

Executive Summary

The District of Cox's Bazar located in the southeastern Bangladesh is subjected to most devastating natural disasters in the country. The District has a population of about two million of which 46.2% are male and remaining 53.8% are female. Density of population per square km is 570. Cox's Bazar and the nearby area fall in the High Risk Zone for tropical cyclones. Existing Cyclone Preparedness Program (CPP) in the country has resulted in a reduction of loss due to cyclones. However, the earthquake and related tsunamis has recently appeared as additional natural threats to this region. The risk of damage due to those disasters should be minimized through development of an earthquake and tsunami preparedness program for the region. A community based earthquake and tsunami preparedness program has been conducted under this project in the district to raise awareness about the earthquake and tsunami disasters.

The approach of disaster preparedness program was undertaken with a goal to ensure the full utilization of existing resources, strengthening the resources and involving the vulnerable community. The awareness program started with a project briefing to the officials associated with the Disaster Management activities in Cox's Bazar district such as Government officers and officials of Non-Government organizations, Engineers, Doctors, Fire Service and Civil Defense officers at the office of the Deputy Commissioner of the district. Ten school based awareness workshops, thirty community based seminars, one school based disaster imagination workshop and one mega drill simulating earthquake and tsunami hazards were included in the community awareness programs. A satellite based warning system deployed in the district of Cox's Bazar was also introduced to the community through the mega drill.

The awareness program carried out is expected to comprehend the community about the hazards expected from natural disasters like earthquake, tsunami and cyclone and increase the community capacity to endure the disasters. Community loss in a natural disaster could be minimized, if the peoples take the disaster management activities as an integrated part of their daily life. Hazards expected from earthquakes and tsunami and the safety requirements for those disasters, along with the preparedness plan were demonstrated in the community awareness programs. Thus, the program is expected to make the community safer, more

prepared and more resilient to earthquake, tsunami and other natural disasters. Conduction of similar community awareness activities are recommended for vulnerable communities to reduce loss from natural disasters.

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List of Abbreviations

BMD	Bangladesh Meteorological Department
CDMP	Comprehensive Disaster Management Programme
DC	District Commissioner
DMB	Disaster Management Bureau
DoE	Department of Environment
DRR	Directorate of Relief and Rehabilitation
DRRO	District Relief and Rehabilitation Officer
MoFDM	Ministry of Food and Disaster Management
PIO	Project Implementation Officer
PTWC	Pacific Tsunami Warning Center
UNO/TNO	Union / Thana Nirbahee Officer
UDMC	Union Disaster Management Committee
DDMC	District Disaster Management Committee
UzDMC	Upazila Disaster Management Committee

1. Introduction

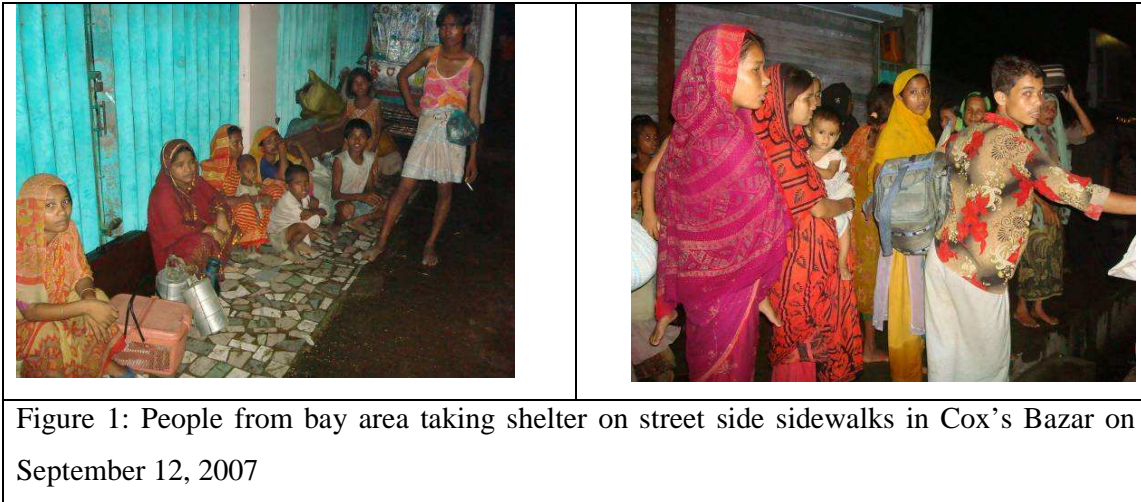
‘Disaster Preparedness’ stands for getting habituated, imagined, skilled and exercised sufficiently to predict expected hazards from a known upcoming disaster to fight and overcome properly, where a disaster is a damaging phenomena causing loss to lives and properties. Therefore, development of disaster preparedness defines some methodologies, some techniques and technologies adopted in conformity to enhance existing disaster preparedness, or to assign a new system to fight against upcoming disaster. Preparedness can be both at personal level and community level. Again, it can be for threshold hazards or, for future which will be early warned, if possible, or unpredictable. Hence, an early warning system, itself also a part of disaster preparedness. Thus, development of disaster preparedness is researching on rehearsing preparedness methodologies for a particular geographical location.

To comply with ‘Development of a Disaster Preparedness Program for Earthquake and Tsunami Hazards in Cox’s Bazar’, different methods of activities, workshops and meetings were undertaken to raise awareness and getting preparedness on earthquake and tsunami. The stake holders were from school children, disaster management committees, school management committees, local religious groups, women communities and folk communities. These were carefully chosen to distribute samples homogenously, as far as possible, throughout Cox’s Bazar District.

2. Rationale of Raising Awareness Activities

Peoples of Cox’s Bazar still can remember the December 26, 2004 tsunami which was caused by an undersea earthquake that occurred at 7:58 a.m. local time. The earthquake occurred in the Indian Ocean off the northwestern coast of Sumatra, Indonesia. The earthquake had a magnitude of 9.0, making it the largest since a 9.2 earthquake hit off the coast of Alaska in 1964. The quake created a large tsunami which caused tremendous devastation in several countries and killed hundreds of thousands of people. The hardest hit area was the Aceh Province of Suamtra, in northern Indonesia, which was the closest area to the quake. Sri Lanka, Southern India and Thailand were also affected largely by the tsunami. In the coastal areas of Bangladesh, water rised and washed away some fresh water shrimp cultivation

fields, trawlers, water quakes felt all over Bangladesh and some small islands were reported sank.



The devastation of December 2004 tsunami raised concern among the communities around the Indian ocean region, including Bangladesh. The concern of the peoples of Cox's Bazar was demonstrated through the tsunami warning of September, 2007. In evening of September 12, 2007, a warning was disseminated based on a predicable tsunami after the earthquake of 8.5 Richter scale at the same location, at 5.09 pm (Bangladesh time). The warning was issued by the Bangladesh Meteorological Department (BMD) based on the predictable tsunami by Pacific Tsunami Warning Center (PTWC). The prediction revealed that a potential tsunami would hit Indian ocean countries including Bangladesh at around midnight of September, 2007. The government of Bangladesh has therefore took initiative to evacuate the peoples to the nearby cyclone shelters. As this was the first tsunami warning for the country the people could not understand what they should do. As a result the people became helpless and they came into the road and tried to find a safe place to save their lives and belongings. Apart from cyclone shelters, all school buildings, markets, deputy commissioner offices, Upozilla Headquarters, Paurashavas and roads (Figure1) at higher places were crowded with people, who stayed overnight to escape the possible disaster. Many residents were also found to take shelter at the rooftop to save them from tsunami. Therefore, tsunami preparedness is in need of action. Figure 1 shows a group of people who took shelter on the street side market verandah during the tsunami warning of September 12, 2007. The evacuation process after the tsunami warning revealed effectiveness of the current disaster preparedness programme in the District. However, the evacuation programme took few hours that may be too long in real tsunami. Fortunately tsunami did not hit the coast and the warning resulted as a false. A false

warning for hazard is not unusual in any disaster preparedness plan. However, the sufferings of the people from false warning could be minimized if an effective warning mechanism could be developed based on regular monitoring and updating of hazard information. Earthquake is also become a regular phenomena in the Cox's Bazar District. While Bangladesh is an earthquake prone country, the Cox's Bazar falls in a zone near to the active fault. A strong earthquake shook coastal areas in southern Bangladesh in December 18, 2007, and residents rushed out of their homes in panic, officials and witnesses said. A few buildings developed cracks, but no casualties were reported. The quake struck around 1:10 p.m. and measured 6.0 on the Richter scale. Its epicenter was about 157 miles southeast of the capital. The measurements were taken at seismic observatories in Dhaka and Chittagong. The TV channel Channel-I; network reported that the quake was felt as far as the Chittagong Hill Tracts, about 30 miles northeast of Cox's Bazar. Several residents reported cracks in neighborhood buildings, including at a court house in Bandarban and at a fire station in Rangamati, both hill districts bordering India and Myanmar. Earthquake of magnitude ranging from 4 to 6 Richter scale occurred around Cox's Bazar District over recent years that raised a concern about preparedness for earthquake hazard. The report presents awareness raising activities on earthquake and tsunami preparedness programme undertaken in Cox's Bazar District.

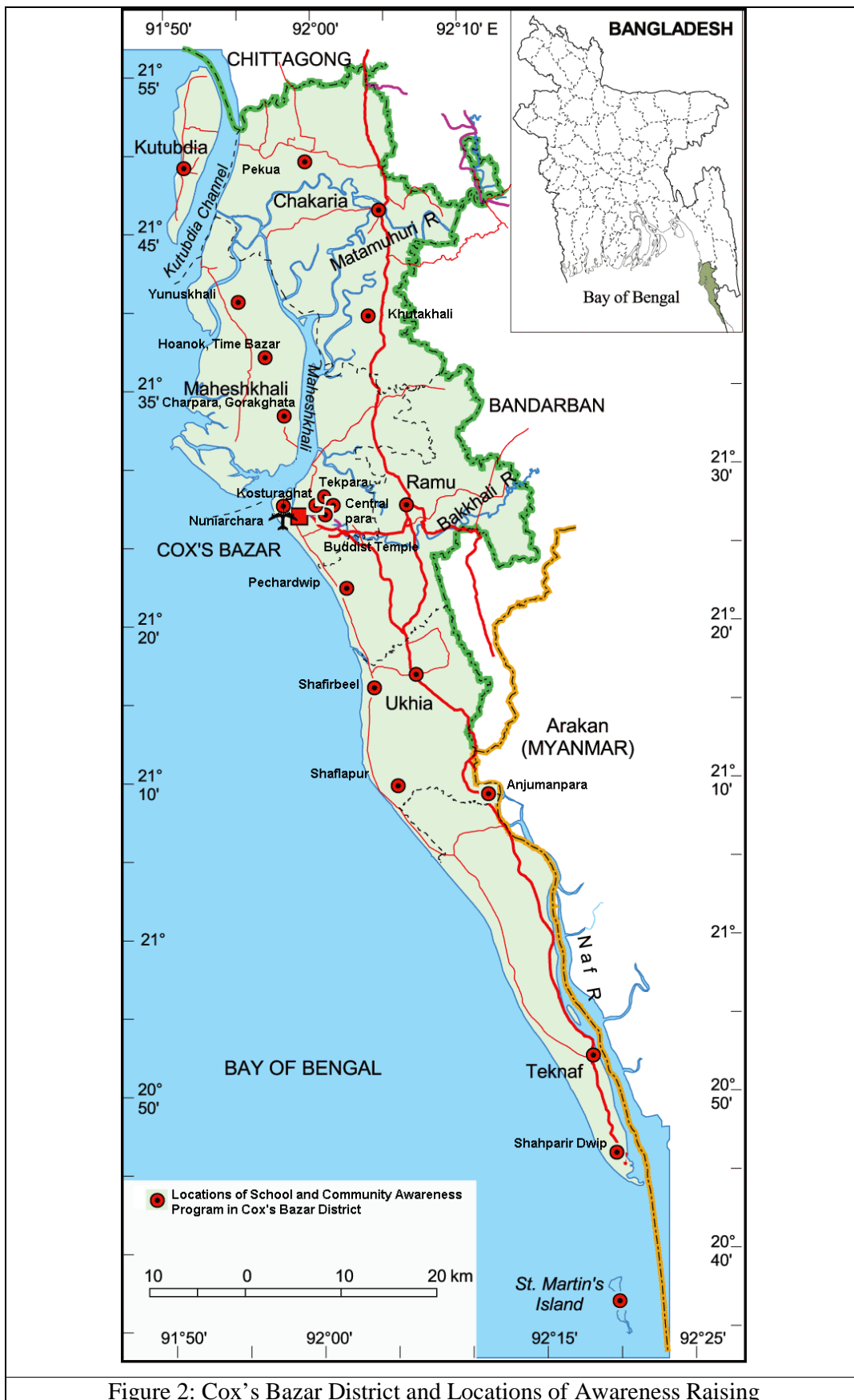
3. Objectives of the Awareness Raising Activities

- To organize disaster preparedness workshops among target beneficiaries
- To educate school children and community on the basics of earthquake and resulting tsunami, their adverse effects and vulnerabilities of the Cox's Bazar areas of Bangladesh
- To introduce disaster fighting techniques; Seven Steps and First Aid, conformity to earthquake.
- To introduce tsunami evacuation maps for the community
- To demonstrate brain storming on a likely earthquake and resulting tsunami through disaster imagination
- To encourage school management committee to formulate Community Emergency Response Team (CERT) in connection to local Union Disaster Management Committee (UDMC).

- To introduce Emergency Alert System to the local community and its operational behavior with CERT and UDMC.
- To raise social responsibilities among school children and community people.

4. The Target Area: Cox's Bazar District

Cox's Bazar District (Figure2) with an area of 2491.86 sq km, is bounded by Chittagong district on the north, Bay of Bengal on the south, Bandarban district, Arakan (Myanmar) and the Naf river on the east, the Bay of Bengal on the west. Annual average temperatures are maximum 34.8°C and minimum 16.1°C and annual rainfall is 4285 mm. The district having been a coastal region, often falls victim to sea storm, tidal bore, hurricane and cyclone. Cox's Bazar is about 150 km from Chittagong and is connected to the port city by bus, air and steamer services.



5. Methodology Adapted for Awareness Raising

5.1 Conceptualization

For the sake of physical research investigation, within the first two quarters of 2007 of the Development of disaster preparedness program for earthquake and tsunami hazards in Cox's Bazar, soil boreholes were conducted within the boundary of cyclone shelters, distributed homogenously all around Cox's Bazar. Twenty soil boreholes were carried out to take the privilege of homogenous distribution, as well as those spatially represent the whole community of Cox's Bazar District, from Teknaf to Kutubdia. Exploration of bore holes had the social impact and raised community interest about project activities. The cyclone shelters nearby to the soil test location works as primary school run by Government of Bangladesh through Upazila Administration and Primary Education Officer. The Head Teachers of those schools were negotiated to help in initiating school level seminar and community level workshop-meeting for awareness raising activities. Program of the seminar and workshops were designed to demonstrate the potential of the disaster, their effects and possible preparedness activities.

School children are future generation. They have the access to other strata and they are quick responder to any uneven event in the society. The psychological impact of preparedness methodologies will transform from generation to generation. Working with school children mostly benefits the society by involving their representations from certain socio-economic and interest groups. Thus, school children has the potential to receive newly introduced learning materials with great attention and they can disseminate those information to their own family, relatives, roaming friends of other schools on playground and neighboring areas. In Bangladesh, school buildings are found to be used as safe shelters due to frequent disasters since more than couples of decades. So, the first responders of a society or a community can be school teachers, their other colleagues in school premise and school children.

5.2 Basic Assumptions

School children have to pass a minimum period of 3 hours for schooling purpose and the community people are very responsible persons with their daily life activities. Children in the coastal community have to contribute their families by either physical support or, looking

after cattle, drying fish or household activities. Meanwhile, community people are to work for their livelihood for a particular day time period. Therefore, the participants were involved in such a manner that they didn't need to spend more than 3 hours per session. Some activities were also arranged after evening prayer in the mosques, or in weekend leisure times for community awareness program, while some class periods were relaxed in schools in a convenient manner.



5.3 Sample Size Determination and Distribution

Raising Awareness program is directly connected with the representatives participating the event. As, the research team was in a position with lots of activities and responsibilities, a point and shoot method was replicated to have an overall coverage of the Cox's Bazar District based on some information review.

5.3.1 Selection of Schools and Number of Beneficiaries

Cox's Bazar District has a population of 19,60,000 of which male 46.23%, female 53.77%; Muslim 92.13%, Hindu 5.6%, Buddhist 2.17%, Christian 0.06% and others 0.04%. Density of population per sq km is 570 (Banglapedia, 2004). Average literacy 21.9%, male 28.2%, female 14.9%. There are 4 government colleges, 17 non-government colleges, 6 government high schools, 107 non-government high school, 8 junior high school, 150 madrasas, 376 government primary schools, 235 non-government primary schools, 22 NGO operated primary schools, one primary teacher's training institute, technical training institute and nine kindergartens.

Primary schools in the research area were found attached mostly with Cyclone Shelters, and their space arrangements were made in such a way to serve as multipurpose for the community and safe shelters for the catchment area. However, the schools cum shelters are not always beyond danger for the natural disaster. Some schools were found in very good condition while few buildings were also abandoned in the area. Figure 3 shows a typical shelter cum school building and Figure 4 shows an abandoned building in Cox's Bazar District.

	
<p>Figure 3: A typical school cum Cyclone Shelter used as multipurpose primary school in Shafirbeel, Cox's Bazar District</p>	<p>Figure 4: Abandoned School building at Pechardwip, vulnerable to earthquake in Cox's Bazar District</p>

Schools in Cyclone Shelters are managed by School Management Committee (SMC), responsible for schooling operations, social responsibilities conformity to the school premises and decision making, administered by Thana Education Officers. Within their present administrative premise, schools cum shelters are operated by Head Teacher in a need and right based approach. Each school has a Guardian Committee, and Meetings of different committee are held each month chaired by the Head Teacher. The School Management Committee is administered by responsible officer of Thana Headquarter. School teachers has the potential to disseminate any hazard information through students, community people as they are connected by Thana Nirbahi Officer's office, Upazila Disaster Management Committee, Union Disaster Management Committee and local Ponchayet Committee. Hence, based on the above information, the research team went for some thump rule to design a sample size and distribute those to make a complete coverage of disseminating awareness related materials. Table1 shows the list of target beneficiaries initially planned for the awareness program, which was eventually adjusted based on local condition.

Table 1: List of Schools as a target for School Awareness Program

Sl.no.	Name of Schools and no. of beneficiaries	Thana/Upazila
1	Tekpara Govt. Primary School cum Cyclone Shelter-100	Cox's Bazar
2	Kosturaghat Govt. Primary School cum Cyclone Shelter-100	Cox's Bazar
3	Central Govt. Primary School cum Cyclone Shelter-100	Cox's Bazar
4	Peskarpara Govt. Primary School cum Cyclone Shelter-100	Cox's Bazar
5	Hazi Hason Ali Govt. Pri. School cum Cyclone Shelter-100	Cox's Bazar
6	Kutubdia Govt. Primary School cum Cyclone Shelter-100	Kutubdia
7	Charpara Govt. Primary School cum Cyclone Shelter-100	Moheshkhali
8	Ukhia Model Govt. Pri. School cum Cyclone Shelter-100	Ukhia
9	Pekua Model Govt. Pri. School cum Cyclone Shelter-100	Pekua
10	Shahporirdwip Govt. Pri. School cum Cyclone Shelter-100	Teknaf
Total	10 x 100 Participants = 1000 School Children in Cox's Bazar District	

5.3.2 Sample Testing and Experimentations

Some schools were experimented first to have an exercise by the awareness raising team lectures on earthquake and tsunami, disaster imagination, video show and sharing knowledge on cyclone shelter buildings vulnerability to upcoming hazards. From this experiment, school children of those schools got training on awareness on earthquake and tsunami. Participants for experimental programs were open for all. School teachers, their neighbors and students were made enthusiastically attending in those programs. Table 2 shows a list of those schools where the experimental program was executed.

Table 2: List of Experimental Schools where Awareness Program was held to have an exercise by the facilitators on their lectures and first aid training

Sl.no.	Name of Schools and no. of beneficiaries	Thana/Upazila
1	Mandolpara Govt. Primary School cum Cyclone Shelter	Ramu
2	Shafirbeel Govt. Primary School cum Cyclone Shelter	Ukhia
3	Pechardwip Govt. Primary School cum Cyclone Shelter	Ramu
4	New Pllanpara Govt. Primary School cum Cyclone Shelter	Teknaf

5.3.3 Selection of Communities and Their Representatives

There are various occupations in the coastal community of Cox's Bazar District. Representatives from different occupations were conceptualized to make access to have a complete coverage to diverge interest groups on earthquake and tsunami. Before fixing the target audiences, information regarding economic status were evaluated based on available literatures. It was found that communities of Cox's Bazar are involved in Agriculture 25.64%, forestry 1.85%, fishing 4.01%, agricultural labourer 21.2%, wage labourer 7.64%, service 4.68%, commerce 15.14%, transport 1.86%, others 17.98% (Banglapedia, 2004). Before choosing the participants to represent the Cyclone Shelters' catchment area people, Head Teachers of different School cum Cyclone Shelters at different locations were discussed and they were requested to make participation from all strata of the society of the nearby area. Finally, it was remained as the Head Teachers' social responsibility to ensure participants in the meeting for awareness raising. Beside these, to ensure representatives from female group, religious and tribal minority, underprivileged and peoples' representatives from Union Parishads and social and religious leaders were also communicated.

The socioeconomic and cultural systems let the teachers in a very respectable position to influence over the society to make understand any situation. Besides, the research team was well informed about the existence of Disaster Management Committees in District, Thana/Upazila, Union and Pourashava level. Those are covered under different projects by other partner organizations (BDPC, RDF, RIC, HITAISHI, CODEC, ANANDA, etc.) of Comprehensive Disaster Management Program (CDMP) followed by some other methodologies of disaster preparedness related awareness raising program. Further, other NGOs; i.e, Caritas, Christian Commission for Development in Bangladesh, Prism Bangladesh, Gana-Swasthya Kendra, BRAC, ASA, PROSHIKA, Bangla-German Sampriti, World Vision, Concern, Islamic Relief Organisation, Muslim Aid, Al-Furkan Welfare Association, MSF (Holland), Red Crescent Society, CARE, etc. have their own Disaster Preparedness Programs there in different issues, at different locations. List of participants along with location and number are given in Appendix-A.

5.4 Tools Applied for Raising Awareness Preparedness

Raising awareness on disaster preparedness comprises different approaches and tools. The seminars, workshop-training sessions, disaster imagination, etc. with a totality are very effective in disaster fighting in connection to Vulnerability and Risk Reduction, contributing to reducing losses. The greater the preparedness, the lesser the losses. The following table shows the applied tools to the community and school.

Table 3: Tools and receivers in awareness raising program

Tools applied	Communities	Schools	Women Community
Series of lectures on Earthquake and Tsunami	√	√	√
Counseling workshops and seminars	√	√	√
Disaster imagination and loss prediction		√	
Audio-visual learning materials	√	√	√
Evacuation mapping for upcoming tsunami escape	√		
First Aid training and hands on skills development		√	
Distribution of posters	√	√	

Considering the time and resource availability, as well as access to remote community, approaches and tools for raising awareness were varied. The next sections are organized to represent a full content of awareness raising activities and tools applied into the schools and local community.

6. Educating the Basics of Earthquake and Tsunami

In each school and community, a basic on earthquake and thereafter tsunami were lectured in a very simple way to grasp the idea (Figure5). The main objective of Earthquake and Tsunami Education was to create a panic on those disasters to influence in receiving preparedness measures and to encourage in community disaster management activity. Recent quakes, felt around Cox's Bazar were discussed and possibilities of severe damages were also made to be believed by the community and school children (Figure7). These counseling workshop and seminars were mainly chaired by Union Parishad Chairman, Member of Particular Union Parishad, Representatives from Union Disaster Management Committee, School Head Teachers, or social or religious leaders.



Figure 5: Earthquake education in Hazi Hason Ali Govt. Primary School, dissemination of audio-visual materials and taking feedback from participants

Ground Shaking & Landslide, thereafter casualties, fires, getting damage of bridges, pipelines, powerlines and roads, failures of dam, hazardous material releases and liquefaction tsunamis Photographs of different earthquake scenario, tsunami disaster and preparedness were viewed to the participants. Laptop and projector based presentations were found very fruitful to have the interactive sessions among the audience (Figure 6). The audiences were given the opportunity to ask their questions and to propose their own ideas (Figure 9). At school and community level what available resources were abandoned for disaster fighting and mitigation measures were also discussed (Figure 8). Communities were found associated with Union Disaster Management Community just in name rather having an effective Community Emergency Response Team. Schools were cyclone shelters, but due to lack of proper maintenance, ignorance and reluctance, First Aid Boxes were useless, lost or absent there. Not even teachers were found having with First Aid Training. Problems and prospects were note down and what can an exemplary solution for their emergency response were also further discussed in First Aid giving point of view.



Figure 6: Displaying Google Maps from Projector to show geographical location



Figure 7: Describing Thrust Fault in connection to tsunami probability



Figure 8: Displaying seabed bathymetry of the Bay of Bengal as part of Tsunami Education



Figure 9: A journalist responding earthquake educational issues in community meeting workshops



Figure 10: Community Awareness Meeting at Leadership University Para at Moheshkhali



Figure 11: Workshop in Central Govt. Primary School at Cox's Bazar Sadar

7. The Seven Steps to Earthquake Safety

Communities and students are assumed to have well informed about the popular Hollywood Movies of James Bond: 007, where Mr. Bond is the key role player for challenging any task. Our team inspires the recipients of schools to be like Bond having the '007' steps (in connection to take deep attention to our disaster fighting tips) followed in their own lives. This coding was helpful to remember the items separately. Again, sequential steps prepare a PENTAGON as symbol of Defense of USA (Figure12).

7.1. Identifying potential hazards in home and beginning to fix them

The first step to earthquake safety is to look around home and identify all unsecured objects subject to fall during a shake. The audiences are given time to think themselves and make a list of their own home objects subject to fall during earthquake.

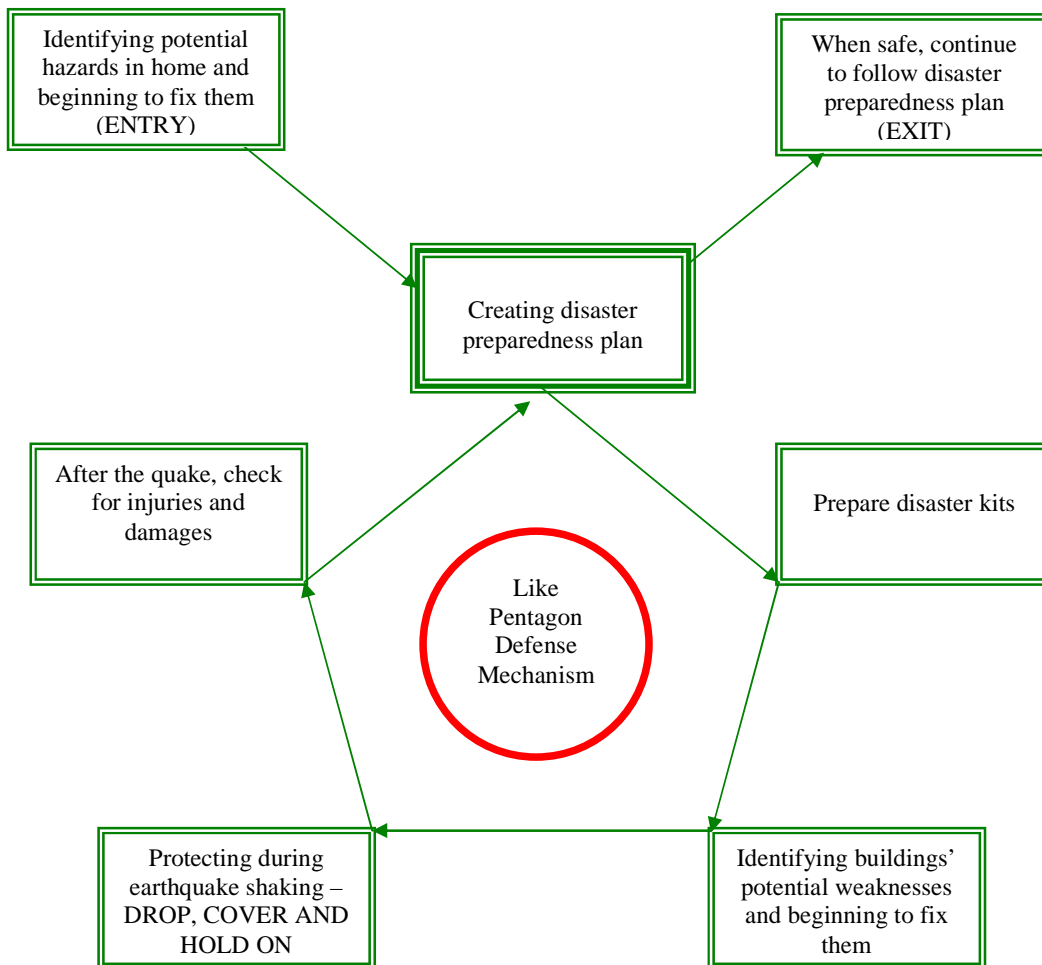


Figure 12: The Seven Steps to Earthquake Safety builds like PENTAGON Defense System

From their written descriptions, heavy furniture, such as bookcases, steal Elmira, wardrobe, meat-shelves, etc. were found. They were advised to make sure that exit paths from their bed remained clear of clutter.

Our facilitator made them to identify some readily available simple and inexpensive things that would help in reducing injuries and protect belongings in a quake. Most hardware and home-improvement department stores carry earthquake safety straps, fasteners, and adhesives (though those are not generally made in connection to any earthquake, but can be of many use) that can be easily used to secure home belongings. Some specific ideas were transferred to the audience to fix illustratable potential hazards at home.

Hanging objects

We like to decorate our home with Art, Photographs, Posters, Wall Clock and other objects hung on walls and they may fall, and glass in frames and mirrors may shatter during a heavy quake. Our team advised to place only soft art, such as unframed posters or rugs and tapestries, above beds or sofas. If there are mirrors, pictures, and other hanging objects, they are recommended to put on closed hooks.

Objects on open/closed shelves

In any shaky situation, collectibles and other loose objects can become dangerous projectiles. Putty or removable glue, adhesives can be used to hold those collectibles, pottery, and lamps in place. Besides, museum wax, or quake gels can also be applied. These are little bit costly. Special care should be taken to place heavy items and breakables on lower shelves.

Furniture

Tall, top-heavy furniture, such as bookcases, Elmira, cabinet, wardrobe, home theaters, entertainment centers, may fall and injure. Top corners of the tall furniture should be secured to a wall stud, not just to the dry wall. Again, furniture can be allowed to move independently from the wall mounting with flexible fasteners, like nylon straps to reduce strain on studs.

Overhead water tank, water and gas (if any) pipes

Unsecured water tanks may fall over, rupturing rigid water and gas connections. So water tanks should be anchored to wall studs or masonry with metal straps and lag screws. To avoid fracturing in pipes, flexible (corrugated) copper water connectors can be a good initiative. Water leaks can cause extensive damage, and gas leaks are for major fire hazard. Consulting a plumber to evaluate, replace and properly secure rusted or worn water and gas pipes may reduce risk. Besides, water and gas shutoff valves should be checked whether they are working properly. During an emergency, to avoid catastrophic disaster, shutoff valves should be operated.

In the kitchen

Apart from gas burners, fuel cakes, fuel sticks, dried leaves are used in cooking for fire. During a quake, sparks may project dynamically and cause fire hazard. Water full tub, sand or firefighting instruments can be placed in the kitchen. Glassware and china-porcelain may crash to the floor if cabinet doors are unsecured. Cabinet doors, especially those overhead should be secured to help prevent contents from falling out during a quake. Latches must be used to make provisions for children in the kitchen. Refrigerators and other home appliances should be secured with walls using earthquake straps or clamps. Drills with royal plug can be a cheaper way to reduce cost.

In the garage, store room or workshop-studio

Utility items made with metal substances in the garage and store can fall, causing injuries, damage and hazardous spills or leaks. Flammable or hazardous materials must be placed to low areas and items stored above or beside vehicles, or fragile stocks should be placed in such a way not to damage, or block the passage.

Home electronics

Large electronic devices may fall, spreading particles of glass and darts, causing injuries and damage. They are also costly to replace. Televisions, stereos, woven, computers and lightings should be strapped with nylon and buckles for easy removal and relocation.

7.2. Creating disaster preparedness plan

The audiences were asked whether their family members know how to react (disaster response) during and after a strong earthquake. Most of them noticed negative. Then, they were introduced with different type of plans they generally used to. Mostly noticed about their annual plan to celebrate Eid-ul-fitre, shopping plan, Eid-ul-ajha, sacrificing cattle, study plan, home plan, life plan, etc. A plan was introduced as a preprogrammed idea or thinking what to do in a certain period or what was expected for a better future. Therefore, a disaster preparedness plan came to realize as thinking some upcoming adverse disastrous situation, what was expected at that moment after a certain period, to fight properly to overcome the nightmare. Thus, disaster preparedness plan is an organized thinking of logistics, skills and events to support, help protecting someone from a known hazard.

Components of earthquake preparedness plan

Skills at hand: how to face an earthquake shaky situation

Individual survival skills were the most crucial part of any disaster preparedness plan, introduced to the audience. Practicing ‘drop, cover, and hold on’-a simultaneous technique to response just immediate at the moment of any earthquake scenario (details in step-5). Participants were then advised to think their safest spots in every room in the house they live in. Spots under sturdy desks, bed and tables were recommended to consider.

Logistics: what do I need to make a success to my plan

Participants were suggested to keep shoes and a working flashlight next to each bed at their home. Further, advised to teach everyone in their family to use emergency communication methods, like whistles, and or knocking 3 times repeatedly if trapped. Rescuers searching collapsed buildings will be listening to sounds. Identifying the needs of household members and neighbors with special requirements or situations, such as use of a wheel chair, walking aids, special diets, or medication can add value to preparedness plan.

Preparation of Tsunami Evacuation Map

Based on the discussion among the community people, the safest way to reach safe shelters were prepared. Possibility of Tsunami was judged for Kutubdia, Moheshkhali, Cox’s Bazar Paurashava, Shahporirdwip, etc. It was prepared by ground survey of accessibility to Cyclone Shelter Premises of high land. The following figures (Figure 13 to 16) were some examples of initiatives in tsunami evacuation route plans. The developed tsunami evacuation maps are provided in Appendix-E.

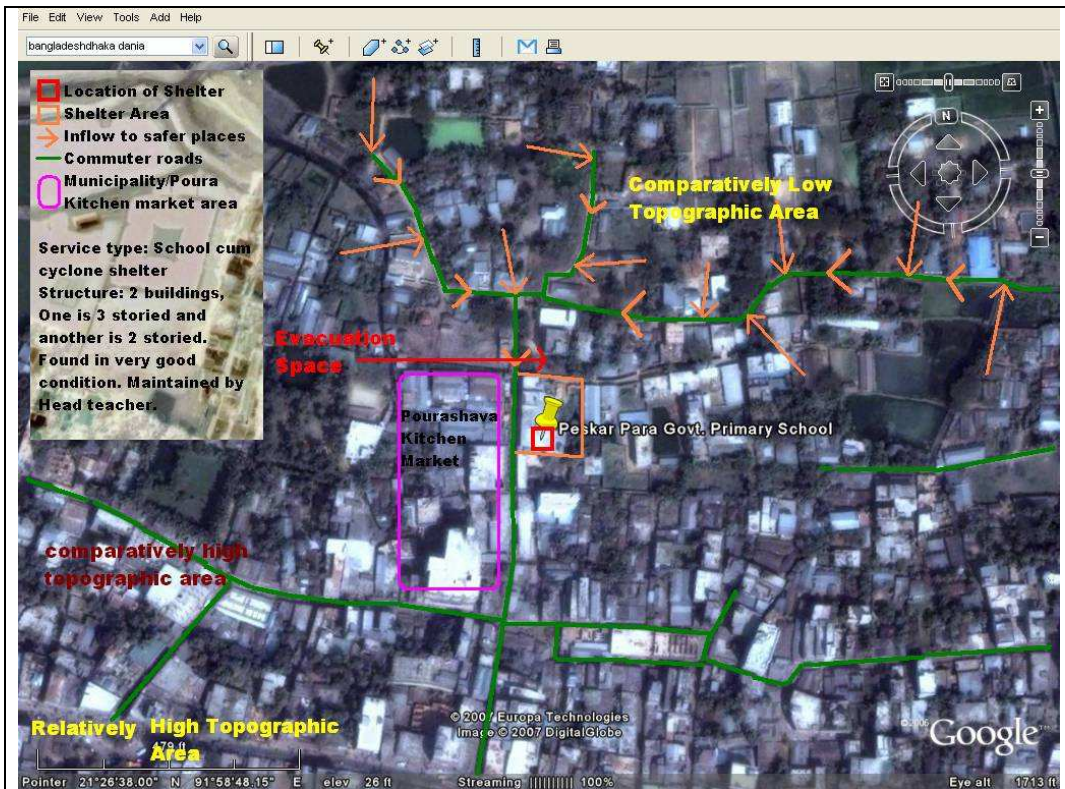


Figure 13: Tsunami Evacuation Mapping in Peskarpara Area based on pointing Safe shelter at Peskarpara Govt. Primary School cum Cyclone Shelter

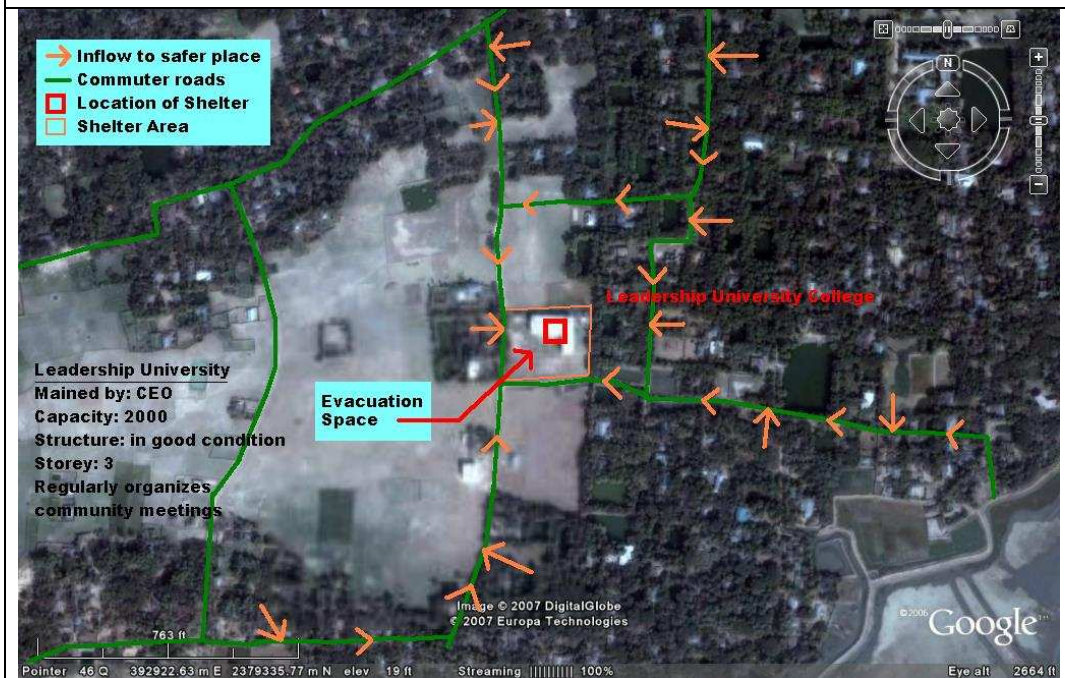


Figure 14: Tsunami Evacuation Mapping in Charpara, Leadership University Para, Gorakghata, Moheshkhali Area based on pointing Safe shelter at Leadership University cum Cyclone Shelter

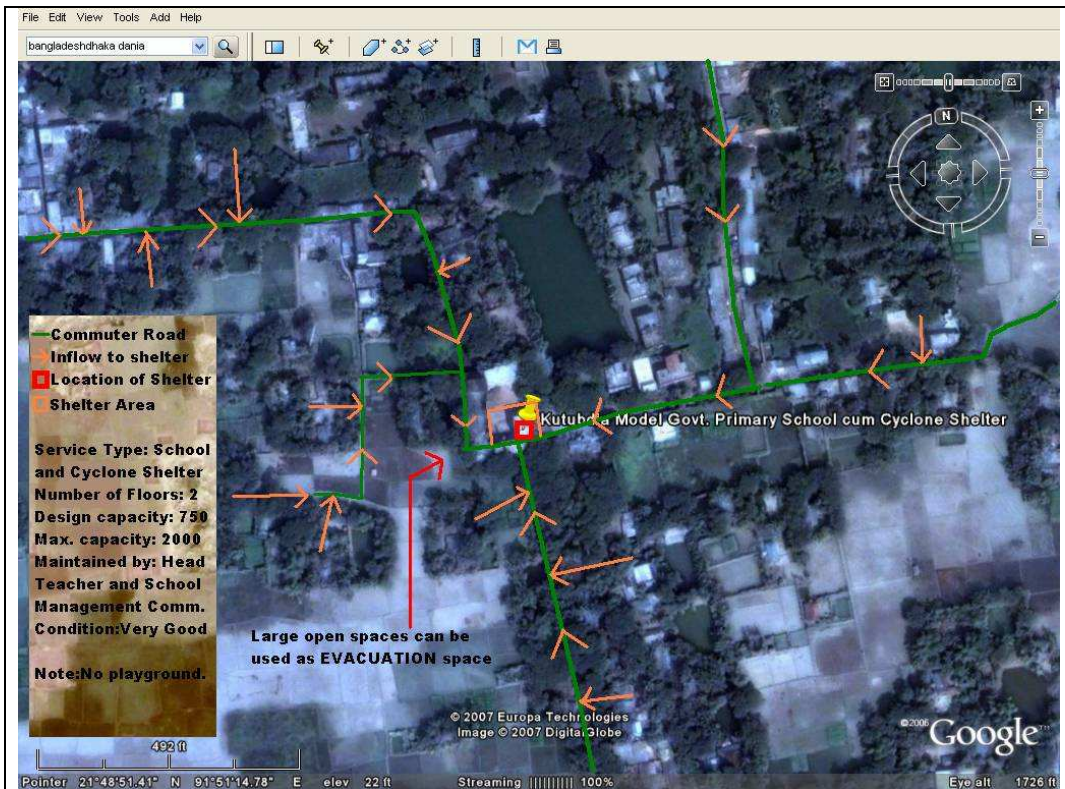


Figure 15: Tsunami Evacuation Mapping in Kutudia Island Area based on pointing Safe shelter at Kutubdia Model Govt. Primary School cum Cyclone Shelter



Figure 16: Tsunami Evacuation Mapping in Shahporirdwip Area based on pointing Safe shelter at Shahporirdwip Govt. Primary School cum Cyclone Shelter

Special training on First Aid and CPR

In each country, at different locations, social clubs, like Red Cross/Crescent Society, Scout, Rotaract Club, etc. are now common. Some participants noticed about their involvement in Cyclone Preparedness Program (CPP) by Red Crescent in their locality. They were encouraged to take a course on First Aid and CPR (CardioPulmonary Resuscitation). A complete demonstration on First Aid and CPR were transferred to the school children, where as orally described to the community people, due to shortage of time.

First Aid is a primary tool applied to any victim of hazards. While giving and receiving First Aids, one must follow three important rules which were assisted as mandatory for any sort of hazardous situation. Focusing particularly earthquake and concurrent tsunami, training session was operated with reduced time frame;

1. In any hazard, while the victims required First Aid, keep head cool and do quick
2. The First Aid operator is not a doctor, or some one must not pretend to be a doctor
3. Apply your techniques to make victims' situation under control and then transfer injured people to proper medication to registered physicians.

Getting training on First Aid not only facilitates the trainee (first hand beneficiaries) himself, rather it provides extending confidential help towards community people in a disastrous situation. Sometimes, just for any simple first aid can be of a great value to save lives from hazardous situation from an earthquake.

There were some objectives kept in mind to execute training on First Aid among school children;

- To introduce with First Aid Box and its supplies, applications of different instruments, contents and some life saving drugs.
- To train students the basic steps that are required to nurse any victim, particularly for earthquake and other similar disastrous situation
- To feel confident to heal the sudden panic on any unprecedented injuries that victims fall in getting shocked from unexpected hazardous situation
- To introduce the students own capacity with the available resources within their community

Tools introduced to the participants

A general knowledge on primary medications were lectured among the participating children. Thereafter they were asked if there was availability of different items required to face particular injuries at their home. If they were responded with the unavailability of required materials at home, from where those items could be managed, loaned or borrowed, even to purchase, were properly discussed by open discussions. Introductory definitions on First Aid, symptoms of different injuries, causes of getting possible injuries from earthquake related hazardous situation at home and outdoor built environment, some principles and responsibilities of First Aid provider were properly instructed. The topics that were followed are-

- 3L; meaning Look, Listen and Learn: In any victimized situation, one must keep his head cool, calm down and look the injured victims (Figure 18), try to listen to how he feels, thereafter try to learn how everything was happened. This is the first step to make a choice who will get the first preference
- ABC; meaning Air Breathing and Circulating: In collapsed building, injuries created mostly victimized by falling under debris and toppled masonry. People may fail to breath and ABC can be of good use. It requires skilled hands and therefore students were advised to exercise frequently at their homes and playfields (Figure 19, 20).
- CPR; meaning Cardio Pulmonary Resuscitation: Getting smashed or, sudden shock may result to mild stroke and respiratory difficulties. This requires very skilled hands on experience to operate and children were prohibited to execute it. It requires proper care; other wise bones in chest may break due to over burden pressure producing by bumping downwards.
- Heatstroke, how to treat burnt casualty, burns Scalds and Acid Burns
- Bleeding, wounds, dressings and bandages
- Healing of getting Shock, Unconsciousness and Fainting
- Immobilizing the injured part, lower and upper arm sling, chest, leg and skull bandage
- Fractures, Strain and Sprains
- Mobilizing the first aided one to registered physician, or local hospital
- Sharing knowledge on their active participation in any such victimized situation the participants ever experienced

Habituate with house keeping emergency activities

Audiences were asked some questions on whether they knew about the shutoff valves of water, gas, electricity, etc. in their own houses. Participants were inspired to get trained on using fire-extinguisher and mask (if necessary). Installation of fire and smoke alarm, testing them monthly, changing batteries once a year, etc. should be exercised by themselves. Our facilitators queried about whether there was any Community Emergency Response Team (CERT) in their locality. The response was negative. No interest groups, within the district, except a special Department of Fire Service and Civil Defense of Government of Bangladesh under the administrative jurisdiction of Cox's Bazar DC, located central part of Cox's Bazar Paurashava (municipality) was found to fight the emergency period.

Organized events: plan to communicate and recover after an earthquake

After any earthquake, the residents must get themselves outside of the buildings. The audiences were advised to imagine their homes' outside place to meet after the shaking stops. Every family member should be provided important contact phone numbers. Alternatives of home should be thought, because after a strong shake, home cannot be occupied due to risk of fractures and fragility.

7.3. Prepare disaster kits

In every home there are some common drugs. The drug-stock generally serves as primary kit to fight any disease at home. This practice had been found in each family, representing the community and school children. Disaster kit is actually a combination of different emergency handheld devices and medical supplies. The important factor focused here was the access to disaster kits at the moment of any upcoming disaster event. These emergency kits should be kept at home, at workplace, at bike or at school. A backpack or other small bag is best for these kits so that they can easily carried in an evacuation. A demonstration was shown about the contents of an emergency supplies in a personal disaster kit (for school children, also applicable to individuals) and household disaster kit (to the community).

Content of Personal Disaster Kit

Common medical supplies; Paracetamol, Metronidazole, Oral Saline, Antihistamine Tablets, Aspirins, Pain killers and Antacid.

First Aid kit and handbook; Scissors, gauges, bandages, antiseptics, clean clothes, cotton buds, etc.

Spare eyeglasses, personal hygiene supplies, sturdy shoes, bottle water, whistles (to alert rescuers to your location), emergency cash, personal identification, list of emergency contact phone numbers, snack foods high in calories, emergency light sticks, and/or working flash light with extra batteries, comfort items, such as games, crayons, writing materials, etc.

Content of Household Disaster Kit

The idea for household disaster kit preparation is something different than that of personal disaster kit. While thinking for a household disaster kit, one should keep in mind that electrical, water, transportation, and other vital systems can be disrupted for several days after any large earthquake. Emergency response agencies and hospitals will likely be overcrowded and unable to provide immediate assistance. Hence, household disaster kit must complement personal disaster kit encompassing some other supplies and should be located outside the house, accessible after the hazard event.

Drinking water (one gallon per person per day), first aid supplies, medications, essential hygiene items, soap, tooth paste, toilet paper, sanitary napkins, water buckets, etc. are focal items. Emergency lighting-light sticks, firebox, flash/torch light, batteries, radio, canned and packed food, cooking utensils including emergency cooking burner, work gloves, protective goggles, etc. can be very contributory. Items to protect from the adverse weather, such as warm clothing, sturdy shoes, extra socks, blankets, umbrella and perhaps even a tent, heavy duty plastic bags for waste disposal and to serve other uses, such as tarps and ponchos can add some extra value to the household disaster kit.

7.4 Identifying buildings' potential weaknesses and beginning to fix them

Buildings all over Bangladesh are mainly three types; kacha, semi pucca, and pucca building. Kacha and semi pucca buildings are more or less risk free from any earthquake hazards. Pucca i.e., either masonry or, concrete buildings are under risk of collapsing from any large earthquake. Masonry buildings are more vulnerable than reinforced concrete buildings. Soft stories at the bottom level of high-rises, multi-stories are of those reasons collapsing from an earthquake. Again, aged buildings are also risky due to reduced strength. Building inspectors, contractors or, engineers should be involved to retrofit buildings to reduce vulnerability to

any heavy shake. Cracks, rusted steel rods, uplifted plasters should be inspected and proper measures should be taken in consent to building experts. Our research on different sampled houses over the coastal areas of Cox’s Bazar notices that most buildings are vulnerable to any moderate to large earthquake magnitude.

7.5. Protecting during earthquake shaking –DROP, COVER AND HOLD ON

The participants in the school were exercised mock drills, while participants in the community group were asked to imagine a situation in the middle of a strong earthquake. This can be termed as Disaster Response Imagination.



Figure 17: DROP, COVER and HOLD on exercised by a student



Figure 18: Demonstration of getting some injured and senseless by earthquake hazard in a locality



Figure 19: Examining the situation and in progress to CPR (Cardiopulmonary Resuscitation) by a volunteer



Figure 20: Demonstration ABC of artificial air breathing mechanism applied to a victim in building collapsed

Imagine yourself indoor

“DROP, COVER, AND HOLD ON,” if you are not near a desk or table, drop to the floor against an interior wall and protect your head and neck with your arms (Figure 17). Avoid exterior walls, windows, hanging objects, mirrors, tall furniture, large appliances, and cabinets filled with heavy objects. If not possible, place yourself aside the column. Columns are more strong vertical objects within the buildings. Do not go outside until well after the shaking stops. If you are in bed, just hold on and stay there, protecting your head with a pillow. You are less likely to be injured staying where you are. Broken glass on the floor can cause injuries; so be sure to put on shoes on before stepping on the floor. Try to remember, it was introduced in step 2 when you learnt about your disaster preparedness plan. If you are in high rise building, drop, cover and hold on. Do not use elevators. Don't be surprised if sprinkler systems or fire alarms activate. If you are at your workplace, drop, cover and hold on. Try to grasp the earthquake safety plan, if the workstation do possess. Unfortunately, no plans were found available in any organization of Cox's Bazar District. When safe, move to a specific location. If you are in any public building, or within a theatre seat, duck down and protect your head and neck with your arms. Don't try to leave until the shaking is over. Then walk out slowly, watching for fallen debris or anything that could fall on you in aftershocks.

Some posters depicting the earthquake preparedness applicable in Bangladesh were distributed among the participants. The poster was made by Prof. Dr. M. A. Anasary and *et. al.* which was an outcome of BUET-VPI Linkage Project, funded by Ministry of Science and Information Communication Technology, Government of Bangladesh.

Figure 21 shows the poster on earthquake safety options and preparedness. This poster contains tips and techniques in building construction through reducing vulnerabilities, steel orientation, massing design, earthquake preparedness, response, mitigation and recovery suggestions.

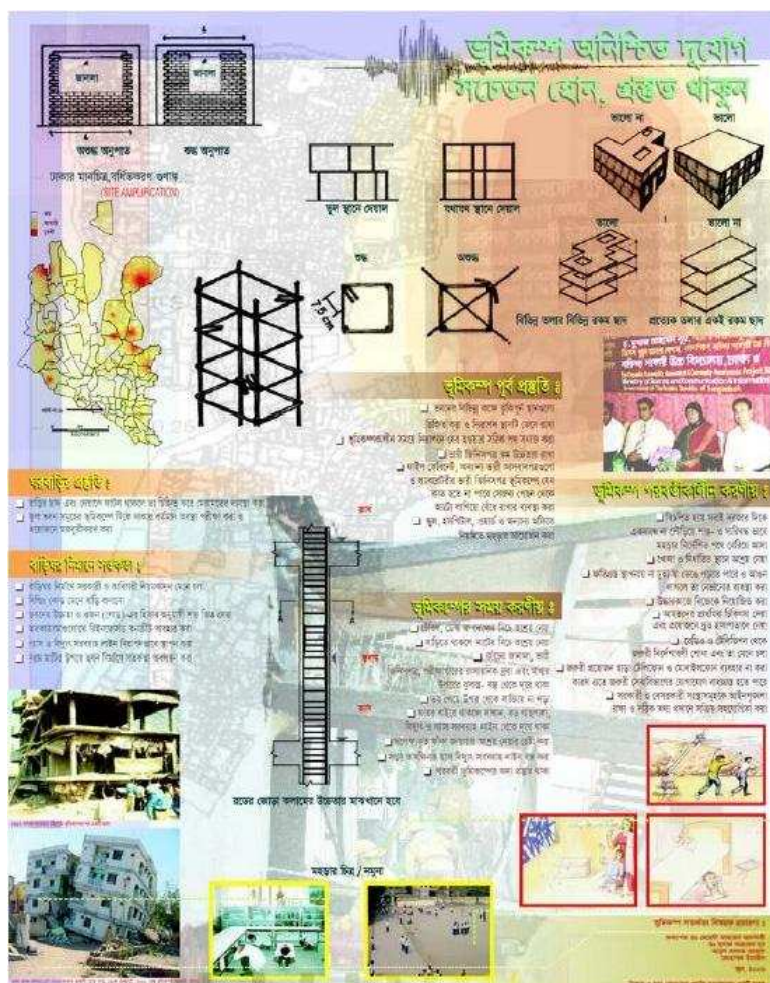


Figure 21: A poster-Earthquake is an unpredictable disaster, get aware and preparedness practices

Imagine yourself outdoors

Move to a clear area if you can safely do so; avoid buildings, power lines, trees, and other hazards. Always assume fallen power lines are live! While passing any tall buildings, take care yourself. Windows, facades, and architectural details are often the first parts of a building to collapse. Keep away from these danger spots while shaking starts and take refuge in a safe building or an open space. While driving, if quake starts, just pull over to a safe side of the road, stop and set the parking brake. Avoid overpasses, bridges, powerlines, signs, trees, and other things that might fall on the vehicle. Stay inside the vehicle until shaking is over. If any powerline falls on the vehicle, stay inside until a trained, skilled person removes the hazard. Dams can fall during a major earthquake as a catastrophic failure is unlikely, but if you are downstream from a dam, you should know flood-zone information and have prepared

an evacuation plan. If you are near the shore, tsunamis from local earthquakes may flood low lying coasts within minutes of the quake. Distant, large earthquakes can produce tsunamis that may arrive hours later. If you feel strong quake, hear tsunami warning or notice the water suddenly withdrawing from the beach, evacuate immediately to higher ground. Tsunami waves may continue to arrive for hours, so do not return to the shore until an “all clear message” has been issued.

Particularly for this preparedness program, tsunami specific information posters were distributed to the community people. Basics of tsunami and behaviors, its adverse effects without any preparedness, experiences from recent tsunamis along with a Digital Elevation Model (DEM) were introduced to the community through this poster.

Figure 22 shows the poster on tsunami related literatures that can raise awareness among peoples of Cox’s Bazar. This poster contains basics on tsunami, early warning tips, tsunami preparedness activities, explanation of water level rise through Digital Elevation Model (DEM), immediate response just after getting warning, prohibition on some traditional activities, recommendations to search for safe shelters and examples of recent tsunami devastating situations.



Figure 22: A poster on Tsunami as a sudden disaster, knowing it, getting aware and preparedness

Further, the audiences were convinced at different workshop that a video would be played later for them to have the experiences from recent tsunamis worldwide. The video consisted with scenes from different tsunami affected coastal areas of Indonesia, Sri Lanka, India, Thailand, Somalia, Myanmar, Malaysia, and Maldives devastated inundated by December 26, 2004 tsunami.

7.6 After the quake, check for injuries and damages

The participants were advised to recall their 'Disaster Preparedness Plan' what they learnt in step two. At this stage, the audiences were instructed to follow some structured activities for themselves, their properties and home.

Check for serious injuries before helping others. Protect nose, mouth and eyes from dust. Put direct pressure to bleeding person's wound. Use clean gauze if necessary and available. Persons not breathing should be administered rescue breathing. Persons not having pulse must be provided CPR. Cover injured persons with blankets/clothes. Seriously injured persons shouldn't be moved unless they are found in immediate danger of further harm.

Check for damage causing hazardous conditions

If small fire is there, put out immediately. Turn off the gas by shutoff if gas leak is suspected and odor or sound of leaking from broken pipes can be heard. Shutoff power lines from circuit breaker switch if there is any damage found in home wiring. Leave the power off until the damage is repaired! Beware of heavy items falling or tumbling off shelves when opening the closet, kitchen cabinet and cupboard doors. Potentially harmful materials, such as bleach, lye, garden chemicals, paint, and gasoline or other flammable liquids should be isolated or covered with an absorbent material, such as dirt or cat litter.

Stay away from damaged masonry structures and walls. They may be weakened and could topple during aftershocks. If home is found structurally unsafe or threatened by fire or other secondary disaster, evacuation is a must. However emergency-safe shelters may be overcrowded and initially lack basic services ever experienced. It will not be a good idea to leave home just because of utilities getting out of order; it can make home belongings unsecured. Go for the personal and as well as household disaster kit which was planned in step three.

7.7 When safe, continue to follow disaster preparedness plan

At this stage, participants were expected to overcome the disastrous situation happened by an imaginary strong earthquake. They were further advised to take safety precautions while entering their own homes on the first day after the earthquake. Reentering to the houses was highly prohibited until someone knows whether it was safe. Checks should be made before

using open flames (lighters, matches, candles, etc.) or operating any electrical or mechanical device that could create spark (light switches, generators, motor vehicles, etc.). Checks also should be made for chemical spills, faulty electrical wiring, broken water glasses, aquarium, etc. Portable or car radios can be listened for safety advisories centrally disseminated from emergency services. Victims may be in need of food and water supplies. Refrigerated food and drinks can be used for some more days if doors remain closed. Advantages from household disaster kit can be of good use at this stage.

Introduction of Emergency Alert System

The discussions made among different community found that the community is well informed about early warning system prescribed by Cyclone Preparedness Program (CPP) (Figure 24). Existing methodologies of flagging information were introduced (Figure 23, 25) further to the participating children of different schools, though three flag signaling methods generally does not comply with the exact information what is actually happen out there (Sutradhor, 2007). Sharing on experiences on existing early warning system revealed that it is in need of modernized, more self explanatory and interactive in in emergency response. Again, it was found that most cases cyclone shelters were not visible to the community (Figure 26) from surrounding areas and therefore flagging requires on more height elevation.



Figure 23: A facilitator introducing contents of a flag to the school children



Figure 24: School children response in having understanding the meaning of Flag Signalling Methodologies



Figure 25: Explaining Flagging Methodologies to the Community People



Figure 26: A Cyclone Shelter with less legibility from Marine Drive, Cox's Bazar

8. Brief Description of the Programs

The awareness raising program started with a Project Briefing workshop on the date of thirtieth May, 2007, to District Disaster Management Committee of Cox's Bazar. The program was chaired by the District Commissioner Mr. Sazzadul Hassan, moderated by Dr. Mehedi Ahmed Ansary, Professor, Department of Civil Engineering, BUET and mainly lectured by Dr. Ashutosh Sutradhar, Project Director and Associate Professor, Department of Civil Engineering, BUET. The District Commissioner Mr. Sazzadul Hassan said that Earthquake and Tsunami related researches have the potential to reduce earthquake and tsunami vulnerability in Cox's Bazar. He further added that the initiative by Bangladesh University of Engineering and Technology (BUET), funded by UNDP, in collaboration with CDMP had the immense scope to learn some new ideas and sharing. The main objective of the workshop was to give a brief idea about the project activities and raising awareness among the representatives of District Disaster Management Committee (DDMC). Dr. Ansary narrated how Cox's Bazar area is vulnerable to earthquake in connection to locating nearby active fault. The probability of getting tsunami was in question and up to that end due to continental shelf, its probability is far less -told by Dr. Ashutosh Sutra Dhar. Apart from the main lecturers, Dr. Munaz Ahmed Noor, Associate Professor, Department of Civil Engineering, BUET, described the techniques of curing and mixing of mortars for better construction output in saline areas. Participants were from different Administrative personnel of Upazilas, local authorities, other governmental and non-governmental organizations. While at the workshop, everyone was provided with lecture slide copies and project poster on

tsunami understanding (Figure 22). The program ended with a session of open discussion on different aspects of undertaking project activities.



Figure 27: Project Briefing Session, chaired by the DC Mr. Sazzadul Hassan, moderated by Dr. Mehedi Ahmed Ansary



Figure 28: Project Briefing Session, main lecturers Dr. Ashutosh Sutradhar and Dr. Munaz Ahmed Noor

The following passages will contain the brief description of workshops, seminars, training and film shows in different schools and communities all over Cox's Bazar District.

8.1 Hazi Hason Ali Govt. Primary School

The school is located in Nuniarchara area of Cox's Bazar Sadar, just aside the bank of Bakkhali river. The school was once in nearby Wolrd Vision Cyclone Shelter. Later, with the availability of fund, it stands now on its own premise. The head teacher Mr.Azizur Rahman helped a lot to organize the student program with great effort. Besides, the other assistant teachers and our junior volunteers helped in physical instrumentation. The program started with recitation from the Holy Quran. After a short speech by the Head Teacher to the students, basics on earthquake, tsunami, cyclone and other disasters were discussed among the student. Their present status of preparedness on cyclones was shared and how they organize their sheltering process was exchanged among them. Participants were from class three to five, both boys and girls and they were 101 in number.

Table 4: List of participating students from Hazi Hason Ali Primary School

Participants	Class III	Class IV	Class V	Total
Boys	24	11	8	33
Girls	23	16	19	68
Total	47	27	27	101

8.2 Kutubdia Model Govt. Primary School

Kutubdia is an island in the midst of the Bay of Bengal. The island is only accessible by country boat. Now a days, some speed boats are made available with a high payment. The BUET team negotiated with the head teacher of Kutubdia Model Govt. Primary School, Mr. Golam Rahman and Assistant teacher Mr. Nazmul Islam. The target of the program was to share the knowledge of earthquake and tsunami of past days they have ever experienced. Experiences from tsunami of December, 2004 had a special impact on the peoples of locality. Children said about their heard experiences from their parents and relatives in Kutubdia. A severe water quake was felt and shrimps and other fish beds were washed away with the sudden arrival of water quake. People believed about their ultimate fate on that day that they were going to die. Based from their experiences, the team trained those students how to protect themselves at home and school from an imaginary earthquake. ‘Drop-cover and hold on’ was demonstrated among the students. Both male and female students took part. Our target population was only 100 for that school. Participants were more than the expectation and in reality, training sessions attracted more students to see the other participating students in the class room. Total listed participants were 107.

Table 5: List of participating students from Kutubdia Model Govt. Primary School

Participants	Class III	Class IV	Class V	Total
Boys	12	17	11	40
Girls	26	20	21	67
Total	38	37	31	107

8.3 Charpara Registered Govt. Primary School

Charpara is a little neighborhood in Gorakghata Union of Maheshkhali Island. The Maheshkhali island is highly accessible by speed boat and also by country boat. Our local volunteer Mr. Helal Uddin, who lived in Charpara area negotiated with the School Management Committee both for student and community program. The committee called for a meeting with the teachers of Charpara Registered Govt. Primary School. Thus the student program was organized with the input of earthquake and tsunami definitions, their strength to destroy the area they lived in and expected loss of lives. Nearby hilly areas can be a good shelter for any tsunami was also discussed. There is a Private University named Leadership University College, in Gorakghata and their building structures were made in such a way to be used like Cyclone Shelter. The students were inspired to take shelter there while any cyclone possibility in the area. Further, for any tsunami, those multistoried buildings can be of some good sheltering centers were also made informed to the students. Participants were from class one to five. Charpara School has a very poor number of students due to its poor infrastructures and shortage of teachers. Some students were brought from other neighboring Kinder Garten school and Madrassa. Total participants were 100.

Table 6: List of participating students from Charpara Registered Govt. Primary School

Participants	Class I	Class II	Class III	Class IV	Class V	Total
Boys	4	10	18	11	12	55
Girls	4	6	11	10	14	45
Total	8	16	29	21	26	100

8.4 Ukhia Model Govt. Primary School

Ukhia is one the Thanas of Cox's Bazar District. Ukhia Model Govt. Primary School is located just on the highway from Cox's Bazar Sadar to Teknaf Thana, via Ukhia thana. The School is popular to the locality and situated in a Multipurpose Cyclone shelter, funded by Saudi Government. The head teacher Mr. Shamshul Alam cooperated a lot to organize a student meeting with BUET team. Mr. Alam had a practice of disciplined arrangement to organize students. Students were regularly assembled for Morning Prayer, singing national

anthem and short exercises. All those were the introduction of the program. Thereafter students were introduced with earthquake and tsunami matters, their contribution to disaster all over the world. A video on recent tsunami was presented to the students and they were able to understand the severity of damaging power of any tsunami. The students were further given disaster preparedness tips. Special first aid training on cardiopulmonary resuscitation was demonstrated. Some available medicinal drugs were introduced for quick references for emergency home purpose. Participants were only from class four and five. The total numbers of participants were more than 107, but our registration form had only the container row of that numbers.

Table 7: List of participating students from Ukhia Model Govt. Primary School

Participants	Class IV	Class V	Total
Boys	19	26	35
Girls	38	24	62
Total	57	50	107

8.5 Shahporirdwip Govt. Primary School

Shahporirdwip is located at far north eastern part of Bangladesh main land. The name reveals that it is a island of Shah Pori of some myth. With the rise of water level of sea in rainy season, it really comes disconnected from the main land and local transportation collapse. Shahporirdwip has only two cyclone shelters and one of them serve as Primary School. The head teacher Mr. Kolimullah was primarily contacted both for soil boring and student program purpose. Other associated teachers were also helpful in organizing and undertaking awareness raising activity. Part-time teacher Mr. Abdul Mabud was there to serve our project activities. Mr. Mabud gave an orientation about our awareness raising goal and objectives to the teachers and students. Students were gathered in a hall room inside the cyclone shelter and displayed the video documentation of recent tsunamis over Indian coastal region. Students were found very attentive to the devastating calamities of tsunami hitting scenes. They were surprised to see the effects and got frightened about whether any possibility of tsunami in Shahporirsdwip. Students were advised to take safe shelter making an observation of evacuation map for their locality, made from Google-earth aerial photographs. If really any such disaster comes, they must be in need of emergency response and hence they were taught on certain topics and skills on first aid. The participants were both male and female students

and the total number of participants was 104 which was more than that of registered in our attendance sheet. Finally, the program was modeled as one of the successful awareness activity in Cox's Bazar area for the BUET team. The team is highly grateful to head teacher Mr. Kolimullah for his immense cooperation undertaking the whole session.

Table 8: List of participating students from Shahporirdwip Govt. Primary School

Participants	Class III	Class IV	Class V	Total
Boys	13	31	16	60
Girls	6	16	22	44
Total	19	47	38	104

8.6 Pekua Model Govt. Primary School

Pekua Thana is newly formed from former Chakaria Thana. At the center of Pekua Sadar, the Pekua Model Govt. School is located. The head teacher Mr. Nasiruddin Ahmed is the secretary of School Management Committee and the management committee is also responsible for the caretaking the Cyclone shelter premises, as the school works within the cyclone shelter and hence uses all types of infrastructures of the shelter premise. The BUET team negotiated to organize the workshop with the head teacher and thereafter cooperated highly make a successful completion of video documentation display, First Aid Training, Disaster Preparedness tips, existing early warning methodologies and sheltering process of cyclone shelters. The area where the school was located is not actually a storm surge prone area rather it has higher altitudes. Therefore emphasis was given more earthquake matters, as it was noticed that some earthquakes were felt there severely on past days. Samples for soil testing from bore logs were collected earlier than the day the program was organized and they were informed about possibility of high seismic activity due to soil condition. After completion of the program students were drilled with imaginary earthquake and evacuation from the school class rooms. More than one hundred and twenty students participated that program. From the registered list of students of 107, 20 male students and 87 female students were found participated from the program. The higher number of female participation is an indicator of interests among female students on such workshop that was liked by them.

Table 9: List of participating students from Pekua Model Govt. Primary School

Participants	Class II	Class III	Class IV	Class V	Total
Boys	0	15	10	5	20
Girls	0	24	39	14	87
Total	0	39	49	19	107

8.7 Kosturaghat Govt. Primary School

Kosturaghat is actually river port just aside the Bangladesh Inland Water Transport Authority office in Cox's Bazar municipality area. A cyclone shelter standing on the bank of river Bokkhali is occupied by Kosturaghat Govt. Primary School. The head teacher Mr. Borhanuddin Ahmed is in charge of both school and shelter premise, connected to an authority of School Management Committee. The school is actually a combined school with boys and girls at different shifts. BUET team had the target to organize the workshop with participation from 100 students, where 50% would be male and rest 50% would be female. Mr. Borhanuddin, along with other teachers made the full arrangement of organizing students in one hall room. The program started with the recitation from the holy Quran, followed by a short speech from the head teacher. The BUET team started with the definition and basics of earthquake and tsunami. Students raised many questions on the topic which were discussed and slide presentation was made from different still photographs on earthquake and tsunami. Students from class three to five took the workshop session and the number of participants was 102.

Table 10: List of participating students from Kosturaghat Govt. Primary School

Participants	Class III	Class IV	Class V	Total
Boys	11	19	19	49
Girls	18	19	16	53
Total	29	38	35	102

8.8 Tekpara Govt. Primary School

Tekpara is middle class residential area of Cox's Bazar municipality area. The area actually was born organically. The area is mostly populated by Rakkhain tribe and other minor tribal groups. Besides, a large number of Muslim families are over there coexisted with other social groups. BUET team had some volunteers permanently resided there and made the contact of Mrs. Umme Khaleda Khanom, the head mistress of Tekpara Govt. Primary School. The head teacher assigned some assistant teachers to cooperate us in undertaking our Training there. The main focus was First Aid Training on air breathing and circulation, cardio pulmonary resuscitation, managing heat stroke, treating burnt casualties, burn scales, acid burns, bleeding wounds, dressing and bandages, etc. The main objective of the training workshop was to build the capacity of students. The team did not expect that the training recipients would be very skilled just watching those activities rather kept in mind that the viewers at least will memories the activities of what to do in any emergency response activities. Surely, their enthusiastic participation also helped the team working with higher accuracy and communicative. The total number of participants were more than the registered on attendance sheet. The number of participants was 107 of which 48 were boys and 59 were girls.

Table 11: List of participating students from Tekpara Govt. Primary School

Participants	Class II	Class III	Class IV	Class V	Total
Boys	2	26	14	6	48
Girls	2	25	17	15	59
Total	4	51	31	21	107

8.9 Peskar Para Govt. Primary School

Peskar Para is actually a kitchen market area along with some lower middle income class of residential areas. Within the market area, a Cyclone Shelter was constructed by the Saudi Fund in collaboration with Red Crescent Society. The infrastructures of shelters are now used as primary school and spread the light of education to the society. The BUET team representatives once drilled a soil bore for testing soil properties in the Shelter premise. The activity created interests on the project activities of Development of a disaster preparedness program. The teacher, Mrs. Shahan Begum on behalf of the head teacher showed interest to

the BUET team to take a workshop on earthquake and tsunami in their school for the greater benefit of the children community. She further requested to show the video documentary on recent tsunamis all over the coast in Indian ocean. The team accepted their invitation and organized a half day workshop from noon to evening. The students were also made participating poster distribution and locating in the city area. First Aid Training, A total disaster preparedness tips were shared with them. Sharing make them confident on disaster fighting. The participants were from class three to five. The total number of participants was more than the registered in attendance sheet and the ratio of male and female students were more or less fifty-fifty.

Table 12: List of participating students from Peskarpara Govt. Primary School

Participants	Class III	Class IV	Class V	Total
Boys	19	23	18	50
Girls	17	26	14	57
Total	36	49	32	107

8.10 Central Govt. Primary School

Central Government Primary School is situated on the heart of Cox's Bazar municipality area, along with the Central Government High School. The school building is a cyclone shelter constructed by Saudi fund. The head teacher and chairman of the Primary School Teachers Association, Mr. Mohammad Shafiquel Haque is in charge of the School and Cyclone shelter premise. The BUET team negotiated to organize a program of film show, question-answer session and feed back on the video documentary. The video contained the destructive scenario on Tsunami of December 2004. The pathetic scenes and disaster recovery and rescue operations videos were also shown and helped the students to imagine the Cox's Bazar city with the arrival of such natural calamity. The students asked about tsunami basics, its speed, chances of occurrences and possibility getting such tsunami over Bangladesh coasts. Scientific backgrounds on earthquake and tsunami were described and made easy and simple logics on chances of not getting such tsunami were delivered. Further, with an uncertainty, if really such a devastating calamity really arrive, what to do were also discussed. The total number of participants was more than the registered on the attendance

sheet provided. From the registered 107, 48 were boys and 59 were girls. Participants were only from class four and five.

Table 13: List of participating students from Central Govt. Primary School

Participants	Class IV	Class V	Total
Boys	24	24	48
Girls	25	34	59
Total	49	58	107

8.11 Shahporirdwip Al-Mamur Jame Mosque Based Community

Shahporirdwip is located at the far north-eastern part of Bangladesh in Teknaf Thana, connected with main land. During rainy season, sometimes it loses connectivity with the main land of Teknaf Thana due to inundated roads and unavailability of transportations. The area is mainly Muslim prominent area and due to lack of the light of education, superstitions take place in the community on different types of disasters. It was revealed when the BUET team organized a lecture on earthquake and concurrent tsunami in the Al-Mamur Jame Mosque at Shahporirdwip. The local community prey there. The community was organized by one of our locally resided volunteer Mr. Abdul Mabud. The lecture was mainly focused on causes of earthquakes and the scientific connection between earthquake and tsunami. The traditional belief was about a fish under the soil layer and its jerk causes earthquake. Some other religious leaders tried to prove those disasters as the curses given by Al-mighty. Therefore a debate started between BUET team members and local community. The objective of that lecture was to reshape their views on earthquake and tsunami basics, they learned traditionally from their social environment. After all those discussions, a Dua-Mahfil was organized and Tobarrak was distributed among the participants praying to the Almighty to keep safe the society from all those natural calamities. The participants were from local school management committee, mosque management committee and committee for local social development, called Panchayet or Somaj Committee.

8.12 Dorbarghat Jame Mosque Based Community

Kutubdia Thana is accessible by a number of jetties. Mainly two unions are highly accessible due to organized jetty. One is Boroghophat and another is Dorbarghat. The Boroghoph is the Sadar area of Kutubdia Thana. On the other hand, Dorbarghat is mainly popular based on spiritual Islamic religious leader and his Majar. People here comes from all around district, mainly from Chittagong Division. The BUET team got informed about these from local people while arriving Mognamaghat, the water port to travel to Kutubdia. After arriving at Dorbarghat, some of BUET team volunteers showed their interest to demonstrate the Video documentary on tsunami. The society of the nearby mosque expressed their interest to watch the video and wanted to listen to the lectures on earthquake and tsunami. The Muazzin Md. Fayejuddin helped the BUET team to organize all those activities in the mosque premise. Though the peoples of Kutubdia Thana are highly motivated on Islamic religious belief, they are not in a position to belief superstitious gossips. They reacted immensely with the scientific background of such disasters. They also recalled their memories on the aftershocks of December 26, 2004 earthquake and tsunami felt in their island. Destructions were minor reported but the experiences were seriously frightening, our team heard from them. For tsunami preparedness, cyclone shelters can be of good use and some natural signs from which tsunami can be predicted were discussed among them. The Ex-Union Parishad Chairman Mr. Syad Ahammad Kutubi, Lemsikhali Union Parishad, was there and he said about the curses from Almighty was the reason for such unpredictable disasters over there. Finally, the whole mob preyed to Almighty to keep peace in the society and gives us strength to fight against such disasters.

8.13 Charpara Jame Mosque Community, Leadership University Para

Charpara is actually a small neighborhood area in Gorokghata Union of Maheshkhali Thana. With some minority of Hindus, a Muslim community is prominent in Charpara area. Our local volunteer Mr. Helal Uddin organized all those primary task of negotiating to the Somaj Committee, local religious leaders and mosque committee to manage and invite participants in the seminar. The mosque premise was the ground for lectures and deliveries on earthquake and tsunami, preparedness and its possibility in Maheshkahali area. The program started with the recitation from the Holy Quran. The Society leader Mr. Mahmudul Haque said about their taking of emergency shelter during the last tsunami warning on September 12, 2007. The

cyclone shelters capacity is low than that of their population in the locality. Besides, shelters are degrading their quality and strength due to proper maintenance and funding for repairs. The area is highly served by Cyclone Preparedness Program (CPP) volunteers. How the CPP volunteers helped their last warning based emergency shelter taking was an exciting deliberation by Mr. Nurul Islam. Participants was also from local Madrassa's teachers. Finally, a sample evacuation map was shown from the projector in front of the participants to discuss the evacuation planning they used to in their own mind and what could be of good for safest sheltering process.

8.14 Pekua Old Jame Mosque Based Community

The newly formed Pekua Thana was actually separated from Chakaria Thana. The elevation of Pekua is relatively higher than Chakaria Thana and not so much under risk of storm surge from the sea connected rivers. The main objective of the awareness program in Pekua Mosque was to aware people on earthquake. From the soil investigation, the BUET team got informed about the severity of seismic activity from a likely earthquake there. The participants were made informed about the local soil condition and therefore made understood that they should take proper steps against possible hazards from any quake there. Laptop and projectors were used to show some research outcomes in front of the general people. They got frightened understanding their vulnerability to the possibility of such hazard. Besides, the community is not far from the active fault was also shown from digital maps. Video on tsunami was also played to have an overall idea on tsunami. But, importance was given on the seven steps to earthquake disaster preparedness to the community. The importance of taking first aid training was also discussed and the nearby cyclone shelter was provided with a First Aid Box to serve the society was also explored to the community people. Local primary school teacher Mr. Ismail Hossain said about the reluctance of disaster preparedness among the community people. People generally do not leave their houses during any cyclone or other storms. So, during tsunami, the participation and cooperation would be serious question-asked by the social leader Mr. Rashed Al Newaz.

8.15 Centralpara Community and Primary School Teacher Community

The head teacher of Central Govt. Primary School, Mr. Mohammad Shafiqul Haque is the chairman of the Primary School Teachers Association and while BUET team organized a student program in the Central Govt. Primary School, he requested to organize an audio-visual session for his colleagues and friends. The Secretary of Primary School Teachers Association, Mr. Borhanuddin Ahmed, the head teacher of Kosturaghat Govt. Primary School helped a lot to invite teacher colleagues of their association and local social leaders, who have some influence over the social development of the society. The program started after the Asor Salat and lasts up to Magrib Salat followed by an Iftar Party. The discussion periods were very interactive. Because, the audiences were educated and they understood the basics of geological formation, earthquake and tsunami matters very easily. The GIS maps and Seattelite images were shown to the participants to understand how Bangladesh is safe from probable tsunami. Besides, being closer to the active fault, the possibility of local tsunami was also discussed. Mr. Borhanuddin delivered a short speech on the geological change over the Cox's Bazar area from his point of view and from the heard stories of his ancestors. Maheshkhali was actually attached to the mainland of Cox's Bazar and due to different earthquake and other geological change, the Bakkhali river changed its path and made the Maheshkhali an island now. So, the probability of getting more and more quakes there is a normal phenomena and peoples of the area should be more aware about the earthquake vulnerabilities and should be trained on disaster fighting- said by Mr. Mohammad Shafiqul Haque, the Chairman of the Primary School Teachers Association. After completion of the program, Mr. Borhanuddin Ahmed, the Secretary of the Primary School Teachers Association, requested to demonstrate a lecture session in his School Premise for his School Management Committee and friends in his community. Our team accept his invitation and took necessary steps to do so.

8.16 Nuniarchara Community (Hazi Hasson Ali Primary School Area)

Nunirachara area is actually a fishing community. The community depends on local hatcheries and fisheries, as well as fish processing industries on the bank of Bakkhali river. Fishermen needs to know about tsunami and they must take proper measures as they sail on the sea and the most vulnerable community to any tsunami. In December 2004 tsunami, many fishermen were reported missing in Bangladesh coast. Dead bodies from deep see arrived on

the shore. All those information made the BUET awareness making team interested to organize a session on tsunami and disaster preparedness to the fishing community. The head teacher of Hazi Hason Ali Govt. Primary School, Mr. Azizur Rahman helped to invite people of the community and organized the meeting session. The program started with the speech from Mr. Azizur Rahman followed by an introduction of participants identification and place of residence. The BUET team delivered the natural symptoms of arriving any tsunami. The audiences tried to adjust the information with the past tsunami experience they had ever received from December 2004. Waterquake was felt in Nuniarchara bank of Bakkhali river and sudden over flow with unusual water behaviors were reported by the participants. They further noticed about appearance of dead fishes on the coast.

8.17 Bodormukham Community in Kosturaghat Primary School Premise

Invitation from the head teacher of Kosturaghat Primary School, Mr. Borhanuddin Ahmed, BUET team organized an audio-visual seminar in Bodormukham Community. Participants were both from local community and Cox's Bazar P.T.I. It can be called a second meeting with teachers community in Cox's Bazar. The program started with the speech from Mr. Borhanuddin Ahmed, followed by an introduction session of participants in the room. Overhead digital projector was used to show different slides on earthquake and historical tsunamis. Some audiences asked questions on tsunami arrival symptoms and its early warning. Our team assured about installation of early warning dissemination system all over the Cox's Bazar District. Some photos and working procedures were described among them. Mr. Osman Sarwar Kamal, a trainee from P.T.I. asked about whether these devices would be installed in Cyclone Shelters and would remain useless, and lack of proper maintenance those machines would be damaged like other materials and devices installed in different cyclone shelters before. Mr. S. M. Shoukat Alam Choudhury also described the VHS sets, provided by IFRCs, once installed in his locality's Cyclone Shelter and now it is nothing but a solid waste to the society. Therefore what would be the fate of upcoming early warning dissemination system and its devices was a matter of question –said by Shamsul Alam, Assistant Teacher, Kosturaghat Govt. Primary School.

8.18 Khutakhali Govt. Primary SMC, Teachers & others

Khutakhali is located on the way to Chakaria Thana from Cox's Bazar Sadar. The Khutakhali Govt. Primary School is located just aside the Khutakhali Bazar area. Our Chakaria and Dulahazara located volunteers Mr. Syamol Dey, Bikash Choudhury and Sojib Das negotiated to the head teacher of Khutakhali School, Mrs. Hasian Zaman. Thereafter, she organized the seminar. The seminar was especially organized for the women community of the locality. Female participants from school management committee, teachers and local neighborhood were the main target audiences. Mainly video documentary was played before them and audiences raised many questions on arrival of tsunami, time, speed of water and wave height. The audiences thereafter provided some posters containing tsunami information and disaster preparedness. Our volunteer Ms. Selina, Ms. Sanwara and Ms. Dilkus were the prominent facilitators for the entire program. They demonstrated the illustrated information in the tsunami poster, designed and printed by the project.

8.19 Hoanok Time Bazar Union Parishad

Tonusree Vottachrya, Assistant Teacher of Timebazar Govt. Primary School at Maheshkhali, was once worked for BUET team to undertake local key information interview, with Mr. Dulal Chandra Vattacharya, the Assistant Head Teacher of that school. Coincidentally, her son was a student studying in BUET and therefore she feel the BUET team like her own team and helped a lot to organize a meeting-workshop in Hoanok Time Bazar Union Parishad. She introduced the Chairman Mr. Abdul Monaf to our BUET team and the Chairman assigned Mr. Abdul Malek, Member of Union Parishad to organize the meeting-workshop. The Secretary of Chairman, Mr. Abdul Haque invite local people from disaster management committee, local leaders and union parishad members. The program was mainly focused on tsunami and its preparedness. Open discussions were made on the past tsunami warning that was disseminated on September 12, 2007. Experiences of sheltering process were very horrible listened to the community. The law and order situation was severely uncontrolled there. Besides, the local cyclone shelters were noticed not highly capacitated to accommodate the population of the neighborhood.

8.20 Mondolpara Community

Mondolpara is in Ramu Thana and is a small neighborhood area. The community resides with high altitude which is actually free from any risk of storm surge. But the area is not free from earthquake and hence the community was trained on earthquake preparedness. A poster based earthquake and disaster preparedness related tips were provided. The program was chaired by Women Union Parisahd Memembr, Monowara Islam Nevy. The program was located in her home yard. Mrs. Monowara gave a short speech on disaster preparedness on cyclone and other disasters that the vulnerable society of the community must face each year. Besides, the environmental degradation how influence our natural disasters were also analyzed by her to the community. Her cooperation on making a successful session was really outstanding.

8.21 Shamlapur Govt. Primary School Students Guardian Community & SMC

Shamlapur is a far remote area of Teknaf Thana. Communication from the national highway of Cox's Bazar to Teknaf, is somewhat uncertain due to semi metalled road and tidal waves. The area is more accessible with the low tide along the Cox's Bazar beach toward Teknaf Thana. Mr. Abul Kalam Azad, the head teacher of Shamlapur Govt. Primary School once worked as volunteer for Key Information Interview for the project and therefore our team had a connectivity with him. Our team negotiated to Mr. Abul Kalam Azad to organize a seminar-workshop at the Cyclone Shelter premise including local people and school management committee. Finally, he was successfully able to invite students' guardian committee and some participants from school management committee. The program took long hours and had a good end with the introduction of earthquake and tsunami matters, video documentation, poster distribution, discussion on local preparedness that they exercise in any cyclone warning, the capacity and condition of cyclone shelters locally resided, availability of emergency medicines, hospitalization, etc.

8.22 New Pollanpara School Management Committee and Local People

New Pallanpara is a small neighborhood little distant from Teknaf Thana Sadar, accessible by rickshaw. The head mistress, Mrs. Solema Akter was communicated by BUET team at the period of soil investigation on the ground of New Pallanpara Govt. Primary School. She helped a lot to the Soil boring experts in undertaking borehole in the school premise. She was

very curious to know our research project and asked how they can be benefited from the research outcome. Our team therefore assured her that a seminar will be organized at her school area to disseminate some research outcomes along with awareness raising activities by BUET team. Mrs. Solema Akter always kept connection with the BUET team and she also served as volunteer for Key Information Interview surveys. Our team finally negotiated a date for the seminar at the school and the school managing committees along with other local participants attend the seminar enthusiastically. The community was eager to know why soil investigation was necessary to undertake our research. Our facilitators described how the soil properties are connected with the prediction of scale of severity of any likely earthquake in the area. Besides, local soil properties will let the scientists to formulate physical infrastructure development policy in the area. Video documentary on tsunami was played and tsunami posters were distributed among local people to understand the tsunami behaviors and to get prepare against such disasters.

8.23 Shafirbeel School Management Committee and Local community

Shafirbeel is accessible by Marine drive but it is a far remote area from Cox's Bazar Sadar. The area is located within Ukhia Thana. Shafirbeel Govt. Primary School is a multipurpose cyclone shelter and its position is nearby the shore with a high risk of getting eroded soon. The community has the experiences from different natural calamities including cyclone, other storm surge and water quake in December 2004. The head teacher Mr. Azizul Hoque was negotiated while our team visited the school premise for soil investigation purpose. The area is mainly Muslim settlement and most of the people are involved in either fishing or work as day laborer commuting Cox's Bazar Sadar or, Ukhia Sadar. There is no electrification and proper sanitation system. People here are really very backdated and indigenous in manner. Mr. Azizul Haque took the initiative to invite people from all around the surrounding village and school management committee. Our team showed the video on tsunami from laptop and the audiences paid deep attention to the scenes and calamities in the film. The video has a specialty that it contains Bengali scriptures and quotations from the Holy Quran. The audiences get inspired about the religious point of view in disasters and its management from Islamic point of view. Debates arrived on whether tsunami is scientific outcome of geological aspects or as a curse from the Almighty to sinners.

8.24 Pechardwip School Management Committee and Local Community

Pechardwip is located within Ukhia Thana and accessible by Marine drive. The head teacher Mr. Azgor Mondol served as volunteer for Key Information Interview survey. He was always been connected to the BUET team for any sort of help. Mr. Azgor Mondol took the initiative to organize a local seminar in his school building which was actually a Cyclone shelter. The program was chaired by Social Worker Mr. Kamaluddin and moderated by Mr. Azgor Mondol, the head teacher of Pechardwip Govt. Primary School. The BUET team delivers basics concepts on earthquake and tsunami, their cause and effects resulting to disaster to any community. Some earthquake and tsunami related posters were distributed among the participants and the content of the posters were demonstrated literally to check whether they can understand the photos and texts of the materials described. When the team got a satisfactory level of feedback, then the workshop was closed to end.

8.25 Chakaria School Students Guardian Committee and SMC

The head teacher of the Chakaria Model Govt. Primary School, Mr. Abdul Motin was negotiated to organize seminar at the school building. The Chakaria Model Govt. Primary School is located just aside the highway of Cox's Bazar to Chittagong highway and within the Chakaria Municipality. The program was chaired by the Head teacher Mr. Abdul Motin and Moderated by BUET volunteer Sykot Borua. Speakers were both from BUET team and local community people. One of the Students' guardian says that Chakaria is a very disaster prone area. The Upazila more often fall victim to cyclone and tidal bore. The devastating cyclone and tidal bore of 29 April 1991 caused serious damage to the upazila with a death toll of 16705 persons. So, proper steps should be taken to reduce vulnerabilities to storm surges as well as tsunamis. After deliberation of lectures on disaster preparedness on earthquake issues of seven steps, people get wondered about the cyclic orders of such disaster preparedness loop. Disaster preparedness is a matter of cycle and it's a continuous process in every day life was introduced among the participants. Later some posters on tsunami were pasted on the wall of different location of the school premise so that students can read those and get prepared on tsunami.

8.26 St Martin's Island Union Parishod

St Martin's Island a small island in the northeast of the Bay of Bengal, about 9 km south of the Cox's Bazar-Teknaf peninsular tip and forming the southernmost part of Bangladesh. It is about 8 km west of the northwest coast of Myanmar at the mouth of the river Naf. The island lies between 92°18' and 92°21' E longitudes and 20°34' and 20°39' N latitudes. The local people call it Narikel Jinjira. It is almost flat and is 3.6m above the mean sea level. The 9.66 km wide channel between the mainland and the island is much shallower than the open sea southwest of the island. There are reefs from 10-15 km to the west-northwest. Awareness raising workshop there was a real challenge and fantasy. The Union Parishad Member Abdul Haque, on behalf of U.P. Chairman organized the seminar in Union Parishad Building. The Program was chaired by SLT Akizul Islam and stated with the speech from M.A. Kalam, Coast Guard Contingent Commander. Other illustratable participants were Md. Anisuzzaman Choudhury, CDO-DoE, Teknaf, Mahbubul Alam, A.S.I, Md. Aminullah, CPP supervisor, Md. Enamul Haque Mukul, Head Teacher, CREED Primary School. The main objective of the seminar was to introduce the audiences the basics of tsunami, its destructive power to make disasters and the possibility of it in the island. Video documentaries were projected on the over head screen to realize the devastating tsunami that occurred in December 2004, all over the Indian ocean.

8.27 Baharchara Buddhist Temple

A large number of Buddhist community people lives in Cox's Bazar Sadar Area. As, at earlier stage of awareness raising activity was done particularly to the Muslim Community, a special arrangement for Buddhist community was also arranged with the help of the Monks and social workers of Baharchara Buddhist Temple. The Buddhist Community is very strong and cooperative and the place of Buddhist temple is constructed with higher elevation. Therefore it can serve as safe shelter at any cyclone storm surge and from of course tsunami. The program started with the Prayer by the Chief Monk at the Temple. The program was chaired by the Chairman of Rakhain Buddhist Social Welfare Association, Mr. Ukkokhin and moderated by Sykot Borua, volunteer, BUET team. Other illustratable participants were Advocate Sunil Kumar Borua, Mr. Monbuyee, Secretary of rakhain Buddhist Social welfare Association, and senior religious leaders, Robindra Bijoy Borua, Monkaching Marma, Mauyong Yeng and Sugoto Borua. The Chairman of Rakhain Buddhist Association said that

the temples of the Buddhist societies are always made with higher elevation. If, proper entry and exit facilities can be provided, those temples can also serve as safe shelters in any surge related disasters. After speech, the BUET team plays the audio visual contents of earthquake and tsunami, as well as other disasters over the history of the world.

8.28 Ukhia SMC & Rajapalong Low Income Group, Slum Community, Ukhia

The head teacher of Ukhia Model Govt. Primary School, Mr. Shamsul Alam once worked as survey volunteer for Key Information Interview for BUET team. A social connectivity was always maintained among teachers and BUET team members. The head teacher was negotiated to organize a seminar on earthquake and tsunami preparedness in his living locality including school management committee members, guardians of students and local community people. It was really very inspiring that he made invitations to the slum community and low income group of people to listen to the important lectures of earthquake and tsunami preparedness from BUET team. A framed poster was shown in front of them and sequentially those are described to the audiences. The BUET team delivered what is tsunami, reasons of tsunami, examples of destructive effects of tsunami, the natural symptoms of arriving any tsunami. The possible measures that should be done in a tsunami, what are those prohibited in any tsunami event and process of taking safe shelters were depicted within the discussions among the community people.

8.29 Yunuskhali Govt. Primary School Community

Yunuskhali is located in Kalarmarchara Union at Moheshkhali Thana. The area is one of those far remote areas in Cox's Bazar District. The head teacher Mr. Akter kamal was communicated by the BUET volunteers to help in organizing a seminar. The head teacher assigned Mr. Jainul Abedin, Assistant Teacher of Yunuskhali Primary school to negotiate with our team and finally organize the program successfully. The program was chaired by The head teacher Mr. Akter kamal and as a special guest Mr. Meer Hoassain, the head teacher of Uttornolbila Govt. Primary School was present there. The opening speech was done by the Special Guest and closing speech was done by Chairman of the program. Other illustatable guest were Mr. Mosaddek Faruki, social worker and local leader, M. Giasuddin Choudhury, Jamsen Borua and Mr. Bodiul Alam. The objective of the seminar was to disseminate the earthquake vulnerabilities of Yunuskhali neighborhood due to soil

properties and closer to active fault. From the soil properties investigation, it was found that the region is within the possibility of high amplification area. The ways of getting prepare against such probable earthquake, seven steps were described among the community and tsunami poster contents were explained to the society. Some posters are also distributed among the participants to spread the knowledge to the grass root people.

8.30 Tekpara Women Community in Tekpara Govt. Primary School

Umme Khaleda Khanom, the head mistress of Tekpara Govt. Primary School is one of those very cooperating teachers served as surveyors in Key Information Interview. Our local volunteer Selina Akter, Sanwara Begum and Dilkas Begum were the main demonstrator and facilitators among the women participants in the seminar, organized by Umme Khaleda Khanom. In any disaster, the most vulnerable groups of the society are women, children and old, or disabled. Besides, in any family, when the male one is out side the residence and the need of getting emergency response is necessary, the need of women in cooperating sheltering process, evacuation of home sites, participating disaster fighting and recovery is a must. Based on these requirements, out team tried their best to introduce earthquake and tsunami matters among the community. These disasters, their strength to damage properties and loss of human lives, natural symptoms to get alert and techniques of getting preparednesses were the main issues. Besides, videos on tsunami were also displayed to have over all ideas of damaging phenomena if hit in Bangladesh coast.

8.31 Anjumanpara Jame Mosque and Hefjjo Madrassa, Palongkhali Community

Our target was to organize a seminar in Anjumanpara Govt. Primary School encompassing school management committee and surrounding community people. That was why the head teacher of Anjumanpara school was communicated. Later some problem aroused which let the community awareness team to change the venue from school premise to nearby Mosque and Hefjjo Madrassa. The Hefjjo Madrassa ground was used as community hall and the multimedia projector was set on the wall of the Madrassa. The program was chaired by the Principle of the Hefjjo Madrassa, Mohammad Hafez Abdur Rahim and started with the speech from Social Leader Mr. Abdul Gofur. This program was somewhat different from others. While executing the seminar lecture, it was always kept in mind that the team was facing a highly motivated Muslim community. The scientific logics must be complied with

the Islamic concepts. Examples were cited from the Holy Quran and made the community truly believe on the disasters potentiality to do any hazard in the community, if no preparedness measures are taken. Finally, tsunami videos were played to watch the devastating calamities that happened over the years all around the world and over Indian coast.

8.32 Baharchara Women and Children Community

Baharchara is one of the residential areas of the Cox's Bazar Sadar Area. Along the Baharchara residential area, a refugee slum settlement grew on the bank of the sea. There are hundred families of refugees there and they work as day laborer in Cox's Bazar City. The community is reluctant to any cooperating organizations either social welfare organizations or government societies. The volunteers observed that the community formed a small neighborhood with their slum houses there and keep isolated from all facilities of urbanized people though the Cox's Bazar City is within a half kilometer distance. The BUET team volunteers Mr. Bijoy Sutradhar, Dilip Sutra Dhar and Sykot Borua visited there to propose the community to have such an awareness raising activity in their locality. The refugee leader was not there and some women showed their interests to listen to from our team about tsunami and earthquake matters, as well as to watch the videos or recent tsunamis. The locality was not provided electricity, as that was not an area of permanently residing. Our volunteers looked for rented fuel generator to have the supply of electricity to run multimedia projectors. The discussions were made day-night to the community. At the evening the tsunami videos were played.

8.33 Imamerdeil Bazar Community

Imamerdeil is one of those far remote areas of Cox's Bazar District located in Teknaf Thana. The area is only accessible through country road from Teknaf Thana. Besides, Zeep based transportation system is available to communicate through the beach from Cox's Bazar to Teknaf Thana. It depends on the tidal wave of the sea. During rainy season, it comes disconnected from the surrounding Unions and villages due to high water level in local channels. BUET team targeted the Imamerdeil Union Parishad to organize a seminar there on earthquake and tsunami. Unfortunately, after the arrival, BUET team came to know that the Parishad was no more held in the existing building, rather the Parishad was working

unofficially in the Chairman house of Mr. Mohammad Hafej, far from the point of arrival by 5 kilometers away. At that moment, our team suddenly changed their mind and organized the awareness activity in the Bazar of Imamerdeil, which is located on the bank of the sea. There were so many peoples there watching our carried videos in Laptop there. The community got frightened watching all those destructive manners of tsunami all over the Indian Ocean. The volunteers then described some natural symptoms of getting any tsunami in locality.

8.34 Dulahazara Union Women Community

The BUET volunteer Mr. Shymol Dey, was requested by his community people to organize a community awareness workshop in his own locality at Dulahazara Union. Meanwhile, the team was more interested to organize that workshop in Dulahazara Union Parishad encompassing Dulahazara Union Disaster Management Committee. Everything was just fine, as the meeting was negotiated to held on a certain date and the BUET team was there just in time. It was found that the Chairman was not in a position to hold the workshop in his community hall and wanted to change the date, as sudden duties and responsibilities were assigned to complete National Id card making in his locality which was under supervision by Joint Forces. Suddenly, the team shifted the program to Mr. Shymol's locality and organized in a Hindu Temple Plaza. To supply electricity there, fuel generator was managed by the community people. Our women volunteers spread to invite participants from door to door. The invited women arrived after evening and then the program started with the speech from Mr. Shymol Dey, reciting some Hindu Puranic lines and it explanation to disasters and it devastating situations described in the point of Hinduism of view. Thereafter, the female volunteers delivers the basics of earthquake and tsunami to the community. The superstitious community got wondered watching all those audio visual materials on laptop and multimedia projector. Their imagination on earthquake and tsunami changed for ever. They easily realized that in any tsunami, the local cyclone shelters can be of good help.

8.35 Jaliapalong Union Parishad and UDMC

Jaliapalong Union Parishad is located near the Sonarpara Bazar at Ukhia Thana in Cox's Bazar District. Our local Volunteer Mr. Sykot Borua and Bijoy Sutradhar made a contact to the secretary of the Chairman Mr. Nurul Amin Choudhury. The Chairman assigned Union Parishad member Mohammad Abdullah along with our volunteers to invite Jaliapalong

Union Disaster Management Community members, honorable leaders and social workers in the society. The program was chaired by the UP Chairman Mr. Nurul Amin Choudhury and Moderated by The Secretery Mr. Bojol Ahmed. The Chairman said about many good initiatives that were undertaken by Comprehensive Disaster Management Programme (CDMP) and the implementation of Disaster management plans over the coastal areas of many other contributory non-governmental organizations. The initiative by BUET was really appreciated that started earthquake and tsunami awareness program all over Cox's Bazar District. This is the first initiative from the part of government to reach awareness programs to the grass root level of the society by other implementing agencies like BUET, through CDMP banner. The BUET team representatives delivered its regular audio visual materials to the invited participants. Other illustratable participants were Mr. Nurul Alam, Assistant Teacher, Sonarpara Govt. Primary School, Mr. Abdul Goni, Mohammad Lokman Hakim, Freedom Fighter, Mrs. Farida Begum, Selina Begum and Monowara Begum, Women Union Parishad Member, Jaliapalong Union Parishad.

8.36 Lemsikhali Union Parishad and UDMC

Lemsikhali is located in Kutubdia Island. The union is accessible through Dorbarghat jetty. The BUET team members contacted the Lemsikhali Union Parishad Chairman collecting his mobile number from the Imam of Dorbarghat Jame Mosque, where BUET team once organized an indoor session. The Chairman Jasihimuddin Hyder was very cooperative to organize the seminar at his Union Parishad. He assigned the peon to invite all members of Disaster Management Committee, Bazar Committee, Somaj Committee and local school teachers. The program was chaired by the Chairman Mr. Jashimuddin and started with a speech from the speech from M.Hamed Hassn, the Super of Al-Faruqi Madrassa. The BUET team members delivered their lectures on earthquake and tsunami. Further the video documentary was also played to have an idea of devastating calamities that was contributed all over the world by recent tsunamis.

8.37 Doxin Dhurong Union Film Show

Doxin Dhurong Union is just aside the Lemsikhali Union. The Chairman Mr. Jashimuddin Hyder helped to make contact to undertake a Film Show there. The Doxin Dhurong Union Parishad Chairman cordially accepted our proposal and organized a mass in the Local

Stadium by proper milking to the Dixin Dhurong, Uttor Dhurong and Bazar Community. Our volunteers managed Cinema Screen, Mike and Fuel generators from local decorators. The Film show started from the speech from Mr. Abu Mia, Member of Dixin Dhurong Union Parishad. More or less five hundred people watched the video in the open stadium from Magrib to Esha Salat. The content of the videos were very touchy and illustrated many Islamic citations from the Holy Quran.

8.38 Chakaria Surajpur Manikpur Union parishad and UDMC

Surakpur Manikpur Union is located in Chakaria Thana. Manikpur Union is located far eastern part of Chakaria and very remote area, only accessible by Zeep. It is a very disaster prone area. The Upazila more often fall victim to cyclone and tidal bore. BUET volunteer Mr. Sykot Borua and Selina Akter contacted physically the Chairman of Surajpur Manikpur Union Parishad, Mr. Azimul Haque Azim. The chairman assigned his office staffs to invite Manikpur Union Parishad Disaster Management Committee. The program was chaired by Freedom Fighter and senior social leader, Mr. Mujibur Rahman Choudhury. He said about his experiences from different disasters he ever fights against in his own locality. Among all those, the devastating cyclone and tidal bore of 29 April 1991 caused serious damage to the upazila with a death toll of 16705 persons. After his speech, BUET team delivered lectures on the basics of earthquake and tsunami, its probability, lessons learned from the past tsunamis and ways of getting prepared against such natural disaster.

8.39 Khutakhali Union Parishad and UDMC

Khutakhali is located on the way to Chakaria Thana from Cox's Bazar Sadar. The Khutakhali Govt. Primary School is located just aside the Khutakhali Bazar area, where once our BUET team organized School program. Just on the opposite to the Bazar, the Khutakhali Union Parishad Bhaban was located. Our Chakaria and Dulahazara resided volunteers Mr. Syamol Dey, Bikash Choudhury and Sojib Das negotiated to the Chairman of Khutakhali Union, Mr. Akter Kamal Choudhury. His dynamic approach to organize the workshop helped a lot to successfully complete the seminar there. The program was chaired by the Chairman Mr. Akter Kamal Choudhury. After his speech, BUET team delivered lectures on the basics of earthquake and tsunami, its probability, lessons learned from the past tsunamis and ways of getting prepared against such natural disaster. Other illustratable participants were Mr. Abu

Sufian, Secretary, Union Parishad, Mr. Monju Alam, Nurul Kobir, Nurul Amin, Rowshan Ara Begum, Razia Begum, Khaleda Begum, Members of the Khutakhali Union Parishad, CPP Leader Mr. Ahmed Reza Khan and Health Inspector Mohammad Ullah.

8.40 Rajapalong Union's Women Community Film Show

Rajapalong Union is within Ukhia Thana. Our volunteer Mr. Sykot Borua contacted to Mrs. Rokti Borua, Women Member of Rajapalong Union Parishad. She cordially accepted our proposal and organized a mass in the courtyard of a neighboring house by proper milking to the village area to invite women. Besides, our female volunteers also visited door to door to invite house wives and children to participate in the film show. Our volunteers managed Cinema Screen, Mike and Fuel generators from local decorators. The Film show started from the speech from Mrs. Rokti Borua, Member Union Parishad, Ward no. 7, 8 & 9. More or less hundred women watched the video in the open ground from Magrib to Esha Salat. The content of the videos were very touchy and illustrated many Islamic citations from the Holy Quran

8.41 Cox's Bazar Paurshava Women Community

Our BUET team members contacted Mrs. Helenaz Tahera, the women ward commissioner for 1,2,3 of Cox's Bazar Municipality. She organize the seminar in Municipality Conference Hall. Participants were women from three wards 1,2,3 and it was focused on urban vulnerability to disasters in connection to earthquake and tsunami. The BUET team members Ms. Selina Akter, Sanwara Begum and Dilkus Begum were the main facilitators for the community awareness program among the women community. Some framed posters were distributed to the participants and presented to the Women Ward Commissioner, Mrs. Helenaz Tahera.

9. Disaster Imagination Based Earthquake and Tsunami Damage Assessment

Children are one of the most vulnerable groups at the time of any disasters. Most of the children have less idea about the disaster and its severity. In such a case it is very important to improve the disaster imagination power among the children. Therefore, a special tool was

developed to give pre-idea about possible disaster. A workshop had also been held to pre-test the methodology. The workshop was held at “Noapara CRED Primary School” which is situated on the south-western island of Bangladesh named Saint Martin.

9.1 The Concept

When small children face unpredictable danger such as an earthquake, fire or an intruding malicious person, they need adult’s help. (Meguro, K. and Abe, M., 2007). In this study small children means the children who are studying in primary school and normally who are six to ten years old. In practical, at the time of any disaster the adult people took care of those children who are under the age of six in our country. As a result the children, whose age are more than six years; have to take care of themselves at the time of disaster. But to prepare themselves they have to first know about the disasters. That is why it is very important to develop a disaster imagination power among the children whose age crosses six.

9.2 Demonstration

A clear concept about the disaster, risk, vulnerability and disaster management system were tried to given to the participants (Primary School Children). Then the participants were asked to imagine themselves about a specific disaster. At this phase the study team had act as facilitators. After that the participants were asked to sketch their own community as they have seen it or as they wanted to see it (Figure 29). Then, they are given to see an audio visual documentary about the disaster. Finally they were asked to sketch their own village after the strike of that specific hazard. Which reflects the imagination of their own immature mind and also aware them about that specific disaster. A positive effect of this methodology is when the children were aware about these matters, the whole community would also aware of these. When the children’s parents, relatives and friends communicate with them they also become aware about disaster management activities. To deal with disaster mitigation or disaster management it is very important to imagine disaster situation properly because if one could not imagine the situation of a possible disaster properly he could not take part in the disaster management process or his effort in the disaster management process would be worthless.



Figure 29: Mohammad Helal Uddin of Class V drew a sketch of his own imaginary village, where beautiful houses, cattle and trees were there. Country boats were plying, fishing trawlers sailed for fishing to the deep sea. His thinking also comprised of safe sanitation and planned village concept.

Finally, when the children have grown a more precise disaster imagination they were told to draw another sketch on another piece of paper (Figure 30). They were instructed to sketch their village if it were attack by an earthquake or a tsunami. The participants have again drawn the picture of their village where they have drawn the impact of earthquake or tsunami.



Figure 30: After a tsunami hit the beautiful village, it turned into a massacre. The devastating tsunami uplifted trees and houses, washed away homes, cattle and boats. A massive human loss was observed. Some people carried the dead bodies of their relatives for funerals.

This picture or sketch of the village depicts the disaster imagination power of the children. The sketches of each member are different from others which show that each of the children has imagined the disaster situation from his own.

10. Observations from School Students and Community

The sessions that the children and community passed, made them human resources in the sake of getting information and skill transfers. It was realized that more than two thousand populations over the coastal areas of Cox's Bazar at least know what is earthquake and tsunami hazards and minimum half of them grossly can be assumed that they would be found in a very responsible duties in any sort of upcoming earthquake hazards, or tsunamis.

Trained school children on Disaster Imagination, different definitions, introduced with emergency supplies, possible casualties and unpredictable hazard event will be a great resource of information and research practice over the coast. First Aid training recipients

were expected to be very contributory both for their family and neighbors. School teachers observing primary medication will let them to call for first aid operator and thereafter a multilateral relationship will be built up. Multilateral relationship will let the rising of community feeling among neighbors and thus a strong community feeling will let to take proper initiatives by community leaders with greater responsibilities. As, it was preplanned to undertake community awareness program within the periphery of soil boring spots and teachers were negotiated always over mobile phones, they were found always help in the name of greater interest to the school children and society. Thus, it was easy to accumulate in group discussions about their perceptions on earthquake, and some resulting tsunamis. It was formulized at early stage, that due to remoteness of St. Martin Island, it will not be served. Later, St. Martin's Island was covered under Community Awareness Meeting, in Union Parishad. Therefore the total number of School program stands 10 (ten) and Community seminars 31 (thirty one) in numbers. The numbers of participants are available in Appendix C.

11. Training Workshop on Early Warning Dissemination System for Disaster Management

A One Day "Training Workshop on Early Warning Dissemination System for Disaster Management" was organized on 19 April, 2008, Saturday at 9.00 a.m. in the Seminar Room of the Civil Engineering Building, BUET. The Workshop aimed at sharing of knowledge as well as hands on training on the installation, operation and maintenance of the New Satellite based Early Warning Devices to be deployed in the District of Cox's Bazar. Dr. Ashutosh Sutra Dhar, Associate Professor and the Project Director briefed the project at the workshop. Mr. Mohammad Jobair, A B. Afifa Imtiaz and Rajan Saha, Research Assistants working in the Project briefed about the Devices in the Workshop. Honorable Vice Chancellor of BUET, Dr. A. M. M. Safiullah was present as the Chief Guest and Mr. K. H. Masud Siddique, Director Geneneral of Disaster Management Bureau, Govt. of People Republic Bangladesh was present as the Special Guest in the Inaugural Session of the Workshop. Professor Dr. Mehedi Ahmed Ansary delivered the Closing speech of the Inauguration Session at the workshop.



Figure 31: Dr. A. M. M. Safiullah, VC, BUET presenting his speech and Mr. K. H. Masud Siddique, DG, DMB along with Dr. Mehedi Ahmed Ansary and Dr. Ashutosh Sutra Dhar, on the chair



Figure 32: Project Director, Dr Ashutosh Sutra Dhar, briefing the project

12. Mega Drill: Earthquake - Tsunami Simulation and Disaster Preparedness

Simulating any event to understand any particular situation is a popular method of presentation and participation. An important aspect of simulation is to capacity building to fight the real world scenario, like any disaster. Earthquake and tsunami simulation, undertaken by BUET team, was just like an event under Disaster Preparedness Program for Earthquake and Tsunami Hazards in Cox's Bazar Project. It was held in Poura Preparatory High School, Cox's Bazar Sadar, having participating by hundred and fifty students, boys and girls, from six different schools, all over Cox's Bazar Sadar area.

12.1 The objectives of the Program

The main objectives of the simulation were-

- To understand the basics of earthquake and tsunami, and their adverse effects to contribute in devastating calamities
- To train up participating school children in emergency response, first aid provisions, search rescue operations and inspiring to build Community Emergency Response Team (CERT), which can be very contributory in earthquake related disaster, like building collapse, blockage, getting severe injured, rescuing from multi-stories buildings, preparation of disaster kits, etc.

- Application and demonstration on Emergency / early Warning Dissemination System in emergency evacuation and taking of safe shelters.
- To habituate and capacity building of the participating school children and audience in earthquake and tsunami related disaster management, preparedness and recovery techniques.
- To inspire the administration to replicate such simulating model all over coastal areas of Bangladesh.

12.2 The Program

The simulation was a drama participating by students and specialized trained up volunteers to replicate a typical scene from a coastal area in Bangladesh, with high proximity to earthquake and tsunami vulnerability. The drama contains some sequential parts. It started with the Aajan (the calling for) of Salat (prayers). Very parallel, the other priests of religion also started their morning prayers. Some players were practicing football in the urban part. On the other hand, students were moving towards school. In the meantime, a specialized team from Bangladesh University of Engineering and Technology (BUET) arrived in the coastal town to establish Early Warning Dissemination System (EWDS) and was looking for the Project Implementation Officer (PIO) at Thana Nirbahee Office (Upazila Headquarter). Members of the team got introduced with the PIO and explain their purpose of arriving there. The PIO was very cooperative and got very attentive to receive a brief description of those machines and its particulars. The team finally sets up the EWDS in the PIO office and leaves it like continuously running. The ground was just like other days of a coastal district town, representing daily life of certain people all around. Shop keepers selling his products, hawkers do the way they do. People were bargaining in the market place. Children were playing on the school ground. Football players started quarrel with the tea stall, as their ball hit the stall and disturbed the customers of the stall. Other people were involved in their socialization and many activities. A cheering group of people were coming to this town to participate in wedding ceremony. They were looking very joyful. Colored clothing's, sounds from band, the bride and groom made the ceremony more attractive and stunning. Singing and dancing in the rhythm of drams were very customarily reflecting their cultural activities in connection to any wedding program. But, all on a sudden, a heavy earthquake arrived!

The shaking of earth crust forced to collapse the school building, neighboring multistoried apartment houses, cracked the roads and help falling down people on the ground. Mass people of area got displaced.



Figure 33: Earthquake hits, multistoried buildings collapsed and people got injured



Figure 34: Emergency Response team provided first aid to an injured victim



Figure 35: An wounded person was carried by the emergency response team



Figure 36: The rescuers were dropping down an wounded victim by rope from up



Figure 37: Rescuing from a roof top



Figure 38: The arrival of tsunami on coast

The wedding party guests got injured wounded at different categories; some people were blocked in the debris of collapsed concrete. Fatality was not rare. School children in the class room had experience some different thing. Some students took shelter under the table and bench, on the side of columns and door frames. These students were trained to earthquake preparedness strategies. But some students fall still in victim. The other skilled students started the search and rescue operation to help their friends.

Meantime, local emergency response team, supervised by the Project Implementation Officer (PIO) started their initiative to Emergency Response Operation. Rescuing people from high rise buildings, carrying them by stretcher to the First Aid Clinic for proper medications, etc. were common scenes all over the replicated disastrous coastal district town.

Thus, the initiatives by PIO, other emergency response operators, local people and students of the school were able to response and recovery the earthquake disaster in their town successfully. The people were returning their homes. Students and parents were positioned in safe places.

All on a sudden, the Early Warning Dissemination System (EWDS) came into action and it disseminated a Tsunami Warning that might hit the coast within hours. People should take safe shelters and necessary arrangements should be made to sustaining the after disaster period were also disseminated. The siren of the EWDS started more and more. The PIO communicated to the central body of administration to take proper steps. The central command was to evacuate the coast and to take necessary arrangement to make people taking

safe shelters. Mega phone and mikes were used to disseminate the warning information and evacuation for sheltering. People were taking their belongings, as much as they could to sustain after tsunami and moving towards local Cyclone shelters, as those were constructed with higher altitude.

Still, some people were reluctant to take safe shelters. After a certain period, when tsunami arrived with strong and high wave, everything was smashed and nothing remained except some destroyed properties, floated shops and dead peoples on the coast. An emergency response team arrived to search and rescues the dead bodies from the shore and communicated to different administrative and aid agencies. That was the end of the simulated drama.

	
Figure 39: MD. Sazzadul Hassan, DC, Cox's Bazar, inaugurating the program	Figure 40: Guests attended the Mock Drill
	
Figure 41: Portion of the Audience attended the Mock Drill	Figure 42: Participants of the Mock Drill

The program was inaugurated by the District Commissioner, Mr. MD. Sazzadul Hassan, Cox's Bazar. Other guests were from Bangladesh University of Engineering Technology (BUET), local administrative bodies, members of District Disaster Management Committee (DDMC), School Teachers and guardians of the participating students.

13. Conclusion

Raising Awareness among a coastal and diverge regional settlements was really a challenging and thrilling event. Cox's Bazar District is blessed by multicultural and multilingual communities of diversified modern, indigenous and tribal settlements. Holding workshops at different remote areas came to the research team as a newly introduction to other community. Local dialects were faced by locally appointed volunteer cum facilitators and thereafter translated the scientific aspects of earthquake and tsunami to their own voices. The school children were found very interested to learn about earthquake matters and eagerly received the audio-visual materials on the screen. Peoples of the Cox's bazaar were enthusiastic about having such awareness program each year. The illiterate community there believes in some prehistoric superstitions and prejudices on shaky fish under the bedrock causing earthquakes and tsunamis. Prejudices on earthquake and tsunamis were somewhere explored, defended, accepted and/or, encouraged to come people getting prepared on earthquake matters. Thus, blending of scientific, non-scientific and superstitious ideas were driven to make people aware. A total coverage of more than two thousand peoples (approximately one thousand in schools and one and half thousand in communities) were facilitated with any of tools of disaster preparedness for earthquake and tsunami hazards in Cox's Bazar District.