
Community-Based Landslide Watch Network in Thailand

Thailand

1. Background:

Thailand is located in a tropical monsoon zone. It covers an area of 513,115 km² and has a population of 65 million. Thailand is comprised of 76 provinces and is geographically divided into 5 regions: Northern, Northeastern, Central, Eastern and Southern. The Northern, Southern and Eastern Regions are predominantly high mountainous areas while the Central Region is mainly lowlands with high mountains on its western border. The Northeastern Region is a high plateau with mountains on its southern and northern borders.

From historical data, landslide disasters have usually occurred in the Northern and Southern Regions. A landslide disaster occurred in Katoon, Nakhon Si Thammarat Province in 1988, killing and injuring 230 people and damaging a lot of houses, infrastructure facilities, and agricultural crops. The total cost of damages was estimated around 1 billion Baht (US\$25 million). Then there were no landslides for 12 years from 1989 to 1999. After that, there were landslides and flash floods in Phetchabun Province in 2000 and in Phrae and Phetchabun Provinces in 2001, followed by nearly annual occurrences since then.

The Department of Mineral Resources (DMR) realized that landslides would cause a lot of problems in the future, so it undertook several research and study projects on landslides. In addition, DMR established community-based landslide watch networks, including local networks, and a landslide monitoring center called as the Geohazards Operation Center in Bangkok. Presently DMR utilizes the center as the contact point to coordinate with the networks and relevant agencies.

2. Objectives

Landslides are natural hazards that cannot be prevented, and they generally happen in remote mountainous areas far from help. In such areas, and in bad weather, communication often breaks down and road access may be cut off, making it impossible for government agencies to help local people. The best way to solve the problem is to improve the self-protection capability and landslide awareness and knowledge of the people in vulnerable areas.

3. Network Establishment

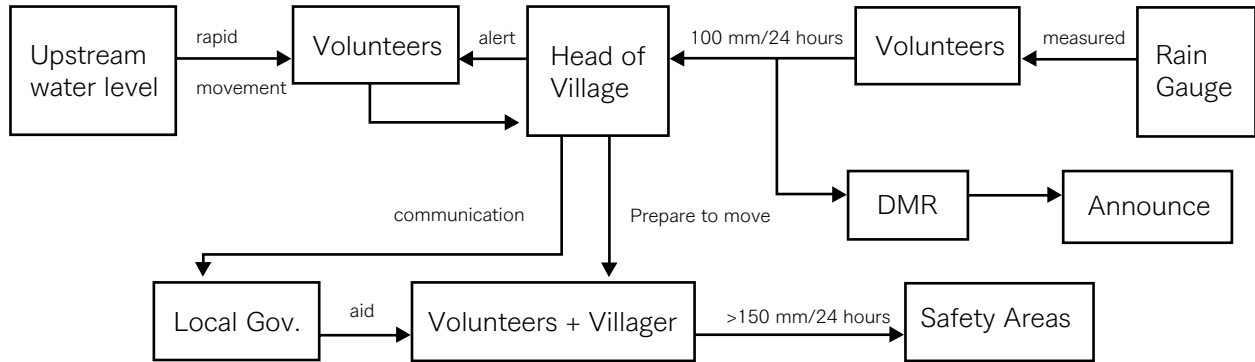
To establish a network, DMR personnel talk to local communities, especially the heads of villages. They explain landslide hazards in the surrounding area and point out evidence of past landslides, such as big boulders, landslide deposits and signs of flooding. Then the DMR personnel will ask the head of a village to choose 6 – 9 villagers who will volunteer to participate in training. Normally, the training is organized for groups of villages which are located in the same catchment area. The volunteers are trained by DMR personnel and learn about landslide behavior and how to use a rain gauge. They are also taught about signs of potential landslides and how to recognize them. Then an observation site, or check point, is selected by the DMR personnel and volunteers. Ideally, the check point should be located on a hill near a stream or river flowing to the village so that the volunteers can observe the water level and debris. When they hear a rumbling sound from the mountains or notice a rapid change in the water level, they send signals to warn the people in their village and other downstream villages. In the training course, evacuation routes and assembly areas for each village are also worked out.

In conjunction with local warning networks in landslide risk areas, DMR established the Geohazards Operation Center in Bangkok and in the central part of Thailand. The center is a national facility and is mainly responsible for monitoring landslides and coordinating with the local networks.

When a heavy rain is confirmed or the estimated rainfall is higher than 100 mm/day and it is still raining, the center will disseminate watch bulletins. The bulletins are also issued in special cases when a tropical

cyclone is approaching. Usually, 60 bulletins/year are sent by facsimile to television and radio stations as well as relevant agencies. Recently, the networks in risk areas have started providing information by telephone and Short Message Service (SMS) via mobile phone. After they receive the information, the local networks will man their check points to watch for signs of landslides and prepare to issue warnings.

Warning Network Flowchart



The local networks can also phone the center to get information about the weather or to report landslide and flash-flood information. Because of the importance of this information, the center distributes it to other networks and uploads it to the DMR Website.

4. Achievements

The first local network was established in 2003. In all of Thailand, there are presently 8,536 volunteers working in networks linking 1,092 communities or villages in 22 provinces. Due to the good performance of the networks, DMR has strong support from the Thai government to establish local networks in the other 29 provinces. DMR also arranges workshops to upgrade all networks every year, and to keep in touch with local communities and inform them about new technologies and to re-encourage them. In 2007, DMR established networks in 12 of the provinces that were not on networks.

6. Conclusion

To mitigate the impact of landslides, DMR establishes community-based watch networks, which include local warning networks and the Geohazards Operation Center. The local watch networks use village volunteers working as guards at check points to observe signs of landslides. They are only on duty when heavy rain is approaching or they are receiving landslide watch information from DMR. They were trained to have knowledge of landslide behavior and warning and evacuation procedures. They were also trained to measure rainfall and how to coordinate with DMR. To maintain the networks, DMR plans to upgrade them every year. Local villages and communities can therefore play important roles in the landslide watch networks for their own safety and that of others.

7. Contact Details

Geohazards Operation Center
 Environmental Geology Division
 Department of Mineral Resources
 Rama VI Road, Bangkok 10400, THAILAND
 Tel: 662 621 9701-05 Fax: 662 621 9700 Website: www.dmr.go.th