

Preparing Schools For A Safer Tomorrow

A MULTI-HAZARD APPROACH MANUAL ON SCHOOL
SAFETY IN BANGLADESH



Disclaimer

This document has been produced with the financial aid of the European Commission. The views expressed herein should not be taken in any way to reflect the official opinion of the European Commission.

Preface

This manual is based on consultations with and inputs from a number of local, national, regional and international experts and stakeholders including the Ministry of Primary Education (MoPE), Government of Bangladesh, Comprehensive Disaster Management Program (CDMP). The consultation process was conducted at three levels; first with the teachers, school management committee and students in different parts of the country focusing on multi hazard such as Dhaka, Chittagong, Sylhet, Netrakona, Khulna, Sathkhera, Shyomnagar and Jamalpur areas of Bangladesh.

This comprehensive Manual on School Safety has been developed for Bangladesh under DIPECHO SOUTH ASIA-V agreement between ADPC and Plan Bangladesh and Islamic Relief Worldwide Bangladesh with technical inputs from Handicap International. This has been developed after understanding the needs of schools in Bangladesh by collecting primary and secondary data on hazards and vulnerability of Bangladesh, related activities carried out by various agencies, and carrying out interviews and group discussions with schools in various hazard prone locations. Indian experiences of Sustainable Environment and Ecological Development Society (SEEDS India) and regional experiences of Asian Disaster Management Centre (ADPC), Islamic Relief and Plan Bangladesh have also been put together in realizing this manual.

SEEDS India has developed a methodology for School Safety in India and tested the methodology in about 500 schools in various parts of India prone to a number of natural hazards such as earthquake, flood, flash flood, cyclone, landslide, and tsunami. The methodology also focuses fire and road hazards and also considers climate change related issues. Considering school-specific hazards comprehensively, teachers and students are guided to develop a disaster management plan that includes mitigation planning, preparedness planning and response planning.

Though care has been taken to develop this manual specific to Bangladesh, it will be necessary that the users of this manual understand the concepts used in this manual and adapt as suitable to the local conditions prevailing in various locations of the country.

Users are encouraged to send their comments on how to improve the manual for the future.

Abbreviations

ADPC	Asian Disaster Preparedness Centre
BMD	Bangladesh Meteorological Department
CBO	Community Based Organisation
CFL	Compact Florescent Light
DRR	Disaster Risk Reduction
GSB	Geological Survey of Bangladesh
GSHAP	Global Seismic Hazard Assessment Programme
HFA	Hyogo Framework for Action
IFRCS	International Federation of Red Cross and Red Crescent Societies
INEE	Inter Agency Network for Education in Emergencies
ISDR	International Strategy for Disaster Reduction
LRP	Land Reclamation Programme
MES	Meghna Estuary Study
MoWR	Ministry of Water Resources
NGO	Non-Government Organisation
PTSD	Post Traumatic Stress Disorder
PWD	Persons with disabilities
SEEDS	Sustainable Environment and Ecological Development Society
UN	United Nations
WARPO	Water Resources Planning Organisation (Bangladesh)
WHO	World Health Organisation

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Chapter 1

Introduction

The role of schools in the community is very important and it would be befitting to call schools as cradles of the society. Children are a dynamic and powerful force of change and are supporters in creating awareness in the community. They can contribute in a unique manner with energy and vision to find local solutions. School children should be encouraged to take up tasks, which make them realize their importance as necessary stakeholders in the change process.

Global Scenario

Past experiences and based on the available evidences in Bangladesh, it shows that education sector was hardest hit along with other sectors in the event of disaster. Starting from Cyclone of 1970, 1991, 2007 and floods of 1998, schools were interrupted due to structural collapse. In the flood plain area majority of schools were closed for more than three months. An estimated 5,927 educational institutions were fully or partially damaged by Cyclone Sidr in 2007, resulting in a total value of damage and losses of BDT 4.7 billion (Source: Damage and Need Assessment 2008.)

School children and school buildings have been greatly affected by all major disasters. A devastating fire claimed 94 lives of young children at the Sri Krishna Primary School in Kumbakonam (Tamil Nadu, India) on 16 July 2004. The Bhuj earthquake that occurred on the 26 January 2001 in India claimed 13,805 lives and amounted to direct losses of over USD 3.1 billion. At least 1884 school buildings collapsed and 5950 classrooms were destroyed in the earthquake. 17,000 children died and 2,448 schools collapsed in the 2005 Kashmir earthquake in both India and Pakistan. Typhoon Linda (1997) razed 2,254 schools and damaged 4,022 schools in Vietnam. 74% of all schools were damaged in the 1999 Colombia earthquake. 441 school children died in a stampede at a school function in Mandi Dhabwali (India) in December 1995. Out of 200,000 buildings brought down by the Great Sichuan Earthquake on May 12, 2008 in China, nearly 7,000 schools, many recently built, were destroyed and several thousand school children were killed. In the town of Mianzhu seven schools have collapsed, burying 1,700 people. Roughly one billion children aged 0-14 live in countries with high seismic hazard zones. Several hundred million are at risk when they are attending school. More than 200 million people are affected by disaster every year world over, a third of them are children.

Hyogo Framework For Action (HFA)

A global blueprint for disaster risk reduction was developed in the name of Hyogo Framework for Action (HFA) in Kobe, Hyogo, Japan at the World Conference on Disaster Reduction in January 2005. 168 Governments including Bangladesh adopted this 10-year plan to make the world safer from natural hazards at this conference. Its goal is to substantially reduce disaster losses by 2015 in lives, and in the social, economic, and environmental assets of communities and countries. It was also understood that fulfilment of Millennium Development Goals would not be possible without proper implementation of the objectives of Hyogo Framework of Action.

The outcome expected from implementing the HFA is “substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries”. The realization of this outcome will require the full commitment and involvement of all actors concerned, including governments, regional and international organizations, civil society including volunteers, the private sector and the scientific community.

To attain this expected outcome, the Conference resolved to adopt the following strategic goals:

- (a) The more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction;
- (b) The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards;
- (c) The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes in the reconstruction of affected communities.

The World Conference on Disaster Reduction adopted the following five priorities for action:

- (1) Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.
- (2) Identify, assess and monitor disaster risks and enhance early warning.
- (3) Use knowledge, innovation and education to build a culture of safety and resilience at all levels.
- (4) Reduce the underlying risk factors.
- (5) Strengthen disaster preparedness for effective response at all levels.

Implementing Priority 3 calls for promoting the inclusion of disaster risk reduction in school curricula, developing training and learning programmes on disaster risk reduction at a community level, for local authorities and targeted sectors.

The Inter-Agency Network for Education in Emergencies (INEE)

The Inter-Agency Network for Education in Emergencies (INEE) is a global, open network of non-governmental organizations, UN agencies, donors, practitioners, researchers and individuals from affected populations working together within a humanitarian and development framework to ensure the right to education in emergencies and post-crisis recovery.

INEE has developed global minimum standards for Education in Emergencies based on a broad and consultative process that all individuals – children, youth and adults – have a right to education during emergencies. They echo the core beliefs of the Sphere Project that all possible steps should be taken to alleviate human suffering arising out of calamity and conflict, and that people affected by disaster have a right to life with dignity.

Global Initiatives on School Disaster Preparedness

School safety has been given a major focus by the United Nations International Strategy on Disaster Reduction (UN/ISDR) when the 2006-2007 World Disaster Reduction Campaign was devoted to the theme “Disaster Reduction Begins at School”. This theme was chosen by UN/ISDR because (a) it is in line with the Priority 3 of the Hyogo Framework for Action 2005-2015: “Use knowledge, innovation and education to build a culture of safety and resilience at all levels, and (b) schools are the best venues for forging durable collective values; therefore they are suitable for building a culture of prevention and disaster resilience.

ADPC under the Asian Urban Disaster Mitigation Program (AUDMP) has initiated intervention in the areas of School Safety since 1995-2003 and worked in Nepal and Indonesia with National Society for Earthquake Technology (NSET) and Institut Teknologi Bandung (ITB).

An International Conference on School Safety held on 18-20 January 2007 in Ahmadabad in India, recognized that every child has both the right to education and the right to safe and sustainable living, and set the goal of achieving “zero mortality of children in schools from preventable disasters by the year 2015”.

The Asia Pacific Regional Workshop on School Education and Disaster Risk Reduction held on 8-10 October 2007 in Bangkok came out with a ‘Bangkok Action Agenda’ addressing all stakeholders, on the following priority areas for action: (i) Integrating Disaster Risk Reduction into School Education; (ii) Strengthening Disaster Risk Reduction Education for Community Resilience; (iii) Making Schools Safer; and (iv) Empowering Children for Disaster Risk Reduction.

The Second Asian Ministerial Conference on Disaster Risk Reduction held on 7-8 November 2007 in New Delhi resolved to urge the national governments to integrate disaster risk reduction in school education and make the schools safer for the children as per the Bangkok Action Agenda 2007.

Bangladesh Context and need to prepare schools

Bangladesh is susceptible to various hazards including earthquakes, recurrent floods and water logging, flash floods, landslides, cyclones, and fire. In case of earthquakes, past few hundred years there have been several significant earthquake events recorded in Bangladesh. According to GSHAP data, Bangladesh lies in a region with low to high seismic hazard risks that increase in the northern and eastern parts of the country. Its neighbouring country like India did experienced major earthquakes in 2001 (Gujarat-Bhuj, India). Apart from earthquakes, other disasters such as cyclones, floods, landslides, fire and water logging are regular features in Bangladesh. Schools in different parts of Bangladesh suffer differently and to understand the local context following are some highlights on School Safety and Disaster Management in Bangladesh:

- ***Culture of Safety***- Schools in general in Bangladesh do not talk about safety whether it is about road safety or fire safety, hygiene safety and leave apart natural hazards and disasters. Electrocutation, fires, injury, road accident, stampede are the common hazards in each of the schools to be recognized.
- ***Appropriate planning and designing***- there are buildings in many parts of Bangladesh having non-engineered brick structure and vulnerable to earthquakes. However Government of Bangladesh has taken initiative in 2001 to construct frame structure building
- ***Institutional strengthening***- the School Management Committee (SMC) is well structured with the different stakeholders representation. Guardians, parents, ward councillors, and teachers are well counted in this committee. Government of Bangladesh has regulated the guidelines for School Management Committee (SMC). But the role of SMC is still needs to be strengthen to realize the safer school from disaster risks.
- ***Anticipation of Natural hazards vs manifested Hazards***- Many of the old and some of the recently constructed school buildings do have several cracks here and there in the buildings. The Department of Education and Engineering does have the monitoring system but only to ensure the accomplishment of the construction. After that there is no monitoring system to identify these cracks.
- ***Risk as a perception***- many of the school teachers especially with regards to injury, road accident, fire, and food poisoning consider as a perception only. That is why in most of the schools there is no FIRST AID box even where hundreds of students are studying.
- ***Awareness on Disaster Management in general***- Disaster Management has been given space in to the school curriculum from grad 6 to 10. But it is very much evident that little and inadequate explanation of disaster management will do little in terms of reaching out students

to reduce their vulnerabilities. How recovery and mitigation differs from each other and what does development means to teachers and students in context of disaster management context need to be clarified.

- **Disaster management and disability:** the needs and capacities of children and teachers with disabilities within all phases of Disaster Management need to be reflected within the curriculum as a cross cutting issue. UN Convention on the Rights of people with Disabilities, Article 11: *ensure the protection and safety of persons with disabilities in situations of risk including humanitarian emergencies and the occurrence of natural disasters.*

Whom is this Manual for?

It is designed for master trainers, education authorities, school management, teachers and students. It is hoped that this material will provide some level of professional support for the teachers. There are approaches and exercises that the teachers may find useful for their own lives as well as supporting their students.

What are the objectives of the manual?

The purpose of this manual is to assist education authorities, school management, staff, teachers, and students to make their schools safer, and to know what to do before, during and after if different types of disasters occur. Specifically, after participating in a training based on this manual, teachers will:

- Understand the basic concepts of DRR and emergency response need for responding to disaster event effectively;
- Understand multi hazards scenario in the country;
- Gain knowledge on specific requirements for school safety, risk reduction and preparedness;
- Be able to identify specific hazards, vulnerabilities and capacities concerning the school premises;
- Be able to identify non-structural vulnerabilities and plan for minimizing the impact due to disaster risk;
- Be able to develop Disaster Management Plan for School including the evacuation and emergency evacuation mock drill;
- Become Master Trainer on “School Safety” and will be able to teach and train other teachers and students.
- Be able to identify impact of disaster on the most vulnerable children/children with disabilities and identify strategies to minimize the impact and how to utilize their knowledge, skills and insight in disaster management.

Chapter 2

Hazards and Vulnerabilities of Bangladesh

Geography of Bangladesh

Bangladesh is a low-lying deltaic country in South Asia formed by the Ganges, the Brahmaputra and the Meghna rivers. It is a land of about 144 million people within its 147,570 sq. km territory. More than 310 rivers and tributaries have made this country a land of rivers. (Reference: Bangladesh National Plan for Disaster Management 2008-2015 Final Draft)

The geographical location, land characteristics, multiplicity of rivers and the monsoon climate render Bangladesh highly vulnerable to natural hazards. The coastal morphology of Bangladesh influences the impact of natural hazards on the area. Especially in the southwestern area, natural hazards increase the vulnerability of the coastal dwellers and slow down the process of social and economic development. Significant country features include:

- A vast network of rivers and channels
- An enormous discharge of water heavily laden with sediments
- A large number of islands in between the channels
- A shallow northern Bay of Bengal and funnelling to the coastal area of Bangladesh
- Strong tidal and wind action

Natural and human induced hazards such as flood, cyclone, hailstorm, nor'wester, cold wave, drought, tidal surge, tornado, earthquake, river erosion, fire, infrastructure collapse, high arsenic content of ground water, water logging, water and soil salinity, epidemic, and various forms of pollution are frequent occurrences.

Climate change adds a new dimension to community risk and vulnerability. Although the magnitude of these changes may appear to be small, they could substantially increase the frequency and intensity of existing climatic events (floods, droughts, cyclones etc). Current indications are that not only will floods and cyclones become more severe; they will also start to occur outside of their "established seasons". Events, such as drought, may not have previously occurred in some areas and may now be experienced.

Hazards / Vulnerabilities of Bangladesh

Bangladesh is exposed to natural hazards, such as, floods, river erosion, cyclones, droughts, tornadoes, cold waves, earthquakes, drainage congestion/ water logging, arsenic contamination, salinity intrusion etc. But the nature of occurrence, season and extent of effect of the hazards are not the same in all places. Bangladesh National Disaster Management Plan Draft Document lists the following hazards of the country:

Flood

Floods are annual phenomena with the most severe occurring during the months of July and August. Regular river floods affect 20% of the country increasing up to 68% in extreme years. The floods of 1988, 1998, 2004 and 2007 were particularly catastrophic, resulting in large-scale destruction and loss of lives. Approximately 37%, 43%, 52% and 68% of the country is inundated with floods of return periods of 10, 20, 50 and 100 years respectively (MPO, 1986). Four types of flooding occur in Bangladesh:

- Flash floods caused by overflowing of hilly rivers of eastern and northern Bangladesh (in April-May and September-November).
- Rain floods caused by drainage congestion and heavy rains.
- Monsoon floods caused by major rivers usually in the monsoon (during June- September).
- Coastal floods caused by storm surges and tides.

The 1988 flood affected about two-third area of the country. The 1998 flood alone caused 1,100 deaths, rendered 30 million people homeless, damaged 500,000 homes and caused heavy loss to infrastructure. The 1998 flood lasted for 65 days from July 12 to September 14 and affected about 67% area of the country. This devastating flood had an enormous impact on the national economy, in addition to causing hardships for people, and disrupting livelihood systems in urban and rural areas.

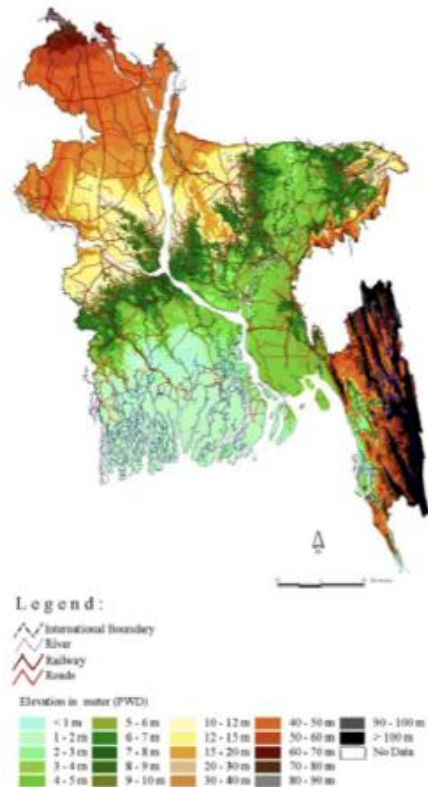


Figure1. Topography of Bangladesh

In the year 2000, Bangladesh faced an unusual flood over its usually flood-free south western plain, which also caused loss of life and massive damage to property. In 2004, floods inundated about 38% of the country (WARPO, 2005). About 747 people lost their lives. About 2500 kilometres of embankment were damaged. About 74 primary school buildings were washed away. This flood caused economic loss of about US\$ 2200 Million. In 2007, the flood inundated about 32000 Sq Km including the char areas of 6000 sq km affecting almost 16 million people in around 3 million households. 649 persons lost their lives. Floods continue to be major hazards in Bangladesh. To mitigate the impacts of floods, the government has been developing and implementing various measures to better equip the country to deal with floods. The Ministry of Water Resources (MoWR) is leading the country on flood mitigation initiatives. Important initiatives include Flood Action Plan, Flood Hydrology Study, Flood Management Model Study, National Water Management Plan, National Water Policy, Flood Early Warning System Study, etc.

Cyclones and Storm Surges

Tropical cyclones from the Bay of Bengal accompanied by storm surges are one of the major disasters in Bangladesh. The country is one of the worst sufferers of all cyclonic casualties in the world.

Table 1: Major Cyclones That Hit The Bangladesh Coast

Date and Year		Maximum Wind speed (km/hr)	Storm Surge height (Meter)	Death Toll
11 May	1965	161	3.7-7.6	19,279
15 December	1965	217	2.4-3.6	873
01 October	1966	139	6.0-6.7	850
12 November	1970	224	6.0-10.0	300,000
25 May	1985	154	3.0-4.6	11,069
29 April	1991	225	6.0-7.6	138,882
19 May	1997	232	3.1-4.6	155
15 November	2007	223	6.1-9.1	3363

Source: Bangladesh Meteorological Department 2007

The high number of casualties is due to the fact that cyclones are always associated with storm surges. Storm surge height in excess of 9m is not uncommon in this region.

For example, the 1876 cyclone had a surge height of 13.6 m and in 1970 the height was 9.11m (WARPO, 2005). In fact, the 1970 Cyclone is the deadliest Cyclone that has hit Bangladesh coastline. With a wind-speed of about 224 km per hour and associated storm surge of 6.1 to 9.11 Metres, it was responsible for death of about 300,000 people. A list of devastating cyclones is given in Table 1.

The Super Cyclone Sidr-2007: The cyclone Sidr-2007 erupted from the Bay of Bengal packing winds of 240 kilometres per hour, swept through the southwestern coastal areas within 155-miles radius of its eye with heavy rain and storm surges reached up to 15-20 feet high in some places on 15th November'07. According to Bangladesh Metrological Department, the Sidr's eye crossed the Khulna-Barisal coast near the Sunderbans mangrove forests around 9:30 pm, while it crossed over the Baleshwar River in Barguna district at mid night. The coastal districts of Barisal Patuakhali, Borguna, Pirojpur, Jhalkthi, Bhola, Bagerhat, Khulna, Satkhira, Shariatpur, Chittagong and Cox'sbazar and their offshore islands and chars received the major destructions by the Sidr. Out of 12 severely affected districts 4 are the worst affected, these are Bagerhat, Barguna, Perojpur and Patuakhali.

As on the reporting period it was observed that 3,363 peoples are dead, 55,282 are injured. Approximately 564,967 houses are totally destroyed and 957,110 houses are partly damaged. It is also reported that 743,321 acres of crop areas are fully and 1,730,316 acres area partly damaged by the Sidr'2007.

Tornadoe and nor'wester

The two transitional periods between southwest and northeast monsoons over the Indian sub-continent are characterized by local severe storms. The transitional periods are usually referred to as pre-monsoon (March-May), and post-monsoon (October-November). It is the pre-monsoon period when most of the abnormal rainfall or drought conditions frequently occur in different parts of Bangladesh. Also there are severe local seasonal storms, popularly known as nor'westers (kalbaishakhi). Severe nor'westers are generally associated with tornadoes. Tornadoes are embedded within a mother thundercloud, and moves along the direction of the squall of the mother storm. The frequency of devastating nor'westers usually reaches the maximum in April, while a few occur in May, and the minimum in March. Nor'westers and tornadoes are more frequent in the afternoon. Table 2 shows some of the devastating nor'westers and tornadoes that hit Bangladesh. Nor'westers may occur in late February due to early withdrawal of winter from Bangladesh, Bihar, West Bengal, Assam, and adjoining areas. The occasional occurrence of nor'westers in early June is due to delay in the onset of the southwest monsoon over the region.

River Bank Erosion

It is an ongoing disaster and there is no specific indicator to measure the extent of damage. So the extent of damage caused by river erosion in most cases is based on various reports/information. Needless to say whatever the difference in ascertaining the extent of damage river erosion causes huge loss of property throughout the year. According to "World Disaster Report 2001" published by IFRCS every year about 1,000,000 people are affected by river erosion and 9,000

Table 2: Nor'westers and Tornadoes

14 April 1969	Demra (Dhaka)
17 April 1973	Manikganj (Dhaka)
10 April 1974	Faridpur
11 April 1974	Bogra
09 May 1976	Narayanganj
01 April 1977	Faridpur
26 April 1989	Saturia (Manikganj)
14 May 1993	Southern Bangladesh
13 May 1996	Tangail
04 May 2003	Brahmanbaria
21 March 2005	Gaibandha

Source: Bangladesh: State of the Environment 2001 and web sources

hectare cultivable lands are banished in river. Among these only a few affected people are able to find new shelters while others become homeless for uncertain period.

River erosion in Bangladesh is no less dangerous than other sudden and devastating calamities. Losses due to river erosion occur slowly and gradually. Though losses are slow and gradual, they are more destructive and far-reaching than other sudden and devastating calamities. The effects of river erosion are long term. It takes a few decades to make up the losses, which a family has incurred by river erosion. There has been little progress, however, for improving the lot of erosion-affected people due to resource constraint.

Rivers in Bangladesh are morphologically highly dynamic. The main rivers are braided, and form islands or chars between the braiding channels. These chars, of which many are inhabited, "move with the flow" and are extremely sensitive to changes in the river conditions. Erosion processes are highly unpredictable, and not compensated by accretion. These processes also have dramatic consequences in the lives of people living in those areas. A study concluded in 1991 reported that: out of the 462 administrative units in the country, 100 were subject to some form of riverbank erosion, of which 35 were serious, and affected about 1 million people on a yearly basis. Around 10,000 hectares land is eroded by river per year in Bangladesh. Kurigram, Gaibandha, Jamalpur, Bogra, Sirajganj, Tangail, Pabna and Manikganj districts lie in the erosion prone area along Jamuna River. Erosion of total area and settlement is higher along the left bank than that of the right bank. Along Padma River, there are the districts of Rajbari, Faridpur, Manikganj, Dhaka, Munshiganj, Shariatpur and Chandpur. According to a recent study, bank erosion along Padma River during 1973 – 2004 was 29,390 hectares and along Jamuna River during 1973 – 2004, it was 87,790 hectares.

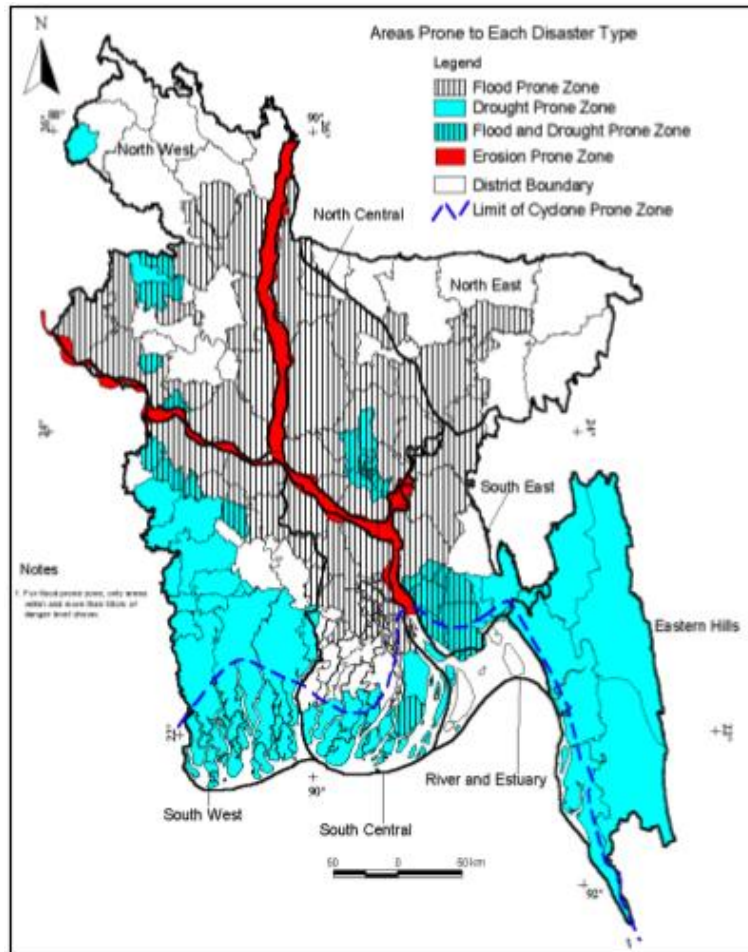


Figure 2. Areas Prone to Various Hazards

Earthquake

Bangladesh and the northeastern Indian states have long been one of the seismically active regions of the world, and have experienced numerous large earthquakes during the past 200 years. The catastrophic earthquakes of 1762 and 1782 are believed to have been partially responsible for the diversion of the main flow of the Old Brahmaputra river from the west to present Jamuna river and main flow of the Arial Khan river to the present Padma channel. Since 1860 over 20 shallow and intermediate earthquake epicenters have been recorded in Bangladesh and the surrounding areas. A seismicity map of Bangladesh and its adjoining areas has also been prepared by BMD and GSB. Bangladesh has been classified into three seismic zones with zone-3 the most and zone-1 the least vulnerable to seismic risks (Figure 3).

The record of approximately 150 years shows that Bangladesh and the surrounding regions experienced seven major earthquakes (with $M_b = 7$).

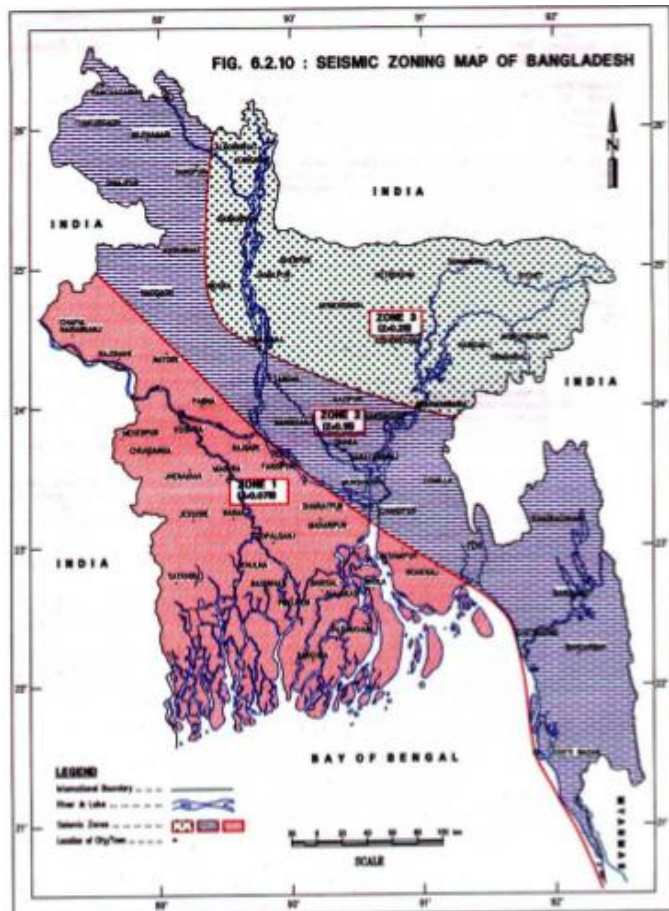


Figure 3. Seismic Zones Of Bangladesh

Table 3. List of Major Earthquakes That Affected Bangladesh

Date	Name of Earthquake	Magnitude (Richter)	Epicentral Distance from Dhaka (km)	Epicentral Distance from Sylhet City (km)	Epicentral Distance from Chittagong (km)
10 January, 1869	Cachar Earthquake	7.5	250	70	280
14 July, 1885	Bengal Earthquake	7.0	170	220	350
12 June, 1897	Great Indian Earthquake	8.7	230	80	340
8 July, 1918	Srimongal Earthquake	7.6	150	60	200
2 July, 1930	Dhubri Earthquake	7.1	250	275	415
15 January, 1934	Bihar-Nepal Earthquake	8.3	510	530	580
15 August, 1950	Assam Earthquake	8.5	780	580	540

Source: Choudhury, 2005

In the recent past, a number of tremors of moderate to severe intensity had already taken place in and around Bangladesh. The Sylhet Earthquake ($M_b = 5.6$) of May 8, 1997, the Bandarban Earthquake ($M_b = 6.0$) of November 21, 1997, the Moheshkhali Earthquake ($M_b = 5.1$) of July 22, 1999, and the Barkal (Rangamati) Earthquake ($M_b=5.5$) of July 27, 2003 may be cited as examples.

Drought

Bangladesh faces unpredictable drought hazard in the dry monsoon due to inadequate and uneven rainfall. It varies from place to place, however, Northwestern region suffers most from the drought. As much as 17% of the Aman crops, the main paddy crops in the wet season may be lost in a typical year due to drought. Though this is an annual phenomenon, the last severe drought faced by Bangladesh was in 1994. In view of persistent food shortage, this is a catastrophe. Drought affects the seasonal

crops and also the fruit-bearing trees, forestry and the environment as a whole. Moreover, the crop environment during the monsoon (Kharif-II) season is not favourable for achieving full potential yields because of uneven distribution of rainfall, flooding etc. To combat the drought, it is essential for Bangladesh to utilize its water resources, both surface and groundwater. However, Bangladesh has increasingly used her ground water resources to such an extent that the depletion of ground water resources as well as arsenic contamination is occurring at an alarming rate in the ground water reservoirs due to over and unplanned withdrawal. The scope of increasing the irrigation areas by LLP is limited. In these circumstances, there is no option but to use surface water to meet the water deficit created by droughts in the Kharif-II season and hence, surface water utilization projects such as barrages across the rivers, installation of pumping plants for lifting water from the rivers are essential.

Water Logging

South-Central Bangladesh is prone to extended monsoon flooding and water logging from the ocean and the Ganges and Jamuna Rivers. Various climate change studies have revealed that this region will be more prone to flooding and water logging due to heavy rainfall and other predicted effects of climate change. Erratic rainfall and temperature fluctuation are hampering crop production and livelihood activities in the area.

This area is mainly drained by a number of north-south flowing rivers. From east to west, important rivers are the Gorai-Madhumati-Baleswar, the Bhairab-Pusur, the Bhadra-Gengrail, the Hari-Teka-Mukteswari, Sibsa, the Kabadak-Betna system and the Jamuna-Ichamati-Kalindi rivers. Most of the rivers are tidal in nature. East-west rivers interconnect the north-south rivers. Flows of these east-west rivers are very important for the complete circulation of tide all over the tidal flat.

The tidal floodplain is bounded in the north by the Ganges floodplain and in the south by the Sundarban mangrove tidal forest. The tidal floodplain is strongly influenced by tide, salinity and rainfall. This plain is also criss-crossed by numerous tidal creeks or channels and has high drainage density. The average tide difference is about two metres. Most of the areas are between one to three metres above mean sea level and have a southward regional slope.

The water and the soil are saline but in the rainy season salinity becomes low. Fresh water flows from the upstream regions and the tides normally control the salinity of this region. The major portion of the floodplain is low-lying, barely one metre above mean sea level and below high tide level. Homesteads, roads, vegetable gardens and orchards were developed on areas artificially raised by digging ponds and ditches.

Water logging destroyed houses, disrupted communication and the rhythm of daily life, killed off fruit trees and reduced the number of domestic animals. Because of water logging, the fuel crisis became acute. The collection of wood fuel and drinking water became increasingly difficult; human waste was thrown into water in the absence of dry land and farmers turned into fishers as agricultural lands were submerged. Many migrated to other areas as life became difficult to support. The pollution caused by the stagnant waters created epidemics of water-borne diseases. Schools closed and children were deprived of education. Hundreds of thousands lost their occupations and became destitute.

Water logging is also a big problem in Dhaka City. This is the consequence of unplanned development. Due to rapid urbanization with unplanned construction, most of the storm water drainage have been encroached, filled up, diverted and caused obstruction to the smooth flow of water to the outfall-rivers, creating severe water-logging in the city every year during monsoon incurring huge loss in terms of adverse social, physical, economic and environmental costs.

Heavy rainfall brings Dhaka to a virtual standstill, demanding urgent need for long term planning to overcome water logging problem. The problem is exceptional and the government and development authorities have no control over the weather. Nevertheless, the devastating impact of the downpour

that paralyzes Dhaka often is a salutary reminder of the severity of the problem, and the necessity for the government to take counteractive measures on a priority basis. Dhaka City could hurtle towards an ecological disaster if destruction of the natural drainage and water bodies isn't stopped and an effective management of urban drainage system isn't set up.

Planning, design, operation and maintenance of urban drainage systems is a challenge for urban authorities because of unplanned development activities, and the effectiveness of storm water management systems can be directly linked to the efficacy of urban management. Therefore, for urban drainage systems to be managed effectively and operationally sustainable, greater emphasis needs to be placed upon the following:

- Co-ordination between urban authorities and agencies those are responsible for different aspects of urban infrastructure provision and management;
- Collaboration between government and non-governmental organizations and promotion of effective partnership with civil society and the private sector;
- Training and human resource development for improved planning, design, and operation of urban drainage systems.

Arsenic Contamination

At present, arsenic contamination is considered to be a dangerous environmental threat and a serious health risk. It is identified as a public health emergency in Bangladesh. There is no specific treatment for chronic arsenicosis other than ceasing further intake of arsenic contaminated water and raising awareness of the population about the problem. The value (recommended limit) for arsenic in drinking water as per the guideline of the World Health Organization (WHO) is 10 mg/L while the national standard in most countries, including Bangladesh, is 50 mg/L. With varying levels of contamination from region to region, groundwater in 61 out of the 64 districts in Bangladesh is contaminated with arsenic. According to a study conducted by the British Geological Survey and DPHE, Bangladesh, arsenic concentrations in the country range from less than 0.25 mg/L to more than 1600 mg/L. This study report estimates that out of the Bangladesh population of 125.5 million, up to 57 million drinks water that has an arsenic concentration greater than the WHO guideline value and up to 35 million drinks water that has concentrations in excess of the Bangladesh standard. The waters in the southwest and southeast parts of Bangladesh are highly contaminated with arsenic. Important government initiatives to mitigate risk to arsenic contamination include development of the National Policy for Arsenic Mitigation 2003 and the Implementation Plan for Arsenic Mitigation in Bangladesh

Landslide

Large and small landslides occur almost every year in nearly all regions of the world. In the past, landslide was not considered a major hazard in Bangladesh. However, recently landslide has emerged as a major hazard, particularly after the Chittagong Landslide 2007. Due to heavy rainfall during 10-11 June 2007, landslide and collapsed walls caused widespread damages in six areas of Chittagong city and in different Upazilas of the district. 50 MM rainfall was recorded from 12:00 AM 10 June 2007 to 6:00 AM June 11 2007, and 315 MM rainfall was recorded from 6:00am to 2:00 PM on 11 June 2007. More than 120 people have been reported dead due to Chittagong Landslide.

Landslide is a complex-disaster phenomenon that can be caused by earthquakes, volcanic eruptions, heavy rainfall (typhoons, hurricanes), sustained rainfall, heavy snowmelt, unregulated anthropogenic developments, mining, and others. In Bangladesh, landslide is mostly triggered by heavy rainfall. However, underlying causes of landslide include deforestation, hill cutting, unregulated development work, etc. Moreover, poverty and landlessness force poor people to live in the risky hill-slopes.

Fire

Fire hazards occur frequently in Bangladesh. Fire causes huge loss of lives and properties every year. Although termed as 'fire accident', most fire events are far from being accidental. Indeed, most fires are preventable. Industrial units, particularly garments industry, produce deadliest of the fires. For example, a fire broke out on 6 January 2005 on the fourth-floor of a building housing a factory in Narayanganj. It took fire-fighters four hours to extinguish the blaze. Dozens of workers were injured as they desperately tried to escape down the narrow smoke-engulfed stairs. About 23 people died because they were unable to escape because many of the exits were blocked, and the fire extinguishers were not working.

Tragically, factory fires are all too common in Bangladesh. Whenever a fire occurs, the authorities are usually asked to investigate the fire, pay exemplary compensation to the survivors as well as to the families of those that died, take immediate steps to improve health and safety in the industry, as well as take legal action against those found responsible for criminal negligence in allowing the existence of such unsafe conditions.

Fire incidents in the country are increasing at an alarming rate. In 2004 alone, a total of 7,140 fire incidents occurred which caused damage to property worth more than Tk. 200 crore.

Tsunami

Underwater strong earthquakes, volcanic eruption or other submarine landslide usually causes tsunamis. When earthquake occur offshore at subduction zones (places where a tectonic plate that carries an ocean is gradually slipping under a continental plate). Some tsunamis can be very large. In coastal areas their height can be as great as 30 feet or more (100 feet in extreme cases), and they can move inland several hundred feet.

A tsunami consists of a series of waves. Often the first wave may not be the largest. The danger from a tsunami can last for several hours after the arrival of the first wave.

- Tsunamis can move faster than a person can run.
- Tsunamis can occur at any time, day or night.

Tsunami impact: although infrequent, tsunamis are among the most terrifying and complex physical phenomena, and have been responsible for great loss of life and extensive destruction to property. Because of their destructiveness, tsunamis have important impacts on the human, social, and economic sectors of societies. The last major Pacific-wide tsunami occurred in 1960. Many other local and regional destructive tsunamis have occurred with more localized effects.

Considering the state of tsunami vulnerability and potential seismic sources, Geological Survey of Bangladesh has divided the Bangladesh coastal belt into three zones:

- (a) Tsunami Vulnerable Zone- I (Chittagong-Teknaf coastline): Most vulnerable. The intra-deltaic coastline is very close to the tectonic interface of Indian and Burmese plates. The active Andaman-Nicobar fault system is often capable of generating tsunami waves.
- (b) Tsunami Vulnerable Zone- II (Sundarban-Barisal coastline): Moderately vulnerable. This old deltaic belt is extremely vulnerable to local tsunamis due to presence of Swatch of No Ground.
- (c) Tsunami Vulnerable Zone- III (Barisal-Sandwip estuarine coastline): Low vulnerability. The estuarine coastal belt considered being less vulnerable due to presence of numerous islets and shoals in the upper regime of the continental shelf.

Climate Change Impact

Global warming effects have already started showing up more impact cyclones, floods and droughts along with increasing intensity, namely change in species habitats and habits, acidification of oceans, loss of wetlands and bleaching of coral reefs. Rapid and continued loss of biodiversity is taking place at an alarming rate, and the ecological footprint, which measures the extent of human demand on Earth's ecosystems, has tripled since 1961, showing that the planet's resources are being used at a rate 25% higher than their ability to regenerate. These disturbing effects will worsen as climate change accelerates and are likely to deprive hundreds of millions of people from access to water within just a couple of decades, while tens of millions will be displaced by floods from rising sea levels and tropical cyclones as well as wildfires will intensify; Food production may initially improve in some northern regions but starvation could affect hundreds of millions in near future.

Chapter 3

Basic Concepts of Disaster Management

What is a Hazard?

Hazard is the natural occurrence or human-induced process or event phenomenon capable of causing loss. Hazards are dangers. There are different categories of hazards exist which are as follows;

Category of Hazard	Hazard
Hydro Meteorological Hazards	Floods, Debris, Mudflows. Tropical cyclone, Storm surges, Thunder/hail storm, Rain and wind storm, Blizzards and other severe storms, Drought, Desertification, Wild land fire, Temperature extremes, Sand or dust storms
Geological Hazards	Avalanches, Earthquakes, fault rapture, Forest fires, Landslides, Rock falls, rock slides, Torrent, Volcanic eruption and Tsunami
Industrial and Chemical Hazards	Toxic pollution, Explosion and Chemical fire
Biological and accidental Hazards	Dengue fever, malaria, tuberculosis, H1N1, Road injury and accident, Urban Fire, Slum fire, Structural collapse, Spill of oil, Air crash, Air Pollution, Railway Accident, Transport Accident, All types of fire

The first two categories can be recognized as Natural Hazards and rest as Man-Made Hazards.

What is Vulnerability?

Vulnerability is a set of prevailing or consequential conditions that adversely affect people's ability prevent, mitigate, prepare for and respond to hazardous events. Vulnerabilities are weaknesses. The conditions determined physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards.

Types of vulnerability	Explanation
Physical / Material Vulnerability	<ul style="list-style-type: none"> ▪ Hazard-prone location of community houses, farmlands, infrastructure, basic services ▪ Design and construction materials of houses and buildings ▪ Insecure and risky sources of livelihood ▪ Lack of basic services: education, health, safe drinking water, shelter, sanitation, roads, electricity, communication ▪ Exposed to violence (domestic, community conflicts or war) ▪ Limited capacity of health and emergency services to respond in emergency

Types of vulnerability	Explanation
Social / Organizational Vulnerability	<ul style="list-style-type: none"> • Weak family / kinship structures • Lack of leadership, initiative, organizational structures to solve problems or conflicts • Ineffective decision-making, people/groups are left out • Unequal participation in community affairs • Absence or weak community organizations (in formal, governmental, indigenous) • Rumors, divisions, conflicts: ethnic, class, beliefs, caste, ideology, discrimination against group of people (eg people with disabilities)/ society • Unjust practices, lack of access to political processes • No or neglected relationship with government, administrative structures • Isolated from outside world • Poverty: unstable economic situation affects mitigation and preparedness activity as well as capacity to recover economic stability
Motivational / Attitudinal Vulnerability	<ul style="list-style-type: none"> • Negative attitude towards change • Passivity, fatalism, hopelessness, dependency • Lack of initiative, no 'fighting spirit' • Lack of unity, cooperation, solidarity • negative beliefs/ideologies • unawareness about hazards and consequences • Dependence on external support/dole-out mentality • Poor awareness of capacity to respond

What is Capacity?

Capacity is a combination of all the strengths and resources available within a community, society or organization that can reduce the level of risk, or the effects of a disaster.

Capacity may include physical, institutional, social or economic means as well as skilled personal or collective attributes such as leadership and management. Capacity may also be described as capability.

What is Risk?

The probability of harmful consequences, or expected losses (deaths, injuries, disabilities, psycho social trauma, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human-induced hazards and vulnerable conditions.

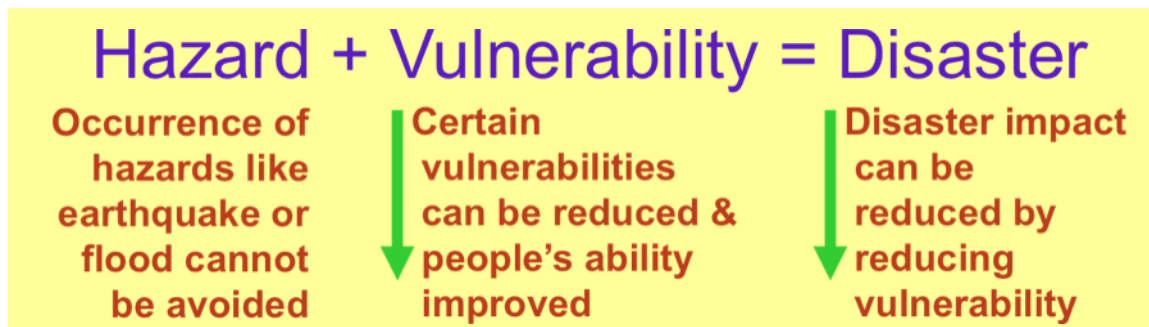
Conventionally risk is expressed by the notation **Risk = Hazards x Vulnerability**. Some disciplines also include the concept of exposure to refer particularly to the physical aspects of vulnerability.

Beyond expressing a possibility of physical harm, it is crucial to recognize that risks are inherent or can be created or exist within social systems. It is important to consider the social contexts in which risks occur and that people therefore do not necessarily share the same perceptions of risk and their underlying causes.

What is a Disaster?

Disaster is a serious disruption of the functioning of a society, causing widespread human, material, or environmental losses, which exceed the ability of the affected society to cope using only its own resources.

A disaster is a function of the risk process. It results from the combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences of risk. Disaster can happen in a society if it is vulnerable to a particular hazard and the existing capacity is low and is not prepared to cope with the hazard. This can be expressed as **Hazard + Vulnerability = Disaster**.



The above figure illustrates that a hazardous event occurring in a vulnerable location leads to disaster. Though it may not be possible to avoid the occurrence of a hazard, by reducing the vulnerabilities and improving the capacity of people, it would be possible to avoid the hazard from turning into a disaster or to reduce the negative impact of the disaster.

What is Disaster Risk Management?

Disaster risk management is the systematic process of using administrative decisions, organization, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. This comprises all forms of activities, including structural and non-structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of hazards.

What is Disaster Risk Reduction?

Disaster risk reduction or disaster reduction is the conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development.

The disaster risk reduction framework is composed of the following fields of action, as described in ISDR's publication 2002 "Living with Risk: a global review of disaster reduction initiatives":

- Risk awareness and assessment including hazard analysis and vulnerability/capacity analysis;

- Knowledge development including education, training, research and information;
- Public commitment and institutional frameworks, including organisational, policy, legislation and community action;
- Application of measures including environmental management, land-use and urban planning, protection of critical facilities, application of science and technology, partnership and networking, and financial instruments;
- Early warning systems including forecasting, dissemination of warnings, preparedness measures and reaction capacities.

What are the Various Phases of Disaster Management?

Figure 4 shows various phases of disaster management.

Response or Relief: This refers to the provision of assistance or intervention during or immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected. It can be of an immediate, short-term, or protracted duration.

Recovery: This refers to the decisions and actions taken after a disaster with a view to restoring or improving the pre-disaster living conditions of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk. Recovery (rehabilitation and reconstruction) affords an opportunity to develop and apply disaster risk reduction measures.

Mitigation: This refers to the structural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards.

Preparedness: This refers to the activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary evacuation of people and property from threatened locations.

Recovery V/s Risk Reduction: While relief, rehabilitation and reconstruction activities are taken up in

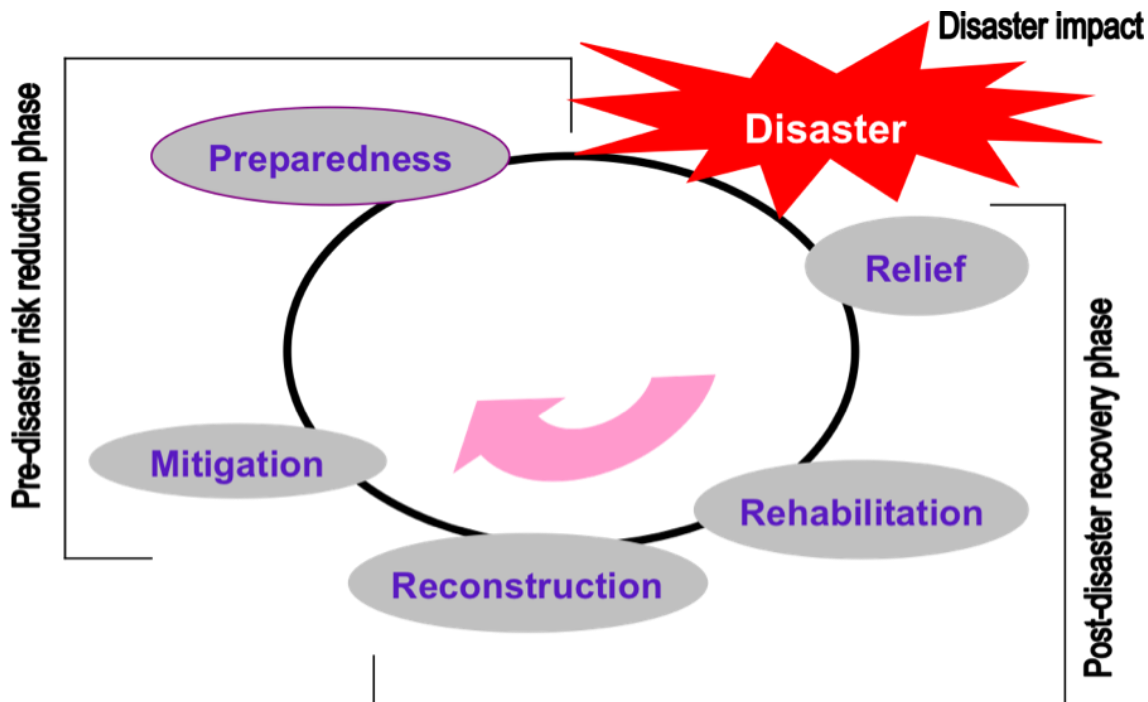


Figure 4. Phases of Disaster Management

the post-disaster recovery phase, mitigation and preparedness activities are to be taken up in the pre-disaster risk reduction phase (Figure 4).

Chapter 4

School Safety

Why School Safety?

Making schools safer is important due to the following:

- School children form one-third of about 200 million disaster victims every year. Saving the lives of school children by making the school buildings safer is of paramount importance.
- Roughly one billion children aged 0-14 live in countries with high seismic and other disaster risk. Several hundred are at risk when they are attending schools. Giving disaster awareness to children will go a long way in saving their lives as well as the lives of others in the community.
- School-going children spend about 30-35% of their time in the school (in a 24-hour day-night period). Therefore, it is essential to make the school safe from disasters.
- School premises can be used as temporary shelter for accommodating communities displaced during a disaster. Therefore the school buildings should be made disaster resistant.
- Children are an excellent medium to reach the parents. Messages on safety, hygiene, etc., can be conveyed through the children to the parents and to the society at large.

What are the objectives of School Safety?

The objectives of School Safety are:

- To make the school secure against disasters by risk reduction.
- To train and build awareness among students, teachers, staffs, management and parents about disasters
- To train and build awareness among students, teachers, staffs, management and parents about the impact of disasters on the most vulnerable children including children with disabilities.
- To plan and implement disaster reduction activities in the school.
- To effectively prepare and respond to disasters.
- To coordinate with local government offices, emergency services, community and community based organisations for support.
- To empower students, teachers, school management and community through schools.
- To develop a school community that meets the needs and uses the talents of all its members, parents, teachers, boys, girls, children from marginalized groups including children with disabilities

Approach to School Safety

Japanese philosopher and educationist Dr. Daisaku Ikeda outlined the "Learn, Reflect, Empower" formula for education for sustainability, stating, "Education must also inspire the faith that each of us has both the power and the responsibility to effect positive change on a global scale". This approach seems to be the best for providing risk education to the children.

- **To Learn:** Students deepen their awareness about hazards and risks when they understand realities and know facts. Recent natural disasters are well documented and shared. These serve as case studies for teachers as well as students. Wherever needed, disasters are simulated with the help of portable models. The learning process is strengthened by curriculum change.
- **To Reflect:** Students analyze factors leading to human casualties and injuries, disabilities, psychosocial trauma in disasters, so that they can recognize development practices and human actions that can cause disasters or prevent them. Students connect to their own local communities and families and share their learning with them.
- **To Empower:** Students take concrete action toward reducing risks in their environment. Classroom and school exercises are introduced to help them take small definitive actions that can become a precursor to bigger investments for disaster risk reduction. School management prepares school disaster management plans which identify roles and responsibilities and which are rehearsed periodically.

In this approach, school students, teachers and management develop disaster management plans for their schools. In the process, they come to know existing structural and non-structural weaknesses. Efforts are made to ensure that the school community takes ownership of the plan and make the necessary updates in the future. It is to be noted that involving teachers is essential for the success of any activity with students.

Students are trained to identify hazards inside their schools through a "hazard hunt" exercise. They are also provided with a similar checklist for doing "home work" – to identify hazards in and around their homes. Students can also identify the vulnerability and capacity inside as well as outside the school (surrounding area of school). Students can also identify the inside capacity, vulnerability and outside (surrounding area of school) capacity, vulnerability of their school. The DRR message spreads as the students share information and knowledge to their parents, relatives, friends and neighbours.

What are the activities needed for a comprehensive school safety?

The main objective of the school safety activities is Risk Reduction. This will include mitigation and preparedness activities and preparing a disaster management plan for the school to respond the event effectively. A community-based disaster management approach is followed, involving the following steps:

- Raising awareness of disaster related issues among the targeted stakeholders (students, teachers, school management, guardians and others) through various methods of lectures, discussions, posters, drama (street play) and demonstration;
- Facilitate to the teachers, SMC and student representatives on
 - Identifying and listing hazards and vulnerabilities outside the school;
 - Identifying structural and non-structural vulnerabilities inside the school;
 - Identifying and listing ways of reducing vulnerabilities;
 - Identifying the roles and responsibilities of various stakeholders;
- Training teachers on how to prepare a school evacuation plan, building emergency response capacity, focusing on skills such as search and rescue, fire safety, and first aid (training provided to student groups); and Preparing Disaster Management Plan for the school;
- Listing the contact information of all responder and resource agencies for emergency management;

- Conducting emergency evacuation mock drill, to practice and demonstrate the evacuation, rescue, fire safety, and first aid skills acquired by the students;
- Promoting sustainability of risk education through various ways such as Safety Clubs, newsletters, etc;
- A comprehensive school safety plan should address the following issues:
 - Psychosocial support for children during disasters
 - Needs and potentials of children with disabilities(Children with disabilities have capacity to play an active role in school safety)
 - Continuation of education during emergencies
 - School Safety Audit

What are the various phases of school safety activities?

While planning for disaster safety of a school, the various phases of disaster management can be considered as: non-disaster time, before disaster, during disaster and after disaster. All activities for reducing (mitigating) the effects of disaster should be taken up when there is no disaster. Also, awareness raising, skills training and mock drills will be done at this stage. Activities before disaster will include checking all equipment and tools and keep them ready for quick response, and decisions to be taken such as declaring closure of school when a cyclone warning has been issued. When a disaster happens, the activities such as responding to the disaster by evacuation of students from the buildings will be taken. After a disaster, the safety and care of students and sending them to their homes will be the activities.

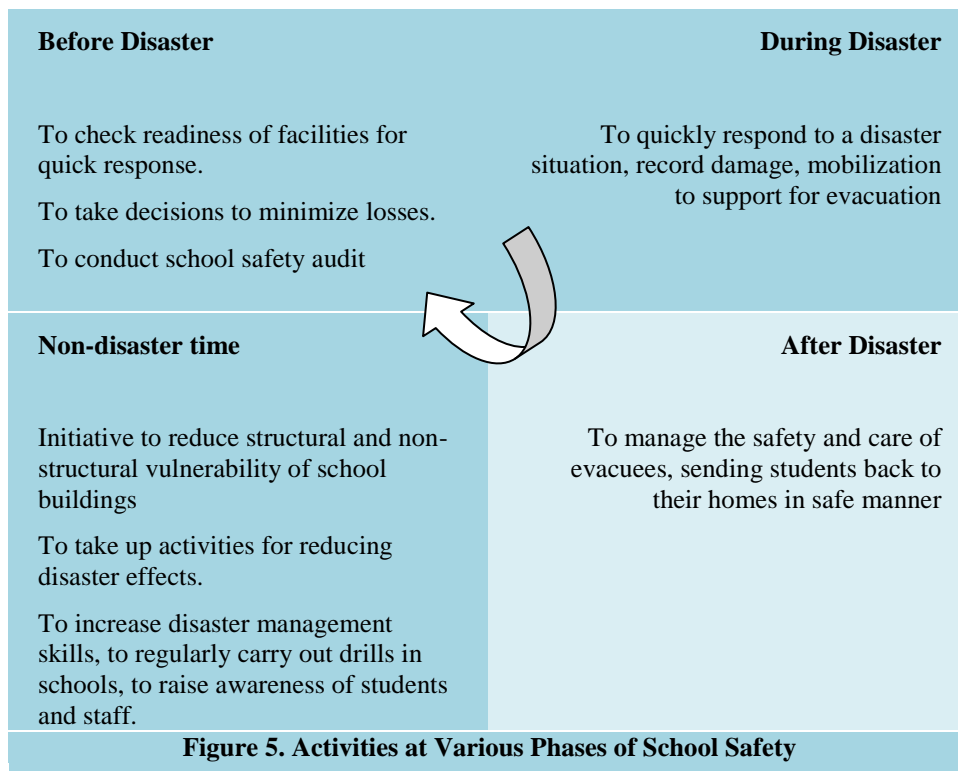


Figure 5. Activities at Various Phases of School Safety

Chapter 5

Hazards / Vulnerabilities Mapping for Schools

Recognising dangers threatening the school

The dangers (hazards) that are threatening to strike the school should be identified through discussion. The members of the School Disaster Management Committee will have the knowledge and experience of the dangers faced by the school. They can recall their past experiences and make a list of the dangers in the following Table. Specify the threat level of the danger as High (H), Medium (M), Low (L), or zero (0). The level of threat is a combined assessment of the frequency and damage potential of a danger. Listing the past disasters will be useful to address the most recurring danger.

Some types of dangers are listed below. Only the dangers that are relevant to the school should be listed.

Table 4. Hazards Threatening School		
Type of Hazard	Level of threat	Past experience
Natural Hazards		
Earthquake	<i>For example, H</i>	<i>In 2001 earthquake, Block 3 building partly damaged.</i>
Cyclone	[]	
Flood	[]	
Human-made Hazards		
Fire	[]	
Chemical accident	[]	
Stampede	[]	
Civil disturbance	[]	
Medical emergency	[]	
Road accident	[]	
Other	[]	

Identifying external problems (vulnerabilities)

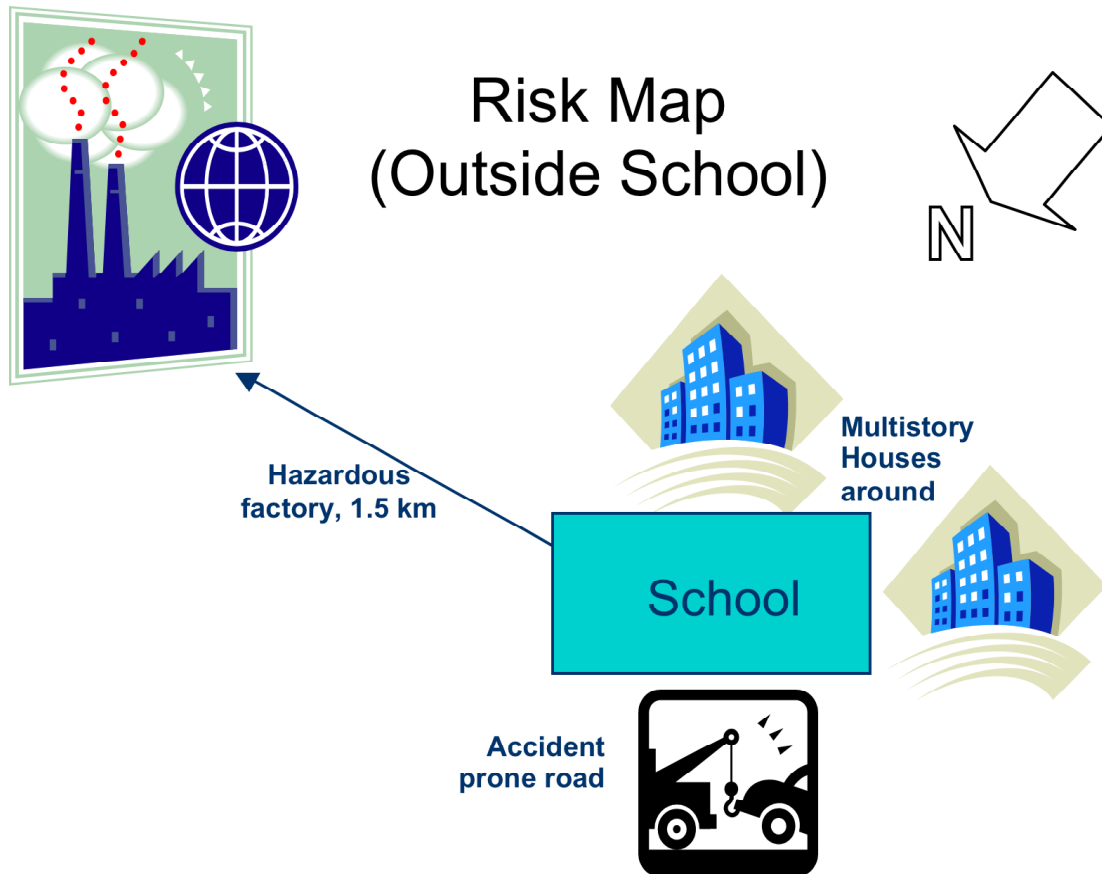


Figure 6. Risk Map

There may be problems (vulnerabilities) existing in the neighbourhood that may make disaster management difficult. All such problems should be identified and the possibilities for solving them should be identified. A risk map can be prepared by showing the various problems existing outside the school and their relative location with respect to the school.

This risk map can be displayed in the school and it will be useful to understand the existing dangers in the neighbourhood. An example of a risk map is given in Figure 6. The map may be sketched by hand. The map should be oriented in a direction so that the teachers and students can easily understand the map. The North direction may be marked on the map.

Action Plan for solving external problems

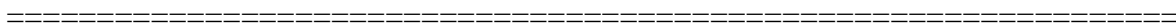
Consider the problems outside the school identified one by one and discuss the actions to be taken to remove or reduce the problem. For example, if the school main gate is located on a busy road, it poses problem for children while coming to and returning from school. To solve this problem, the school authorities may request the concerned authorities to make the road as one-way during specified hours, fix traffic signal or warning sign, or deploy security guards to guide the traffic.

An action-planning template is shown below (Table 5) with some examples. In making the action plan, follow these steps:

- Consider all identified problems one by one.
- For each problem, identify all options for solving.

- Discuss and select the viable solution that can be implemented.
- Identify who will be responsible person for implementing the solution.
- Decide when the action will be implemented.

Table 5. Action Planning for Solving External Problems Threatening School				
Type of Problem outside school	Description of problem	Action to be taken to remove or reduce problem & date	Date by which action will be taken	Responsible person
Access to school	Roads around the school are narrow uneven, inaccessible; Accident-prone road School is surrounded by multi-storey houses on three sides and huts on the fourth side; Dangerous open drains outside the school	A security person should be appointed when the next school session starts to regulate the traffic when students arrive and leave from school. Make the school accessible for all, including children and teachers who use mobility aid/wheelchair		Principal
Industries in the vicinity	Chemical Industry at a distance of 1.5 km Nuclear power plant at a distance of 5.0 km	Awareness to be given to children		Chemistry teacher
Flood prone area	Low-lying area existing on the west side of the school that gets inundated during rainy season			
Topography	School buildings are located on mountain slope	In steep areas use steps with even height (150mm) and depth (300mm) and handrails at 700mm and 850-900mm on both sides Link main track to school entrance with a slope whose maximum gradient is 1:12 for accessibility of children and teachers who use wheelchairs		



Exercise 1: Identifying Hazards

The hazards prevailing in the country is given in Chapter 2. Identify the hazards that prevail in the location of your school, the level of threat posed by each of the hazards [High (H), Medium (M), Low (L), or zero (0)] and the past events of the hazards and damage information.

Hazards Threatening School		
Type of hazard	Level of threat	Past experience
Natural Hazard		
Human-made Hazard		

Exercise 2: Risk Mapping

Read the procedure given for preparing Risk Map in section “*Identifying external problems (vulnerabilities)*”. Identify the problems faced by the school due to the external environment. Prepare a Risk Map by presenting the external elements in a pictorial form.

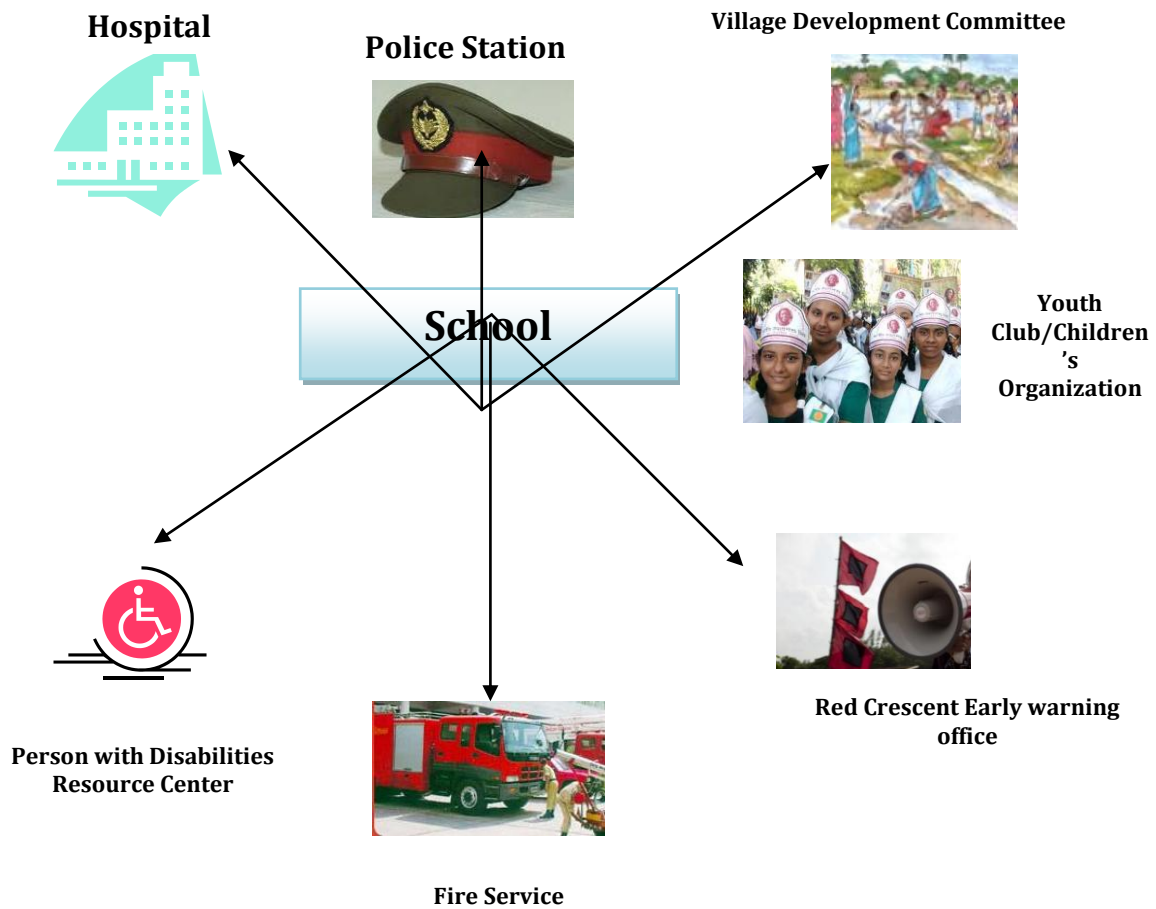
Exercise 3: Action Planning for External Problems

Follow instruction given under the section “*Action Plan for solving external problems*” and prepare an Action Plan for your school in the following table.

Action Planning for Solving External Problems Threatening School				
Type of Problem outside school	Description of problem	Action to be taken to remove or reduce problem & date	Date by which action will be taken	Responsible person

Chapter 6 Facilities / Resources Mapping for Schools

All facilities / resources available within the school and outside the school for helping in disaster management should be compiled and listed. The facilities outside school may include fire station, hospital, police station, City Commissioner's Office, etc. Some of the facilities may be very close to the school and some may be far away from the school. These facilities should be decided depending on the hazards affecting the school and vulnerabilities of the school. Facilities within the school may include evacuation area and shelter, equipment and materials useful for disaster response, trained manpower, awareness materials, etc.



Mapping of facilities outside school

A list of physical facilities existing in the neighbourhood outside the school should be prepared as follows.

Table 6. Facilities Outside The School				
Facility	Distance from school	Name of Contact Person	Contact Telephone Number	Details about the facility
Police station	1 km			
Fire station				
Hospital				10 beds
Taxi stand				
Medical shop				
Person with disabilities resource centre				
Red Crescent Early warning office				
Village Development Committee				

A facility map can be prepared by showing the various facilities existing outside the school and their relative location with respect to the school. This map should show the location of nearest police station, fire station, hospital, ambulance, taxi stand, telephone booth, medical store, rehabilitation centre, assistive device production workshop etc. This facility map can be displayed in the school and it will be useful to understand the existing facilities in the neighbourhood. An example of facility map is shown in Figure 7. The map may be sketched by hand. The map should be oriented in a direction so that the teachers and students can easily understand. The North direction may be marked on the map.

Resource Planning

In this section, planning is done for increasing the capacity of the school to deal with a disaster situation. This will include acquiring necessary equipment and awareness material, and carrying out activities for awareness raising and training.

Action planning for equipment and tools

An action-planning template for equipment and tools is shown in Table 7 with some examples. To plan for equipment and tools for disaster management:

- First, prepare a list of materials available in the school that are useful for managing disaster situations, along with quantities and their locations.
- Identify the items missing or additional quantity that needs to be procured.
- Also identify any equipment that is not in working condition and needs to be corrected.
- Also, include by whom and by what date will the items be purchased or repaired.

Table 7. Action Plan for Equipment and Tools for School Disaster Management

Equipment	Quantity available	Location	Condition	Additional quantity to buy	Date to buy or correct	Person In-charge & Contact number
<u>Communication</u>						
TV			PA system not working			
Radio						
PA System						
Megaphone						
<u>First Aid</u>						
First Aid Kit						
Medicines						
Stretcher						
Resuscitator						
<u>Site security</u>						
<u>Fire fighting</u>						
Fire Extinguisher						
Sand buckets						
<u>Search & Rescue</u>						
Ladder						
Rope						
Torch	4		No battery cells for torches	2 torches;		
Wheelchair				20 battery cells		
Whistle						

The items shown in the above Table are only indicative. While developing the School Disaster Management Plan, all necessary items should be identified.

Action planning for awareness materials

An action-planning template for awareness materials is shown in Table 8 with some examples. To plan for awareness materials for disaster management:

- First, prepare a list of awareness materials available in the school that are useful for providing disaster awareness, along with quantities and their locations.
- Identify the items missing or additional quantity that needs to be procured.
- Also, include by whom and by what date will the items be purchased.

Table 8. Action Plan for Awareness Materials for School Disaster Management

Type of awareness material	Quantity available	Location	Additional quantity needed	How to arrange	By what date	Person In-charge
Books on disaster education	15	Library	30	Purchase		Librarian
Posters on earthquake safety	20					
IEC on disability issues	20					

Action planning for capacity building activities

An action-planning template for capacity building activities is shown in Table 9 with some examples. To plan for capacity building activities:

- First, prepare a list of activities that help increase disaster awareness.
- Also, include by what date will the activity be implemented, and who will be responsible.

Table 9. Action Plan for Capacity Building Activities

Activity to be undertaken	By what date	Activity Completed? Yes / No	Person In-charge
Posters (to be displayed in classrooms and corridors)			
Leaflets (to be distributed to parents and community)			
Training of Task Forces			
Conducting mock drill (ensure active participation of children with disability)			

Exercise 4: Identifying External Facilities

Read the section “*Mapping of facilities outside school*”. Identify all facilities available in the neighbourhood that will be useful for disaster response in the school. Fill the details in the following table.

Facilities Outside The School					
Facility	Distance from school	Name of Contact Person	Contact Telephone Number	Details about the facility	Access for all: barriers and supportive factors for accessibility

Exercise 5: Facilities Mapping

Prepare a Facility Map by representing pictorially the facilities identified under Exercise 4.

Exercise 6: Action Planning for Equipment

Follow the steps given in section “Action planning for equipment and tools” and prepare an Action Plan for equipment and tools that will be useful for disaster response in the school in the following format.

Action Plan for Equipment and Tools for School Disaster Management						
Equipment	Quantity available	Location	Condition	Additional quantity to buy	Date to buy or correct	Person In-charge & Contact number

Exercise 7: Action Planning for Awareness Materials

Follow the steps given in section “Action planning for awareness materials” and prepare an Action Plan for awareness materials in the following format.

Action Plan for Awareness Materials for School Disaster Management						
Type of awareness material	Quantity available	Location	Additional quantity needed	How to arrange	By what date	Person In-charge

Exercise 8: Action Planning for Capacity Building

Follow the steps given in section “Action planning for capacity building activities” and prepare an Action Plan for capacity building that will be useful for disaster response in the school in the following format.

Action Plan for Capacity Building Activities			
Activity to be undertaken	By what date	Activity Completed? Yes / No	Person In-charge

Chapter 7

Ensuring Structural Safety of School

What are structural and non-structural elements in a building?

All building components can be divided into two types of elements: structural and non-structural. Structural elements refer to the building elements like slabs, beams, columns, foundation, load bearing walls etc., that carry the load of the structure. Non-structural elements are the components that do not carry the load of the structure like windows, doors, stairs, partition walls etc., and fixtures and contents of the building, which the users bring with them such as furniture, appliances, bookshelves etc.

How to make buildings disaster resistant?

It is always advisable particularly in cyclone and earthquake prone areas to have simple shape of the building to reduced stress concentration. Best is a square layout of building if possible and if it's not possible due to site constraints a rectangular layout can be used but in that case the length should not be more than three times its width. Openings on the walls should also be as less as possible and the openings should be placed symmetrically as openings are the weakest part of wall that reduces the strength of the wall in resisting lateral forces that are created during an earthquake or cyclone.

Usually buildings are designed and constructed to carry vertical loads, which is the result of self-load of the structure. During the time of hazards like earthquake, cyclone, landslide or floods lateral load comes into play, and this needs additional features within the building to resist the extra loads. In a traditional masonry building we need to provide horizontal bands at different levels, which increase the lateral load resistant of the structure during the time of disasters. It is very important to provide disaster resistant features in buildings that can minimize damages at the time of disasters and saves lives of people who are using the building. Different disaster resistant features are seismic bands at plinth level, sill level, lintel level, corner reinforcement, bands around openings, etc. It is also possible to strengthen the existing buildings by providing disaster resistant features; this process is called retrofitting.

Details of building construction with disaster resistant features, and retrofitting of weak structures are beyond the scope of this manual. A qualified structural engineer should be contacted for more information.

How to make buildings accessible for all?

An accessible environment allows for free and safe movement, function and access for all, regardless of age, sex or condition. It is a space or a set of services that can be accessed by all, without obstacles, with dignity and with as much autonomy as possible.

Universal design: The design of products, environments, programs and services to be usable by all people, to the greatest extent possible, without the need for adaptation or special design (UN Convention on the Rights of People with Disabilities)

Ensuring minimal accessibility standards leads to a safe environment for everyone who lives there:

- People with disabilities
- People who have injuries

- Elderly people
- Pregnant women
- Young children
- People carrying heavy loads

Access is not just having a ramp or an “accessible” toilet – it’s about diverse access needs of people with reduced mobility and disabilities. It should consider all external and internal facilities and services including connecting pathways, entrances & exists, signage, color contrasts, Braille text, audio-visual information, furniture, emergency evacuation etc.

Accessible construction is endorsed by international and national legislation and policies. Accessibility, article nine **UN Convention on the Rights of People with Disabilities**: *To enable persons with disabilities to live independently and participate fully in all aspects of life state parties shall take appropriate measures to ensure access to persons with disabilities, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas.*

Bangladesh Disability Welfare Act 2001 Part- G, Article: Transport Facilities:

Set up appropriate facilities at all buildings and establishments and transports belonging to the Government, Statutory Bodies and private organizations to facilitate easy movements and communications for the people with disabilities.

Bangladesh Building Code 2006. Schedule 3, code/rule 75:

Entrance/exit

1. Public building shall have at least one entrance/exit for all people including people with disabilities
2. Indicator and guide block shall be given for visually impaired persons
3. Footpath, corridor and any other pathways should be a minimum of 1200mm in breadth with specified distance for turning wheelchair

Ramp and handrail

1. There shall be plane landing space at the beginning and end of the ramp
2. The maximum slope of the ramp shall be 1:12

Washroom and toilet

1. The door of the toilet shall be minimum 900mm in breadth and shall open to the outer side
2. The tap of the wash basin shall be 850mm up from the wall and the pipe below the basin shall be fixed in a way so that the wheelchair can reach

Stair/step

1. The height and breadth of each step should be 150 and 300mm respectively
2. There should be handrail on both sides of the stair with 850-900mm height
3. At the end of every step bright separating colour should be used

The National Building Code is there in order to build a risk free, safe environment for all

People might feel that making construction accessible for all is costly. But if accessibility issue considered from design and planning, the cost is negligible, may be additional 2-4% of project cost.

Action planning for solving structural problems

An action-planning template for structural mitigation is shown in Table 10 with some examples. To plan for structural mitigation of school building:

- First, carry out a visual survey of all buildings, classrooms, laboratories, hostels, offices, etc., in the school premises using rapid visual survey format. Take necessary technical help to finalise the information.
- Alternatively, carry out a safety audit of the school by competent professionals in order to ensure the safety of the school against hazards such as earthquake, cyclone and floods.
- Carry out an accessibility audit of the school by children with disabilities and expert (if available) using access audit form annexed.
- List the structural problems identified by the structural safety audit & accessibility audit.
- Allow adequate and safe place inside the room for people with restricted mobility or who use assistive devices i.e. wheel chair, white cane to manoeuvre.
- Ensure tactile floor surface marking at all entrances and exits to rooms and around any obstacles as an indicator for people with visual impairment.
- Indicate any obstacles, steps etc with bright colour for people with low vision.
- Install “exit” sign and any other sign in accessible format, and accessible place. The text should be clear, visible. Also install audio signal for children with visual impairment
- Consider the structural problems & obstacles for accessibility one by one and discuss the actions to be taken to remove or reduce the problem.
- Identify viable solution for each problem.
- Identify who is responsible, and when the action will be taken.

Table 10. Action Plan for Structural Mitigation				
Location of structural problem	Description of problem	Action to be taken to remove or reduce problem	Date by which action will be taken	Responsible person
Block I	This building is 20 years old and has many visible cracks; may be dangerous in the event of an earthquake	Repair and strengthen building, in 6 months.		Principal
Block II	Roof of this building is made of asbestos, may be weak against cyclone	Strengthen roof of building, in 3 months		
Laboratory rooms	2 steps at the entrance of the room	Install a ramp, put handrails at a height of 700 and 850-900mm at stair by one month		
Library				
Computer room				

Exercise 9: Action Planning for Structural Mitigation

Follow the steps given in section “*Action Planning for solving structural problems*” and prepare an Action Plan for structural mitigation in the school premises in the following format.

Action Plan for Structural Mitigation				
Location of structural problem	Description of problem	Action to be taken to remove or reduce problem	Date by which action will be taken	Responsible person

Chapter 8

Ensuring Non-Structural Safety of School

Non-structural elements

Sometimes, even if the school building is not affected by earthquake, certain objects kept loosely such as cupboards, computers, wall clocks, may topple and fall and cause damage or injuries. The number of stairs or the number of exit gates from a building may not be sufficient for emergency escape, or they may not be kept open, or the opening may be blocked. Such problems are called non-structural problems. Heavy furniture, free standing cabinets, book cases, water heaters, gas cylinders, hanging plants, framed pictures, refrigerators, lamps and mirrors should be firmly fastened in place.

Some of the Non-structural elements can be categorized as follows:

Architectural Elements

- Windows and partition walls
- Parapets
- Canopies and walkways
- Stairways
- Water towers

Electrical Systems

- Transformers
- Lighting
- Emergency power

Furnishing and Equipment

- File cabinets
- Shelving
- Display cabinets
- Shop equipment
- Lab equipment
- Kitchen appliances

Hazardous Materials

- Natural gas
- Chemicals
- Asbestos, lead

Action planning for solving non-structural problems

The damage and injury caused by hazards to non-structural elements can be reduced or prevented by taking up appropriate measures. Such types of measures are known as non-structural mitigation. Some of the non-structural mitigation activities that can be taken up are listed below:

- Changing the position of blocking items like cup-boards, fridge etc and securing them using appropriate screws
- Fixing thin film on outer surface of glass panels
- Providing non-slip mat below display and decoration pieces like trophies, statues, sculptures etc.
- Repairing of shelf shutters and replacement of magnetic catcher
- Firmly connecting computer monitor to the table using adhesive tapes or other means
- Bracing book shelves or securing to the floor using expansion bolts
- Providing stoppers for doors and windows

An action-planning template for non-structural mitigation is shown in Table 11 with some examples. To plan for non-structural mitigation of school:

- Identify non-structural problems existing in the school premises.
- The following questions can be asked to identify non-structural problems:
 - ✓ Are freestanding cabinets, bookcases and shelves secured to the walls?
 - ✓ Are heavy objects removed from high walls?
 - ✓ Are heavy trophies, shields removed from areas from where they can fall?
 - ✓ Are computers secured properly?
 - ✓ Are wall-mounted clocks, maps, fire extinguishers secured properly?
 - ✓ Are big trees away from the main building?
 - ✓ Are chemicals stored in a way to prevent spilling?
 - ✓ Is the laboratory material secured to prevent movement or breakage?
 - ✓ Is ventilation adequate where chemicals are kept?
 - ✓ Are classrooms and corridors well lit?
 - ✓ Are objects near the doors secured so that they don't fall and block routes?
 - ✓ Are classrooms well ventilated?
 - ✓ Are glasses on windows and doors properly secured to withstand strong wind?
- Use the Non-Structural Mitigation Itemized Inventory Form for detailed assessment.
- Carryout the assessment in all rooms of all buildings of the school.
- Consider the non-structural problems inside the school identified one by one.
- Discuss the actions to be taken to remove or reduce the problem.
- Identify who is responsible for the action, and when the action will be taken.

Table 11. Action Plan for Non-Structural Mitigation

Location of non-structural problem	Description of problem	Action to be taken to remove or reduce problem	Date by which action will be taken	Responsible person
Exit doors	Block I has two floors and 15 classrooms in each floor. But there is only one exit door from the building Block II has two exit doors, but one exit door is always kept locked Block III has narrow exit door which will not accommodate a person using a wheelchair	Construct additional exit door, in three months. Keep both exit doors open always Ensure door width of 900mm to enable person using a wheelchair to pass and install sign of accessibility		Principal
Stair Case	Each building block has only one stair case The stair case is at the end of the Block and has no handrail	Construct additional stair case with handrail at 700mm at 850-900mm on both sides		
Electrical meter box	Main meter boxes are installed inside the building			
Block I	Narrow corridor			
Block II	Free standing bookshelves in the library room	Fix bookshelves		
Room 24: Chemistry Lab.	Chemicals not secured properly in the chemistry lab.	Secure chemicals properly		

Exercise 10: Action Planning for Non-structural Mitigation

Follow the steps given in section “Action Planning for solving non-structural problems” and prepare an Action Plan for non-structural mitigation in the school premises in the following format.

Action Plan for Non-Structural Mitigation				
Location of non-structural problem	Description of problem	Action to be taken to remove or reduce problem	Date by which action will be taken	Responsible person

Chapter 9

Disaster Awareness

Schools are the best place for building a culture of long lasting collective values. There is no suitable place than school where disaster risk education should be initiated. Education helps in counteracting the myths and the passivity people have towards something new. It should provide theoretical knowledge as well as hands on practical learning experience. The curriculum should also provide knowledge for thwarting and minimizing the risk caused by ignorance. Disaster risk education should, thereby, train the school community with the knowledge and skills needed to systematically recognize hazards and vulnerabilities which will reduce the risks in their environment and build their capacities and resources at the same time.

While senior students can be provided with the knowledge of hazards and vulnerabilities and technical details, small children should be made aware of what to do during a hazardous event and how to support their peers with disabilities. In this Chapter, safety messages in the form of Dos and Don'ts have been provided in the following sections. These safety messages can be provided to the children in pictorial form as well as in local language. Various media can be used such as posters, games, songs, etc.

Cyclone

What is a cyclone?

Tropical cyclone is a storm system with a closed circulation around a centre of low pressure, fuelled by the heat released when the moist air rises and condenses. They can produce extremely high winds, tornadoes, and torrential rains and drive storm surge onto coastal areas. The life cycle of an average tropical cyclone is about seven days but can extend over three weeks.

Different names are given such as hurricanes, cyclones or typhoons on the basis of where it appears besides having the same characteristics: hurricanes in North Atlantic Ocean, cyclones in Indian Ocean and typhoons in Pacific Ocean.

The development of tropical cyclones may be divided into three stages:

- Formation and initial development
- Full maturity
- Modification or decay

Formation and initial development stage

Four atmospheric and oceanic conditions are necessary for development of a cyclonic storm:

- Warm sea temperature in excess of 26 degrees Centigrade to a depth of 60 m, which provides abundant water vapours in the air by evaporation.
- High relative humidity of the atmosphere to a height of above 7000 m facilitates condensation of water vapours into water droplets and clouds; releases heat energy thereby inducing a drop in pressure.
- Atmospheric instability encourages formation of massive vertical cumulus cloud convection with condensation of rising air over ocean.
- A location of at least 4-5 latitude degrees from the equator allows the influence of the forces due to the earth's rotation to take effect in reducing cyclonic wind circulation around low-pressure centres.

Mature tropical cyclone:

The physical feature of a mature tropical cyclone is a spiral high pattern of highly turbulent cumulus thundercloud bands, which wraps around a calm and cloud free eye.

Modification or Decay:

A tropical cyclone begins to weaken in terms of its central low pressure, internal warm core and extremely high winds as soon as its source of warm moist air begins to ebb or is abruptly cut off.

What is the impact of cyclone?

When the high-speed winds hit land, they bend and uproot trees, uproot electric poles and telecommunication poles, damage houses and blow away objects on their way. The floodwaters from the sea can turn the field's salty leading to damage of crops and plants. Bridges, dams and embankments can suffer serious damages. Houses collapse and people are rendered homeless.

- Children and adults with disabilities may be separated from their caregivers and assistive devices including wheelchair, hearing aid etc during cyclone – be aware of what they need and prepared to help them
- Children and adult may be affected by psychological trauma during coping with cyclone and its subsequent adaptation.
- Cyclone can cause physical injury which may lead to disability; the impact of disability may be addressed by appropriate emergency management and ensuing treatment and rehabilitation.

What are Do's and Don'ts of Cyclone?

- Keep watch on weather and listen to radio or TV.
- Contact local Red Crescent Office to cross check the cyclone related threats.
- Be aware of your neighbours and disseminate early warning to them, especially those who may miss the warning i.e. people with disability, people who do not have access to Radio, TV
- Keep alert about the community warning systems - loudspeakers, bells, conches, drums flags, flash light etc.
- Get to know the nearest cyclone shelter / safe houses and the safest route to reach these shelters.
- Keep your emergency kit handy in a tight plastic bag and take it along with if you are evacuating.
- Assist adults and children with disabilities, elderly people, and pregnant women as required if evacuating.
- Try to keep any assistive device used by a person with a disability with them during evacuation – they will need it to move around, to communicate etc during and after the cyclone.
- Keep a list of emergency addresses and phone numbers on display. Know the contact telephone number of the government offices / agencies, which are responsible for search, rescue and relief operations in your area.
- Nail all windows, secure doors and stay indoors.
- Disconnect all the electrical appliances and turn gas off when cyclone strikes.
- Don't venture into sea for fishing.
- Do not move out after the cyclone. Wait for official "all clear" announcement. Be aware of the "calm eye", if the winds suddenly drop, do not assume the cyclone is over. The violent winds may soon blow in from the opposite direction.
- Beware of fallen power lines, damaged bridges, buildings and trees, and do not enter floodwaters.

Flood

What are the causes and types of flood?

A flood is an overflow of an expanse of water that submerges land. In the sense of "flowing water", the word may also be applied to the inflow of the tide. Flooding may result from the volume of water within a body of water, such as a river or lake, exceeding the total capacity of its bounds, with the result that some of the water flows or sits outside of the normal perimeter of the body. It can also occur in rivers, when the strength of the river is so high it flows out of the river channel, particularly at bends or meanders.

Flooding is mainly caused by:

- Prolonged rainfall over several days (for e.g. river flood)
- Intense rainfall over a short period of time (for e.g. flash flood)
- An ice or debris jam can cause overflow and flood the surrounding area (for e.g. ice-jam flood)
- A dam failure or a sudden release of water held by an ice or debris jam (for e.g. flash flood)

Types of Flood:

- Flash flood is a rapidly rising and flowing surge of water that result from excessive rainfall or failure of a dam. Flash floods usually occur with little or no warning and can reach full peak within a few minutes.
- Coastal floods are a result of tropical cyclones. Seawater moves into mainland propelled by high tides, heavy rainfall, storm surges or tsunamis. Human settlements in flood plains often reduce the effective width of drainage channels thus intensifying flood situation.
- River floods are the most common type of flooding. When the actual amount of river flow is larger than the amount the channel can hold, the river tends to overflow its banks and flood the areas alongside. River floods build up slowly and are often seasonal.
- Urban flood: Flood due to land losing its natural absorbing capacity resulting from rapid urbanization and industrialization.
- Ice jam flood: It occurs on rivers that are totally or partially frozen. A rise in river level will break up a totally frozen river and create ice flows that can pile up on channel obstructions such as shallow riffles, log jams, or bridge piers. Such flood is possible in the Himalayan streams.

What are the impacts of flood?

- Physical damage: Floods accompanied by storm surge are destructive both in their inward travel and on their outward return to the sea. Crops, houses and cattle are completely washed away in coastal areas. Similarly flash floods sweep everything as they descend down the slope. Flash floods are often accompanied by huge quantity of debris.
- Casualties: Floods result in loss of life, particularly of young children, children with disabilities and women. Gradual flooding causes relatively fewer direct deaths or injuries. Snakebites are also common in flood-affected areas.
- Endemic diseases such as diarrhoea, malaria and other viral outbreaks may follow as indirect results of the flood.
- Water and food supplies: Open wells and other ground water supplies may be contaminated temporarily by the debris carried by flood water and salt water brought by storm surges. Either harvest is lost together with animal fodder resulting in long-term food shortages. Grains are damaged due to prolonged inundation in cropland. Lack of safe drinking water and food crisis are major cause of malnutrition that leads to death or disability.
- Children and adults with disabilities may be separated from their caregivers and assistive devices including wheelchair, hearing aid etc during flood – be aware of what they need and prepared to help them
- Children and adult may be affected by psychological trauma during coping with flood and its subsequent adaptation.

What are Do's and Don'ts of Flood / water logging?

- Regularly listen to local radio and TV for weather updates and flood warning.
- Contact Union office/UNO/ward councillor about the flood warning and cross check the flood threats in the area
- Be aware of your neighbours and disseminate early warning to them, especially those who may miss the warning i.e. people with disability, people who do not have access to Radio, TV

- Move to evacuation centres or high grounds in case of flood warning.
- Assist adults and children with disabilities, elderly people, and pregnant women as required to reach shelter.
- Try to keep any assistive device used by a person with a disability with them during evacuation – they will need it to move around, to communicate etc during and after the flood.
- Turn off electric and gas connections before evacuating your house.
- Always keep an emergency kit with adequate food and drinking water.
- Ensure drains and sewage pipes are regularly cleaned for clear passage of rainwater.
- Don't consume food that had come in contact with floodwater.
- Don't enter floodwater; snakes and poisonous insects may be present.

Landslide

A Landslide is the movement of a mass of rock, debris or earth down a slope. All landslides have two things in common; they are the result of the soil and rock materials that make up the hill slope that are driven by gravity. They can vary in size from a single boulder of rock to huge debris. They often take place in conjunction with rain, flood, earthquake, or volcano eruption. They can be triggered by human activity also.

What are the causes of landslides?

Earthquakes cause most of the destructive landslides. Excessive rainfall or snowmelt and forest fires are also responsible for frequent landslides. Rapid temperature changes can also cause landslide due to alternate shrinking and expansion of soil. Human actions like mining, underground excavation, lowering ground water levels and overdeveloping hill slopes are also reasons for landslides.

With growing population and urbanization, landslides like any other hazards pose a constant threat to growth of human settlements. Large-scale deforestation, and other human activities relating to expansion of settlements into forestland, construction of roads, dams and bridges contribute to increased intensity of landslides.

What are impacts of landslides?

When a landslide occurs, anything on top of the hill or in the path of a landslide can be totally destroyed. The resulting rubble can damage lines of communication and block roadways, and railways, block waterways creating flash floods, and cause casualties due to collapse of buildings or burial by debris.

The adverse effects of landslides can be substantially reduced by taking a few preventive measures and an understanding of landslide warning signs. In a landslide prone area new cracks start appearing in plaster, tiles, bricks or foundations. Similarly doors and windows are jammed before an impending landslide. Taking precautionary measures like growing vegetation cover and constructing retaining walls in and around settlements are useful to minimize the effects of landslides.

What are Dos and Don'ts of Landslide?

- Do not build near steep slopes, close to mountain edges or natural erosion valleys.
- Plant grass covers on slopes and build retaining walls.
- Evacuate from the landslide area the moment you suspect an imminent landslide
- Assist adults and children with disabilities, elderly people, and pregnant women as required to move away from the landslide area.

- Try to keep any assistive device used by a person with a disability with them during evacuation – they will need it to move around, to communicate etc after the landslide.
- Curl into a tight ball and protect your head if escape is not possible.
- Listen to local radio station for warnings and situation updates.
- Regularly check for cracks or damage on building foundation, chimney, water pipes and surrounding land and inform concerned authorities immediately.

Earthquake

What are the causes of earthquake?

An earthquake is the result of a sudden release of energy in the Earth's crust that creates seismic waves. Earthquakes are recorded with a seismometer, also known as a seismograph. The magnitude of an earthquake is conventionally reported on the Richter scale. Intensity of shaking is measured on the Modified Mercalli scale. At the Earth's surface, earthquakes manifest themselves by shaking and sometimes displacing the ground. When a large earthquake's epicentre is located offshore, the seabed sometimes suffers sufficient displacement to cause a tsunami. The shaking in earthquakes can also trigger landslides and occasionally volcanic activity.

In its most generic sense, the word earthquake is used to describe any seismic event – whether a natural phenomenon or an event caused by humans – that generates seismic waves. Earthquakes are caused mostly by rupture of geological faults, but also by volcanic activity, landslides, nuclear experiments and mine blasts. An earthquake's point of initial rupture is called its focus or hypocenter. The term epicentre refers to the point at ground level directly above the focus.

How does an earthquake affect us?

Lives are lost in an earthquake due to collapse of houses. People are hurt by falling plaster and heavy objects that are not firmly fixed. Earthquake may trigger tsunami, landslide, dam failure, or fire. Services such as hospitals, fire stations, electricity and water supply may also be affected. The degree of destruction caused by an earthquake depends on the magnitude and duration of the earthquake, depth of rupture location, distance from epicentre, soil conditions, preparedness of the population, time of occurrence. Earthquake shaking results in reducing the strength of soil. Saturated fine-grained non-cohesive soils such as silt can lose the strength completely during shaking and flow like liquid. This behaviour is termed as liquefaction.

What are Dos and Don'ts of Earthquake?

If you are caught indoors

- Duck, Cover & Hold: Duck under a strong table/cot and protect yourself from injuries till the shaking stops. Do not move during the shaking.
- Keep calm, stay away from glass windows, doors, cupboards and mirrors
- Do not rush towards the door or staircase
- Do not use the lift; use stairway to come out
- Assist children and teachers with disabilities to be rescued/move to a safe and accessible place

If you are Outdoors

- Move to an open space available nearby

- Provide any additional assistance required to children and teachers with disabilities
- Keep away from tall chimneys, buildings and electric lamp posts

After the shaking stops

- Evacuate in orderly manner
- Switch off main electric supply
- If in a coastal area, stay away from river banks and beaches
- Provide first aid to the injured & send for further medical care
- Inform emergency services
- Listen to radio for earthquake updates and obey instructions given by authorities
- Be prepared for aftershocks
- Maintain clear communication so all children are informed and understand what is happening, ensure message are understood by children with different types of impairments i.e. visual, hearing and/or speech impairment and/or intellectual disability

Avoid the following in an earthquake

- Do not crowd around damaged areas or buildings.
- Do not move the seriously hurt people. Wait for medical help to arrive ensure first aid service during this interim time.
- Do not spread rumours. They lead to panic and worsen the situation.

Fire Safety

What are Dos and Don'ts for Fire Safety?

Smoke Alarms

- Install smoke alarms. Properly working smoke alarms decrease your chances of dying in a fire by half.
- Place smoke alarms on every level of your residence. Place them outside bedrooms on the ceiling or high on the wall (4 to 12 inches from ceiling), at the top of open stairways, or at the bottom of enclosed stairs and near (but not in) the kitchen.
- Test and clean smoke alarms once a month and replace batteries at least once a year. Replace smoke alarms once every 10 years.

Escaping the Fire

- Review escape routes with your family including members with disabilities. Practice escaping from each room. Ensure that your escape route is accessible for all family members.
- Make sure windows are not nailed or painted shut. Make sure security gratings on windows have a fire safety-opening feature so they can be easily opened from the inside.
- Consider escape ladders lifts, zig zag ramps if your residence has more than one level, and ensure that burglar bars and other antitheft mechanisms that block outside window entry are easily opened from the inside.

- Teach family members (including people with disability) to stay low to the floor (where the air is safer in a fire) when escaping from a fire.
- Clean out storage areas. Do not let trash, such as old newspapers and magazines accumulate.

Flammable Items

- Never use gasoline, benzine, naphtha, or similar flammable liquids indoors.
- Store flammable liquids in approved containers in well-ventilated storage areas.
- Never smoke near flammable liquids.
- Discard all rags or materials that have been soaked in flammable liquids after you have used them. Safely discard them outdoors in a metal container.
- Insulate chimneys and place spark arresters on top. The chimney should be at least three feet higher than the roof. Remove branches hanging above and around the chimney.

Heating Sources

- Be careful when using alternative heating sources.
- Place heaters at least three feet away from flammable materials. Make sure the floor and nearby walls are properly insulated.
- Use only the type of fuel designated for your unit and follow manufacturer's instructions.
- Store ashes in a metal container outside and away from your residence.
- Keep open flames away from walls, furniture, drapery, and flammable items.
- Keep a screen in front of the fireplace.
- Have heating units inspected and cleaned annually by a certified specialist.

Matches and Smoking

- Keep matches and lighters up high, away from children, and, if possible, in a locked cabinet.
- Never smoke in bed or when drowsy or medicated. Provide smokers with deep, sturdy ashtrays. Douse cigarette and cigar butts with water before disposal.

Electrical Wiring

- Have the electrical wiring in your residence checked by an electrician.
- Inspect extension cords for frayed or exposed wires or loose plugs.
- Make sure outlets have cover plates and no exposed wiring.
- Make sure wiring does not run under rugs, over nails, or across high-traffic areas.
- Do not overload extension cords or outlets. If you need to plug in two or three appliances, use built-in circuit breakers to prevent sparks and short circuits.
- Make sure insulation does not touch bare electrical wiring.

Other

- Sleep with your door closed.
- Install A-B-C-type fire extinguishers in your residence and teach family members how to use them.
- Consider installing an automatic fire sprinkler system in your residence.

- Ask your local fire department to inspect your residence for fire safety and prevention.

If your clothes catch on fire, you should

- Stop, drop, and roll - until the fire is extinguished. Running only makes the fire burn faster.

To escape a fire, you should:

- Check closed doors for heat before you open them. If you are escaping through a closed door, use the back of your hand to feel the top of the door, the doorknob, and the crack between the door and doorframe before you open it. Never use the palm of your hand or fingers to test for heat - burning those areas could impair your ability to escape a fire (i.e., ladders and crawling).
- If door is hot - Do not open. Escape through a window. If you cannot escape, hang a white or light-colour sheet outside the window, alerting fire fighters to your presence.
- If door is cool - Open slowly and ensure fire and/or smoke is not blocking your escape route. If your escape route is blocked, shut the door immediately and use an alternate escape route, such as a window. If clear, leave immediately through the door and close it behind you. Be prepared to crawl. Smoke and heat rise. The air is clearer and cooler near the floor.
- Crawl low under any smoke to your exit - heavy smoke and poisonous gases collect first along the ceiling.
- Close doors behind you as you escape to delay the spread of the fire.
- Stay out once you are safely out. Do not re-enter. Call Fire Brigade.

Road Safety

What are Dos and Don'ts for Road Safety?

Transport related safety

- Stay away from traffic while waiting for the school transport (bus /rickshaw/auto etc)
- Line up in a place away from the road as the school transport approaches
- Wait till the school transport stops before stepping onto the street
- Use handrail while getting down.
- Never put head, arms or hands out of the window.
- Keep the aisles of the vehicle clear -- books or bags may block the way in an emergency.
- Before you reach your stop, get ready to leave by getting your books and belongings together.
- Wait for the school transport to stop completely before getting down
- Stay away from the vehicle's rear wheels at all times.
- Take five giant steps straight out of the vehicle and be out of the danger zone.
- Assist any students with visual or hearing impairment – they not be as aware of passing traffic danger
- Never bend down near or under any vehicle after getting down
- Never travel standing on the footboard
- If travelling by car fasten the seat belt before it starts.

Pedestrian safety

- Always walk on the footpath. If there is no footpath, walk in the right side margin of the road
- Cross roads only at the zebra crossings.
- If there is no zebra crossing then watch the traffic on the road and cross when it is safe.
- Follow the Curb drill and cross road looking right, left and right until no vehicles are coming. Don't run.
- Avoid reading or looking at hoardings while walking on the road.
- Greet or chat with friends by taking them to the footpath or the side margin.
- When walking at night, avoid wearing dark clothing.

Two-wheeler rider's (Bicycle) safety

- Stop at all stop signs and obey traffic lights just as other vehicles do.
- Never ride against traffic.
- Don't ride too close to parked vehicles— doors can open suddenly.
- Always walk a bicycle across busy intersections using the zebra crossings.
- When riding in a group, always ride single file on the street.
- When passing other bikers or people on the street, always pass to their left.
- Never ride on the handlebars or share a seat with a friend — only one person should be on a bike at a time. You might lose balance.
- Never catch a ride on a moving vehicle.
- Never change directions or lanes without first looking behind you, and always use the hand signals.
- Never ride with one hand or no hands on the handle

Person who uses a tricycle or wheelchair safety: -

- Use the footpath when possible
- Check the road for traffic before moving on to it when you need to use the road
- Cross roads only at the zebra crossings.
- If there is no zebra crossing then watch the traffic on the road and cross when it is safe.
- Follow the Curb drill and cross road looking right, left and right until no vehicles are coming. Don't run.
- Ask an assistant to help you on steep slopes and to go up and down kerbs
- Use a light when using the wheelchair or tricycle at night
- Avoid wearing dark clothes if using the wheelchair or tricycle at night
- Use a bell to warn pedestrians, rickshaws, vans etc that you are coming

Tsunami

The term Tsunami has been derived from a Japanese term 'tsu' meaning 'harbour' and 'nami' meaning 'waves'. A tsunami is a series of waves created when a body of water, such as an ocean, is rapidly displaced. The rapid displacements on the water bodies could be due to an earthquake, a powerful volcanic eruption, or an underwater landslide or an impact of a large meteorite.

How does a tsunami occur?

On the basis of the source of generation a tsunami can be classified as follows:

- Earthquake-generated tsunami: This type of tsunami is the most common. Earthquakes are caused when there is a sudden movement in the ocean floor. The waves are formed as the displaced water tries to find equilibrium. Not all earthquakes cause tsunami.
- Landslide-generated tsunami: Tsunami can also be generated by landslides inside ocean. Landslide-generated tsunami is normally more powerful than earthquake-generated tsunami. The strength of the wave depends upon the size of the landslide and also the height of fall.
- Meteor-generated tsunami: Meteor-generated tsunami is also called mega-tsunami. The effects of this tsunami are very similar to the landslide-generated tsunami.

What are tsunami risk reduction measures?

It is not possible to prevent a tsunami but in certain tsunami prone countries some measures have been taken to reduce the damage caused on the shore. Japan has implemented an extensive programme of building tsunami walls of up to 4.5 m (13.5 ft) high in front of populated coastal areas. Other localities have built floodgates and channels to redirect the water from incoming tsunamis. The wall helps in slowing down and moderating the height of the tsunami but it did prevent major destruction and loss of life.

Some other systemic measures to protect coastlines against tsunamis include:

Site planning and land management:

- Within the broader framework of a comprehensive plan, site planning determines the location, configuration and density of development on particular sites and is therefore an important tool in reducing tsunami risk.
- Zoning of tsunami hazard areas for open space uses such as agriculture, parks and recreation is recommended as the first land use planning strategy. This is designed to keep development at a minimum in hazard areas.
- Where it is not feasible to restrict land to open space uses, other land use planning measures can be used. These include strategically controlling the type of development and uses allowed in hazard areas, and avoiding high-value and high-occupancy uses.

Engineering structures:

- Most of the habitation of the fishing community is seen in the coastal areas. The houses constructed by them are mainly of lightweight materials without any engineering inputs. Therefore there is an urgent need to educate the community about the good construction practices that they should adopt such as:
 - Site selection – Avoid living in buildings within several hundred feet of the coastline as these areas are more likely to experience damage from tsunamis.
 - Construct the structure on higher ground level with respect to mean sea level.

- Elevate coastal homes. Most tsunami waves are less than 3 meters in height. Elevating house will help reduce damage to property from most tsunamis.
- Construction of wave breakers to reduce the velocity.
- Use of water and corrosion resistant materials for construction.
- Construction of community halls at higher locations, which can act as shelters.

What are Dos and Don'ts of Tsunami?

- If you live in a tsunami risk zone, move in an orderly, calm and safe manner to the evacuation site or to any safe and accessible place.
- If you are at the beach or near the ocean and you feel the earth shake, move immediately to higher ground. Do not wait for a tsunami warning to be announced.
- Secure all important documents before evacuating.
- When tsunami warning is issued, follow the government instructions.
- Be aware of your neighbours and disseminate early warning to them, especially those who may miss the warning i.e. people with disability, people who do not have access to Radio, TV
- Assist adults and children with disabilities, elderly people, and pregnant women as required to move away from the tsunami risk zone.
- Try to keep any assistive device used by a person with a disability with them during evacuation – they will need it to move around, to communicate etc after the tsunami.
- Do not return to port if you are at sea and a tsunami warning has been issued for your area.
- Never go to the beach to watch a tsunami come in.
- Keep emergency kit ready.

Climate Change Adaptation

What are Dos and Don'ts for Climate Change Adaptation?

- Use energy saving bulbs i.e., compact florescent lights (CFLs)
- Switch off lights and electric appliances when not in use.
- Use green energy generated from renewable energy sources such as water, wind and the sun.
- Reduce, Reuse and Recycle
- Go green: plant lots of trees and vegetables in the kitchen garden
- Do not waste water
- Dry cloths outside in the sun
- Switch off electrical equipments like TVs and computers when not in use.
- Use organic waste of fruits and vegetables as manure for kitchen garden
- Avoid using plastic bags.

Exercise 11: Hazard Awareness to Children

For the hazards prevailing in your school location, make a list of important messages of Dos and Don'ts that needs to be given to children.

Chapter 10 Evacuation Planning

What is an evacuation plan?

School emergency evacuation is the immediate and rapid movement of school community away from the threat or actual occurrence of a hazard. An evacuation plan shows safest and shortest exit routes from each room of the school building. The plan should also indicate the location of resources in the premises such as first aid kit, fire fighting equipment, search & rescue equipment, etc. which can be used during an emergency.

Why is an evacuation plan needed?

Students may have to be evacuated from their classrooms in an emergency situation that may have been caused due to a hazard or due to events like public unrest when the school may be ordered to be closes and send the students safely to their homes. Objectives of preparing an evacuation plan are:

- To ensure the safest and most efficient evacuation time of all the occupants of the school.
- To provide orderly evacuation of the occupants of the school at the time of emergency.
- To map safe and accessible escape routes from the school building to the designated identified safe and accessible location.
- To prevent from chaos and stampede at the time of an emergency
- To design evacuation plans and equipment considering equal access and benefit for adults and children with disabilities.
- To identify children who may required additional support and plan to provide it

What is a safe place for evacuation?

Students may have to be evacuated from the classrooms if necessary when an earthquake or fire occurs. Therefore, possible areas for evacuation should be identified and a map of evacuation areas should be prepared. The map should also indicate the safe and accessible evacuation route for each classroom with any barrier to access identified.. Open space away from buildings or open playground can form the space for evacuation. A strongly built hall or auditorium also can be a safe shelter. Safe evacuation places will be different for different types of disaster. In case of an earthquake, a safe location for evacuation will be the open space away from any building. In case of flood, evacuation from ground floor will have to be done to upper floors. In case of gas leakage from an industry, it is safer to go to a place against the wind direction.

Table 13: Safe Spots for Various Hazards

Hazards	Safe spots
Earthquake	Open ground
Cyclone	Sturdy part of the building / cyclone shelters
Fire	Open ground
Floods	Upper floor of the school or elevated ground
Tsunami	Upper floor of the school or elevated ground
Landslide	Open ground which is away from the slide areas

How to prepare an evacuation map?

- Take the layout of the school building
- Prepare a line-drawing of the school layout
- Separate each floor plan of the building into separate drawings
- Identify and mark on the map safe spots depending on the hazard.
- Mark the classrooms and the exits from the school building in the map.
- Identify safest and shortest exit routes for each room in the building
- Depending on the number of students and the number of exit routes divide the number of students equally. Each exit points should have the same flow of students to avoid bottlenecks and stampede during evacuation.
- On the drawing, mark the exit route from each room to the assembly area by arrow sign
- Allocation of the flow of students should be timed so that the students reach the safe spots at the quickest possible time. The first floor occupants should evacuate first followed by the second floor occupants if they are evacuating from the same staircase. Likewise, the occupants of the classroom next to the staircase should evacuate first followed by occupants of the next farthest classroom. This flow of occupants should be monitored by the teachers or the class captains of the respective classrooms during the actual evacuation.
- Mark locations of fire extinguishers, rescue and first aid equipment.
- Mark accessible evacuation route along with accessible/appropriate signage
- Display the evacuation map showing the evacuation route at strategic locations so that children can see the same often and understand the evacuation route.
- Mark clearly all the emergency routes with the help of signage on the walls of the school building.
- Periodically inspect and update the emergency tool kits for example inspect whether fire-suppression or extinguishing equipments are updated or not.
- Plan two ways out of the building from different locations throughout the school as a backup plan.
- Reach out to the local community for assistance. Sometimes students will need to be evacuated to a further safer location for care or safety until parents can pick them up.
- Install accessible and appropriate signage that will indicate accessible evacuation route

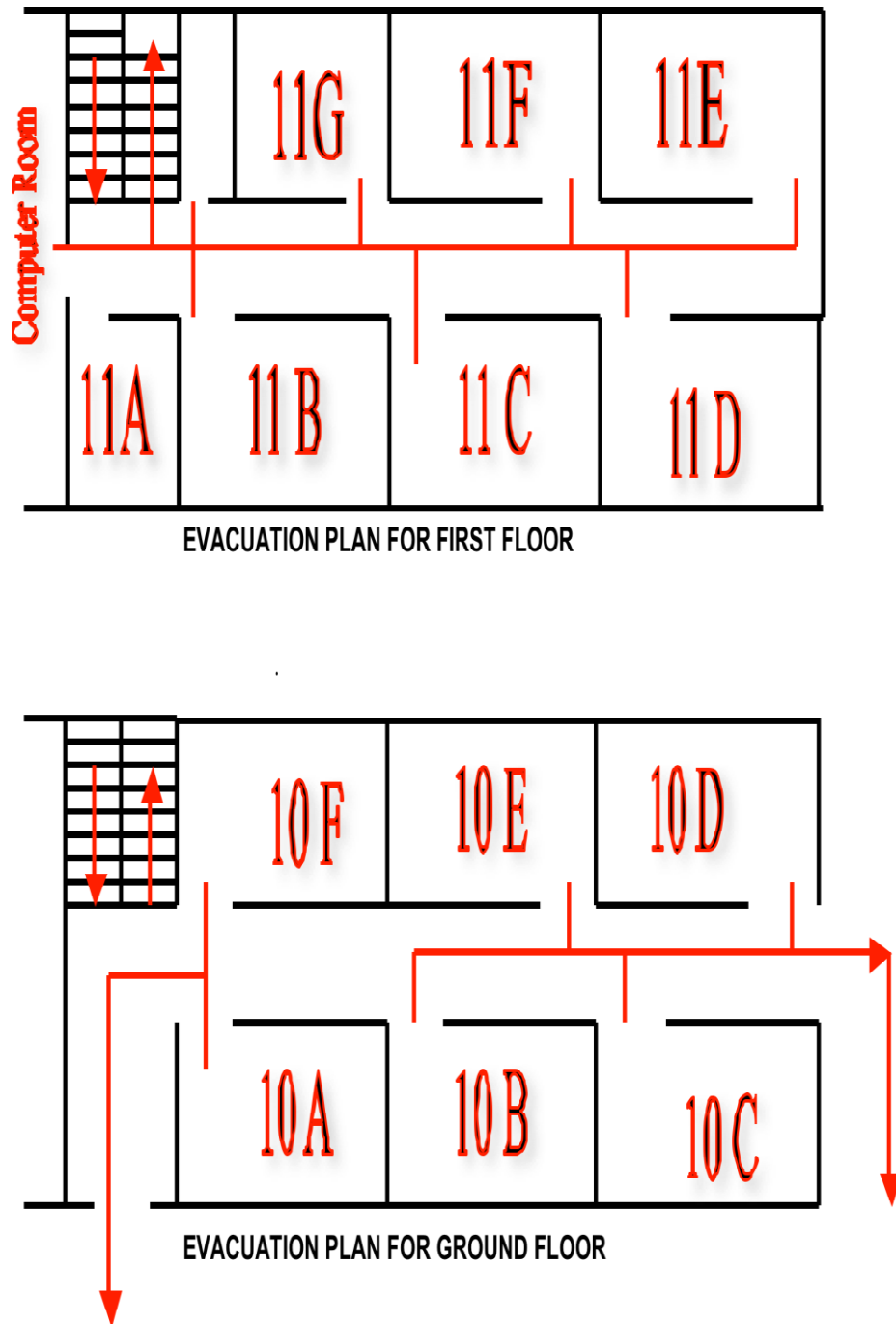


Figure 8. Example of Evacuation Map

Exercise 12: Evacuation Planning

Follow the steps given in section “How to prepare an evacuation map?” and prepare an evacuation plan for your school.

Chapter 11 Task Forces Training

What task forces are needed for school?

Fellow students and teachers are the first responders in any kind of emergency situation in a school. External help takes time to reach the school premises. Therefore, it is essential that students and teachers have basic skills and knowledge to respond during such critical period. Ensure that children from different groups i.e. boys, girls, children with disabilities have active participation in task force. Both casualties and loss of life could be reduced with such timely interventions. The following task forces are recommended:

- Warning & Awareness Task Force
- Evacuation Task Force
- Search & Rescue Task Force
- First Aid Task Force
- Fire Safety Task Force
- Psychosocial Aid Task Force
- Site Security Task Force

It is suggested that a minimum of three task forces (Search & Rescue, First Aid, Fire Safety) should be formed in a school. In High Schools, Coordinator of each task force will be a teacher, and about 10-12 students will be members of each task force. But in Primary Schools, Coordinator as well as members of task forces will be teachers, as students are very young. Therefore no student member will be included in task forces in case of Primary Schools.

What are the trainings to be given to task forces?

Following are the suggested contents of the training for various task forces. NGOs implementing school safety activities and developing disaster management plan for schools should organise training of task forces covering the following suggested syllabus. The task force training should be completely based on showing demonstration of each of the following items followed by hands-on practise by the task force members.

Search & Rescue Training Syllabus

- Hailing search method (in case of no-go building)
- Light physical search
- Introduction to rescue
- Emergency rescue methods
 - Pick a back method
 - Reverse pick a back method
 - Fire man lift method
 - Human crawl method
 - Human crutch method
 - Cradle method

- Two hand seat method
- Three hand seat method
- Four hand seat method
- Shirt drag method
- Shoulder drag method
- Fore arm drag method
- Fore and aft method

In all rescue methods ensure children with disabilities have equal participation and their needs are addressed. Talk with them to understand what support they require, they may help you in the rescue process. Including children with disabilities in the task force can lead to insight into what their needs and capacities are and how to address and utilise them.

- Non-emergency moves
 - Direct ground lift method
 - Improvised stretcher lift method
 - Blanket drag method
 - Piggy back carry with rope method
 - Methods to limit injuries becoming disabilities ie assessing for spinal cord injury and then immobilising the person before moving them with a stretcher.

Fire Safety Training Syllabus

- What is fire?
- What Makes fire?
- Smothering, Cooling and starvation – Fire Extinguishing
- Types of Fire, its Composition and mechanism
- Types of Fire Extinguishers
- Operation of Fire Extinguishers
- Method & precaution – operation of fire extinguisher
- Location and placement of appropriate fire extinguishers so it can be reachable for all children ie children who use a wheelchair cannot reach above 1000mm
- Other ways of extinguishing fire
- Action in case of fire (Dos & Don'ts)
- Precaution from Fire
- Fire Alarms
- Emergency numbers

First Aid Training Syllabus

- Patient assessment plan
- Initial assessment skill
 - Skills for opening airway
 - Head tilt chin lift method
 - Jaw thrust method
 - Checking of pulse – carotid, radial and femoral pulse
 - Checking of breathing – look, listen and feel technique
- Artificial rescue breathing method – mouth to barrier / mouth (for senior students only)
- Pre-hospital care for internal bleeding
- Pre-hospital care for external bleeding
- Pre-hospital care for soft tissue injuries
- Method of applying tourniquet (for senior students only)
- Pre-hospital care for dislocation of shoulder
- Pre-hospital care for fracture of shoulder
- Pre-hospital care for fracture of upper arm
- Pre-hospital care for fracture of forearm / wrist
- Pre-hospital care for dislocation / fracture of elbow (bent / straight)
- Pre-hospital care for fracture of knee (bent / straight)
- Pre-hospital care for fracture of ankle
- Pre-hospital care for fracture of thigh
- Pre-hospital care for fracture of lower leg
- Assessment for spinal cord injury safety i.e. log rolling, immobilizing etc (senior students only).
- Pre-hospital care for placing the patient on the board – supine position (for senior students only)
- Pre-hospital care for burns
- Triage (START method)

Psychosocial Aid Training Syllabus

- Basic knowledge of Mental health including identification of sign's & symptom's of psychological disorder
- Basic counselling skills
- Stress reduction techniques
- Skills for designing activities /sessions
- Information related to referral services (psychiatrist /counsellor /hospital etc.)

Site security Training Syllabus

- Curb drill i.e. drill for crossing road
- Traffic signals
- Road signs
- Guidelines for Pedestrian safety
- Guidelines for Cycling safety
- Guidelines for School vehicle safety
- Guideline for wheelchair/tricycle safety
- Guidelines for other site safety, for example, playground, chemical laboratories etc.

What are the equipment needed by task forces?

The basis of developing the inventory at the school level for search and rescue, fire safety and first aid is to mobilize local resources and also utilization of improvised methods. During the field visit it was found that maximum strength of primary school both in rural and urban areas is in between 300 to 500 students and 3-6 teachers. On the other hand, secondary schools have 1000-2000 students and 10 -20 teachers. The task forces in both primary and secondary schools are lead by teachers in coordination with students. Primary school students are taking lead in creating awareness whereas the responsibilities of secondary school students also lies in responding to the event in coordination with teachers, school disaster management committee and school management committee. Based on the pilot testing of school safety and preparedness plan, the below mentioned list required to be revised as per the primary and secondary school at the same time this sample list can be revised during the facilitation of school safety and preparedness planning. The provided list here is based on number of members within task forces

Equipments for Primary School

Table 14 a: Search & Rescue Kit		
S. No	Items	Quantity
1	Asbestos Hand Gloves	1 pair each member + 3 spare
2	Helmet	1 pair each member + 3 spare
3	Cotton or jute Rope (4"-5" dia)	50 ft
4	Cotton or jute Rope (2" dia)	15 ft
5	Bamboo Stick for Stretcher	6 nos (7 -8 ft long)
6	Blanket	2 nos
7.	Bed Sheet	3
8	Wheelchair (child size)	1 no
9	Wheelchair (adult size)	1 no
10	Axilla crutch	1 pair
11	Elbow crutch	1 pair
12	Cervical collar	2 nos
13	Splint for lower limb fracture	1 pc
14.	Megaphone	1
15.	Triage ribbon (red, green, yellow)	10 each

Table 15 a: Fire Safety Kit		
S. No	Items	Quantity
1	Sand Buckets	2 nos
2	Fire extinguishers (Dry powder type)	1 nos
4.	Empty bucket	3
5.	Water storage Jar/bucket	1

Table 16a: First Aid Kit		
S. No	Items	Quantity
1.	IFRC First Aid Kit	2
2	Extra Cotton Rolls	1 large or 2 medium
3	Extra adhesive tape / paper plaster	2 nos
4	Tweezer	1 no
5	Extra Soap	1 no
6	ORS	as per the requirement
7	Water purification tablets	as per the requirement

Equipments for Secondary School

Table 14 b: Search & Rescue Kit		
S. No	Items	Quantity
1	Asbestos Hand Gloves	1 pair each member + 6 spare
2	Helmet	1 pair each member + 6 spare
3	Cotton or jute Rope (4"-5" dia)	50 ft
4	Cotton or jute Rope (2" dia)	15 ft
5	Bamboo Stick for Stretcher	12 nos (7 -8 ft long)
6	Blanket	6 nos
7.	Bed Sheet	6 nos
8	Wheelchair (child size)	2 nos
9	Wheelchair (adult size)	2 nos
10	Axilla crutch	1 pair
11	Elbow crutch	1 pair
12	Cervical collar	2 nos
13	Splint for lower limb fracture	1 pc
14.	Megaphone	2
15.	Triage ribbon (red, green, yellow)	20 each

Table 15 b: Fire Safety Kit		
S. No	Items	Quantity
1	Sand Buckets	4 nos
2.	Empty bucket	8 nos
3.	Water Storage Jar/bucket	3 nos

Table 16a: First Aid Kit		
S. No	Items	Quantity
1.	IFRC First Aid Kit	4
2	Extra Cotton Rolls	2 large or 4 medium

3.	Extra adhesive tape / paper plaster	4 nos
4.	Extra Soap	4 nos
5.	ORS	as per the requirement
6.	Water purification tablets	as per the requirement

How to select members for task forces?

It is advisable to understand the strength and interest of the students before selecting them for the Task Forces. For example, the students who have interest of subject in biology may be chosen for the First Aid Task Force. A self-explanatory template is given for this purpose. An example is also given.

Table 19: Selection template for task force						
Name of student						
Class:	Age:	Sex: (M/F)				
Subject of Interest	Name of the subject area and brief detail					
Consistency of Interest	Remark	1	2	3	4	5
Level of Interest	Remark	1	2	3	4	5
Physical Strength	Remark	1	2	3	4	5
Mental Strength	Remark	1	2	3	4	5
Demonstration Skill	Remark	1	2	3	4	5
Educational / Professional Background of Family	Detail of the background					
Involvement in Extra curriculum activity	Name of extra curriculum activity	1	2	3	4	5
Assistive device for mobility or communication	Detail of device					
Coordinator's Comment	Overall remarks of the coordinator					
Selected to Task Force Group	SAR	First Aid		Fire Safety		

On the basis of the overall findings, the coordinator has discretion to decide on the allocation of member into specific task force group.

Table 20: Example: Selection of task force member						
Name of student	Nina Talankar					
Class:	X – B	Age:	16 yrs	Sex: (M/F)	Female	
Subject of Interest	She is the house vice captain and scoring in biology is above average. She has a special attention towards health and hygiene.					
Consistency of Interest	Her level of interest seems not to be deviated for last 3 years and she has enhanced her knowledge on the subject beyond the school curriculum	1	2	3	√	5
Level of Interest	Her hobby is for the music but when asked for option, she prefers to have extended information on health rather than music	1	2	3	4	√
Physical Strength	Average on holding and carrying weight	1	2	√	4	5
Mental Strength	Strong enough	1	2	3	√	5
Demonstration Skill	She possess the skill to retain and re demonstrate or orient the subject	1	2	3	√	5
Educational / Professional Background of Family	Her family business is of pharmaceuticals and her mother is a doctor.					
Involvement in Extra curriculum activity	She has been undergoing training on Kathak dance for last 5 yrs.	1	2	√	4	5
Assistive device for mobility or communication	She uses a hearing aid					
Coordinator's Comment	[4+5+3+4+4+3] = 23 divided by 6=3.83 As per the detail achieved, it is considered that the member can well fit in for First Aid Task Force Group.					
Selected to Task Force Group	SAR	First Aid	√	Fire Safety		

Contact details of task force members

Each task force should be coordinated by one or two teachers. It is necessary to have a readily available list of the members of each task force. Suggested formats for each task force are given. Schools should make the composition of each task force as they feel appropriate to the school.

Member	Name, Class & Address	Phone No.
Senior Teacher (Coordinator)		
Geography Teacher		
Science Teacher		
Music Teacher		
Drawing Teacher		
Student-1		
Student-2		
Student-3		

Member	Name, Class & Address	Phone No.
Vice Principal / Head Master (Coordinator)		
Teachers and Monitors of all classes (members)		

Member	Name, Class & Address	Phone No.
Physical Education Teacher 1 (Coordinator)		
Physical Education Teacher 2		
NCC / Scouts & Guides in-charge		
Student 1 (trained in search & rescue)		
Student 2 (trained in search & rescue)		
Student 3 (trained in search & rescue)		

Student 4 (trained in search & rescue)	
Student 5 (trained in search & rescue)	

Table 24: First Aid Task Force Members

Member	Name, Class & Address	Phone No.
School Doctor / Nurse / First-Aid in-charge (Coordinator)		
Biology / Science Teacher		
Staff-1 trained in first aid		
Staff-2 trained in first aid		
Student-1 trained in first aid		
Student-2 trained in first aid		
Student-3 trained in first aid		

Table 25: Fire Safety Task Force Members

Member	Name, Class & Address	Phone No.
Physical Education Teacher-2 (Coordinator)		
Staff trained in fire safety		
Student-1 trained in fire safety		
Student-2 trained in fire safety		
Student-3 trained in fire safety		

Member	Name, Class & Address	Phone No.
Psychology teacher / School social worker (Coordinator)		
Staff trained in psychological first aid		
Student-1 trained in psychological first aid		
Student-2 trained in psychological first aid		
Student-3 trained in psychological first aid		

Member	Name, Class & Address	Phone No.
Transport in-charge (Coordinator)		
Physical Education Teacher		
S.U.P.W Teacher		
Class Captain		
Class vice-captain		
Student trained in site security		

Chapter 12

Conducting Mock Drill

What are the objectives of mock drill?

Mock drill provides opportunity to establish new reflexes and test emergency preparedness level. It also checks the various roles and responsibilities of the stakeholders and gives a platform for reviewing any emergency plan. However, emergency situations are relatively rare occurrences. But it is important to organize simulation activities so that a level of practical experience is essential to minimize the possibility of a critical breakdown during the course of an emergency situation. Therefore a range of possible scenarios should be visualised, and mock drills should be conducted on regular intervals. Each simulation should be carefully structured to address the required issue, and can have varying levels of output depending on the objectives that have been set. High levels of efficiency can be attained if mock drills are properly conceived and practiced.

Schools are the best place for building a culture of long-lasting collective values. If emergency preparedness drills are practiced in schools, it would not only lead to spreading the culture of disaster safety in schools but to the communities too. The simulation exercise should be specific to the hazards that the school faces. It can be a simulation exercise on road safety, fire safety, earthquake safety etc. The exercise should be designed in such a way that it should incorporate conditions that have high probability of occurrences in the real disaster mode. For instance, how search and rescue committee will evacuate a child who uses a wheelchair. The exercise should reflect diversity of students girls, boys, children with physical disability, hearing impairment, speech impairment, and intellectual disability to address their specific needs as well as utilized their capacities and insights. This will help in checking the response procedure plan and assessing the level of preparedness, which the school has planned.

If meticulously planned, a mock drill is simple and easy to do but it needs some pre-planning like preparing an evacuation procedure, identifying safe spots in a classroom, defining sequence of response by each task force, etc. Orientation prior to a drill is also essential.

How to conduct earthquake drill?

The following steps explain the procedure for conducting an earthquake evacuation drill. These steps are given for general guidance only. The school should develop its own procedures as appropriate.

Orientation

- Give a lecture to the students on earthquake – what it is how and why it occurs, and what to do before, during and after earthquake.
- Conduct a classroom observation activity as follows:
 - Draw the floor plan of the classroom (desks, table, cabinets, etc.)
 - Identify safe and accessible spots in the classroom (tables, desks, doors, corners, etc.)
 - Identify danger zones (glass windows, book shelves, machines, cabinets, hanging objects, heavy objects that may topple – non-structural problems).
 - Identify inaccessible zones
 - Ask and encourage the students what can be done to correct the non-structural problems.
 - Introduce “duck, cover and hold” method. (Get under the table or desk. Put the hand on the back of the neck. Tuck the head down. Hold on to the legs of the table or desk.)

- Identify any additional support children and teachers with disabilities may require to 'duck, cover and hold' and ensure their class mates are able to assist them
- Make the students practice "duck, cover and hold" to a signal, use visual and audio signal for access and understanding of all. Discuss the procedure with students and clarify their doubts.
- Help students with physical, hearing and speech impairment to understand the steps and learn the ways to protect themselves in case of earthquake.
- Show evacuation map and explain the evacuation route and the assigned open area where the students will assemble when they evacuate from the classroom. Assign the responsibility to a student to ensure the door is open during the shaking.
- Give the following instructions about evacuating when the shaking stops:
 - Be alert.
 - Listen to teacher's instructions.
 - Walk out of the classroom in an orderly manner.
 - Provide assistance for children and teachers with disability as required.
 - While walking along the corridors to the nearest exit of the building, be alert and look for falling objects or debris.
 - Don't run, Don't push, Don't talk, Don't return, Don't bring your things such as books, bags etc.
 - Never go back into the building after coming out. Assemble in the assigned location and wait for further instructions.

Alarm

Use a pre-arranged signal such as siren/bell to indicate the occurrence of an earthquake. All students and teachers should understand the signal. Specific signals should be devised catering to the audience. For example for the school children with hearing-impairment it could be a flag or a pictorial representation of the hazard or the danger.

Response

While the siren/bell/flag is on, everyone should move away from the windows, glass or light fixtures, and should "duck, cover and hold". There should not be any panic or chaos.

Evacuation

The signal can be stopped after about 30 seconds to indicate that the earthquake shaking has stopped. Now the students should evacuate the school building. The evacuation should take place in a sequence as planned, coordinated by evacuation task force members and teachers. The students should evacuate following the pre-determined routes. It should be in an orderly manner without creating any stampede or crowding. Children without disability should support children with disability to evacuate as required.

Assembly

At the designated evacuation area, all students should assemble in accordance with given instructions or according to respective classes.

Head count

After the evacuated students assemble in the safe area, a head count is taken of all the students by the respective class teacher to identify if there is any missing student. To make the simulation exercise more real to the disaster mode, some injured or wounded students can be implanted so that the search and rescue task force could rescue the missing students and bring them to the safe area; then the first aid task force can apply first aid on the injured.

Evaluation

After the drill, the Principal should hold a meeting of the School Disaster Management Committee and evaluate the drill to identify the problems faced during the drill and how to improve in future. An evaluation of the drill is essential to identify problems encountered during the drill. The drills should be conducted at least once in every three months. Prior to a scheduled drill inform the neighbourhood of such an exercise.

How to conduct fire drill?

Similar steps as for the earthquake drill are to be followed in the fire drill. The following steps explain the procedure for conducting a fire drill. These steps are given for general guidance only. The school should develop its own procedures as appropriate.

- When someone identifies a fire, immediately ring the fire alarm and red flag/visual sign and also inform the location by using the PA system.
- The Warning & Dissemination Task Force should report the fire immediately to the fire station to call the fire brigade. Also the classrooms should be warned about the fire and they should be asked to evacuate if necessary.
- The Fire Safety Task Force should try to extinguish the fire or should continue to do it until the fire brigade arrives.
- When the fire warning and evacuation order is received, everyone should evacuate the building as soon as possible keeping in mind the location of fire spot. During evacuation the following points should be kept in mind:
 - Do not run; walk fast in a queue.
 - Do not use lift; use staircase.
 - Follow exit signs.
 - Help children and teachers with disabilities
 - If the room is filled with smoke, escape the room by crawling.
 - Teacher and class monitor should take care of evacuation up to assembly point and provide necessary guidelines.
 - Anyone who is not in class when the fire alarm sounds, should immediately go to the assembly point.
- After evacuation, teachers should count the students and make sure that all are accounted for. If some students are missing, it should be reported to the search & rescue task force, who will then go searching and rescue the injured. The first aid task force should provide first aid to the injured.
- After the drill, Principal should hold a meeting of the School Disaster Management Committee and evaluate the drill to identify the problems faced during the drill and how to improve in future.

How to conduct cyclone / flood drill?

Usually sufficient warning is given by the government authorities for a cyclone or flood. If the school receives the warning in advance, it would be preferable to close the school so that the children can remain safe at their homes under the care of their parents. There may be occasions when the warning is not received in time, or the intensity of cyclone is much greater than that was expected. In such cases, evacuation may be needed.

Cyclone occurs with movement of heavy winds, followed by heavy rains. Cyclone shelters in the coastal areas are of circular shape in general, standing on silts to allow water to flow freely. When the cyclone wind is active, it is advised that the students should remain inside the rooms with doors and windows closed. The door shutter and window shutters should be properly secured so that they are not damaged due to wind.

The effect of cyclone and flood is inundation on the ground and in the ground floor of school building. Therefore, the school building should have two or more floors. The students should be trained in moving to the upper floors without crowding or stampeding in order to avoid the flood waters. However, if the top floor of the building has a sloping roof (tiled roof), it should be avoided, as there is a risk of the roof being blown away by the wind. If the school building is not safe as shelter during cyclone, the school authorities should have a pre-identified safe and accessible building with rails besides stairs and zig zag ramp nearby where the school children can be evacuated to while cyclone warning is received at short notice.

During the heavy wind, the children should remain indoors. After the wind stops, the children can be allowed to go out of the school. If the location of the school is such that the flood water will drain within a short period, the children should remain in the school building until the water drains and the route for reaching the road becomes clear. If water will take a long time to drain, then alternate ways of evacuating the children from the school will be needed. One such method is to stretch a “*guide rope*” between the school building and a tree or post close to the road and use the rope as support while evacuating. Many such ropes can be stretched in different directions as possible.

Ensure participation of children with disabilities so that they are able to practice and their peers can practice assisting them as required.

The following procedure is suggested based on the above concepts for cyclone / flood evacuation drill.

- Orient the children on the phenomena of cyclone / flood with information on dos and don'ts.
- Explain the safe and accessible locations (upper floors) and evacuation route to be followed to all students.
- Explain to the children on the signal that will mark the commencement of evacuation drill.
- Tie the guide rope between a convenient point (at waist level) in the school building at a comfortable level and a convenient location near the road.
- On receiving the signal for evacuation, children should move to the safe location (upper floors) following the evacuation route.
- Children should remain inside the safe rooms until heavy winds prevail.
- After heavy winds stop and flood water level reduces to knee-deep level on the ground, children can evacuate using the guide rope.
- Teachers and senior students should help the younger children and those with disabilities.
- Before children are asked to go out of the building wading through water, a teacher or a senior student should check the presence of any open manhole or drain on the route. Also check for any fallen tree or electric pole.

Chapter 13

Stakeholders' Roles and Responsibilities

Various persons and groups are responsible for disaster management in a school. Duties of these persons and groups are given in this section. The duties have been shown separately at non-disaster time, before, during and after disaster.

School Disaster Management Committee

The School Disaster Management Committee will be responsible for guidance, monitoring and coordination of the disaster management in the school. Specific duties at various phases are given below.

Non-disaster time

- Draft the School Disaster Management Plan
- Review and update the disaster management plan annually
- Review budget and obtain funds for implementing the Plan
- Guide and monitor activities for reducing disaster effects
- Guide and monitor action to be taken to remove or reduce problems outside school
- Guide and monitor action to be taken to remove or reduce structural problems inside school
- Guide and monitor action to be taken to remove or reduce non-structural problems inside school
- Guide and monitor checking of equipment and tools needed and buying for additional needs.
- Guide and monitor acquiring necessary awareness materials
- Guide and monitor awareness activities including training of task forces and conducting mock drills

Before disaster

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During disaster

–

After disaster

- Review details of disaster and response

Principal

The School Principal will have the overall responsibility for disaster management in the school. Specific duties at various phases are given below.

Non-disaster time

- Constitute School Disaster Management Committee
- Constitute various task forces
- Call meetings of School Disaster Management Committee for developing the School Disaster Management Plan and whenever necessary
- Initiate action for reviewing and updating the disaster management plan annually
- Prepare budget and obtain funds for implementing the Plan
- Take actions for reducing disaster effects
- Take action to be taken to remove or reduce problems outside school
- Take action to be taken to remove or reduce structural problems inside school
- Take action to be taken to remove or reduce non-structural problems inside school
- Take action for checking of equipment and tools needed and buying for additional needs.
- Take action for acquiring necessary awareness materials
- Initiate awareness activities
- Organise training of task forces and conducting of mock drills

Before disaster

- Initiate action to check readiness of facilities for quick response.
- Take decisions to minimize losses.

During disaster

- Call meeting of relevant task forces and take decisions to respond
- Assess the situation and seek outside assistance if needed
- Inform authorities about the situations and actions taken
- Supervise task forces and provide guidance
- Initiate action to assess damages

After disaster

- Supervise task forces and provide guidance for managing the safety and care of evacuees.
- Arrange to send students back to their homes in safe manner

Warning & Awareness Task Force

Non-disaster time

- Participate in trainings on disaster awareness
- Prepare / collect necessary awareness materials
- Conduct awareness activities
- Coordinate trainings of task forces
- Organise mock drill exercises
- Orientation on disability including accessible warning messages eg whistle and loud hailer for children with visual impairment, flags for children with hearing impairment, assistance required for children and teachers with physical disabilities who may use wheelchairs, crutches etc

Before disaster

- Monitor and take regular updates from the media on the potential dangers, for example, weather forecast of floods, cyclones, etc.
- Assist Principal to maintain contact with district authorities
- Display warning signs
- Disseminate information to all classrooms and teachers
- Coordinate with other task forces and inform them the weather situation
- Ensure access to information for all via variety of media

During disaster

- Depending on the type of disaster do the necessary action as practised during the drill for e.g. “Duck, cover and hold” at the first sign, for earthquake, move to the upper floor / higher ground for flood etc. , of earthquake. If outside, move away from building
- Give accessible warning messages to the entire school in case of emergency
- Assist Principal to report to the government response departments (SDM, fire station, police)
- Assist evacuation team in evacuation of the school building
- For a chemical factory accident, provide safety information to the entire school
- In case school is used as shelter for public, inform the shelter staff about latest updates and weather reports

After disaster

- Continue monitoring the various information sources
- Keep reporting on the disaster situation to all concerned task forces and coordinate with them
- Disseminate safety tips
- Cooperate with district administration in preparing updates and disseminating information

Evacuation Task Force

Non-disaster time

- Participate in trainings on disaster awareness
- Buy / collect necessary equipment and tools for evacuation
- Conduct and participate in evacuation trainings
- Test special procedures for evacuating children and teachers with disabilities
- Participate in mock drill exercises
- Orientation on disability and evacuation taskforce should ensure active participation of children with disabilities and the evacuation activity will equally benefit to all.

Before disaster

- Check the exits. Identify evacuation areas
- Make sure that there are no non-structural problems present on the evacuation routes
- Check condition of all equipment and tools for evacuation and make sure they are accessible
- Be prepared for special equipment needs for students with disability

During disaster

- Depending on the type of disaster do the necessary action as practised during the drill for e.g. “Duck, cover and hold”, for earthquake, move to the upper floor / higher ground for flood etc.
- Assist children and teachers with disabilities as required
- If outside, move away from building
- Check evacuation route and safe evacuation place identified depending on the type of disaster building condition before evacuation
- Evacuate in orderly manner as practised in the drills

After disaster

- All members of the task force to assemble at a pre-identified location
- Collect the equipment and materials needed by the task force
- Ensure that emergency assembly area is accessible and safe
- Determine if any additional assistance is required for evacuation
- Take attendance of students who have evacuated and determine the missing students and inform the search & rescue task force

Search & Rescue Task Force

Non-disaster time

- Participate in trainings on disaster awareness
- Buy / collect necessary equipment and tools for search & rescue
- Conduct and participate in search & rescue trainings
- Test special procedures for rescue of students and teachers with disabilities
- Participate in mock drill exercises
- Student orientation on disability
- Search and rescue taskforce should ensure active participation of children with disabilities and the evacuation activity will equally benefit to all.

Before disaster

- Make sure needed materials are available and accessible
- Make sure task force members are up-to-date with their training

During disaster

- Depending on the type of disaster do the necessary action for e.g “Duck, cover and hold” for earthquake, move to the upper floor /higher ground for flood etc. Duck, cover and hold at the first sign of earthquake. If outside, move away from building
- Assist children and teachers with disabilities as required

After disaster

- All members of the task force to assemble at a pre-identified location
- Collect the equipment and materials needed by the task force
- Start search & rescue operation in orderly manner as practised in the drills to locate missing students
- Check every room in the school buildings if there is no structural damage and rescue the injured
- In case of structurally damaged building, call for outside rescue team. Locate the missing persons without going inside the building, by hailing search method
- Report the location of injured to the outside rescue team and assist them in rescue
- Inform First Aid Task Force
- Look for obvious structural damages, mark dangerous areas and inform the Principal

First Aid Task Force

Non-disaster time

- Participate in trainings on disaster awareness
- Buy / collect necessary equipment and medicines for first aid
- Make sure that first aid supplies are up-to-date and always complete
- Keep health cards (containing information on special needs such as special medicines being regularly taken by any student or staff) up-to-date
- Conduct and participate in first aid trainings and refresher trainings every year
- Be aware of any special medical requirements of students or staff and ensure that 1-2 days medicines are kept on stock and regularly updated
- Participate in mock drill exercises
- Keeping health records for those who need special attention

Before disaster

- Make sure needed materials are available and accessible
- Check the expiry dates of medicines
- Make sure task force members are up-to-date with their training

During disaster

- Depending on the type of disaster do the necessary action e.g “Duck, cover and hold” at the first sign of earthquake; move to the upper floor /higher ground for flood etc.
- If outside, move away from building
- Assist children and teachers with disabilities as required

After disaster

- All members of the task force to assemble at a pre-identified location
- Collect the equipment and materials needed by the task force
- Administer first aid to the rescued persons, tag the patients and record all cases and treatments
- Determine the need for further medical assistance and coordinate requests for assistance through the Principal

Fire Safety Task Force

Non-disaster time

- Participate in trainings on disaster awareness
- Buy / collect necessary equipment for fire fighting
- Place fire fighting equipment at appropriate locations
- Make sure that fire fighting equipment are in working condition always and refilled periodically
- Conduct and participate in fire safety trainings and refresher trainings every year
- Make sure that all fire-prone areas such as chemical lab, canteen, kitchen etc. are properly protected
- Participate in mock drill exercises
- Test procedures to ensure needs of children with disability are met

Before disaster

- Make sure needed materials are available, accessible and in working condition
- Make sure task force members are up-to-date with their training

During disaster

- Depending on the type of disaster do the necessary action for e.g “Duck, cover and hold” for earthquake; move to the upper floor /higher ground for flood etc. Drop, cover and role if a person catches fire
- Assist children and teachers with disabilities as required

After disaster

- All members of the task force to assemble at a pre-identified location
- Collect the equipment and materials needed by the task force
- Check and confirm the existence of fire. Report to the Principal.
- In case of electrical fire, turn off electric main switches
- Control fire if possible. Ensure personal security.
- Look for conditions that may cause a fire to develop and seek maintenance staff assistance in removal of the

condition.

Psychosocial Aid Task Force

Non-disaster time

- Participate in trainings on disaster awareness
- Organize sessions / activities on mental health awareness and care for psychosocial trauma
- Organize psychosocial aid training for teachers and students
- Compile and maintain contact information on psychiatrists / counsellors
- Identification of signs and symptoms of psychosocial disorders.

Before disaster

- Facilitate and take action for reassuring the children and to remain calm
- Ensure that messages and information are accessible for all – simple easy to follow messages for children with intellectual disability, use of visual information for children with hearing impairment, audio messages for children with visual impairment

During disaster

- Depending on the type of disaster do the necessary action for e.g “Duck, cover and hold” for earthquake; move to the upper floor /higher ground for flood etc.
- Assist children and teachers with disabilities as required

After disaster

- Organize sessions / discussions of trauma experiences among students
- Report or give referral services for those who need outside professional assistance (psychiatrist / counsellor)

Site Security (Road Safety) Task Force

Non-disaster time

- Participate in trainings on disaster awareness
- Organize awareness sessions on road safety, site safety and general safety measures within school.
- Ensure safety for children with disabilities including use of wheelchairs and tricycles
- Collect materials / tools related to road site safety
- Maintain a record of children on the based on their mode of transport to school (pedestrian / cyclist / automobile, bus, etc.)

Before disaster

During disaster

- Take immediate action like giving first aid, calling the ambulance etc and informing the respective authorities like parents, school staff, etc., to minimize the effects

After disaster

- Do head count for students and send them back home safely

Chapter 14 Sustainability of Risk Education

Children always show interest in knowing new things. Once risk education is given to them, they try to follow the instructions. However, it is not sufficient to teach them once. They should be given more and more information on continuous basis so that they have a sustained interest in acquiring more knowledge. This can be done in many ways as explained in this Chapter.

School Disaster Preparedness Checklist

The checklist for school disaster preparedness (Table 28) can be used as an exercise in the class. The teacher should explain the contents of the checklist and encourage the students to identify the dangers faced by the school, problems outside the school, non-structural problems inside the school, location of facilities related to disaster management outside and inside school, and the role of students in the event of a disaster. This will help to prepare students for a future disaster.

Table 28: School Disaster Preparedness Checklist

Instructions			
<ul style="list-style-type: none"> •Identify and take appropriate steps for each of the tasks mentioned in the list. •As you complete each of the tasks, put a tick mark against it. •Check your classroom safety scores at the end. 			
<input type="checkbox"/> 1. We have discussed disaster management plan with our teacher and classmates.			
2. We have identified possible disasters that can affect our school and its surroundings as follows:			
Disasters	Probability of Occurrence		
	High	Medium	Low
Earthquake			
Flood			
Cyclone			
Chemical Disaster			
Fire accident			
Road accident			
Others			
<input type="checkbox"/> 3. We have learnt about dos and don'ts to be followed before, during and after any disaster.			
4. We have identified hazards around our school as follows:			
Hazards	Distance from school		
	Very Close to our school (less than 1 km away)	Close to our school (1-2 km away)	Far from our school (more than 2 km away)
Hazardous Factory			
Busy Road			
High-rise Building			
Shop selling and/or selling inflammable material			
Open/Blocked/Unclean Drains			
Others			
<input type="checkbox"/> 5. We have complete details about the following:			
	Name & Address	Distance from school, km	Telephone Numbers
Fire Station			
Local Hospital			
Police Station			
Other			

6. We follow road safety rules.

7. We know where to assemble in our school in case of an emergency.

8. In case of an earthquake we know that we have to evacuate the school building by walking fast and covering our heads with our hands instead of running to avoid stampede.

9 We know the location of safest staircase in our school which can be used in case of emergency.

10. While using the staircase we move in a queue and in an organized way to evacuate to the open ground

11. We have identified safe and accessible escape routes from our classroom.

12. We have identified the safest places in the class (Away from windows, large & heavy objects that can fall).

13. We have a first aid kit ready for our class with the following material (We check the expiry date of the medicines and change them from time to time)

Dettol & Cotton Bandage

Emergency Medicines like painkillers Burnol

14. We have an emergency kit ready with the following material for our classroom. (we check the expiry dates of the objects for effective usage)

Torch with batteries

Medicines & bandages

Dry food material like Biscuits

15. We have done the exercise of non-structural Hazard Hunt and mitigated these hazards from our school as follows:

We have removed heavy objects from high walls.

We have placed objects (like cupboards & almirahs) away from the doors so that they don't fall and create obstruction in the exit.

We have secured material in our laboratory to prevent breakage or leak of chemicals.

We have secured books and cupboards in our library to prevent them from falling and causing damage or injuries in case of a disaster.

We have fastened all loose movable objects properly

16. We know how to turn off electricity of our classroom.

17. We have learnt to practice "Duck, Cover, Hold" in case of an earthquake.

18. We have learnt how to practice "Stop, Drop and Roll" in case of fire.

19. We are spreading awareness about disaster management wherever we go.

20. We know the situation of children and teachers with disabilities and what are their special needs during disaster

21. We are aware of how to adapt our approach so our initiatives will equally benefit children with disabilities

22. We are aware and sensitized to ensure active participation of children with disabilities in all taskforce and activities

23 We are skilled to make infrastructure and information accessible for all

Name _____.

Class _____.

School _____.

Address _____.

Date _____.

Safety Score of My class:

Count the total number of tick marks and check how safe your class is:

15 & above	10-15	Below 10
Our class is well equipped to face any disaster. We are a safe class!!!	We are learning about safety. We need to work hard to make ourselves, our classroom and school safe!!!	Our class has a long way to go. We need to work much harder to make ourselves and our school safe!!!

Family Disaster Preparedness Checklist

The checklist for family disaster preparedness (Table 29) can be used for preparing the families for a future disaster. After the exercise using classroom checklist has been done with the students, the checklist for family can be given to the students for them to take home. The students should show the family checklist to their parents and other family members. The family members should complete the checklist along with the student. This will be useful for the student as well as the family members to identify the dangers faced by the town, problems outside home, non-structural problems at home, location of facilities related to disaster management outside and inside home, and the role of the family members in the event of a disaster.

Table 29: Family Disaster Preparedness Checklist

Instructions

- Family disaster plan consists of the following items/tasks. Discuss each of the points given below with your family members.
- Identify and take appropriate steps for each of the tasks mentioned in the list.
- As you complete each of the tasks, put a tick mark against it.
- Check your family-safety scores at the end.

- 1. I have discussed our family disaster management plan with all my family members.
- 2. I and my family members have identified possible disasters that can affect our City/Town/ Village

Disasters	Probability of Occurrence		
	High	Medium	Low
Earthquake			
Flood / Water logging			
Drought			
Cyclone			
Chemical Disaster			
Fire accident			
Tsunami			
Nor'wester			
Cold wave			
Arsenic contamination			
Others			

- 3. We have learnt about dos and don'ts to be followed before, during and after any disaster

4. We have identified hazards around our house:

(Put a tick mark against the applicable category)

Hazards	Very Close to my house (less than 1km away)	Close to my house (1-2 km away)	Far from my house (more than 2 km away)
Hazardous Factory			
Busy Road			
High-rise Building			
Shop storing and/or selling inflammable material			
Open/Blocked/Unclean Drains			
Huge/Bushy Tree with over grown branches			
Others			

5. We have complete details about the following resources in case of any emergency:

	Name & Address	Distance from House, Km	Telephone Numbers
Control Room (State/District/Sub-district)			
Helpline (Public utility lines)			

Local Hospital			
Nearest Chemist Store			
Police Station			
Fire Station			
Neighbour 1			
Neighbour 2			
Relative			
Ward Commissioner			
Car rental / taxi stand			
Others			

- 6. All members of our family use helmets/seat belts while driving/riding a vehicle.
- 7. We have decided to purchase a fire extinguisher and to learn how to operate it. We have decided to purchase hammer, and other tools for earthquake preparedness.
- 8. We follow road safety rules.
- 9. We have ensured structural validation of our house/building against any disaster by a qualified structural engineer
- 10. My father/ guardian has taken responsibility to take an expert's help to identify safe places in and around our house.
- 11. We have identified the safest places in the house, and in each room (Away from windows, large & heavy objects that can fall, and objects like heaters that can cause fire).
- 12. We have identified safe escape routes from our house/ building
- 13. We have made sure that doors open towards outside so that exit becomes safer.
- 14. We keep our water tanks clean.
- 15. We store fresh water in containers everyday
- 16. We have a first aid kit ready with the following material (we check expiry dates of medicines and change them regularly)
 - Dettol & cotton
 - Bandage
 - Emergency Medicines Like Painkillers
 - Burnol
 - Prescribed medicines used by any family member/members
- 17. We have an emergency kit ready with the following material (we check the validity for effective utility of the objects)
 - Water bottle filled with fresh water
 - Important documents
 - Money
 - Torch with batteries
 - Clothes
 - Dry food material like Biscuits Blankets
 - Matchbox/ Candle
- 18. We have completed Hazard Hunt and mitigated hazards from our home:
 - We have removed heavy objects from high walls.
 - We have fastened all loose and movable objects properly (eg. Almirahs, cupboards)
 - We have placed objects (like cupboards & almirahs) away from the doors so that they don't fall and create obstruction in the exit.
- 19. We know how to turn off the main power supply of our house.
- 20. We know how to turn off gas cylinders after use.
- 21. We practice "Duck, Cover, Hold" in our homes
- 22. We keep shoes and torches near our beds.

- 23. We are spreading awareness about disaster management wherever we go.
 - 24. We know the situation of family members with disabilities, who are elderly, who are pregnant and what are their special needs during disaster
 - 25. We are aware of how to adapt our approach so our initiatives will equally benefit all family members
- 26 We are skilled to make infrastructure and information accessible for all

Name _____.

Class _____.

School _____.

Address _____.

Date _____.

Safety Score of My Family:

Count the total number of tick marks and check how safe your family is:

15 & above	10-15	Below 10
Our family is well equipped to face any disaster. We are a safe family!!!	We are learning about safety. We need to work hard to make ourselves and our home safe!!!	Our family has a long way to go. We need to work much harder to make our homes safe!!!

School Safety Club

Students’ interest on risk education can be sustained by organising regular activities in the subject through ‘Club Activities’. If there is a ‘Science Club’ or ‘Eco-Club’ the same can add the subject of risk reduction in its activities. If needed, a separate club can be formed to pursue the activities of risk education.

Criteria for membership

The School Management shall nominate a teacher as the Coordinator for the School Safety Club. The Coordinator shall then select other members for the club. Members of the club can be selected from the teaching or non-teaching staff, students, members of task forces. However, members of the School Safety Club should fulfil the following criteria:

- Should have interest in disaster awareness programmes.
- Should have an interest in the needs of the whole school community: boys, girls, children and teachers with disabilities
- Should have an innovative and creative mind.
- Should be able to face the audience and should be active in public speaking.
- Should have knowledge of what is going on around the world.
- Should not feel shy to perform drama in front of audience.
- Girls, boys, children with disability

Suggested activities

The School safety Club may take up the following activities for spreading awareness of disasters and disaster risk reduction.

- Organise drawing/painting competitions
- Organise debates
- Organise dramas/street plays
- Organise invited lectures by experts
- Organise “Safety Week” programmes on topics like “road safety”, “earthquake safety”, etc.
- Use awareness raising materials like card games, board games, posters, etc., among students and staff members
- Scan and compile news articles on disasters around the world
- Maintain library of disaster awareness materials
- Maintain library of disability awareness materials

Chapter 15

Preparing School Disaster Management Plan

What is School Disaster Management Plan?

School Disaster Management Plan or School Disaster Safety Plan shall comprise of all actions that need to be taken by various stakeholders for risk reduction in school. The document shall provide details of the school including number of students, teachers, etc; hazards, vulnerabilities and capacities; contact details of stakeholders including task force members, government authorities; emergency evacuation plan, etc. The document will contain mitigation plan, and preparedness plan addressing risk reduction issues.

Who will make School Disaster Management Plan?

The School Disaster Management Plan will be prepared by the School Disaster Management Committee. An external agencies such as an NGO working in the field of School Safety and disability issues can facilitate the school in developing the plan. The following steps are suggested for developing the disaster management plan for a school:

- First, form a School Disaster Management Committee. The administrative head of the school should be nominated as the Chair of the School Disaster Management Committee. Other members should be drawn from the following categories:
 - Representatives of concerned government agencies such as disaster management, education, social service, police, fire service, health service
 - Representatives from school such as school management, teaching faculty, non-teaching staff, task force coordinators, student representatives, children with disability, parents of children with disability.
 - Representatives from community such as parents, leaders, youth clubs, resident welfare association, local NGOs, Disabled Peoples Organization (DPO) etc.
- The School Disaster Management Committee may engage an external agency to facilitate the development of the School Disaster Management Plan.
- The agency shall organise a workshop for the School Disaster Management Committee and discuss the importance of a School Disaster Management Plan and guide them to develop the Plan in a systematic way.

How to make School Disaster Management Plan?

The following steps are suggested to make disaster management plan for the school.

- Set up a Disaster Management Committee for the school. Collect contact details of members of School Disaster Management Committee (Chapter 15)
- Review Stakeholders' roles and responsibilities (Chapter 13)
- Identify hazards (dangers) threatening the school; identify external problems and prepare risk map for the school (Chapter 5: Exercise 1 & Exercise 2).
- Consider the problems one by one and think how each of the problems can be solved or reduced. Prepare Action Plan for solving external problems (Chapter 5: Exercise 3)
- Identify facilities existing outside the school and prepare facilities map (Chapter 6: Exercise 4 & Exercise 5)

- Identify existing equipment and tools for disaster response. Prepare Action Plan for acquiring more equipment and tools needed (Chapter 6: Exercise 6)
- Identify existing awareness materials. Prepare Action Plan for acquiring more awareness materials needed (Chapter 6: Exercise 7)
- Prepare Action Plan for capacity building activities (Chapter 6: Exercise 8)
- Carry out structural safety audit of the school buildings and identify structural problems. Prepare Action Plan for solving structural problems (Chapter 7: Exercise 9)
- Identify non-structural problems. Prepare Action Plan for solving non-structural problems (Chapter 8: Exercise 10)
- Prepare evacuation maps for the potential hazards (Chapter 10: Exercise 12)
- Identify coordinators for Task Forces. Select student members for each task force. Collect contact details of all task force members. Organise training for task forces (Chapter 11)
- Organise emergency mock drill to practice evacuation (Chapter 12)
- Compile the School Disaster Management Plan (Chapter 15)

What are the contents of a School Disaster Management Plan?

A suggested content of the school disaster management plan is given below:

- Basic details of school with contact information
- List and contact information of School Disaster Management Committee
- Number of students in each classroom (girls; boys) and number of students with disability; what type of disability, type of assistive device used, any alternative or augmentive communication medium used.
- Any teachers with disabilities, what type of disability, type of assistive device used
- Objectives of School Disaster Management Plan
- Methodology of developing the Plan
- Various phases of disaster management considered
- Hazards (dangers) threatening the school
- Mitigation Plan
 - Problems outside school & solution
 - Risk Map
 - Structural problems & solution
 - Non-structural problems & solution
- Preparedness Plan
 - Facilities outside school
 - Facilities Map
 - Evacuation Plan & Evacuation Map
 - Action Plan for Equipment and Tools

- Action Plan for Awareness Materials
- Action Plan for Capacity Building
- Review of School Disaster Management Plan
- Roles and responsibilities of stakeholders
- Contact information of stakeholders

Review of Disaster Management Plan

The School Disaster Management Plan should be reviewed every year. The following sections of the plan should be reviewed.

Table 31: Schedule for Review of School Disaster Management Plan	
Section reviewed	Date of review
School Disaster Management Committee	
List of persons responsible for managing disaster situations in the school	
Class-wise strength of students, teachers, staff	
Dangers (hazards) threatening the school	
Problems outside school, Risk Map & Solution	
Problems inside school – structural & Solution	
Problems inside school – non-structural & Solution	
Physical facilities outside school & Facilities Map	
Evacuation Map	
Equipments and tools	
Awareness materials	
Awareness activities and training	
Warning & Awareness Task Force Members	
Search & Rescue task Force Members	
Evacuation Task Force Members	
First Aid Task Force Members	
Psychosocial Aid Task Force Members	
Site Security Task Force Members	
Fire Safety Task Force Members	

Chapter 16

Psychosocial support for children in disaster situations

People experience stressful events on an almost daily basis. Most people, most of the time can cope with these events well enough. But some events like disaster overwhelm almost everyone's ability to cope. In such situations, people usually develop a disorder following the traumatic event known as the post-traumatic stress disorder (PTSD). It can affect those who personally experience the catastrophe, those who witness it, and those who pick up the pieces afterwards, including emergency workers and law enforcement officers. It can even occur in the friends or family members of those who went through the actual trauma.

Certain categories of people are especially vulnerable or vulnerable in specific ways. The specific groups which are more vulnerable to show PTSD aftermath of any disasters are women, children, the elderly and the persons with disability.

What are the symptoms of trauma?

Children with PTSD may show the following symptoms:

- worry about dying at an early age
- losing interest in activities
- having physical symptoms such as headaches and stomach aches
- showing more sudden and extreme emotional reactions
- having problems falling or staying asleep
- showing irritability or angry outbursts
- having problems concentrating
- acting younger than their age (for example, clingy or whiny behaviour, thumb sucking)
- showing increased alertness to the environment
- repeating behaviour that reminds them of the trauma

What are the possible interventions?

The symptoms of PTSD may last from several months to many years. The best approach is prevention of the trauma. Once the trauma has occurred, however, early intervention is essential. Support from parents, school, and peers is important. Some of the reactions and age specific intervention that can be taken up for children showing PTSD are:

Table 32: Suggested Interventions for PTSD Children of 4-7 years

Reactions	Intervention
1. Inactive. Not able to follow daily routine, school refusal	1. Opportunity to rest, physical comfort, food and play.
2. Fear of being alone, of the dark.	2. Provide sense of security.
3. Not able to speak	3. Help to share feelings through play and drawing
4. Disturbed sleep	4. Encourage expression of dreams through drawing, play and talking
5. Clinging, bed wetting	5. Hold the child often to provide sense of security.

Table 33: Suggested Interventions for PTSD Children of 8-12 years

Reactions	Interventions
1. Confusion, disturbed by their emotions	1. Encourage talking and writing.
2. Disturbed sleep, nightmares	2. Expression of dreams. Provide information about dreams
3. Anger, aggressive behaviour	3. Help them recognize change in behaviour
4. Difficulty in concentration and learning	4. Encourage activities of interest – sports, art, writing, craft
5. Fear triggered by memories of the event	5. Hold the child to provide sense of security

Table 34: Suggested Interventions for PTSD Children of 13-18 years

Reactions	Interventions
1. Sense of vulnerability, fear of being labelled abnormal	1. Talking. Explain that feelings are normal reactions to an abnormal situations
2. Substance abuse, anti-social and sexual misbehaviour	2. Engage in activities of interest. Help to understand that behaviors are an effort to forget about their feelings.
3. Anger, frustration, aggression leading to fights with parents, teachers & friends	3. Help to ventilate by involving in community activities
4. Thoughts of revenge	4. Help to ventilate feelings through writing or talking. Encourage constructive activities

Chapter 17

Adaptation to Climate Change

A climate system has existed ever since the earth's formation. Climate refers to the average weather of a place, which the place experiences over a period of time. It is determined by factors such as rainfall, sunshine, wind, humidity, temperature etc. Over the last century, climate change has been taking place too rapidly which has become a matter of grave concern if left unabated. Human activities at large have contributed to the rapid change in the climatic conditions of a place.

Causes of climate change

The causes of climate change can be divided into two categories – those that are due to natural causes and those that are created by man. Some of the natural causes could be continental drift, volcanoes, ocean currents, the earth's tilt, and comets and meteorites and that of human's creation could be that of large-scale use of fossil fuels for industrial activities, increased emission of greenhouse gases, changes in land use pattern, deforestation, land clearing, agricultural practices, etc.

Impacts of climate change

Earth's changing climate is a matter of grave concern and threat to all. Over the last few years, the temperature of the world has risen. Some of the important aspects of our lives that had been affected through changes in weather patterns are:

a. Agriculture yield

The agricultural yield has been affected because of alterations in temperature and rainfall. The change in temperature has extended the length of the potential growing season, allowing earlier planting of crops, earlier maturation and harvesting, and the possibility of completing two or more cropping cycles during the same season. To adapt to the changing pattern more fertilizers and pesticides are used to counteract the demands and to take advantage of the potential for enhanced crop growth which comes at the cost of environmental risk and degradation.

b. Weather

An increase in the temperature changes the rainfall and snowfall patterns of a place which has resulted in the increase in the phenomena of droughts and floods. Rising temperature also results in the increased level of evaporation of surface water affecting the capacity of air to hold moisture which affects water resources, forests and other natural ecological systems.

c. Sea level rise

The heating of oceans, melting of glaciers and polar ice sheets has resulted in the raise of the average sea level by about half a meter over the last century. The sea-level rise has a number of physical impacts on the coastal areas, including loss of land due to inundation and erosion, increased flooding, and salt-water intrusion which adversely affect coastal agriculture, tourism, freshwater resources, fisheries and aquaculture.

d. Forests and wildlife

Habitat loss is the principal cause of the depletion of wildlife species. Animals and birds in the natural environment are very sensitive to changes in climate. Due to temperature rise, species that live in the higher alpine zones are forced to move higher up to find a suitable habitat and thus reducing the area in which they can live. Many migratory birds are forced to alter their way to the usual place of seasonal habitation as those places no longer provide the essential for survival due to change in climate.

e. Marine life

With the ocean water warming up in the tropics, the damage to coral reefs has increased. The corals are very sensitive to changes in water temperature, which causes bleaching. Zooplanktons, small organisms that float on the sea surface have declined in numbers which results in reducing the number of fish and sea birds that feed on these organisms.

f. Health impacts of climate change

Climate change has resulted to several direct and indirect impacts on health. Extremes of heat and cold can cause potentially fatal illnesses, e.g. heat stress/stroke or hypothermia, as well as increasing death rates from heart and respiratory diseases and the effects on mental health of living in an area that is vulnerable to the effects of climate change. In cities, stagnant weather conditions can trap warm air and air pollutants – leading to diseases transmitted through water, and via vectors such as mosquitoes.

Climate Change Adaptation

Some of the endeavours which we all can contribute to make a difference in adapting the climate change phenomena are:

- Use energy saving bulbs i.e., compact florescent lights (CFLs)
- Use energy efficient electronic and appliances
- Switch off all electrical equipments like TVs and computers when not in use
- Plant trees and stop deforestation
- Conserve water by judicious use
- Use both sides of paper while writing or printing
- Use biodegradable products
- Spread awareness on climate change phenomena to your friends and family
- Join a car pool or use public transport to commute
- Support organic farming and gardening methods; avoid chemical fertilizers, herbicides, and pesticides.
- Chemicals and household toxic products should not be discarded down the drain.
- Reduce, reuse and recycle
- Use green energy generated from renewable energy sources such as water , wind and the sun

Linking climate change adaptation and disaster risk reduction

The aim of climate change adaptation and disaster risk reduction is to reduce the vulnerabilities or its impact among communities. The impact of global climate change is evident with the increase risk of extreme events such as floods, droughts and cyclones. Changing climate conditions can also create new hazards. Tearfund and the Institute of Development Studies shows that climate change adaptation and disaster risk reduction communities require to work together to respond to these challenges. Climate change adaptation is an adjustment in natural or human systems in response to actual or expected climatic changes or their effects (Source: Tearfund Report, 2008). DRR is the development and application of policies and practices that minimize the risks of disasters and reduce people’s vulnerabilities. As adaptation and DRR have similar aims, there are also important differences; DRR includes non-climatic disasters such

as earthquakes and adaptation addresses the longer-term impacts of climatic change, such as the loss of biodiversity.

Chapter 18

Disasters and persons with disability (PWDs)

Disasters do not discriminate. They affect minorities and majorities; people without and people with disabilities; young and old; men and women. The persons with disabilities are left at the periphery when it comes to disaster planning and mitigation activities. However, it has been observed in many disaster situations that they need specific support to complement their work due to the challenges they face in moving, hearing, seeing, communicating or learning. Moreover, disasters impact persons with existing disabilities and injuries sustained can create a new generation of persons with disabilities. Therefore, the needs of people with disabilities have to be incorporated in all the policies and programmes throughout the disaster management cycle.

Preparedness phase

The preparedness level of a community for an emergency plays a crucial part to minimize the impact of a disaster. In-depth planning which is inclusive as well as that bring the vulnerable population at the forefront should be chalked out at the preparedness and planning level. Some of the factors that have to be incorporated while planning for people with disabilities are:

- Preparedness training in the accessible format for e.g in Braille, audio versions, large print, use of sign language interpreters, plain language, etc.
- Delivering of trainings in facilities that are physically accessible.
- Proper data bases/lists of people with disabilities
- Warning system to be installed in a variety of mediums for access for people with different kinds of disabilities
- Conduct school access audit (see access audit checklist annexed)
- Prepare evacuation plan to safely and quickly evacuate people with disabilities.
- Ensure disability is a cross cutting theme mainstreamed throughout all activities

Warning dissemination for people with disabilities

Disaster warning dissemination should be provided in the medium, which is specific to the type of disability by using multi-modal warning system. The specific warning systems that should be deployed for specific types of impairment are listed below:

Table 35: Appropriate Warning System for people with disabilities	
Types of Impairment	Warning system
Visual Impairment	Auditory signal system/alarms
Hearing Impairment	Visual signal system-red flag, symbols
Intellectual Impairment	Special signals-red flags, symbols Clear and brief announcement by rescue workers
Physical impairment	Auditory signals system/alarms Announcements

Disaster response for the PWDs

Immediately following a disaster, priority response should include addressing the needs of adults and children with disabilities and measures to limit newly sustained injuries due to the disaster becoming disabilities through safe and effective evacuation, first aid and search and rescue procedures. Some of the points to be considered are:

- Try to re-unite the people with disabilities with their care-givers if possible
- Try to avoid separating people with disabilities from assistive devices they require for mobility and/or communication
- Ensure sufficient lightning or install handrails or cover pot holes to minimize the risks for people with disabilities
- Responding to the specific needs of persons with existing disabilities such as spectacles for people with low vision.
- Transferring people with severe injuries and/or newly acquired disabilities to referral services for medical, physical and functional rehabilitation and provision of assistive devices.
- Attention during evacuation and first aid to avoid causing injury to become a disability eg moving a person with a suspected spinal cord injury before immobilising them

Rehabilitation phase

The process should aimed at enabling people with disabilities to reach and maintain their optimal physical, sensory, intellectual, psychological and /or social functioning levels, thus providing them with tools to change their lives towards a higher level of independence. Some of the steps that can be taken during this phase are:

- Vocational training for people who had become disabled after a disaster
- Occupational therapies to help people with disabilities learn new ways to complete daily activities (dressing, eating etc) after a disaster
- Measures to be taken by organizations to prevent disability by providing adequate nutritional food, medical aids etc.
- Provide training on using assistive devices such as crutch, walking stick, etc for people who had become disabled.
- Provide psychosocial assistance
- Making linkages with Disabled People's Organisations for support
- Modification and adaptation to ensure a person is able to return to the previous job if they acquire disability

Accessible infrastructure

During planning and design of new infrastructure and modification of existing infrastructure ensure access for all in accord with international and national legislation and policies. Seek technical assistance from an organisation who specialise in disability and accessibility. As planning policy adopt the principle of 'unbroken chain of movement' to enable people to:

- reach – moving around the community to get to the service you wish to use from your home; affected by pathways, linking pathways, slopes, transport systems, signage

- enter – being able to get inside the building you wish to use; affected by steps, ramps, handrails, door width, door handles, tactile floor surface
- circulate – being able to move about inside the building; affected by corridors, thresholds, door widths, resting places, tactile floor surfaces, signage and dimensions (eg you need a minimum internal space of 1500mm x 1500mm to enable a person using a wheelchair to turn and maneuver)
- use – being able to use the services and facilities; affected by dimensions and design of internal furniture and communication eg height of tap, type of tap, signage

Everyone needs and has the right to access to schools, playgrounds, health centres, shops, vocational training centres, places of work, their neighbors homes, toilets, bathing cubicles, water points and tube wells. One missing link within this chain ie if you are not able to either reach, enter, circulate or use means that accessibility has no meaningful impact on people's lives, ie, if a child with a disability is able to reach, enter and circulate within her school but is not able to use the toilet it will remain very difficult for her to attend school on an equal basis with her peers.

Chapter 19

Education in Emergencies

Disasters are often framed from the emergency management perspective in which academic continuity becomes a minor concern. Campus safety and students' security come to the forefront of the people's mind every time there is a new or tragic incident. Academic continuity of the students takes a back seat aftermath of any disaster for a number of reasons: Nonetheless, the continuity of learning in a crisis situation caused by a natural disaster, human-induced (man-made) disaster, or other precipitating factor should be taken as of prime importance despite the disruption caused by the crisis.

Academic continuity is vitally important because it focuses on maintaining the core function of education: providing students with the opportunity to learn. In the aftermath of any emergency schools and school systems are devastated both physically and in terms of human resources. Recognizing the educational vacuum created by disasters it is very important to rebuild and rehabilitate formal schools for returnees and internally displaced children as a way of maintaining and/or restoring at least some normalcy to students' lives. The following issues may be kept in view while planning for continuity of education during emergencies.

- Easily installable black boards and tents for running classes on open and accessible spaces.
- Ensure accessible water and sanitation facilities close to the area selected for running classes
- Back up plans for stationeries and books.
- Improved teacher education for improving the quality and quantity of teachers especially women teachers by rehabilitation and development of regional teacher training institute aftermath of any disaster.
- Non-formal education for youth and adult learners.
- Vocational skills programs and provision of appropriate low-cost technologies to support non-formal education programs.
- Faculty trained to teach online, in emergency
- Student instructions for accessing online course
- Academic continuity to be integrated with the larger goal of institutional resilience.

Chapter 20

School to Community Safety

When a disaster strikes, it affects all the vulnerable areas at the same time – be it a school, hospital, or the community. Therefore, it would be wiser to use all available resources for the benefit of everyone. School safety activities can be extended to the neighbouring community for providing disaster awareness to the community. This can be achieved in many ways. Some of the possible activities are listed below:

- The school safety activities can be a source of inspiration to the community in many ways.
- Students, when given disaster awareness and risk education, can be used to carry the safety messages to their parents.
- Students may be given the “*Family disaster preparedness checklist*” to be filled in collaboration with their parents and siblings.
- Students may be asked to do projects on disaster safety with parents’ contribution.
- The day of Parent-Teacher meeting can be used for providing risk education to the parents.
- Students may be trained and engaged in carrying out “town watching” exercise – to identify hazards and vulnerabilities of their neighbourhood. In doing this exercise, the people of the community can also be involved. This will help to widen the understanding of the children; at the same time, the people will have a better idea of what the children do and they may also get interested in knowing about their surrounding and environment.
- Involve community leaders and Disabled People’s Organisations as members of the School Disaster Management Committee and in developing the school disaster management plan. Resources available in the community as well as those available in the school may be considered in making the school disaster management plan.
- The approach used for developing the school disaster management plan can be extended to formulate the disaster management plan for the community.
- School can be used as an accessible information hub for disaster management for the community.
- School can be used as an accessible information hub for disability issues for the community.
- Any awareness raising activity such as drawing competitions, exhibitions, drama, puppet shows, lectures, etc., organised for the school children can be used for providing disaster awareness to the community as well.
- Any awareness raising activity such as drawing competitions, exhibitions, drama, puppet shows, lectures, etc., organised for the school children can be used for providing disability awareness to the community as well.
- Various skills of student task forces can be demonstrated for the community members. Similar task forces for the community can be formed and trainings organised.
- The community may be invited to witness the mock drill exercises organised for school children. Similar community mock drills can be organised.
- In addition to the people of the community, local youth groups, CBOs, NGOs, Disabled Peoples Organisations, government officials, community leaders, etc., can be involved in the abovementioned activities.

Chapter 21

School Safety Audit

School safety is the responsibility of many stakeholders – government, school management, teachers, students, parents, and the community. The disaster preparedness level of a school can be identified by conducting a school safety audit. An audit can provide the status of safety of a school and identify the areas that need improvement.

What are the objectives of School Safety Audit?

The goal of the School Safety Audit is to promote school safety and school safety awareness by assessing current levels of understanding and preparedness, identifying needs and disseminating research findings. The objectives of the audit are to:

- Assess structural safety
- Assess non-structural safety
- Assess access for all
- Assess the level of understanding and knowledge of school staff regarding disaster mitigation and school safety
- Assess the level of student awareness and involvement
- Assess the mitigation measures taken by schools and outside agencies for promoting school safety and disaster risk reduction.

How to conduct school safety audit?

- The school safety audit will be performed using various tools such as physical inspection, questionnaire, focus group discussions, meetings, interviews and review of text books and other awareness raising materials.
- Safety of school buildings can be assessed by first carrying out a rapid visual survey of the buildings. If the survey indicates that further structural analysis is needed, the same will have to be carried out by a qualified and competent structural engineer. If structural strengthening or retrofitting is recommended, then the same can be taken up by the school management.
- Non-structural safety can be measured by visual inspection of each room and corridor in the school premises. In addition to classrooms, offices, staffrooms, library, science laboratories as well as computer rooms should be inspected. All objects that have the potential of falling and blocking should be identified. Number of exits, width of corridor, direction of door opening, etc., should also be noted. Also, all non-structural mitigation measures taken by the school needs to be identified.
- Access can be measured via an access audit
- Through questionnaire survey, meetings and interviews, the disaster management and school safety knowledge level and understanding of the teachers and administrative staff can be ascertained.
- The existence of a School Disaster Management Committee and School Disaster Management Plan will show the commitment of the school authorities towards school safety.
- Capacity of the school in dealing with disasters can be measured from the preparedness plan, equipment and tools needed for disaster safety, existence of various task forces, periodic training

of task forces on various life saving skills, periodic mock drills conducted for practice, activities taken up for continued risk education of children, and school curriculum.

Annex:
Dummy Disaster Management Plan for School

This is a generic format of School Disaster Management Plan developed for Bangladesh. This needs to be suitably adapted depending on the conditions prevailing in the school.

Certification

This Disaster Management Plan was prepared by the School Disaster Management Committee. A workshop was held for this purpose on..... The members of the School Disaster Management Committee participated in the plan formulation and received guidance from Islamic Relief Worldwide/Plan Bangladesh team for preparing this School Safety and Preparedness Plan. This plan should be revised on quarterly basis to ensure the progress of the school safety plan by the school disaster management committee (SDMC) and wherever necessary action can be taken accordingly. School can also use the annual calendar to decide particular time and date for the revision of the plan. The plan has been revised on the dates as mentioned below.

The plan has been revised on the dates as mentioned below.

Remarks	Date	Signature of Principal
First prepared on		
Revised on		
Revised on		
Revised on		
Revised on		
Revised on		
Revised on		

Geographic location

The.....School is located in This school was established in the year of

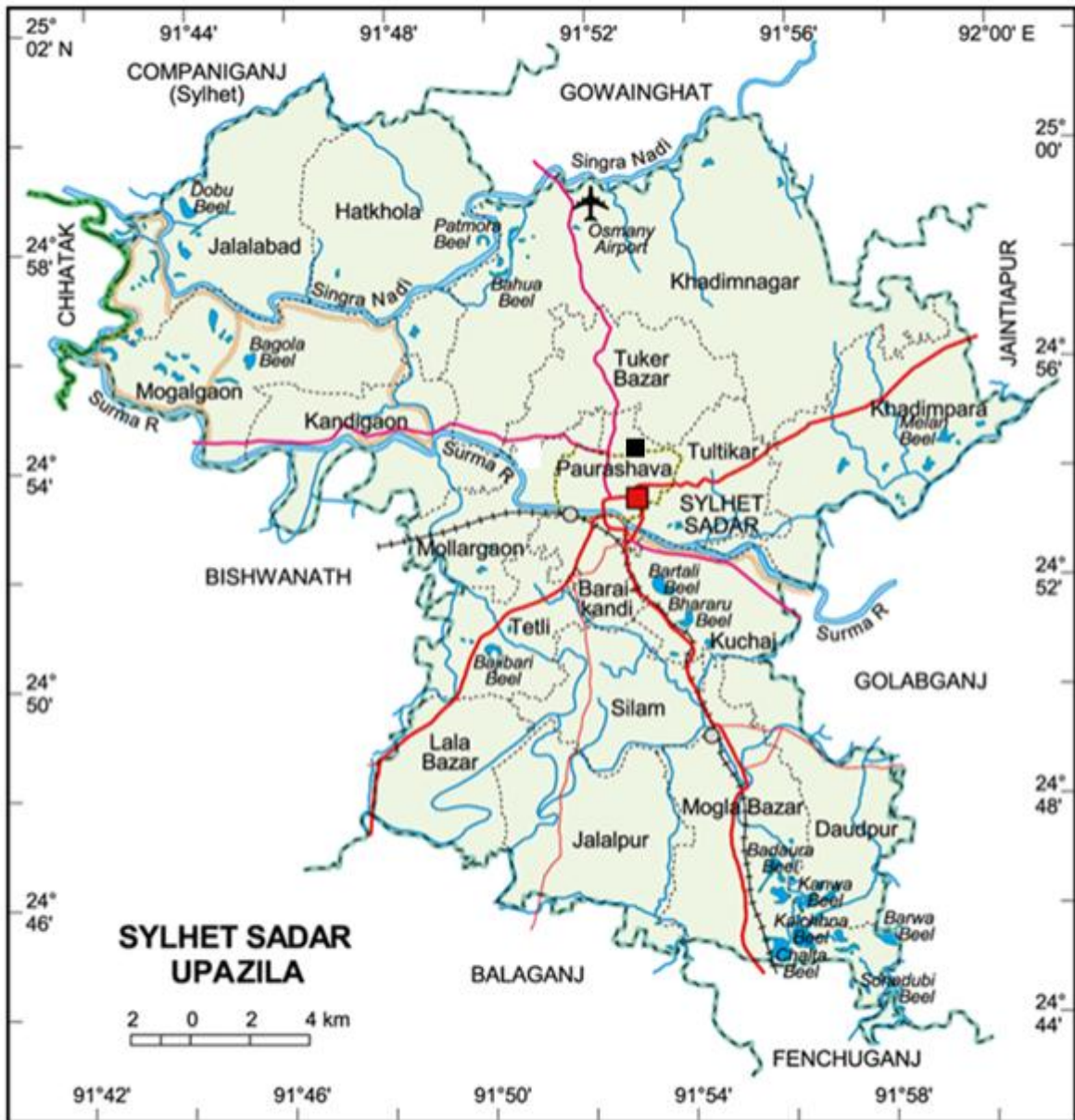


Figure1:

The shown graphic is the layout of the school:

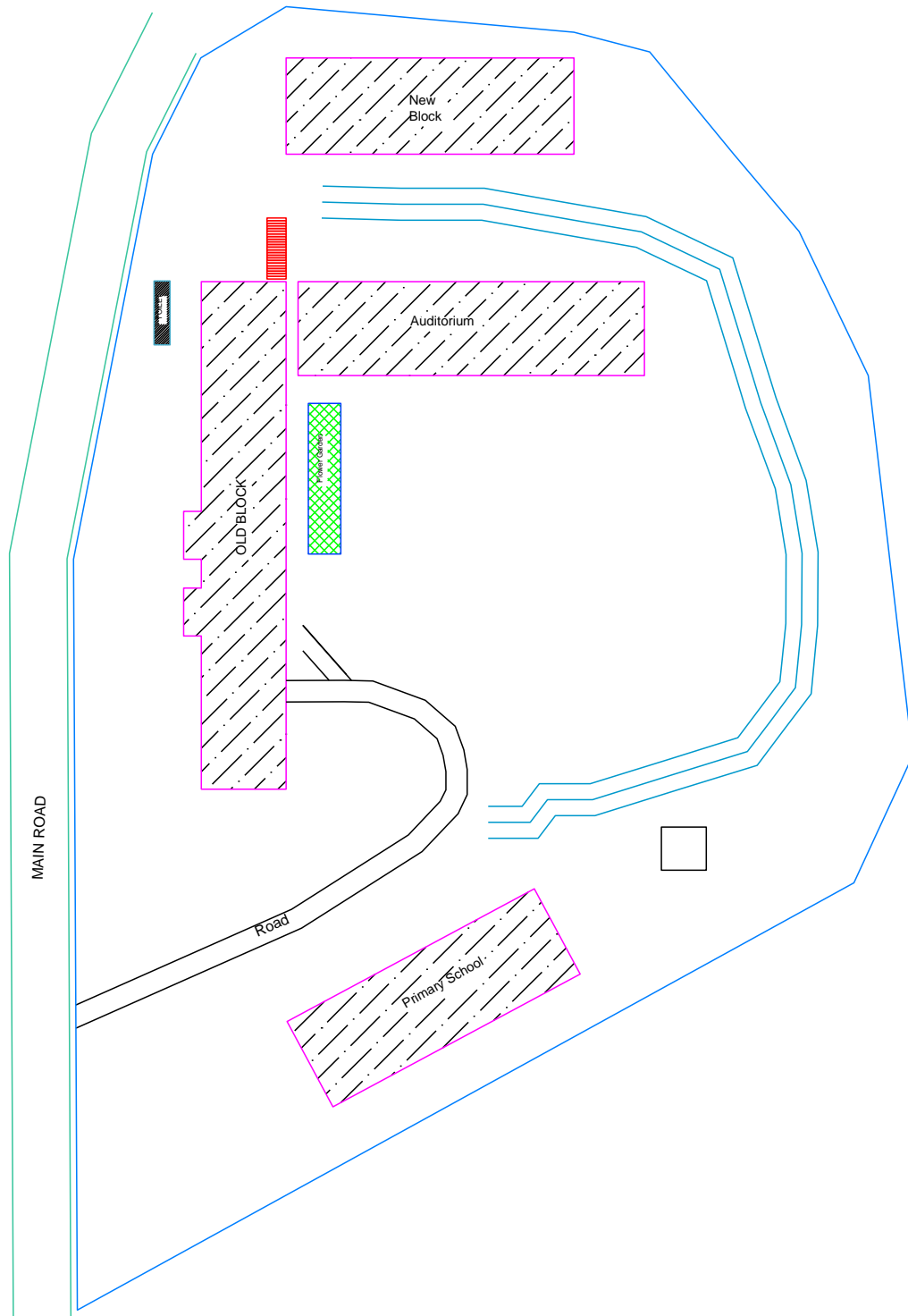
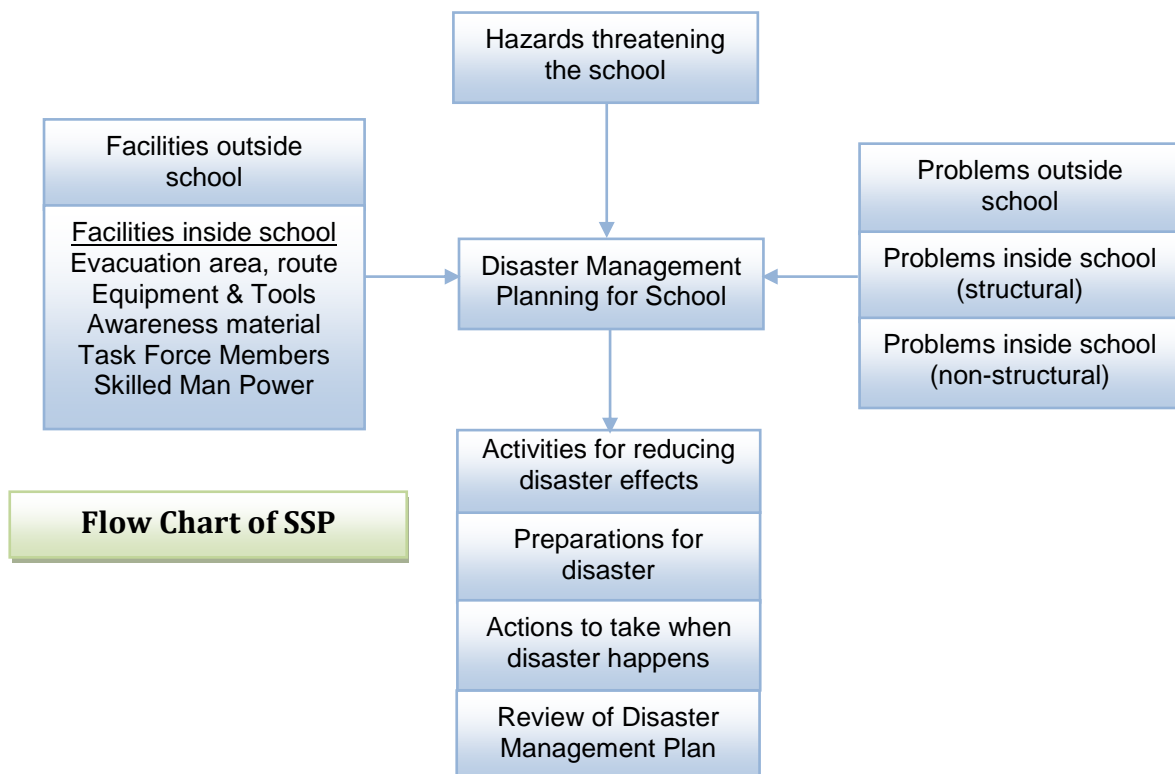


Figure2:

School Disaster Management Planning Initiatives

Under the DIPECHO-V, school safety and preparedness has been targeted by building the capacity of the teachers, students and management committees as well. Under this, a school safety manual for teachers has been developed through the consultation process and later on teachers of the pilot schools have been trained on School Disaster Management Planning and implementation. Subsequently, teachers, students and management committee have taken responsibility to mobilize the schools on disaster management to reduce the potential risks threatening in and around the school. To start with the School Disaster Management planning process, following are the key steps that were followed in developing the plan:

Step	Explanation
1	Seek Permission from Education Authority and School Management Committee (SMC)
2	Secondary information collection
3	Prepare Checklist for necessary items to be used in SSP
4	Orientation to teachers, students and management committee on SSP
5	Develop School Annual Calendar incorporating SSP
6	Formation of School Disaster Management Committee (SDMC)
7	Identification of Hazards
8	Develop Risk and facilities Map
9	Identification of Structural and Non-structural problems within and outside the school
10	Develop Evacuation Map
11	Task Force Formation
12	Resource Mobilization- identification of local and improvise methods and tools
13	Develop Awareness Material
14	Conduct Mock Drill
15	Revise the School Safety and Preparedness Plan



STEP 1: Seek Permission from Education Authority and School Management Committee (SMC)

STEP 2: Secondary information collection

Before conducting the planning process it is important to collect the necessary secondary information. This helps facilitating the planning process in an effective manner. Following were the detail information collected by the school teachers.

Name of school					
Name of Principal					
Contact details					
Address					
Type of school					
Morning shift			Afternoon Shift		
School time					
Total Students:					
Teaching Staff:					
Management Staff:					
Class & section	No. of Boys	No. of Girls	No. of students with disability	Types of disability	
	-				
	-				
	-				
	-				
	-				
	-				
	-				
	-				
	-				
	-				

Note: This data should be verified carefully and if there is persons with disabilities should be identified with the type of disabilities.

STEP 3: Prepare Checklist for necessary items to be used in SSP

To conduct the school safety and preparedness plan, following are the necessary items that will be required:

Item	Detail	Unit
1	WHITE FLIP CHARTS	2 bundle
2	White board marker-different colours	2 Packets
3	Flip Chart Stand	1
4	Transparent Tape	3

5	Bamboo	2
6	First Aid Box	1
7	Rope	1
8.	Used Blanket	
9	Triangle Bandage	2
10	Multi-media (optional)with sound box	
11	Sketch pen	3 sets

STEP 4: Orientation to teachers, students and management committee on SSP

Under this step, it is necessary to first orient the teachers, student and other management staffs about School Safety and Preparedness. Teachers should clearly explained that WHY WE NEED SSP? In the school teachers have listed out why they need to develop the school safety and preparedness plan which are as follows:

- I. To reduce the risk of potential threats on school.
- II. to work systematically on school disaster management plan

Further teachers also explained to the student and management committee on “**what are the objectives of the SSP**”, which are mentioned below:

- A. To make the school secure against disasters by risk reduction.
- B. To train and build awareness among students, teachers, staffs, management and parents about disasters.
- C. To plan and implement disaster reduction activities in the school.
- D. To effectively prepare and respond to disasters.
- E. To coordinate with local government offices, emergency services, community and community based organisations for support.
- F. To empower students, teachers, school management and community through schools.

STEP 5: Develop School Annual Calendar incorporating SSP

The purpose of developing school annual calendar is to identify the possible number of days where school safety and preparedness related activities can be incorporated. This will provide the better idea to the school on availability of their teachers and students if activities are to be planned such as mock drill or revision of school safety plan. Teacher ofhas developed their annual calendar in line with the government circular by incorporating the school safety and preparedness activities.



STEP 6: Formation of School Disaster Management Committee (SDMC)

The formulation of school disaster management committee was discussed with schools whether it requires to have this committee or not. As school is already having management committee so it is necessary to discuss about the SDMC requirements and how this committee will make difference? The school discussed that there are very few representation in the existing management committee; only two teachers are the member. Teachers during the discussion on SDMC felt that there is need to have more representation and formation of SDMC would be appropriate in this case as many of the SMC members are outside the school. In this case it will be difficult to mobilize SMC if any disastrous event occurs in the school. During the discussion it was also highlighted that SMC should be a part of SDMC. Following is the exhaustive list of the SDMC:

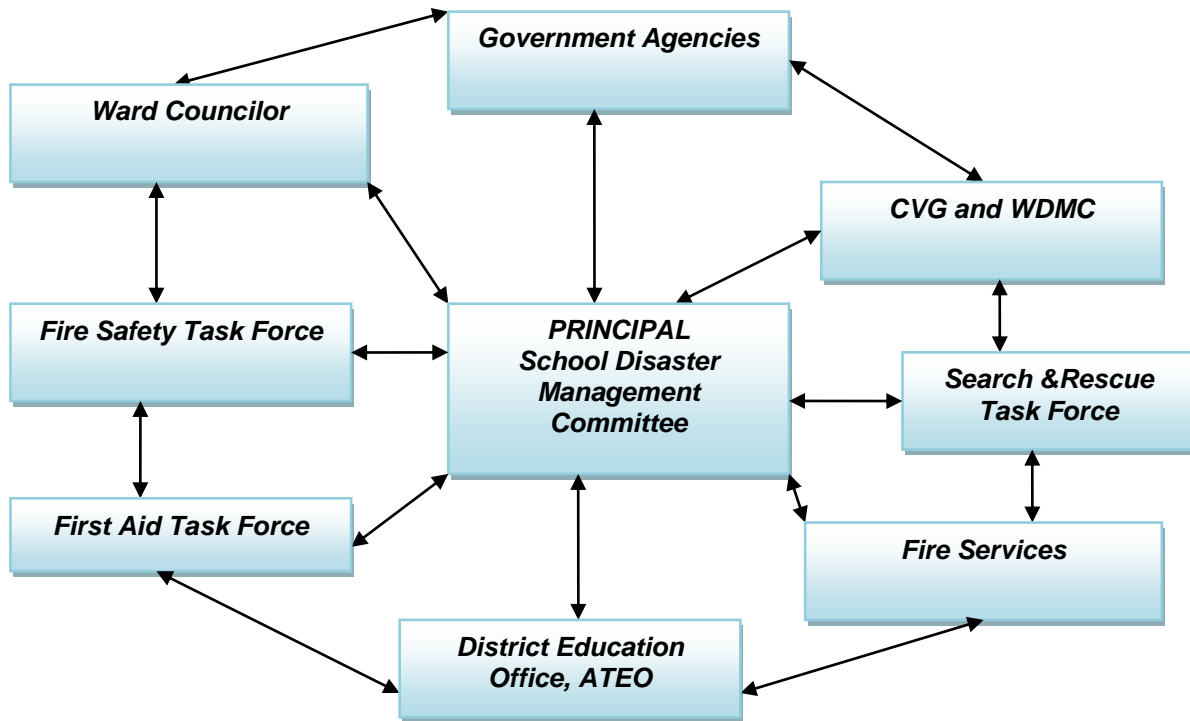
S.N.	Name	Designation & organisation	Contact Details
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Roles and Responsibilities of SDMC:

- A. Draft the School Disaster Management Plan
- B. Review and update the disaster management plan annually
- C. Review budget and obtain funds for implementing the Plan
- D. Guide and monitor activities for reducing disaster effects
- E. Guide and monitor action to be taken to remove or reduce problems outside school
- F. Guide and monitor action to be taken to remove or reduce structural problems inside school
- G. Guide and monitor action to be taken to remove or reduce non-structural problems inside school
- H. Guide and monitor checking of equipment and tools needed and buying for additional needs.

- I. Guide and monitor acquiring necessary awareness materials
- J. Guide and monitor awareness activities including training of task forces and conducting mock drills
- K. Review details of disaster and response

School Disaster Management System



The school disaster management system can be seen as above which includes the task force teams, district education office, fire services, community volunteer group (CVG)/Students Club, ward disaster management committee (WDMC) and ward councillor.

STEP 7: Identification of Hazards

In identifying the hazards which are potential threat to school, it is essential to orient the teachers and students about WHAT IS HAZARD and HOW IT BECOMES TO DISASTER? Here an orientation was given to teachers, students and management committee on hazards and then identification was done. Level of threat is also one of the major aspects during the identification of hazards. Level of threat is based on possible damage to the property and potential loss of lives. Both natural and human made hazards were counted which potential risks for the school are as mentioned below:

Type of Hazards	Level of threat	Past experience
	Natural	
	Human-made	

Type of Problem outside school	Description of problem	Action to be taken to remove or reduce problem	Date by which action will be taken	Responsible person

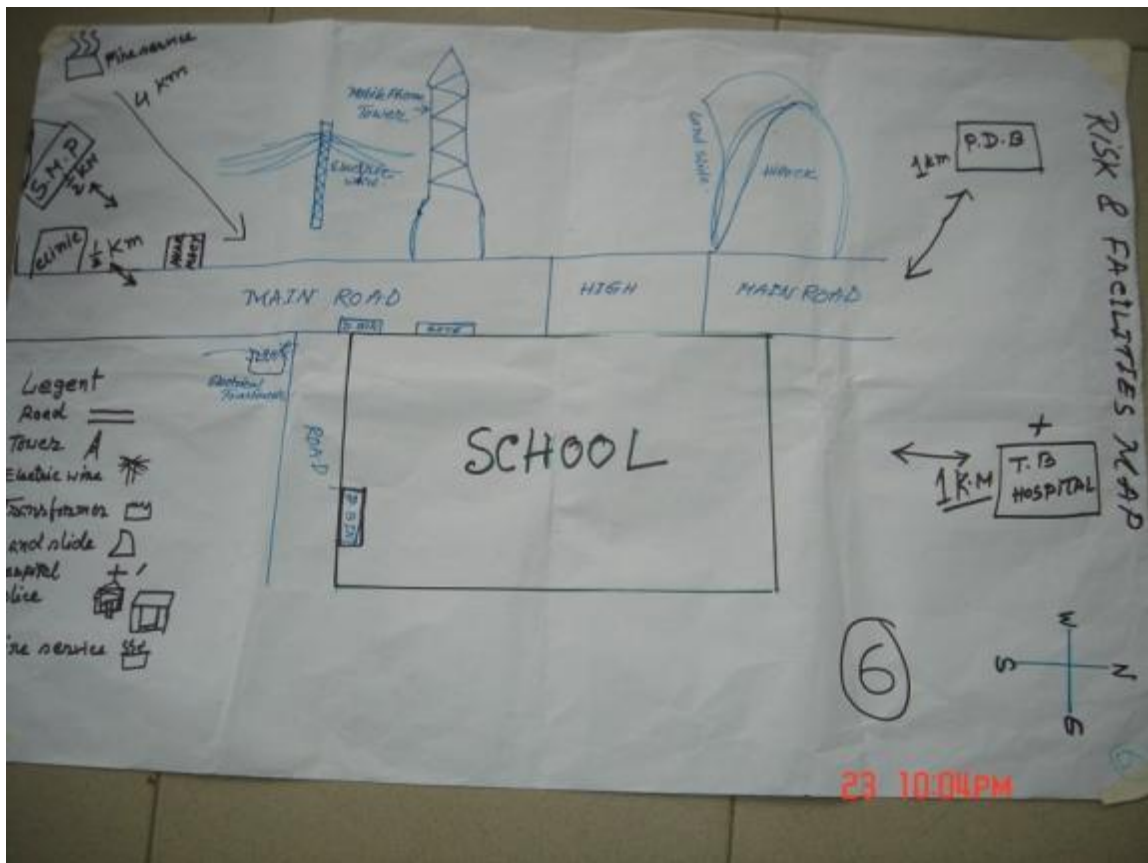
Follow-up activities based on the above problems and solution identified:

Types of Problem	Description of the problem	Action to be taken	Activities	Update

Schools Internal and External Environment



Source: School Safety and Preparedness Plan Formulation



Risk and Facilities Map Developed

Facilities outside school

The following facilities (resources) exist in the neighbourhood outside the school. A facility map has been prepared that shows the various facilities existing outside the school and their relative location with respect to the school (see Risk and Facilities map). This facility map will be displayed in the school to understand the existing facilities in the neighbourhood.

Facility	Distance	Contact Name	Telephone	Details
Fire Service Office				
PDB				
Clinic				
Pharmacy				

STEP 9: Identification of Structural and Non-structural problems within and outside the school

Problems inside school – Structural problems & Solution

The following structural problems (structural vulnerabilities) exist within the school. These structural problems were identified by inspecting all buildings, classrooms, laboratories, roads, etc. Technical help has been taken to finalise the information. Actions to be taken to remove or reduce the problem have also been listed, along with name of responsible person, and when the action will be taken.

Location of structural problem	Description of problem	Action to be taken to remove or reduce problem	Date by which action will be taken	Responsible person

Source: School Safety and Preparedness Formulation

Follow-up activities based on the above discussed plan

Location of the problem	Description of the problem	How to do it?	update
		1.	

Problems inside school – Non-Structural problems & Solution

The following non-structural problems (non-structural vulnerabilities) exist within the school. These non-structural problems were identified by inspecting all buildings, classrooms, laboratories, etc. Actions to be taken to remove or reduce the problem have also been listed, along with name of responsible person, and when the action will be taken.

Location of non-structural problem	Description of problem	Action to be taken to remove or reduce problem	Date by which action will be taken	Responsible person

Follow-up activities based on the above problems and solution identified

Location of the problem	Description of the problem	Action to be taken	How to do it?	Update

STEP 10: Develop Evacuation Map

School emergency evacuation is the immediate and rapid movement of school community away from the threat or actual occurrence of a hazard. An evacuation plan shows safest and shortest exit routes from each room of the school building. The plan should also indicate the location of resources in the premises such as first aid kit, fire fighting equipment, search & rescue equipment, etc. which can be used during an emergency. During this activity school discussed about the “NEED OF EVACUATION PLAN” which is as follows:

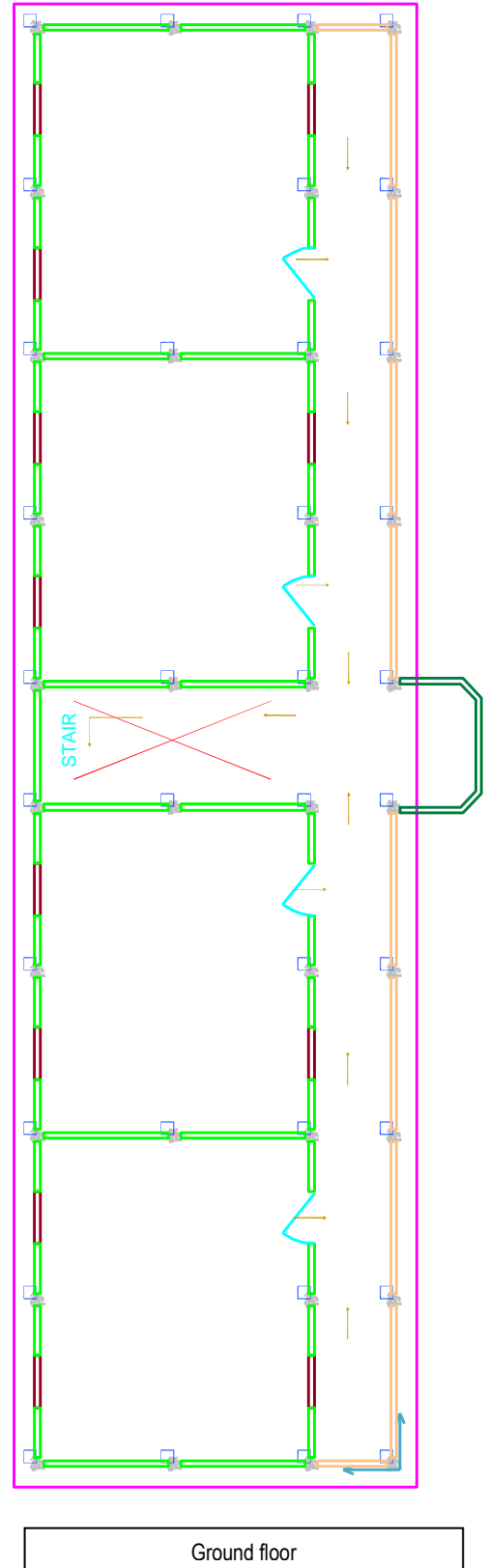
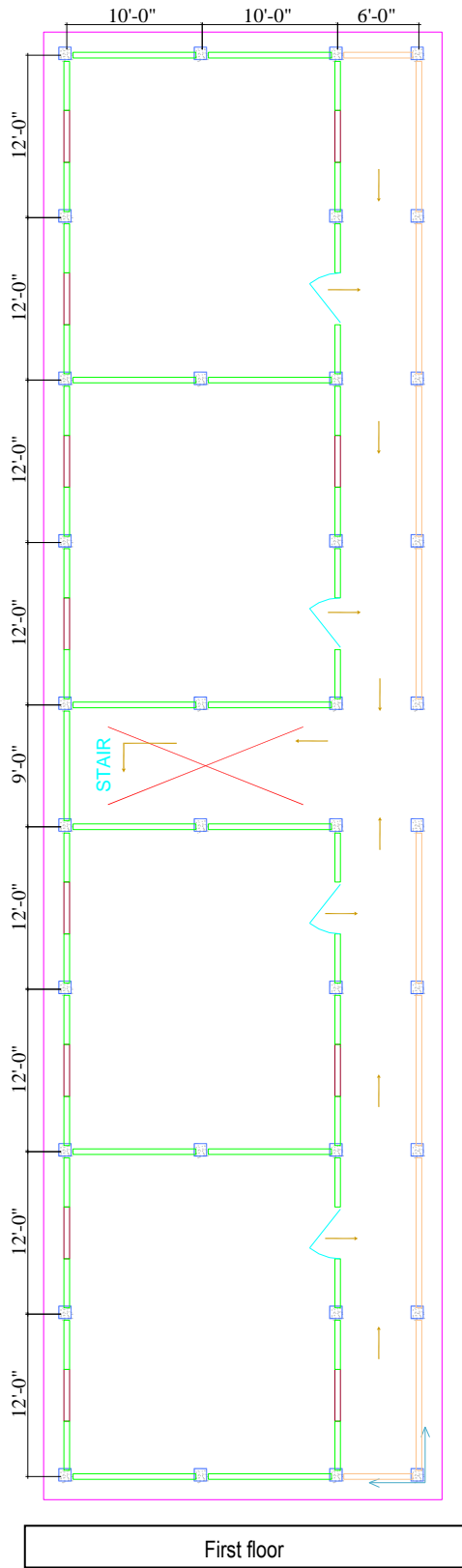
- To ensure the safest and most efficient evacuation time of all the occupants of the school.
- To provide orderly evacuation of the occupants of the school at the time of emergency.
- To map safe and accessible escape routes from the school building to the designated identified safe and accessible location.

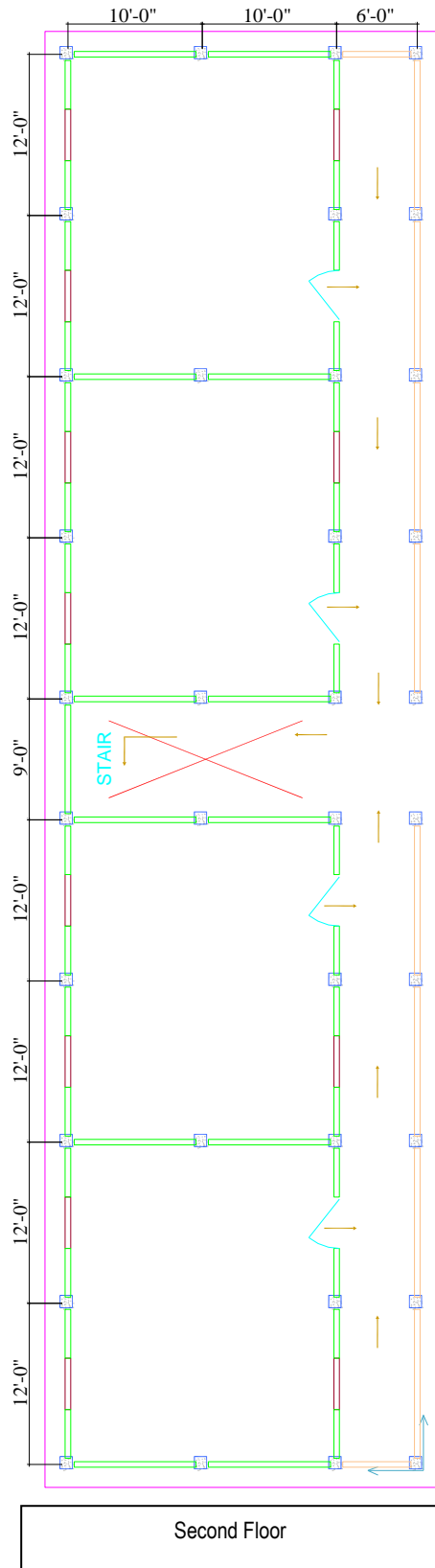
- To prevent from chaos and stampede at the time of an emergency
- To design evacuation plans and equipment considering equal access and benefit for adults and children with disabilities.
- To identify children who may required additional support and plan to provide it

Safe Spots for Various Hazards	
Hazards	Safe spots
Earthquake	Open ground
Cyclone (Kalvaishakh)	Sturdy part of the building / cyclone shelters
Fire	Open ground
Floods	Upper floor of the school or elevated ground
Landslide	Open ground which is away from the slide areas

Evacuation Area and Evacuation Route

Possible areas for evacuation of students in the event of a disaster have been identified as shown in the evacuation map below.





Source: School Safety and Preparedness Plan formulation

The thumb rule for this evacuation is the class close to the exit will be evacuated first and then it will be followed subsequently.



STEP 11: Task force formation

School Disaster Management Committee (SDMC) is responsible in executing the school safety and preparedness plan. The SDMC will also be involved in mobilizing the resources internally and externally from various sources. In this case, task forces such as fire safety search and rescue and first aid becomes very important element of the school safety and preparedness plan. The purpose of task forces is to share the set of preparedness measures against day to day potential threats in and around school. These forces will be an agent to mobilize school on school safety and preparedness. Whether it is primary or high school at least three task forces are required to be formed (fire safety, search and rescue and first aid). In case of high school there can be several task forces depending upon the strength of students and teachers. In all the task forces teachers should lead and student can be a part of it. In primary school, it is recommended to involve students only to create awareness among them but high school students can share the responsibilities of task forces.

Search & Rescue Task Force Members

Member	Name, Class & Address	Phone No./Class-Roll

Roles and responsibilities of Search & Rescue Task Force

Teachers	Students
Before disaster	Before disaster
<ul style="list-style-type: none"> ➤ Maintenance of the search and rescue equipments ➤ Participation in revision of school safety plan and mock drill. ➤ Coordinate with other two task force teams and brief about the availability of the equipments and its condition. 	<ul style="list-style-type: none"> ➤ Ensure the resources needed for the search and rescue is in place. ➤ Participation in revision of school safety plan and mock drill. ➤ Discuss with other students about search and rescue as an orientation on routine basis.
During disaster	During disaster
<ul style="list-style-type: none"> ➤ Depending on the type of disaster do the necessary action for e.g “Duck, cover and hold” for earthquake, move to the upper floor /higher ground for flood etc. 	<ul style="list-style-type: none"> ➤ Ensure that all the student do follow the instruction given by the teacher
After disaster	After disaster
<ul style="list-style-type: none"> ➤ Coordinate with first aid and fire safety teams to discuss on sight situation. ➤ Start search & rescue operation in orderly manner as practised in the drills to locate missing students ➤ Use Triage method of putting different color of tags to the injured students or teachers (red-for severely injured, yellow- minor injury All members of the task force to assemble at a pre-identified location ➤ Check every room in the school buildings if there is no structural damage and rescue the injured ➤ In case of structurally damaged building, call for outside rescue team. Locate the missing persons without going inside the building, by hailing search method ➤ Report the location of injured to the outside rescue team and assist them in rescue ➤ Inform First Aid Task Force ➤ Look for obvious structural damages, mark dangerous areas and inform the Principal 	<ul style="list-style-type: none"> ➤ Assist teachers in doing count head ➤ Assist teachers in organizing the search and rescue equipments.

First Aid Task Force Members

Member	Name, Class & Address	Phone No.

Roles and responsibilities of First Aid Task Force

Teachers	Students
<p>Before disaster</p> <ul style="list-style-type: none"> ➤ Make sure needed materials are available and accessible ➤ Check the expiry dates of medicines ➤ Make sure task force members are up-to-date with their training 	<p>Before disaster</p> <ul style="list-style-type: none"> ➤ Discuss the First Aid Kit with every including persons with disabilities students in the class on routine basis. ➤ Demonstrate the usage of FIRST Aid kit to the all the students
<p>During disaster</p> <ul style="list-style-type: none"> ➤ Depending on the type of disaster do the necessary action for e.g “Duck, cover and hold” for earthquake; move to the upper floor /higher ground for flood etc. 	<p>During disaster</p> <ul style="list-style-type: none"> ➤ Ensure that all the student do follow the instruction given by the teacher
<p>After disaster</p> <ul style="list-style-type: none"> ➤ All members of the task force to assemble at a pre-identified location ➤ Collect the equipment and materials needed by the task force ➤ Administer first aid to the rescued persons, tag the patients and record all cases and treatments ➤ Determine the need for further medical assistance and coordinate requests for assistance through the Principal 	<p>After disaster</p> <ul style="list-style-type: none"> ➤ Assist teachers in providing the first aid treatment and transporting the severely injured patients to hospital

Fire Safety Task Force Members

Member	Name, Class & Address	Phone No./Class-Roll

Roles and Responsibilities of Fire Safety Task Force

Teachers	Students
Before disaster	Before disaster
<ul style="list-style-type: none"> – Make sure needed materials are available, accessible and in working condition – Make sure task force members are up-to-date with their training 	<ul style="list-style-type: none"> – Discuss about Fire safety with all students on routine basis – Routine check up on the availability of the fire safety equipments including sand bags or buckets and accessible place
During disaster	During disaster
<ul style="list-style-type: none"> – Depending on the type of disaster do the necessary action for e.g “Duck, cover and hold” for earthquake; move to the upper floor /higher ground for flood etc. Drop, cover and role if a person catches fire 	<ul style="list-style-type: none"> – Ensure that all the student do follow the instruction given by the teacher
After disaster	After disaster
<ul style="list-style-type: none"> – All members of the task force to assemble at a pre-identified location – Collect the equipment and materials needed by the task force – Check and confirm the existence of fire. Report to the Principal. – In case of electrical fire, turn off electric main switches – Control fire if possible. Ensure personal security. – Look for conditions that may cause a fire to develop and seek maintenance staff assistance in removal of the condition. 	<ul style="list-style-type: none"> – Assist teachers in providing the first aid treatment and transporting the severely injured patients to hospital

STEP 12: Resource Mobilization

Identification of resources to prepare against any disastrous event is extremely important in case of schools. Normally schools whether primary or higher secondary have little priority to keep at least bare minimum equipments to deal with any event including injury or fire accident. It is necessary to promote improvise methods and technique in schools to handle or deal with disaster situation. The basis of resource mobilization is to create awareness among students through teachers that locally available materials can be accessible and effective if cost is the concern for school. The following materials are available in the school for use in managing disaster situations.

Equipment	Quantity available	Location	Condition	Additional quantity to buy	Date to buy or repair	Person In-charge
Communication						
-						
TV						
Radio						
PA System						
Megaphone						

Equipment	Quantity available	Location	Condition	Additional quantity to buy	Date to buy or repair	Person In-charge
First Aid						
-						
First Aid Kit						
Medicines						
Stretcher						
Fire Safety						
-						
Fire Extinguisher						
Sand buckets						
<u>Search & Rescue</u>						
Ladder						
Rope						
Torch						

Source: School Safety and Preparedness Plan Formulation

Note: the resource mobilization part should be checked with the SDMC and SMC on what basis the equipment will be accessed to ensure that safety and preparedness does move forward. As many of the schools will identify resources, it is equally important to highlight the importance of the equipment in to the particular hazard situation.

STEP 13- Develop Awareness material

During the school safety and preparedness planning, discussion was made on what kind of awareness material should be developed? In response to this both teachers and students mentioned following items:

Type of awareness material	Quantity available	Location	Additional quantity needed	How to arrange	By what date	Person In-charge

Awareness activities & training

The following activities for awareness raising and training will be taken up by the school during the year.

Activity to be undertaken	By what date	Activity Completed? Yes / No	Person In-charge

STEP 14- Mock Drill

.....school has decided to test the school safety and preparedness plan through conducting mock drill in the month..... ..

STEP 15- Review of Disaster Management Plan

The School Disaster Management Plan will be reviewed after conducting the mock drill and this should be continued every year as well. The following sections of the plan will be reviewed.

Section reviewed	Date of review
Basic details of school	
School Disaster Management Committee	
Class-wise details of students	
Hazards threatening the school	
Problems outside school, Risk Map & Solution	
Problems inside school – structural & Solution	
Problems inside school – non-structural & Solution	
Physical facilities outside school & Facilities Map	
Evacuation Map	
Equipments and tools	
Awareness materials	
Awareness activities and training	
Search & Rescue task Force Members	
First Aid Task Force Members	
Fire Safety Task Force Members	