

# EVALUATION OF THE COASTAL EVACUATION, COASTAL DISASTER RESILIENCE AND UNDERSTANDING THE DISASTER MANAGEMENT FRAMEWORK OF MYANMAR

**Sri Lanka – Myanmar joint Scientific Mission of  
CABARET**

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In Nay Pyi Taw (Capital of Government offices) &  
Patheingyi District, Ngazun Township,  
Aungmye Thayar Region (Coastal Region)

Short Term Scientific Missions (STSM)

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*Figure 1: Survey Team from Sri Lanka and Myanmar at Naypyidaw*

## **Overview**

### **Visit to Department of Meteorology and Hydrology (DMH)**

#### 1) Seismology Section (National Tsunami Warning Centre)

In the centre, we first met Dr. Yin Myo Min Htwe, the Assistant Director of the Seismological Section. There we observed the mechanisms and plans used for early warning of tsunamis and earthquakes in Myanmar. We also gained more insight into the organization and its activities using a prepared questionnaire.

#### 2) Hydrology Section

The Head of the Hydrology Section in the DMH went through the procedures of the Hydrology Section, especially in terms of activities regarding floods.

#### 3) Meteorology Section

Dr. Tin Mar Htay, the Assistant Director of the DMH talked with us about the monitoring process and technology used in the Meteorology Section.

The DMH has a studio as well to disseminate warnings and updates which they send to the media to issue to the public.



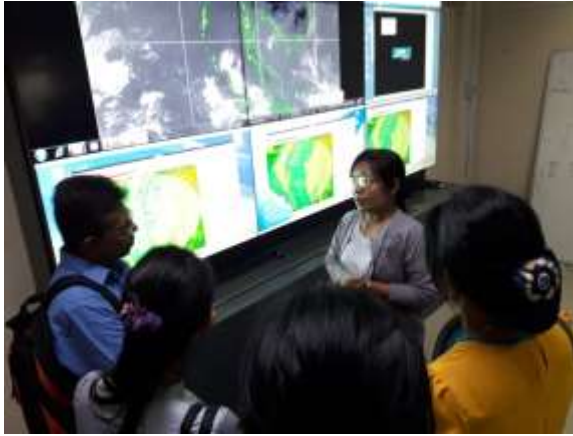
*Figure 2: Department of Meteorology and Hydrology*



*Figure 3*



*Figure 4*



*Figure 5*



*Figure 6*

Figures 3 to 6 illustrates the survey team conducting the survey activities at the Department of Meteorology and Hydrology



*Figure 7: Prof. Dissanayake with the Assistant Director of DMH*





Figure 8: Earthquake monitoring systems

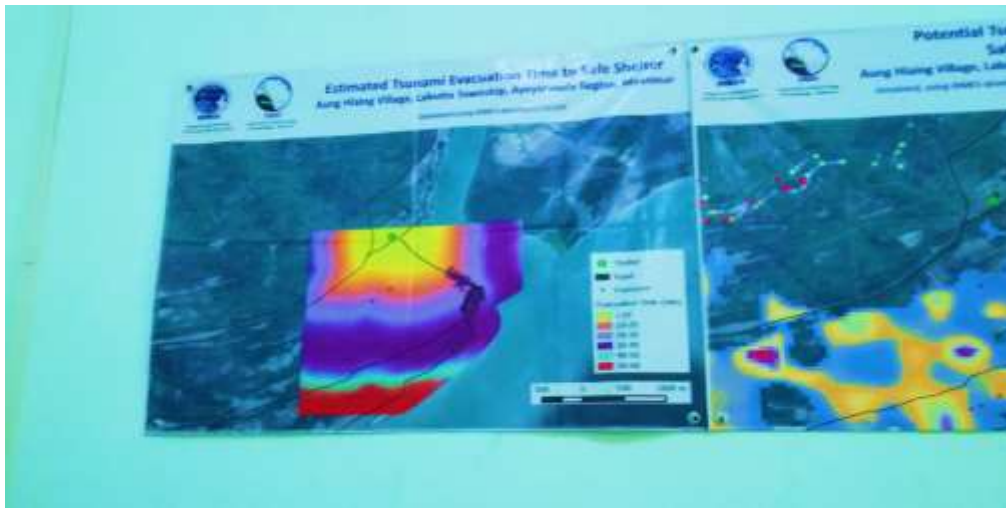


Figure 9: A poster displaying Estimated Tsunami Evacuation time to safe shelter

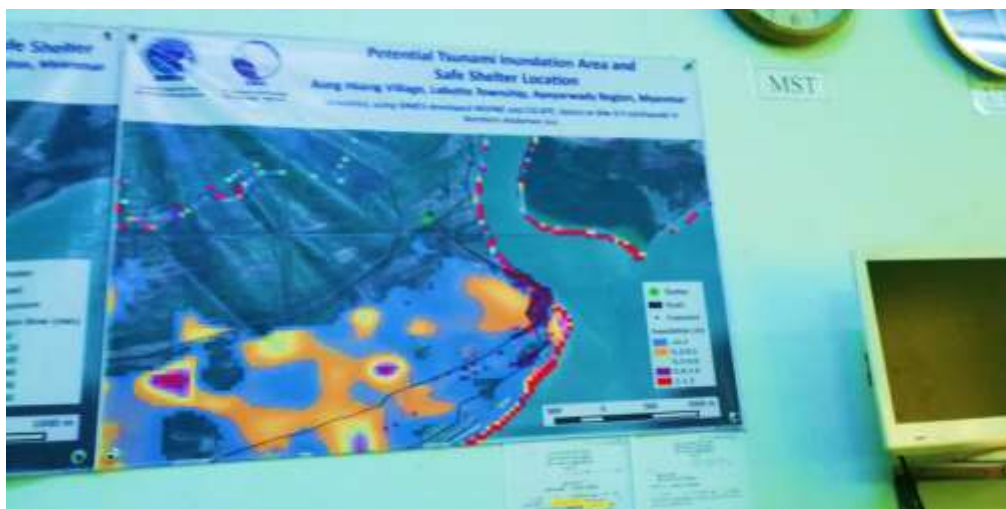


Figure 10: A poster displaying potential Tsunami Inundation are and safe shelter locations





*Figure 12: Survey team with the Administration of DDM*

### Challenges

Integrity in identifying the roles of each organization

Friction in language and communication

Hard to acquire information



## **Visit to Bu Gwe Gyi Village and Thazin Village**

First, we met the group of leaders of the village who used to take the decisions in the village level and who control the villagers. We introduced our self and they were very happy to see us in their village. Secondly, we had a general open discussion to determine the governance, organizational structure, the village level disaster management policy and structure.

We obtained the general idea about how the things work in the village after the open discussion. After that, we interviewed almost all the people including the leaders who took part in the meeting and completed some comprehensive questionnaire responses. Following that, we visited in to the village having a scope of determining the status of the grass root level disaster management along with the leaders and few major people from the village. Then, we interviewed villagers individually and verified and understood the gravity of the disaster management structure currently prevails. Even though there were few complexities and challenges, people responded very well without any reluctance that can be highly appreciated.



*Figure 13: Survey Team at Ngwe Saung*

Figure 14 to 23 illustrates the team conducting group discussions and interviewing community.



Figure 14



Figure 15



Figure 16



Figure 17



Figure 18



Figure 19





Figure 20



Figure 21



Figure 22



Figure 23

## **Summary of the Information gathered**

### **Department of Meteorology and Hydrology**

In the Department of Meteorology and Hydrology- (National Tsunami Warning Center) - Seismological Section, their main role was identified as issuing warnings for Tsunamis and Earthquakes. They majorly coordinate with stake holders such as General Administration Department (GAD), Department of Disaster Management (DDM), Red Cross Society, Ministry of Health and Sport, NGOs, TV and Radio Channels. They have standard operating systems (SOPs) for inland and offshore that are attached at the end of the report.

In their coordination plan, they basically receive Tsunami and EQ information and disseminate the warnings to the above mentioned parties. In the case of evacuation, DMH does not play any major role since it is a sole duty of Department of Disaster Management (DDM) along with the leadership of national disaster management committee and other 12 working committees.

In the DMH -seismology section, there are 23 staff members working on the process of monitoring the seismic activities and issuing of early warnings. There are specialists mainly in the fields of geology, geophysics and seismology. The organization serves since 2004 and they have been successfully engaged in the recent hazards (Eartquakes) in 2011, 2012, 2016 and 2018.

Because of the less productiveness and efficiency in monitoring the seismic activities, they have managed to advance the technology from analog stations to digital stations. After implementing four digital stations they have been overcome the problems in long process time and accuracy of the monitoring process.

They just that, according to their past experience it could have been better if they used different languages for different regions. They also suggest to increase the effectiveness of the process of repairing the seismic stations if a breakdown happens. According to the current situation, they told that it takes much more time since it is done by the head office of the DMH.

In terms of their reporting mechanism, they keep the records to themselves after the disaster and when they currently do not have any measures for evaluation or review the effectiveness of their working process.

They have started using new software like Siescomp3 and Antelope (Antelope is an integrated collection of programs for data collection and seismic data analysis, and typically runs at the central processing site. It has been in development for over a decade and is deployed around the world). They have recently cooperated with some community based organizations to cover a series of activities at the community level aimed at bringing about desired improvement in the social well-being of vulnerable individuals, groups, organizations related to disaster management in Myanmar.

They plan to enhance the performance of the organization by installing sirens for Tsunami early warnings which are currently not installed in Myanmar. Furthermore, there are proposals to collaborate with China Geological Survey Bureau (CGSB). According to their talk, Since the research and development in disaster risk reduction is not substantial, they plan to initiate more research with university students and also with government officers to find and explores new technology. Moreover, although there are 30 seismic stations, most of them are not working and they plan to increase the number of seismic stations too.



## **Department of Disaster Management Under the ministry of social welfare and Relief and settlement**

DDM plays the role of capacity building and awareness raising, coordination for emergency response, rehabilitation and reconstruction. For example, they have a disaster management training center in terms of capacity building sector. They perform drills and exercises for the vulnerable communities in terms of awareness raising. Depending on the severity of the disaster, there are 5 emergency status levels.

The coordination in disaster management in Myanmar is done under 5 administrative levels of the general administration department (GAD) namely, village level, Township level, District level, Regional level and National level. In each level there are 12 working committees namely,

1. Disaster management work committee
2. International relations work committee
3. Financing and financial management work committee
4. Search and rescue work committee
5. News and information work committee
6. Rehabilitation and reconstruction work committee
7. Health care work committee
8. Initial need assessment/ damage and lost verification and need identification
9. Livelihood restoration
10. Environmental conservation
11. Security work committee
12. Logistics work committee

If a particular disaster strikes indicating a higher severity, then the response level will be advanced to the suitable upper level and they will be taken care of the situation.

Not only the GAD, they coordinate with DMH, Myanmar Red Cross Society (MRCS), Public Health, all TV channels, INGOs and NGOs and other responsible government ministries.

The organizational structure of the disaster management bodies of Myanmar is shown below. The DDM works under the national disaster management committee perform the duties in disaster management work committee. And also, according to the director general managers note, they also establish the coordination between these 12 work committees.

During an evacuation, the suggestions and the message to evacuate will be taken by the DDM along with the GADs. The reports from the DMH and the other international organizations will be compared and warnings will be issued accordingly and occasionally. The DDM reports to the national disaster management committee which lies in the upstream level of the organization structure.

The DDM was established in 2005 after the catastrophic Tsunami 2004. They have recently engaged in all types of disasters happened in Myanmar. They still think that they need more capacity and improvements for a better coordination system. They try to establish more collaboration in response and more response capability for vulnerable communities. They try to enhance the effectiveness of their role by mitigating the delay in information sharing as well.

They also use good and newest technology in monitoring all the disasters. In future, they plan to initiate Disaster Alert Notification (DAN) software ; a mobile application that bridges the information gap on disaster risk communication in Myanmar

The new mobile app (DAN), provides warnings to communities in times of disaster as well as notifications, important news, Do's and Don'ts for prevalent hazards, and phone numbers that the general public can contact during emergencies. The application also provides a link to the website of the Department of Meteorology and Hydrology (DMH) which users can refer to for

weather forecasts and early warning information. These initiatives will reinforce the disaster preparedness of the vulnerable communities in Myanmar.



Figure 24: Disaster Management Structure of Myanmar

## **Bu Gwe Gyi Village and Thazin Village**

From received and collected responses majority are from men. Above 50% of the responses are 41-50 years aged farmers. Majority of the respondents identified “Storms and heavy rains” as the most severe coastal hazard of the community.

Under the disaster risk reduction and preparedness for the early warning, generally identified systems available for early warning are from Radio and TV whereas Door to Door and Loud speakers being the historically used systems. The loud speakers were identified as the warning method that communities are most likely to respond. Then again the reluctance to leave property and agricultural lands was identified as the most likely reason for families to stay in the households even after receiving the warning.

The lead time between the disaster and the point of early warning stayed 2-3 hours for Tsunami and for coastal hazards of storms it was two days at most. This lead time was enough for villagers to reach to a safe location, monastery in both villages. The entire village and community was aware about the safe location as monastery and they identified it as the highest place of the village while understanding the safest and quickest route to the safe location from the household.

It is important to highlight about the built-up of the households in both villages. Most of the houses were built from wood about a feet above the ground level using supports. Number of positive aspects were identified about these structures, including the air circulation, heat transferring, safety from ground animals etc.

Community had an understanding on impact on farms and other means of the community incomes during a disaster. Most of them told that their jobs will be disturbed when a disaster strikes. For example, in the village there were lot of coconut farmers and during the disasters

the trees used to fall and they might be helpless. And also they had an understanding on the health related of hazards, especially floods.

In the year 2011 one village had a 3 day training program to train the community of Tsunami evacuation and drills. Other than that none training or drills were carried out. Also there was hardly any development activity carried out in the coastal area to reduce disaster risk. Yet recently electricity was introduced to the area.

During a disaster, immediate actions were taken from villagers itself, the village administration committee. Other than that GAD, Fire brigade, municipalities helps during a disaster as humanitarian support. But it was clearly highlighted that villagers themselves take care of the community. Other than warning dissemination and information delivering people failed to identify any other involvement from local governance structure during a hazard most of the time. The basic need acquiring was rated as the highest emergency need of the people.

Community do not display a mechanism or a process to estimate damages after a coastal hazard. The general procedure was again that villagers by themselves help each other to build back from damages. But there are some non-government organizations like youth associations to help people in a disastrous situation and post disaster period.

As soon as the flood dries down people has drinking water since community depend upon the use of well for drinking water. Also when it comes to electricity, in Bu Gwe Gi new hotels and resorts have been constructed and electricity have been given because of the tourism industry. Since, lines were added very recently(1 month), people did not had a clear experience on how long it take to restore the electricity and other infrastructure. For the other village (Thazin Village), it is very sad to say that they still do not have electricity and they totally depend on the lamps.