



CABARET BRIEFING PAPER

Developing capacity for multi-hazard early warning to improve coastal resilience in Myanmar

1. Summary

Myanmar coastal area is exposed to disaster such as cyclone, storm surge, flood and Tsunami. Since Indian Ocean Tsunami (2004) and Cyclone Nargis (2008), people become well aware of natural disaster and pay attention on MHEW. Myanmar is making many efforts to improve MHEW and coastal community resilience in align with global initiative. Regional cooperation works are also found in this context. However, implementation and practicing of existing law and orders are varies based on the local context. Coordination between related ministries is weak. Participation of higher education institutions in MHEW is still low.

2. Policy messages

To establish effective MHEW system and coastal community resilience, it is needed:

- to upgrade hazard forecasting equipment and technology,
- to upgrade hazard information dissemination channels by using modern technology,
- to widely give awareness to the public,
- to reinforce existing infrastructures of coastal area and
- to establish insurance system and post disaster recovering funding.



3. Introduction

Myanmar is high vulnerability to natural disasters that results from its unique geographic location and geomorphology. Myanmar borders the Bay of Bengal to the southwest and the Gulf of Martaban and the Andaman Sea along its southern periphery. The country's extensive coastline of about 1,930 km (1,990 mi) and its extensive lowland areas make it particularly vulnerable to all types of marine terrestrial disaster.

Department of Hydrology and Meteorology is mainly responsible for gathering of information, analysis and forecasting of hazards for Myanmar. Dissemination of this information to the end user was carried out by General Administration Department through its wide range of network. Myanmar has been actively considered and followed the guideline and agreements laid down by the Sendai Framework, Paris Climate Change Agreement and Sustainable Development Goals in establishment of the MEHW. Government laid down policies and enacted laws and orders in accordance with above global initiative frameworks for coastal community resilience. However, its implementation is weak and effectiveness is difference based on the region and previous experience of disaster.

Hazard assessment efforts are still in the early stage of development and it is necessary to use advanced technologies in data collection and investigation, need to update assessment methods and get experiences on hazard assessment. University plays an important role for giving awareness to the public, nurturing scientist and conducting of MHEW related research. Although the roles and responsibilities of universities are clearly mentioned in the existing law and regulations, actual implementation is still very weak in practice.

For successful establishment of an early warning system in Myanmar, proper arrangements need to be made at national and sub-national levels down to grass-root level not just only in transmission of warnings but also in capturing the timely hazard information. A comprehensive early warning system should consist of four key elements: (1) prior knowledge of the risks, (2) presence of a monitoring and warning service, (3) multi-layer information dissemination system, and (4) capacity to take timely actions. In that case Higher Education Institution could play an important role by means of its human resource, knowledge, and international collaboration networks.

Current national effort to the multi-hazard early warning system is ongoing process and needs to develop further by using advanced technology. National capability is needed to build for the development of MHEW and local communities should get a quick access to the related information in a real time. The following steps need to be done for establishing the Multi-hazard Early Warning Systems such as upgrading of existing early warning centers, improvement of multi-hazard end-to-end early warning dissemination system, improvement of metrological observation and forecasting, enhanced flood monitoring and forecasting capacities at township level, and all the monitoring systems.

4. The body of the briefing paper

Over the decade, Myanmar has suffered from cyclones, floods, earthquakes, and landslides. Especially the coastal regions of the country are mostly affected by storm and its associated hazards. Among the cyclones, Cyclone Nargis, the most devastating hazard event occurred in 2008, significantly damaged to a lot of lives and properties especially in the Ayeyarwady delta region. More than 80000 people died and thousands of families in Ayeyarwady coastal area were homeless due to Cyclone Nargis (UNHABITAT, n.d.). In 2010, the Cyclone Giri passed through Rakhine State in southwestern part of Myanmar. As a consequence, more than 259 people lost their lives and approximately 1 million people were affected. In 2015, Cyclone Komen hit also the Rakhine Coast in the southwest of Myanmar. The country also faced damage and loses of property and infrastructures due to Cyclone Komen in 2015. In 2016, Cyclone Roanu passed through southwestern states of Myanmar. It had caused several damages of homes in Chin State due to landslides (European Union, 2015). In 2017, Cyclone Mora also hit particularly the northern Rakhine State and over 3000 households were affected (International Federation of Red Cross and Red Crescent Society, 2017). The second most occurrence of hazard in Myanmar is flood. Most of the Ayeyarwady delta area and coastal region are always affected by riverine flood. In July 2015, Cyclone Komen caused severe floods and landslides across 12 of the country's 14 states and regions (GoUM, 2015). According to the National Natural Disaster Management Committee (NNDMC), 125 people were killed and 1.7 million people were temporarily displaced by floods and landslides due to Cyclone Komen (UNHABITAT, n.d.).

In the context of Multi Hazards Early Warning system of the country, there is no systematic and well defined assessment upon specific disasters although some INGO and NGO are providing the hazard assessment by means of the country report. The coordination works like data collection, data investigation and evaluation upon event disaster management between government departments and INGO and NGO are still in weak. Moreover, the coastal communities in Myanmar are only relying on the early warning information from DMH. MHEW is essential need for local people in coastal areas to do the resilience upon natural hazards. But, data manipulation and data availability of DMH are still needed to upgrade and integrate with based line spatial data. For example, when the DMH launched the recurrent interval time for storm surge which generated from Tsunami, there is little gap between precision of their focus and reality. Although they can get the global current information relevant to Tsunami in time, they do not have bathymetric profiles of continental shelf of Myanmar coastal areas. Therefore, the communication platforms are still standing in leading role for effectiveness of MHEW system for coastal hazards in Myanmar.

After destruction of Tropical Cyclone Nargis in 2008, some natural disaster related education activities have been carried out with the collaboration of Ministry of Education and UN Agencies and NGOs. For example, ministry of Education and UNICEF has been collaborating in incorporating disaster risk reduction into school curriculum. UNDP and Ministry of Education have developed and distributed Resources Pack to community in Ayeyarwady and Mandalay Regions (RRD, 2012). UNHABITAT and Relief and Resettlement Department published manuals for disasters (UNHABITAT).

5. Policy implications

For successful establishment of an early warning system in Myanmar, proper arrangements need to be made at national and sub-national levels down to grass-root level not just only in transmission of warnings but also in capturing the timely hazard information. Although the DMH has already provided the two Early Warning Center in Nay Pyi Taw and Yangon, the existing centers have to be enhanced with further instrumentation. Also the capacity building of the Early Warning Centers' staffs have to still be undertaken for further augmenting the interpretation and dissemination capacity.

The Universities can help capacity building by means of putting MHEW and community resilience in the university curriculum both as minor and major subjects. In addition, there should have special training course of training for trainers in university. The student who trained from this course will go to their communities and give public awareness in summer vacation with the sponsorship of the government. Such kind of training and public awareness programme will very effective and benefit for local community and students will receive confidence and satisfaction for contribution of knowledge to the community.

Generally, lack of funding, poor inter-ministerial cooperation, and lack of human resources are the main challenges of the university in contributing to the MHEW and coastal community resilience. Cooperation among related ministries and networking with more advanced universities for technology and funding are important ways to overcome such barriers. Universities could contribute to their communities by means of giving awareness, nurturing scientist and experts, innovating MHEW, and enhancing capacity building of coastal community by using its existing infrastructure and knowledge and technology.

6. Conclusions

Although there are many improvements in MHEW of Myanmar during last decades, it is still need to improve MHEW. It is necessary to upgrade of existing MHEW Centres, need to widely use End-to-End Early Warning System, need to improved metrological observation and forecasting, enhanced flood monitoring and forecasting capacities. Universities could contribute their communities by means of giving awareness, nurturing scientist and experts, innovating MHEW, and enhancing capacity building of coastal community by using its existing infrastructure and knowledge and technology. Although the roles and responsibilities of universities are clearly mentioned in the existing law and regulations, actual implementation is still very weak in practice. Cooperation among related ministries and networking with more advanced universities for technology and funding are important ways to overcome some barriers of capacity building and promotion of MHEW and resilience research.

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