Disaster Risk Management Training Manual

Disaster Network of Assistance-Rotary Action Group

(DNA-RAG)

Prepared, Concept and Intellectual Property of Rtn. Samir Nepal – Member, DNA-RAG

Contents

1. DISCLAIMER

This Training manual has been highly influenced from various training manuals, reports and summary prepared by various organizations like IFRC, APP, UNDRR, UN, Nepal Government, etc working in the field of DRM and Emergency Management and thus various contents may have been adopted from their public documents.

2. BACKGROUND

The conception of disaster, especially the attributed source of the occasion, has changed over time. For most of history it has been traditional to view certain sudden and extraordinary physical disturbances with significant negative effects as "Acts of God" (even outside of Western Culture, a religious framework of a similar nature has been used). Whether it is volcanic eruptions or hurricanes/cyclones, the source of the disaster agent was seen as in the supernatural domain. In more recent time, and with the spread of a more secular and nonreligious ideologies, there was a shift to the term "natural" disaster, substituting nature for the supernatural. So, earthquakes are the result of plate dynamics, or floods the consequences of rainfall and drainage capabilities. But in either case the supernatural or nature, the imagery is that something external and beyond the realm of human victims was responsible for whatever happened.

Disasters are foreseeable phenomena in today's time and age. The disasters may not be the necessary result of hazards, more often they occur when these hazards intersect with the environment, inappropriate location, inadequate infrastructure development and lack of capacity of responders to deal with the disaster.

Disaster management aims to reduce, or avoid, the potential losses from hazards, assure prompt and appropriate assistance to victims of disaster, and achieve rapid and effective recovery. The Disaster management cycle illustrates the ongoing process by which governments, businesses, and civil society plan for and reduce the impact of disasters, react during and immediately following a disaster, and take steps to recover after a disaster has occurred. Appropriate actions at all points in the cycle lead to greater preparedness, better warnings, reduced vulnerability, or the prevention of disasters during the next iteration of the cycle. The complete disaster management cycle includes the shaping of public policies and plans that either modify the causes of disasters or mitigate their effects on people, property, and infrastructure.

The mitigation and preparedness phases occur as disaster management improvements are made in anticipation of a disaster event. Developmental considerations play a key role in contributing to the mitigation and preparation of a community to effectively confront a disaster. As a disaster occurs, disaster management actors, in particular humanitarian organizations, become involved in the immediate response and long-term recovery phases.

3. SCOPE OF THE MANUAL

The manual has been devised to improve the quality and overall effectiveness of DRM and developing skills of individuals who have key DRM responsibilities at various parts of the world. The manual will enable professionals to understand the process and whole spectrum of DRM and preparedness and mitigation activities for effective response. The manual will enable professionals to understand the process and whole spectrum of DRM and preparedness activities for effective response. The manual is more a 'nutritional guide' rather than a 'cookbook'.

4. OBJECTIVES OF THE MANUAL

This training manual is prepared with the following objectives:

1. Provide knowledge about the key definition of various terminologies used in disaster.
2. Understand the complexity of a disaster cycle and provide knowledge about the effective process of risk management.
3. To provide knowledge about proper process of DRM planning.
4. Provide an effective way to mitigate various forms of disasters.

5. DEFINITION

Disaster, as defined by the United Nations, is a serious disruption of the functioning of a community or society, which involves widespread human, material, economic or environmental impacts that exceed the ability of the affected community or society to cope using its own resources. Disaster management is how we deal with the human, material, economic or environmental impacts of said disaster, it is the process of how we "prepare for, respond to and learn from the effects of major failures". Though often caused by nature, disasters can have human origins.

According to the International Federation of Red Cross and Red Crescent Societies: "More people are becoming vulnerable to disasters or are forced to cope with acts of violence, financial crises and growing uncertainty, often without adequate support from their governments." Disasters can be either natural or human-made events and can include pandemics, technological disasters, or environmental cataclysms.

A disaster is a serious problem occurring over a short or long period of time that causes widespread human, material, economic or environmental loss which exceeds the ability of the affected community or society to cope using its own resources.

6. EFFECTS OF DISASTER

The effect of the disaster can be immediate and localized but is often widespread and could last for a long period of time. The effect may test or exceed the capacity of a community or society to cope using its own resources, and therefore may require assistance from external sources, which could include neighboring jurisdictions, or those at the national or international levels.

Emergency is sometimes used interchangeably with the term disaster, as, for example, in the context of biological and technological hazards or health emergencies, which, however, can also relate to hazardous events that do not result in the serious disruption of the functioning of a community or society.

Disaster damage occurs during and immediately after the disaster. This is usually measured in physical units (e.g., square meters of housing, kilometers of roads, etc.), and describes the total or partial destruction of physical assets, the disruption of basic services and damages to sources of livelihood in the affected area.

Disaster impact is the total effect, including negative effects (e.g., economic losses) and positive effects (e.g., economic gains), of a hazardous event or a disaster. The term includes economic, human and environmental impacts, and may include death, injuries, disease and other negative effects on human physical, mental and social well-being.

7. MANAGING DISASTERS

Disaster management is about organizing and directing resources to cope with a disaster and coordinating the roles and responsibilities of responders, private sector organizations, public sector agencies, nonprofit and faith-based organizations, volunteers, donations, etc. The goal of the disaster-management leader is to minimize the event's impact, something that involves preparedness, response, recovery and mitigation.

8. TRAINING MODULE

Key Disaster Risk Management Concepts and Terms

8.1 SESSION 1 KEY MESSAGES

Introduction of Training

- Concept, Definitions, and terminologies.

Session 1.1

• **Acceptable Risk:** The level of potential losses that a society or community considers acceptable given existing social, economic, political, cultural, technical and environmental conditions.

• **Adaptation:** The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

• **Building Code:** A set of ordinances or regulations and associated standards intended to control aspects of the design, construction, materials, alteration and occupancy of structures that are necessary to ensure human safety and welfare, including resistance to collapse and damage.

• **Capacity:** The combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals. Capacity may include physical, institutional, social or economic means as well as skilled personal or collective attributes such as leadership & management. Capacity may also be described as capability.

• **Coping Capacity:** The ability of people, organization, and system, using available skill and resources, to face and manage adverse conditions, emergencies or disaster.

• **Capacity Development:** The process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions.

Capacity development is a concept that extends the term of capacity building to encompass all aspects of creating and sustaining capacity growth over time. It involves learning and various types of training, but also continuous efforts to develop institutions, political awareness, financial resources, technology systems, and the wider social and cultural enabling environment.

• **Climate Change**

• Climate change is defined as: *"a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forces, or persistent anthropogenic changes in the composition of the atmosphere or in land use".*

• The UNFCCC defines climate change as *"a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".*

• **Contingency Planning:** A management process that analyses specific potential events or emerging situations that might threaten society or the environment and establishes arrangements in advance to enable timely, effective and appropriate responses to such events and situations. Contingency planning results in organized and coordinated courses of action with clearly- identified institutional roles and resources, information processes, and operational arrangements for specific actors at times of need. Based on scenarios of possible emergency conditions or disaster events, it allows key actors to envision, anticipate and solve problems that can arise during crises. Contingency planning is an important part of overall preparedness. Contingency plans need to be regularly updated and exercised.

Crisis: A crisis is any event that is, or is expected to lead to, an unstable and dangerous situation affecting an individual, group, community, or whole society. Management often requires decisions to be made within a short timeframe & often an event has already taken place. Generally, impact of a crisis situation is localized requiring immediate attention. Crisis situation may lead to a disaster if not managed appropriately.

Disaster: A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources. Disasters are often described as a result of the combination of: the exposure to a hazard; the conditions of vulnerability that are present; and insufficient capacity or measures to reduce or cope with the potential negative consequences. Disaster impacts may include loss of life, injury, disease and other negative effects on human physical, mental and social well-being, together with damage to property, destruction of assets, loss of services, social and economic disruption and environmental degradation.

• **Disaster Risk:** The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period. The definition of disaster risk reflects the concept of disasters as the outcome of continuously present conditions of risk. Disaster risk comprises different types of potential losses which are often difficult to quantify. Nevertheless, with knowledge of the prevailing hazards and the patterns of population and socio-economic development, disaster risks can be assessed and mapped, in broad terms at least.

• **Disaster Risk Management (DRM):** The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disasters. DRM aims to avoid, lessen or transfer the adverse effects of hazards through activities and measures for prevention, mitigation and preparedness.

• **Disaster Risk Reduction (DRR):** The concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.

• **DRM Cycle:** The spectrum of disaster management is generally divided into pre, during and post disaster interventions. The pre-disaster activities are risk assessment, preparedness and early warning, whereas the post disaster activities include relief, recovery, rehabilitation and long term reconstruction as per needs of the affected populations in accordance with international standards. This cycle which covers the whole spectrum of DM is known as the disaster management cycle.

• **DRR Plan:** A document prepared by an authority, sector, organization or enterprise that sets out goals and specific objectives for reducing disaster risks together with related actions to accomplish these objectives.

• **Early Warning System:** The set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss. This definition encompasses the range of factors necessary to achieve effective responses to warnings. A people-centered early warning system necessarily comprises four key elements: knowledge of the risks; monitoring, analysis and forecasting of the hazards; communication or dissemination of alerts and Warnings; and local capabilities to respond to the warnings received. The expression *"end-to-end warning system"* is also used to emphasize that warning systems need to span all steps from hazard detection through to community response.

8.2 SESSION 2: KEY MESSAGES

Session 2.1

Elements at Risk: The People, infrastructures, crops, and livelihoods exposed and are likely to be adversely affected by the impact of hazards.

• **Emergency Management:** *"The organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular preparedness, response and initial recovery steps."* A crisis or emergency is a threatening condition that requires urgent action. Effective emergency action can avoid the escalation of an event into a disaster. Emergency management involves plans and institutional arrangements to engage and guide the efforts of government, non-government, voluntary and private agencies in comprehensive and coordinated ways to respond to the entire spectrum of emergency needs. The expression *"disaster management"* is sometimes used instead of emergency management.

• **Emergency Services:** The set of specialized agencies that have specific responsibilities and objectives in serving and protecting people and property in emergency situations. Emergency services include agencies such as civil protection authorities, police, fire, ambulance, paramedic and emergency medicine services, red cross and red crescent societies, and specialized emergency units of electricity, transportation, communications and other related services organizations.

• **Environmental Degradation:** The reduction of the capacity of the environment to meet social and ecological objectives and needs.

• **Environmental Impact Assessment:** Process by which the environmental consequences of a proposed project or program are evaluated, undertaken as an integral part of planning and decision making processes with a view to limiting or reducing the adverse impacts of the project or program.

• **Exclusion:** The process where people living in high risk areas also have poor housing, inadequate social services, weak political voice and lack of decent work all combine to create an experience of marginalization is called exclusion.

• **Exposure:** People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses. Measures of exposure can include the number of people or types of assets in an area. These can be combined with the specific vulnerability of the exposed elements to any particular hazard to estimate the quantitative risks associated with that hazard in the area of interest.

• **Forecast:** Definite statement or statistical estimate of the likely occurrence of a future event or conditions for a specific area.

• **Hazard:** A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. Hazard can be single, sequential or combined in their origin and effects. Each hazard is characterized by its location, intensity, frequency and probability.
Hazards have following two types: -

Types of Hazards

• **Natural:** Natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

• **Human-induced:** Conditions that may have disastrous consequences for a society. These are associated with industries or energy generation facilities and include explosions, leakage of toxic waste, pollution, dam failures. Complex Emergency is included in this category.

• **Categorization of Natural Hazards**

• **Geological:** Geological process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.
• **Socio-natural:** The phenomenon of increased occurrence of certain geophysical and hydro-meteorological hazard events, such as landslides, flooding, land subsidence and drought, that arise from the interaction of natural hazards with overexploited or degraded land and environmental resources. Socio-natural hazards can be reduced and avoided through wise management of land and environmental resources.

• **Hydro-meteorological:** Process or phenomenon of atmospheric, hydrological or oceanographic nature that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

• **Biological:** Process or phenomenon of organic origin or conveyed by biological vectors, including exposure to pathogenic micro-organisms, toxins and bioactive substances that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. Examples of biological hazards include outbreaks of epidemic diseases, plant or animal contagion, insect or other animal plagues and infestations.

Session 2.2

Categorization of Human-induced Hazards

• **Technological:** A hazard originating from technological or industrial conditions, including accidents, dangerous procedures, infrastructure failures or specific human activities, that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services,
social and economic disruption, or environmental damage

• **Complex Emergency:** A complex emergency is a major humanitarian crisis that is often the result of a combination of political instability, conflict and violence, social inequities and underlying poverty.

• **Forest/Urban Fire:** A large, destructive fire that spreads over a forest or area of woodland, whereas urban fire occur primarily in cities or towns with the potential to rapidly spread to adjoining structures. These fires damage and destroy homes, schools, commercial buildings and vehicles etc.

Hazard Assessment: The process of estimating, for defined areas, the probabilities of the occurrence of potentially damaging phenomena of given magnitude within a specified period of time. Hazard

assessment involves analysis of formal and informal historical records and skilled interpretation of existing topographical, geological, hydrological and land-use maps.

• **Heterogeneous Vulnerable Groups:** Those groups whose needs do display many similarities but are nevertheless divergent as well e.g. Children, older people and person with disabilities. For example, older people tend to be more vulnerable but with this there are also older people who have physical disability, visual and hearing impairment, are minorities, internally displaced people or refugees. So this makes them heterogeneous.

• **Internally Displaced People (IDP):** Are individuals or groups of individuals who have been forced or obliged to flee or to leave their homes or places of habitual residence due to conflicts and natural calamities., who have not crossed an internationally recognized state border.

• **Inclusion:** In DRM inclusion means that especially at-risk groups take decision that affect them jointly with local, national and international decision makers, and that they are involved in planning and implementing relevant activities.

• **Land-use Planning:** The process undertaken by public authorities to identify, evaluate and decide on different options for the use of land, including consideration of long term economic, social and environmental objectives and the implications for different communities and interest groups, and the subsequent formulation and promulgation of plans that describe the permitted or acceptable uses.

• **Mitigation:** The lessening or limitation of the adverse impacts of hazards and related disasters. The adverse impacts of hazards often cannot be prevented fully, but their scale or severity can be substantially lessened by various strategies and actions. Mitigation measures encompass engineering techniques and hazard-resistant construction (i.e. structural measures) as well as improved environmental policies and public awareness (i.e. non-structural measures). It should be noted that in climate change policy, *"mitigation"* is defined differently, being the term used for the reduction of greenhouse gas emissions that are the source of climate change.

• **Preparedness:** The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.
Preparedness action is carried out within the context of DRM and aims to build the capacities needed to efficiently manage all types of emergencies and achieve orderly transitions from response through to sustained recovery. Preparedness is based on a sound analysis of disaster risks and good linkages with early warning systems, and includes such activities as contingency planning, stockpiling of equipment and supplies, the development of arrangements for coordination, evacuation and public information, and associated training and field exercises. These must be supported by formal institutional, legal and budgetary capacities. The related term *"readiness"* describes the ability to quickly and appropriately
respond when required.

• **Prevention:** The outright avoidance of adverse impacts of hazards and related disasters. Prevention expresses the concept and intention to completely avoid potential adverse impacts through action taken in advance. Examples include dams or embankments that eliminate flood risks, land-use regulations that do not permit any settlement in high risk zones, and seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake. Very often the complete avoidance of losses is not feasible and the task transforms to that of mitigation. Partly for this reason, the terms prevention and mitigation are sometimes used interchangeably in casual use.

• **Public Awareness:** The extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually and collectively to reduce exposure and vulnerability to hazards. The process of informing the general population, increasing levels of consciousness about risk and how people can reduce their exposure to hazard. This is particularly important to public officials in fulfilling their responsibilities to save lives and property in the event of a disaster.

• **Recovery:** *"The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors."* The recovery task of rehabilitation and reconstruction begins soon after the emergency phase has ended, and should be based on pre-existing strategies and policies that facilitate clear institutional responsibilities for recovery action and enable public participation. Recovery programmes, coupled with the heightened public awareness and engagement after a disaster, afford a valuable opportunity to develop and implement disaster risk reduction measures and to apply the *"build back better"* principle.

• **Refugees:** Are persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights, or natural or human-made disasters and who have crossed an internationally recognized state border.

• **Residual Risk:** The risk that remains in unmanaged form, even when effective risk reduction measures are in place, and for which emergency response and recovery capacities must be maintained.

• **Resilience:** The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.
Resilience means the ability to *"resile from"* or *"spring back from a shock"* the resilience of a community in respect to potential hazard event is determined by the degree to which the community has the necessary resources and is capable of organizing itself both prior to and during times of need.

• **Response:** The provision of emergency services and public assistance during or immediately after a disaster in order to save lives reduces health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

• **Retrofitting:** Reinforcement or upgrading of existing structures to become more resistant and resilient to the damaging effects of hazards.

• **Risk:** The combination of the probability of an event and its negative consequences. The word "risk" has two distinctive connotations: in popular usage the emphasis is usually placed on the concept of chance or possibility, such as in *"the risk of an accident"*; whereas in technical settings the emphasis is usually placed on the consequences, in terms of *"potential losses"* for some particular cause, place and period. It can be noted that people do not necessarily share the same perceptions of the significance and underlying causes of different risks.

Risk is expressed as Risk = Hazard x Vulnerability. Some experts also include the concept of exposure when referring to the physical aspect of vulnerability.

8.3 SESSION 3: KEY MESSAGES.

Session 3.1

Risk Assessment: A methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend.

• **Risk Management:** The systematic approach and practice of managing uncertainty to minimize potential harm and loss.

• **Risk Transfer:** The process of formally or informally shifting the financial consequences of particular risks from one party to another whereby a household, community, enterprise or state authority will obtain resources from the other party after a disaster occurs, in exchange for ongoing or compensatory social or financial benefits provided to that other party.

• **Social Integration:** Social integration has been defined as *"the process of promoting the values, relations and institutions that enable all people to participate in social, economic and political life on the basis of equality of rights, equity and dignity".*

• **Structural and Non-structural Measures**
• Any physical construction to reduce or avoid possible impacts of hazards, or application of engineering techniques to achieve hazard- resistance and resilience in structures or systems;
• Any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, public awareness raising, training and education.

• **Sustainable Development:** Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of *"need"*, in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization of the environment's ability to meet present and the future needs

• **Voluntary Exclusion:** Some minority groups voluntarily exclude themselves from wider society. This phenomenon should be distinguished from social exclusion, which occurs for reasons that are beyond the control of those subject to it.
• **Vulnerability:** The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard. The vulnerability can also be defined as the conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community or society to the impact of hazards. It can also be termed as the extent to which an individual, community, sub group, structure, service, or geographic area is likely to be damaged or disrupted by the impact of a particular hazard.

• **Categorization of Vulnerabilities**
• **Physical Vulnerabilities:** Are the hazard-prone locations of settlement, insecure and risky sources of livelihood, lack of access to basic production resources (such as land, farm inputs, and capital), knowledge and information, access to basic services.

• **Social Vulnerabilities:** Are reflected in the lack of institutional support structures and leadership, weak family and kinship relations, divisions and conflicts within communities, and the absence of decision-making powers.

• **Attitudinal Vulnerabilities:** Are seen in dependency, resistance towards change, and other negative beliefs. People who have low confidence in their ability to affect change or who feel defeated by events are harder hit by disasters than those who have sense of their ability to bring the changes they desire.
• **Economic Vulnerabilities:** Pertain to how people make their living and from where they get their livelihood. Determining which type of livelihood is easily affected by disasters (e.g. fishing, tricycle driving, etc.) is a key issue to be considered in determining the magnitude of economic vulnerability.

Vulnerabilities Assessment: The process of estimating the vulnerability to potential disaster hazards of specified elements at risk. For engineering purposes, vulnerability analysis involves the analysis of theoretical and empirical data concerning the effects of particular phenomena on particular types of structures. For more general socio-economic purposes, it involves consideration of all significant elements in society, including physical, social and economic considerations (both short and long term), and the extent to which essential services, traditional and local coping mechanisms are able to continue functioning.

• **Vulnerable Groups:** Person or a group having less or no coping capacity to respond to a certain hazardous phenomenon. In local context these includes, women, children, disabled and elderly persons.

8.4 SESSION 4: DISASTER RISK MANAGEMENT

What is Disaster Risk Management?

DRM can be defined as the systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disasters. Disaster risk management aims to avoid, lessen or transfer the adverse effects of hazards through activities and measures for prevention, mitigation and preparedness.

Disaster Risk Management Cycle and its Components

- DRM cycle includes sum total of all activities, programmes and measures which can be taken up before, during and after a disaster with the purpose to avoid a disaster, reduce its impact or recover from its losses.

- Disaster specialists have consistently made efforts to classify the time periods of a disaster. Among the standard classifications used are: the pre-disaster, during disaster and post disaster phase. DRM Cycle provides a comprehensive description of different elements of measures taken. If followed in a systematic manner, each element of DRM Cycle can effectively reduce disaster risks.

- The time period for any activity/measure will vary greatly depending on the type of disaster and other factors. People involved in disasters must recognize the different phases and the appropriate activities that occur in each phase. It is difficult to set time limits on the post-disaster time phases or to accurately define the limits of each, even for one specific type of disaster.

Disaster Risk Management Phases

a) Phase I - Pre-disaster: Pre-disaster activities are those which are taken to reduce human and property losses caused by a potential hazard. Can also be term as preparedness phase.

b) Phase II - During-disaster: These include initiatives taken to ensure that the needs and provisions of victims are met and suffering is minimized. Activities taken under this stage are called emergency response activities.

c) Phase III - Post-disaster: There are initiatives taken in response to a disaster with a purpose to achieve early recovery and rehabilitation of affected communities, immediately after a disaster strikes. These are called as response and recovery activities.

8.5 SESSION 5: P LANNING OF DISASTER RISK MANAGEMENT

DRM Planning

• The DRM plans will define priorities and provide guidelines for DRM in the district, provide strategic directions for DRM, define resources available in the district, and describe SOPs for emergency response by the district government.
• The DRM plan can be called by various names such as disaster preparedness and mitigation plan, counter disaster plan, DRR plan or even district development plan.
• Based on the risk assessment (hazards, vulnerabilities and capacities), to reduce the risks.
• Considered important, because this will raise awareness of stakeholders about disaster risks and risk management.

Purpose of planning
• To develop a plan of action for the DDMA and other district stakeholders to set priorities and provide directions for DRM.
• To define the roles of various stakeholders in DRM.
• To raise awareness of stakeholders about disaster risks and the requirements for DRM.

DRM Planning Process
Following steps are involved in the DRM planning: -
• Step I: Review of secondary data and literature including risk assessment.
• Step II: Consultation with various levels of stakeholders.
• Step III: Prepare a draft of the DRM Plan.
• Step IV: Submit the draft to a technical team for technical review and advice.
• Step V: Circulate the draft plan to all stakeholders for comments and feedback.
• Step VI: Organize local, district, regional or national level workshop to seek comments on the draft plan.
• Step VII: Finalize the district plan based upon stakeholder comments.
• Step VIII: Approval of the Plan.
• Step IX: Publish and disseminate the plan to all relevant stakeholders.
• Step X: Revision and updating of the plan.

8.6 SESSION 6: PREVENTION AND MITIGATION FRAMEWORK AND MEASURES FOR VARIOUS HAZARDS

Session 6.1. Mitigation and its Guiding Principles

Divide participants into 5 groups and assign principle to each group. Ask them to discuss and present one example (negative or positive) related to principle. Make cards by printing principle with its definition on them for each group

- Group 1: Initiation
- Group 2: Management
- Group 3: Prioritization
- Group 4: Monitoring and evaluation
- Group 5: Institutionalization

Session 6.2.: Mitigation Measures for Various Hazards

Divide participants into following groups: -

• Group1: Floods (all types) • Group 2: Earthquake • Group 3: Drought • Group 4: Cyclone & Tsunami •Group 5: Landslides • Group 6: Cold Waves • Group 7: Heat Waves • Group 8: Forest Fire • Group 8: Forest Fire • Group 9: Epidemic • Group 10: Thunder and Lightning

Group 1 Floods

- Identification of flood prone areas (flood risk and vulnerability assessment).
- Land use zoning, mapping, regulations and implementation for flood and safety.
- Construction of water storage facilities.
- Construction of flood protection and diversion/dispersion infrastructure.
- Channelization of flood waters.
- Construction of delay action/check dams.
- Construction of flood prone buildings and infrastructure.
- Effective flood forecasting and early warning dissemination system.
- Solid waste management to reduce choking of the drains and river.
- Bio sea wall to reduce the impact of coastal flooding.
- Afforestation to reduce/eliminate chances of erosion.
- Identification & development of safe evacuation sites and routes.
- Capacity building, awareness.

Group 2 Earthquake

Micro-zoning and vulnerability mapping.

- Construction of earthquake resistant buildings and infrastructures.
- Enforcement of building codes including ruler area and decisions about construction of structures with due approval from specified authorities.
- Seismic retrofitting of weak structures in highly seismic zones to make them more resistant to seismic activity, ground motion, or soil failure due to earthquakes.
- Monitoring faults activity and forecasting

• Formulation of guidelines both for earthquake-resistant constructions as well as for retrofitting with specifications about site selection, foundation, construction, materials and workmanship making involvement of specialist architects, trained engineer and masons mandatory.
• Promoting awareness and preparedness programs for general public and involving them in the process of disaster mitigation through education and awareness.
• Capacity building in mitigation measures at all levels.

Group 3: Drought

• Vulnerability and risk assessment.
• Set up a mission/task force on drought mitigation.
• Forecasting and early warning.
• Identify program and measures for drought mitigation.
•Long term irrigation management.
• Water harvesting and conservation by:
    - Artificial recharge of ground water.
    - Traditional water harvesting and conservation.
• Construction of shelters for cattle and development of infrastructure for
• Storage and transportation of dry and green fodder etc.
• Encourage community-level plans for drought mitigation.
• Water saving technologies (drip and sprinkler irrigation system).
• Promote education and awareness of mitigation policies & measures and encourage community participation in drought mitigation.

Group 4: Cyclones and Tsunamis

• Conduct risk mapping and vulnerability assessment.
• Erect tsunami breakwaters to provide cushion.
• Construction of tsunami and cyclone shelters (safe places to flee).
• Building of sea wall and embankments.
• Carryout natural bio-shields and shelterbelt plantations.
• Maintaining of natural sand dunes.
• Building disaster resistant housing & infrastructure.
• Effective early warning system and dissemination system.
• Elaborate evacuation plans (with emphasis on self-reliance for sustenance with the coastal community).
• Capacity development and training.

Group 5: Landslides

• Construct breakwaters to provide cushion against landslides.
• Conduct hazard mapping and vulnerability assessment.
• Carryout land use zonation.
• Ensure slope drainage.
• Built retaining structures.
• Ensure plantation/vegetation.
• Effective monitoring and forecasting mechanism.
• Elaborate warning and evacuation measures.
• Public awareness and capacity building.

Group 6: Cold Waves

• Keep ready the emergency kit along with snow shovels, wood for your fireplace and adequate clothing.
• Listen to local radio station or television for weather updates.
• Stay indoors; minimize travel.
• Keep dry. Change wet clothing frequently to prevent loss of body heat.
• Watch for signs of frostbite, like numbness and white or pale appearance in fingers, toes, ear lobes and the tip of the nose.
• Maintain proper ventilation when using kerosene heaters or coal oven to avoid toxic fumes.
• Go to a designated public shelter, if your home loses power or heat during extreme cold.
• Protect yourself from frostbite and hypothermia by wearing warm, loose-fitting, lightweight clothing in layers.

Group 7 Heat Wave

• **Before**
• Install temporary window reflectors such as aluminum foil-covered cardboard, to reflect heat back outside.
• Cover windows that receive morning or afternoon sun with drapes, shades.
• Listen to local weather forecasts and stay aware of upcoming temperature changes.
• Know those in your neighborhood who are elderly, young, sick or overweight. They are more likely to become victims of excessive heat and may need help.
• Get trained in first aid to learn how to treat heat-related emergences.

• **During**
• Never leave children or pets alone in closed vehicles. Stay indoors as much as possible and limit exposure to the sun.
• Stay on the lowest floor out of the sunshine.
• Eat well-balanced, light and regular meals.
• Drink plenty of water, even if you do not feel thirsty.
• Persons with epilepsy or heart, kidney, or liver disease; are on fluid-restricted diets; or have a problem with fluid retention should consult a doctor before increasing liquid intake.
• Protect face and head by wearing a hat or cloth.

Group 8: Forest Fire

• **Do's**
• Try to maintain forest blocks to prevent dry litter from forest during summer season.
• Try to put the fire out with available resources and if not possible call the fire brigade.
• Move farm animals & movable goods to safer places identified by district administration.
• During fire listen regularly to radio for advance information & obey the instructions cum advice.
• Teach the causes and harm of fire to your family and others. Make people aware about forest fire safety.
• Do not be scared when a sudden fire occurred in the forest, be calm & encourage others & community to overcome the problem patiently.
• Do apply seasonal mitigation measures i.e. fuel reduction etc.

• **Don'ts**
• Don't throw cigarettes butts in the forest.
• Don't leave the burning wood sticks in or near the forest.
• Don't enter the forest during the fire.

• Discourage community not to use slash & burn method.

• **Urban Fire**

• **Do's**
• In case of fire, call fire services in your area/town.
• Learn at least two escape routes and ensure they are free from obstacles.
• Remain calm, unplug all electrical appliances.
• Keep buckets of water and blanket ready.
• If clothes catch fire, Stop, Drop and Roll.
• In case of uncontrolled fire, wrap the victims in a blanket, till the fire ceases/ stops.

• **Don'ts**
• Avoid fireworks etc. in crowded, congested places, narrow lanes or inside the house.
• Use of inappropriate clothes.
• Do not apply adhesive dressing on the burnt area.
• Do not throw lighted cigarette butts.

Group 9: Epidemic

• **Before**
• Store at least two week supply of water and food.
• Periodically check your regular prescription drugs to ensure a continuous supply in your home.
• Have any non-prescription drugs and other health supplies in hand, including pain relievers, stomach remedies, cough and cold medicines, fluids with electrolytes and vitamins.
• Volunteer with local groups to prepare and assist with emergency response.
• Keep your surroundings cleans and do not let the water be stagnant.

• **After**
• Avoid close contact with people who are sick. When sick, keep distance from others to protect them from getting sick.
• If possible, stay at home; stay away from work, school etc. when you are sick. This will help prevent others from catching your illness.
• Cover will help protect you from harmful germs.
• Avoid touching your eyes, nose or mouth. Germs are often spread when a person touches something that is contaminated with germs and then touches his or her eyes, nose or mouth.

Group 10: Thunder & Lightning

• **Before & During**
• Keep ready an emergency kit with important medication. Postpone outdoor activities.
• Remember, rubber-soled shoes and rubber tires provide no protection from lighting.
• Unplug any electronic equipment well before the storm arrives. Use your battery-operated radio for updates.
• Avoid contact with electrical equipment or cords. Unplug appliances and other electrical items such as computers and turn off air conditioners.
• Do not lie on concrete/marble floors and do not lean against concrete walls.

• **After**
• Continue to listen to local radio and television stations for updated information or instructions, as access to roads or some parts of the locality may be blocked.
• Help people who may require special assistance, such as infants, children and the elderly.
• Stay away from broken power lines and report them immediately.