

OUR EXPERIENCE

Warnings from Nature versus Technology-based Warnings Response Strategies Need to Integrate Both

INTRODUCTION

Many people could have survived the Aceh Tsunami if they had not been taken by complete surprise. Currently, most people understand that after a strong earthquake a tsunami might follow and, if the seawater recedes further than usual, a tsunami is imminent. Another consequence of the catastrophe in 2004 was the decision to establish tsunami early warning systems in the Indian Ocean, including InaTEWS for Indonesia. However, there was doubt whether a warning system would be useful for communities at risk from local tsunamis with very short wave arrival times of sometimes only 20-30 minutes – and thus, very little time for official alerts.

LEARNING FROM PILOT AREA PADANG

In 2005, Tsunami Alert Community (KOGAMI), a local NGO, started to advocate for tsunami preparedness. As, at that time, no local institutional capacities for a public warning service in Padang were in place and InaTEWS was still in its initial phase of development, KOGAMI decided to build its response strategy on natural warning signs, i.e. ground shaking. In the following years, Padang suffered several strong earthquakes, which due to their location (in the sea, but too far south from Padang or on land in the Sumatran fault line) or depth (> 70 km) did not pose a tsunami threat, but caused considerable panic and chaos in the city as people fled coastal areas. The urgent need to know – at an early stage – whether an earthquake has the potential to generate a tsunami became apparent. Meanwhile, National Agency for Meteorology, Climatology and Geophysics (BMKG) established a reliable tsunami warning service capable of issuing warnings within five minutes of an earthquake and, as one of the GITEWS Pilot Areas, Padang started to develop tsunami early warning mechanism for the city. With support from GTZ IS-GITEWS, the partners developed procedures and technical solutions for decision-making and warning dissemination. A temporary local emergency operation centre was equipped and activated. In early 2009, the city inaugurated its disaster management agency (BPBD) and its operations control centre for early warning.

Case studies on the earthquake experiences in Padang in September 2007 and September 2009 revealed that only a part of the population in the risk areas decided to evacuate after the ground shaking. It seemed, that People need additional information that can reinforce appropriate responses. On the other hand, the results also showed the difficulties in getting warning and guidance to the public in the immediate aftermath of a strong earthquake.



Discussion on Response Strategy in Padang



Case Studies on Earthquake Experiences in Padang

As a result of intense discussions and an exchange of ideas, the stakeholders in Padang developed a proposal for a response strategy, which builds on natural warning signs, as well as warnings from BMKG and the city authorities. This strategy follows a simple logic: a tremor from an earthquake provides an initial warning about the possibility of a tsunami. People should move away from the coast and riverbanks right away and search for information. Official warnings from the National Tsunami

Warning Centre (NTWC), broadcasted by TV and radio stations, and guidance from local authorities will reinforce evacuation if the earthquake has the potential to cause a tsunami or cancel evacuation if this is not the case. If the ground shaking is strong and long lasting, people should not wait for an official warning, but should evacuate to a safe place immediately. Also, people must not wait for the seawater to retreat or other natural warning signs that confirm the arrival of tsunami waves. If, however, a community neither feels the earthquake nor receives an official warning, they should be aware that an immediate response to these signs provides the last chance to escape.

Ultimately, the question is not whether the response strategy for local tsunamis in Indonesia relies on either natural warnings or on technology-based warnings, but to integrate both into one consistent approach that makes use of all available information. The above strategy does this and acknowledges the limited time for warning and evacuation. It also takes into account concerns that the warning service might fail and is based on the principal understanding that dealing with natural, as well as technology-based, warnings of local tsunamis means dealing with uncertainty.

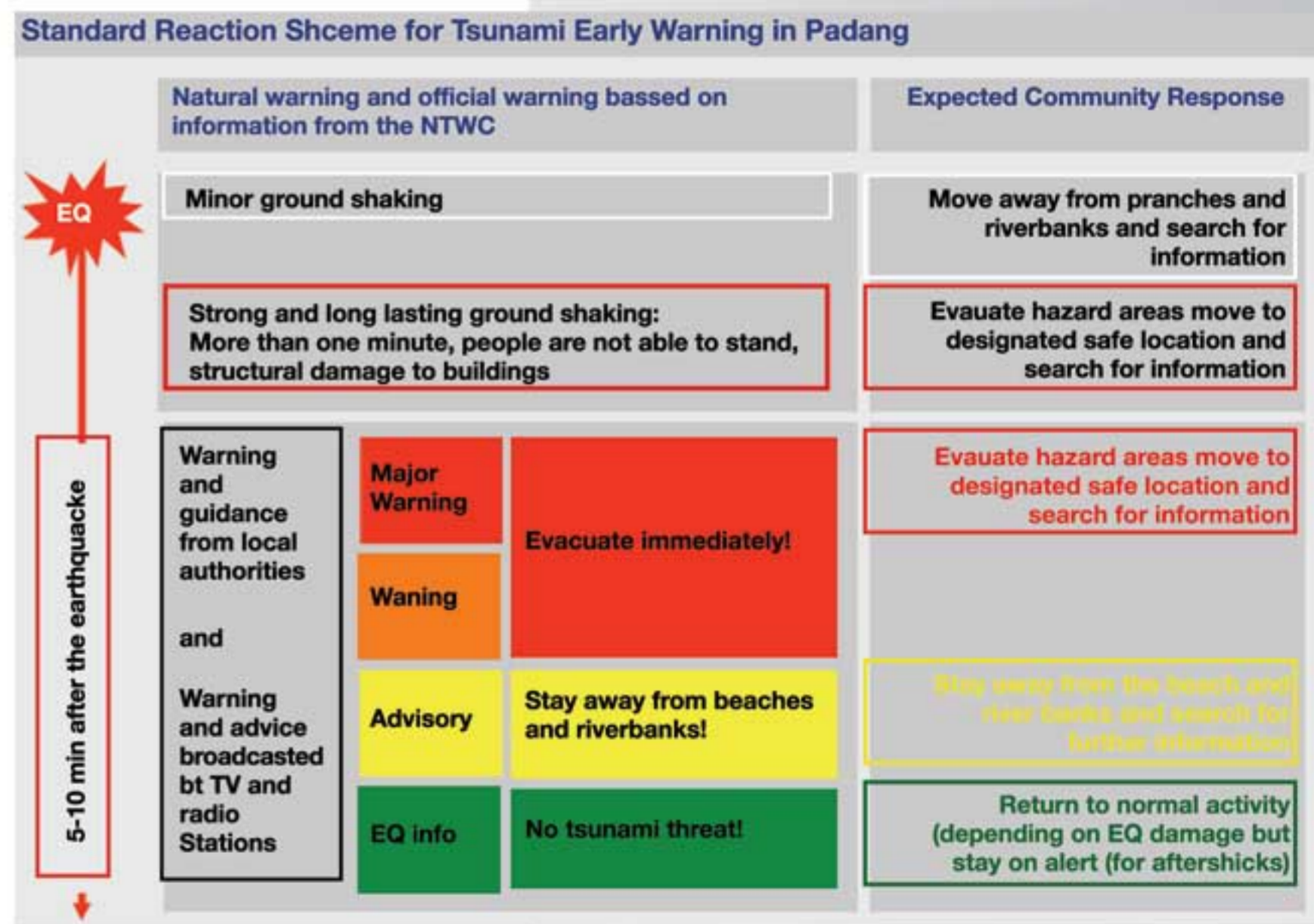


Guideline on the Tsunami Early Warning Service of InaTEWS

CONCLUSIONS

The Mayor's Decree on the Implementation of Tsunami Early Warning in Padang (signed in April 2010) officially approved the response strategy, which is fully in line with experiences from the other GITEWS pilot areas and is believed to serve as a model for other tsunami prone communities in Indonesia. It will be included in the Guideline on the Tsunami Early Warning Services of InaTEWS as a "standard strategy for response to local tsunamis in Indonesia".

There are, however, tsunami prone areas in Indonesia that are an exception to this standard, i.e., the islands west of Sumatra, located directly above the tectonic collision zone, with tsunami arrival times of less than five minutes after an earthquake – too quick for warnings from BMKG. People here have been living with earthquakes and tsunamis since the first settlers set foot on these islands. They have learned from experience and passed on the knowledge of natural warning signs from generation to generation, and saved many people during the tsunami in 2004, thus providing an important lesson for everyone.



Reaction Scheme for TEW in Padang

Author:
 Michael Hoppe
 michael.hoppe@gtz.de
 Willy Wicaksono
 willy.wicaksono@gtz.de
 Harald Spahn
 harald.spahn@gtz.de

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GTZ Office Jakarta
 Menara BCA 46th Floor
 Jl. M.H. Thamrin No.1
 Jakarta 10310
 T: +62-21-2358 7111
 F: +62-21-2358 7110
 E: gtz-indonesien@gtz.de
 I: www.gtz.de/indonesia

Further information:
www.gitews.org/tsunami-kit
 KOGAMI:
www.kogami.or.id
 BPBD Padang:
bpbd.padang@gmail.com
 GITEWS: www.gitews.org