands, they revised the ‘old’ evacuation plan



Summary History of Major Events (Cronin et al., *2004)*



Four maps of disaster Lolovange area made by four groups of people



For Earthquake

- Make use of indirect disaster experience
- Participatory approach is to make people prepared on possible disasters
- Example:
  - Community diagnosis approach (Matsuda and Okada 2007)

From Local to Global: Implication to Yogyakarta Metropolitan Area

From local to global

- It is clear that Yogyakarta Metropolitan Area: Yogyakarta, Bantul, Sleman, Magelang and Klaten are prone to natural disasters: Volcanic Eruption and Earthquake
- The participatory approach (may) work at larger level.
- How to extend the approach at larger level?
- Promote risk awareness to the city

Future Work

Future Work

- Inquire more information on social vulnerability from the study area
- Measure the earthquake and volcanic disaster preparedness: interview key persons, questionnaires and focus group discussion (Paton, 2003)
- Conduct participatory rural appraisal as a means of risk communication (cooperation with a local NGO)
- Analysis: to relate social vulnerability with risk communication

Thank you for your kind attention!