



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms
in Coastal Settlements in Asia – Demonstration in Tourism Destinations

ACTIVITY A.4 LOCAL DISASTER PREPAREDNESS

Patong Municipality
Phuket, Thailand





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INTRODUCTION

Assessment of local disaster preparedness is aimed at assessing local capabilities in responding to potential disasters in seven areas; 1) risk identification and assessment, 2) legal authority, 3) organizational structure, 4) early warning systems, 5) communication, 6) resources and emergency planning, and 7) Tourism related issues. In addition, the findings of this assessment will be used as the baseline information about the existing local disaster management capabilities and emergency coordination which will support the action planning activities and the area-specific capacity building development.

This assessment was conducted by using on-site research in the three main stakeholders involved in local disaster management activities (local authorities, tourism sector and people organizations), together with in-depth interview with the key players in disaster prevention and mitigation.

The findings of the report will be discussed and presented into three parts which are Part One: Background Information of Patong Municipality, Part Two: its current disaster preparedness, and Part Three: summary and suggestions

1. Background Information of Patong Municipality

Patong Municipality or 'Thed-sa-baan Muang Patong' or PM is one of the local administrative organizations of Ka-Thu District, covering an area of 16.4 km² where seven communities are located namely;

1. Chai Wat
2. Baan Mon
3. Baan Sai Num Yen
4. Baan Na Nai
5. Baan Khok Makham
6. Baan Kalim
7. Had Patong



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms
in Coastal Settlements in Asia – Demonstration in Tourism Destinations

According to the census in 2004, Population rate in PM is 15,629 people and its population density is 953 people per one km².

Geographically, Patong Municipality is located in the west coast of Phuket Island. Its landscape is plain bordered with mountain to the east, north and south, and Andaman Sea to the west. As PM is located in between southwest monsoon and northeast monsoon, it has two seasons; summer from December to April and rainy season from May to November.

2. Patong Current Disaster Preparedness

2.1 Risk Identification and Assessment

Overview of Risk Identification and Assessment Procedures

In Thailand, hazard identification and assessment is conducted by various national government agencies, but mainly is done by Department of Mineral Resources (DMR), Ministry of Natural Resources and Environment; Royal Irrigation Department (RID), Ministry of Agriculture. These two agencies are the official source of information on hazard areas, particularly geo-hazard such as landslide/mudslide, flash flood and flood.

Accordingly, the development of local authorities' hazards and risks information is usually based on the study of DMR and RID.

In PM, hazard/risk information is available not only at PM, but also at Disaster Prevention and Mitigation Provincial Office, Phuket, DDPM, Ministry of Interior. They review and update their information at least once a year by using the following sources and methods;

- 1) existing information and statistics, regarding hazards, risk areas and level of risk, population density, hazard maps, produced by DMR and other related agencies
- 2) historical data on past accidents and disasters
- 3) disaster/risk site survey to locate the actual disaster site
- 4) key informants interview to verify the data



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms
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Patong's Disasters/Hazards and its Prone Areas

The latest updated risk information of PM shows that apart from Tsunami, the most likely-to-occur disasters/hazards in PM are;

Natural disasters: 1. Landslide

2. Flood

Man-made disasters: 1. Fire

2. Terrorism

Landslide

is likely to occur during rainy season particularly between May to November. Baan Kalim and Baan Na Nai are identified high landslide prone areas due to the high slope of the land and lack of plantations to prevent soil erosion. Landslide in this area usually occurs when rainfall volume reaches 100 ml. per day. Though landslide is considered harmless to the lives of people, it can cause damages to PM economy in that the eroded soil usually obstructs the traffic. Moreover, there is a community hospital, Kathu Hospitalin, in this risk area.

Flood

is likely to occur when rain falls more than one hour. This leads to slow-up flood which has not much impact to the area for it can be drained within 10 minutes.

Fire

is regarded as the local disaster of PM, particularly in slum areas and in the construction site where temporary shelters of workers are located. Additionally, during important festival, such as Chinese New Year, where people usually conduct traditional activities that can cause fire, for instance, playing fireworks, praying.

Terrorism

is a new threat to PM and is a concern expressed by hotel entrepreneurs and other tourism service providers.



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms
in Coastal Settlements in Asia – Demonstration in Tourism Destinations

Risk Information Management

Since the strike of Tsunami, PM and local government organizations concerned have learned a lesson. They value the necessary of risk information and risk knowledge management. As a result, all risk information of PM have been recorded, updated, translated into a ready-to-use format, and publicized.

Here are some examples of how PM makes use of its risk information

- Local development plan improvement: based on risk information and lesson learned, PM reviews and improves its city development plan so as to enable the organization and its staff to be prepared for identified risks and hazards.
- Disaster Management Plan development: PM with the cooperation of several government agencies concerned, such as, Disaster Prevention and Mitigation Provincial Office in Phuket and Phuket Environment Office, developed the Municipal Disaster Management Plan to used as a guideline to take action before, during and after disaster.
- Risk Area Zoning: PM identified seven Tsunami prone areas and two landslide prone areas in Baan Kalim and Baan Na Nai. This leads to establishment of Warning Towers in Tsunami risk areas and simple rain gauge in Baan Kalim.

2.2 Legal Authority

At present, Thailand has several legislations, such as Civil Defence Act 1979, Prime Minister Office Regulations B.E. 2539 on National Safety, and National Preparedness Policy, used to frame the operations of disaster/emergency management. These legislations, particularly the Civil Defence Act as the core framework, have established legal structure in disaster management to give organizations concerned guidance on how to act and react before, during and after disasters.

According to The Act, the structure can be divided into three parts; 1) policy formulation, 2) policy translation and coordination, and 3) policy implementation. Each part has its key player, its component, and also its responsibilities. Those are;



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms
in Coastal Settlements in Asia – Demonstration in Tourism Destinations

Policy Formulation:

National Civil Defence Committee (NCDC), which is chaired by the Minister of Interior, is the main body to formulate the strategic plan of disaster management. All agencies concerned at all level (central, provincial and local) have to develop their own plans in accordance with the master one. The Committee is comprised of all national government agencies concerned.

Policy Translation and Coordination:

Department of Disaster Prevention and Mitigation, Ministry of Interior, designated as Secretariat of NCDC, is in charge of all administration works such as providing technical support for plan development, collecting plans from agencies concerned, encouraging plan annual review, monitoring and evaluating plan effectiveness and facilitating the translation of plan by providing financial assistance to local authorities to conduct exercises and drills at least twice a year, one for natural disaster and one for man-made.

Policy Implementation:

There are two players responsible for plan materialization. First is Civil Defence Operation Center (CDOC), established at all level of administrative organizations (national, regional, provincial, local). Second is private sector and the public, designated as the supportive resources to CDOC. These players have their own scope of operations and area of coordination.

For example, when landslide occurs in a municipal area, the first official responding body is the Mayor as the commander of Municipal Civil Defence Operation Center. If the MCDOC cannot manage the disaster, the Governor as the Provincial CDOC will take charge.



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms in Coastal Settlements in Asia - Demonstration in Tourism Destinations

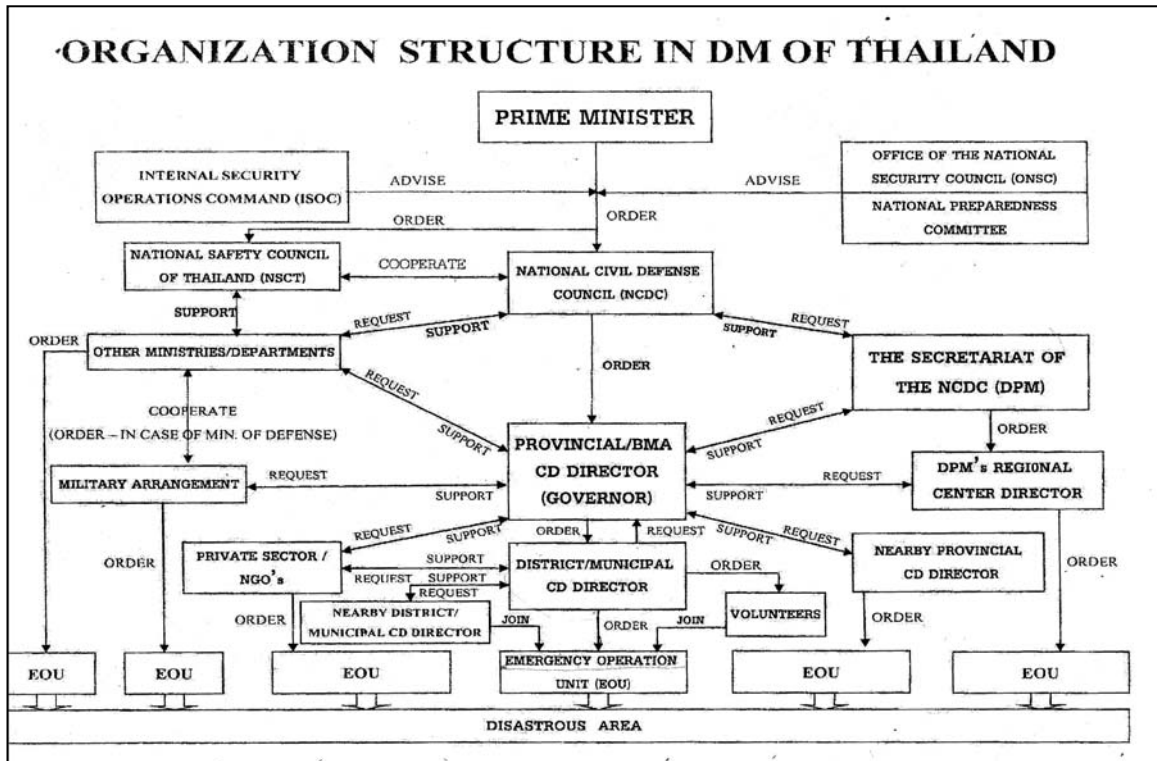


Figure 2.2.1: Legal Structure in Disaster Management of Thailand

Thus, Patong Municipal Civil Defence Operation Center (MCDC, Patong), chaired by the Mayor has authorities to direct and manage response and relief operations, as well as to mobilize support and resources from all partners within the municipal area.

To focus on PM's legal matter, apart from the mandate from national legal framework, it is clear that PM itself has also put this in its priority. One of the PM recent main policies in developing the municipal area is the protection of people's lives and properties. This policy is composed of four major activities;

- Enhance the capacity of personnel, disaster prevention and mitigation equipments and tools so as to serve the future population expansion in the area.
- Enforce preventive measures and laws to ensure that people's lives and properties are well protected, as well as to raise people's awareness and engagement in disaster/accidents prevention
- Conduct 'Beach Guard' project and develop 'Sea Safety Network'
- Develop action plan in disaster prevention and mitigation



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms
in Coastal Settlements in Asia – Demonstration in Tourism Destinations

However, though the legislations have stated the scope of operations and responsibilities of each party concerned (government, private sector, and people); this legislative framework has not yet been widely acknowledged by people and private sectors.

2.3 Organizational Structure

As mentioned earlier, the Act has clearly stated chain of command, the range of coordination and scope of operations at each level of practice. Therefore, PM, designated as the MCDC, depicts the chain of command and scope of responsibilities stated in the national plan and develops its own organizational structure to deal with local disaster in accordance with the national framework as well as the specific needs of the local people. (See figure 2.3.1)

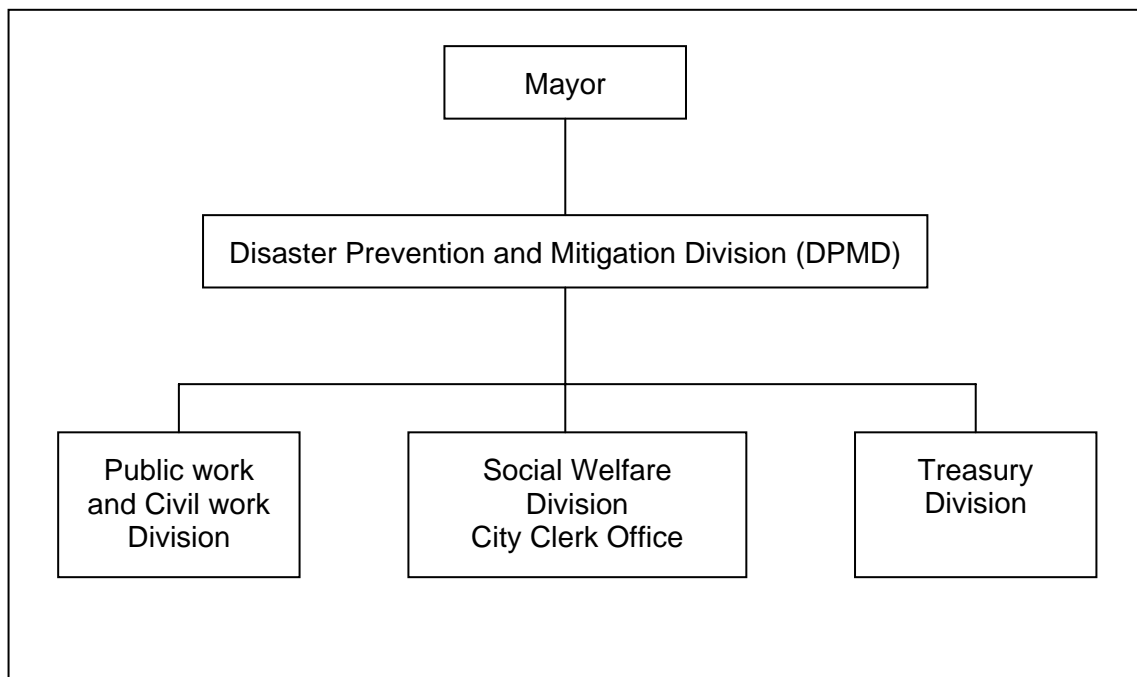


Figure 2.3.1: PM Organizational Structure in Disaster Management

This structure is applied in both peaceful time and emergencies.

In peaceful time, this structure acts as the municipal disaster prevention mechanism where chief of DPMD is official in charge. DPMD, as the key player, has several roles and responsibilities. It is tasked to procure and maintain tools and equipments on a daily basis



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms
in Coastal Settlements in Asia – Demonstration in Tourism Destinations

in order to ensure the timely and effective operation. It is also responsible for monitoring and assessing the risk by assigning the shift officials to monitor the emergencies and patrol the prone area. Besides, it serves as a good training source where training courses, training materials, and trainers are available for the public and interest groups within and outside the municipal area. Moreover, their staffs are required to review and practise their emergency response procedures every Friday. After practice, they usually have debriefing meeting to self-assess their performances.

Interestingly, due to Patong has limitation of fresh water resources that can be used in case of fire, DPMD has to be able to coordinate with hotel entrepreneurs to use hotel's sewage treatment tanks as the alternate source of water for fire fighting. This leads to a more rigid cooperation and agreement between PM and Hotel entrepreneurs.

During emergencies, this structure becomes the MCDC where PM Mayor acts as the Director of MCDC and Incident Commander with City Clerk as his secretary. DPMD performs as information center and emergency response unit, who works closely with other emergency responding agencies such as police officers, disaster prevention and mitigation volunteers, EMS officers, hotel's fire fighter unit, military emergency response unit, etc. in disaster sites. After disaster is under control, other sections are assigned to take part. Public Work and Civil Work Division is responsible for clean-up and restoration activities. Social Welfare Division is in charge of providing basic need assistance to affected people. Treasury Division provides affected people with compensation.

2.4 Early Warning Systems

After the strike of Tsunami on 26 December 2004, PM established Tsunami warning system by installing Tsunami warning towers at three risk areas in Patong Municipality, Sea View Patong Hotel and Sun Set Beach Resort. These Towers are supported by the government of German and Sweden. In addition, UA Thai Company Limited also supported the establishment of amplifiers and automatic wireless warning sirens at seven risk prone spots which are;

- in front of Baan Kalim School
- at Loma Park Junction
- in front of Asia Bank



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms in Coastal Settlements in Asia – Demonstration in Tourism Destinations

- at Sai Num Yen Junction
- in front of Mr. Rapin's house, Chief of Baan Na Nai Community
- opposite Wat Suwan Khiriwong School
- at Sea Pearl Junction

Principally, National Disaster Warning Center (NDWC) is the core national agency in charge of issuing warning signal to assigned local authority that then activates warning alarm in the control room. This triggers the warning towers located in the appointed areas to send forth the alarming sound.

In case of PM, the warning message, issued by NDWC, is sent to Phuket City Hall, PM Mayor Office and to DPMD by fax. Phuket Governor is the assigned local authority to activate the warning alarm. After the alarm is activated, Governor as the Incident Commander commands the Mayor of PM who then assigns DPMD to precede the warning and evacuation procedures. See figure 2.4.1

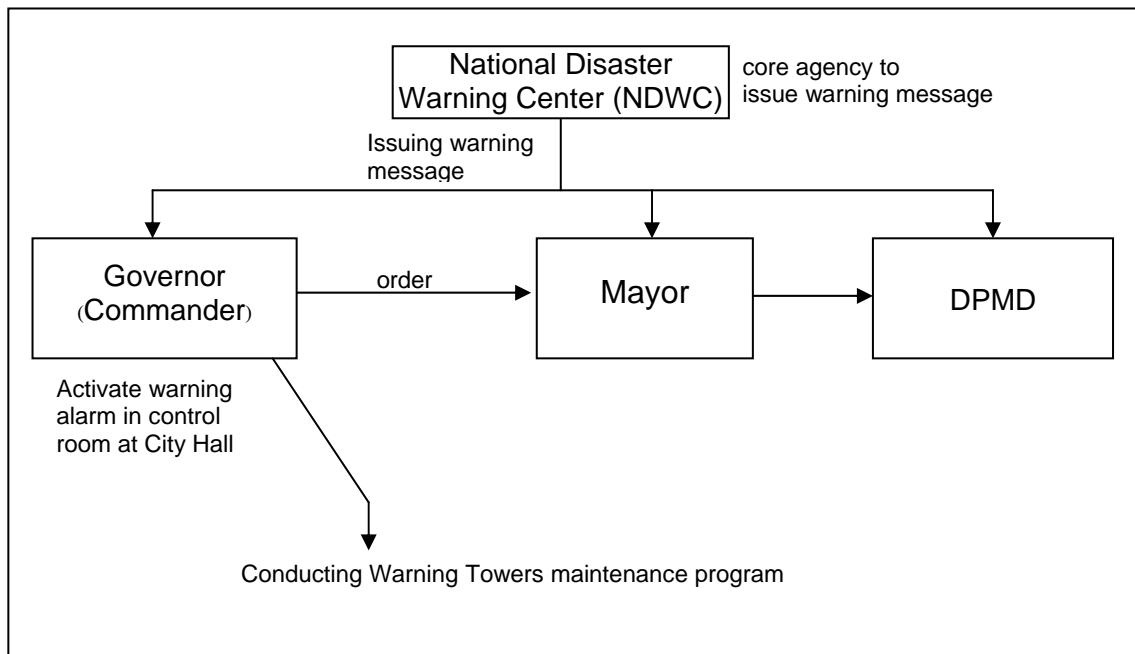


Figure 2.4.1: PM's Tsunami Early Warning System



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms
in Coastal Settlements in Asia – Demonstration in Tourism Destinations

In Patong, the warning message is translated into six languages; Thai, English, Chinese, German, Japanese and Swedish, which can be heard within the range of 1.5 km. from the coastline.

Regarding the quality of the system, while Governor hires a private firm from Bangkok to do the maintenance program to guarantee the reliability of the early warning systems, PM by DPMD is tasked to conduct drills to test the effectiveness of the systems and the responsiveness of the people.

Apart from Tsunami early warning system, PM also develops procedures for other types of disaster early warning systems, landslide for example. Contrary to Tsunami warning system which is operated by advanced technology, landslide warning system is mainly processed by DPMD, community members and volunteers. With the information from Department of Mineral Resources together with the historical data on past disaster, DPMD can identify risk areas and the appropriate period of time to conduct the monitoring, warning and evacuation activities.

What can be of interest is that according to the local official, the maintenance program which is arranged by the provincial level is not reliable enough in that false alarm happened once and it caused confusion to the local people as well as tourists.

2.5 Communication

Information Exchange and Dissemination:

PM has developed procedures for information exchange and dissemination.

Means of communication/coordination

PM has developed a wide variety of means to communicate risk information and knowledge on how to cope with disaster/emergencies to the target groups as the followings;

Non-emergencies; (mainly focus on public education and training activities)

- Meeting with all stakeholders to share information and lesson learned
- The signs along the beach providing guidance during emergencies



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms
in Coastal Settlements in Asia – Demonstration in Tourism Destinations

- Training courses to housewives group, beach massagers and beach vendors to prepare them for emergencies
- Training courses for DPM volunteers and community public health volunteers to update risk information and to prepare them for action
- Exercises for Tsunami evacuation with hotel
- Lectures for school students
- CD ROMs about safety of the tourists for hotels to distribute to their guests

Emergencies;

- Radio VHF 162.550 MHz
- 24-hour Hot Line at 199 or 02-342600
- Radio Towers
- Mobile unit to informing risk information and warning message to the public

Contact person during emergencies

The Mayor, as the commander of MCDC, is the contact person who has authority to coordinate and provide information about the incident/accident to the media and the public, and to designate an official in charge to act as his replacement.

In addition, during evacuation, police officers are assigned to direct and facilitate the evacuation of people.

Information Sources and Data Base Sharing:

Now, all information regarding risk and lesson learned are already documented and formatted in PM development plans, CD ROMs, flyers, leaflets, and so on. The risk/local hazard database is under construction.

Notification Procedures:

As discussed, DPMD is the main unit responsible for emergencies notification and response of PM. Its notification procedures are as followed;

1. Receive emergency call via DPMD 24-hour hotline number; 199 and 02-342600 as well as from radio network at the frequency of 550 MHz.



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms
in Coastal Settlements in Asia – Demonstration in Tourism Destinations

2. Chief of DPCD or official in charge activates the emergency unit stationed at PM to conduct initial incident analysis and response.
3. After initial analysis, if the on-scene Emergency Unit cannot handle the incident, it communicates with the commanding post mainly via radio network for support. For example, if there are injured people; DPMD coordinates its network EMS unit stationed at Patong Hospital. The EMS units are operated by the two NGOs; Ruam Katanyu Foundation and Kusonlatham Foundation.
4. After emergencies, particularly, after the large scale of accident/disaster DPMD responding team usually held a group debriefing to discuss its performance and shortfalls.
5. Damages of the incident are summarized and reported in PM monthly Newsletter.

It should be noted here that since the Tsunami where mobile phone and switched phone system were failure, PM uses radio network as additional mean of operations in case of emergencies. It proves to be the most reliable communication system and becomes the main communication system for practitioners in emergency response.

2.6 Resources and Emergency Planning

Personnel:

As fire is the most common hazard of PM, it recruits and trains the cadres of fire fighters to promptly respond to the incident. This group of people is encouraged to review and practise regularly both by other government training agency and by on the job training. As discussed, they are required to check their equipment everyday and to practice their work procedure every Friday.

All information of trained fire fighting and search and rescue personnel of PM; such as their telephone number, address and training experiences are collected and formatted in directory which is distributed among them. Other special technical experts, who might be necessary for some incidents, have not yet been identified.



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms
in Coastal Settlements in Asia – Demonstration in Tourism Destinations

Interestingly, due to the legislative framework as well as the municipal policies, PM can order and/or request for support from all organizations within the municipal area. For example, PM has agreements with hotels for hosting evacuated people, supplying water for fire fighting and dispatching their fire fighting team to work with PM's.

Training:

There are two aspects of training to be considered. Those are training curriculum and training facilities.

Training Curriculum

As discussed above that PM has expertise in fire fighting, its training courses focus mainly on fire fighting and related topics such as safety and first aid; response actions; equipment selection, use, and maintenance; and crisis communication. These courses are trained by PM officials. For additional or advanced skills and expertise, PM has to rely on outsourcers. Disaster Prevention and Mitigation Academy (DPMA), DDPM is one of PM partner who provides courses covering topics such as crisis management, organizational structures for response actions according to Civil Defence Act and related legislations.

Regarding the provision of quality and creditable curriculum, PM has established methods to develop the standard curriculum. Those methods include 1) training needs analysis, 2) criteria for each course, 3) course effectiveness evaluation, 4) provision of certification, and 5) transfer of training. To concretely illustrate the above mentioned, the followings are the actual practice of PM on training course development.

Before organizing a training course, PM usually conducts a training needs analysis so that the organized courses could meet the needs of its target group and also the potential disasters. The main target groups of PM's training courses are government officials, hotel staff, members of amateur radio club, disaster prevention and mitigation volunteers, and community health volunteers. Each group has different interests; for example, hotel entrepreneurs are interested in Tsunami and fire; therefore, PM in cooperation with hotel entrepreneurs developed special courses for them such as Tsunami response for hotel staff, fire fighting. General knowledge for



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms
in Coastal Settlements in Asia – Demonstration in Tourism Destinations

disasters and hazards, that are common in Patong, are special courses designed for PM officials. Volunteers were trained in crisis communication.

To encourage the transfer of training, PM provides refresher courses once a year to ensure the up-to-date knowledge and expertise of their trainees. Additionally, as PM is the main players in emergencies response, on the job training approach is introduced to facilitate its staff's transfer of training.

Training Facilities

Most of the training courses are held at PM office where training ground with facilities is available for all types of scenarios, such as, fire on high building. Hotel conference rooms also are other training venue that is suitable for theory-oriented courses.

Regarding the availability of training materials, PM can arrange most of the materials required for conducting courses. DPM provincial office can also support materials such as guidebook, documents. However, to conduct a fire fighting exercise, PM has to hire a smoke generator from a private agency in Trang province.

Equipment:

Two aspects of response equipments should be discussed; first is the availability of the equipment and second is the maintenance of them.

Availability of Equipment

As mentioned earlier, there are several agencies involving in emergency response actions. Each agency has been assigned to perform a certain tasks. Accordingly, it is quite clear that within the municipal area, response equipment is sufficient for the local partners to perform their roles in case of emergencies. PM itself owns a number of equipment; such as, personal protective equipment, first aid and other medical emergency equipment, fire-fighting equipment, communication apparatus, evacuation transports. In the need of special equipment, PM also has authority to request support from other local agencies; for example, sampling equipment and monitoring devices from police officers, boat from Navy. More importantly, PM has allocated budget for purchasing special equipment if necessary.



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms
in Coastal Settlements in Asia – Demonstration in Tourism Destinations

Regarding the communication equipment which is crucial for an effective operation, since the strike of Tsunami on 2004, PM has procured and upgraded communication equipment so as to ensure the compatibility of the devices among the operators and the timeliness and harmony of the operations.

However, some of response equipment is found out of date.

Equipment Maintenance

PM carries out the equipment maintenance programme on a monthly basis. Equipment list is regularly updated and informed to DPMD.

Facilities:

PM has identified locations and facilities for responding to emergencies. PM Office is of course the location of incident command post where all facilities are available for conducting emergency operations. Seven risk areas and 13 safety zones and evacuation routes are identified. Along the evacuation routes, signs and instruction on how to act during emergency are also in place. Moreover, if there are injured people, Patong Hospital located near the beach is capable of providing them medical treatment.

After disasters or accidents, whereas PM Office is the identified place for storage and cleaning/reconditioning of response equipment, Muang district of Phuket is appointed to be the location for storage, treatment, recycling, and disposal of wastes resulting from a release from the interaction with a disaster. That is because lands in PM have been already occupied for tourism purpose which then leads to the high cost of lands.

2.7 Tourism Related Issues

Distribution of Tourism in Space and Time:

PM is famous for its beautiful Patong Beach, so Patong Beach is the area where tourism activity is concentrated. Usually, tourists visit PM during November to April which is the summer season of southern part of Thailand. Thus, from 1 November to 30 April every year is considered the tourist high season for PM. The Monsoon



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms
in Coastal Settlements in Asia – Demonstration in Tourism Destinations

season starts from middle of May and ends around October. Moreover, tourists in PM can freely travel to everywhere.

Hot-spots of Tourism Activity:

Patong Beach is the only hot-spot in PM that can attract a big number of tourists. Along Patong Beach, tourist can find variety of activities and services, such as traditional Thai massage, sea sports. It is estimated that 10,000 tourists visit Patong Beach in each day.

Composition of Tourism Load:

PM attracts various groups of tourists, including disabilities, older people, families, teenagers and backpackers. Each group has special interests for example; older people prefer long stay, about six months, to take health services; families with children prefer short stay and teenagers usually visit PM during low season for low cost of tourism services.

Regarding the information on hazards, tourists usually study it prior their travel. In PM, most hotels provide their guests hazard information so that they know how to travel safely.

3. Summary and Suggestions

In sum, Patong Municipality is exposed to various types of risks. Tsunami, Landslide and Fire are considered the potential disasters that the Municipality has to deal with. Though PM is at risk, the findings discussed above shows that PM's current emergency prevention and preparedness measures have been well prepared for all local disasters/hazards which are likely to occur in the municipal area. This is mainly because the existing legislations, policies and institutional frameworks at both national and local levels allow for decentralization so that PM can take responsibilities for disaster management and develop its own disaster management system that can conform to local needs. More importantly, the Mayor and PM executives have truly supported disaster management by approving many disaster related initiatives such as SEA Guard project, Tsunami evacuation drills, Fire evacuation exercise, and so on.



DISASTER RISK REDUCTION IN TOURISM

Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms
in Coastal Settlements in Asia – Demonstration in Tourism Destinations

However, since an effective and systematic disaster management involves many key players and requires close coordination and cooperation between stakeholders, nationally, locally, and internationally, the result of this study reflected the unclear picture of cooperation among agencies concerned.

Accordingly, the project on Disaster Risk Reduction in Tourism might be the good opportunity for PM and all stakeholders to strengthen their partnership, and their resilience to disasters and hazards.