PARTICIPANT'S WORKBOOK

COMMUNITY-BASED DISASTER RISK MANAGEMENT FOR LOCAL AUTHORITIES

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Asian Disaster Preparedness Center

The Partnerships for Disaster Reduction - South East Asia Phase 3 (PDRSEA3) program is jointly implemented by (ADPC) and the UNESCAP with funding support from the European Commission Humanitarian Aid Department (ECHO) under its 'Fourth DIPECHO Action Plan for Southeast Asia'. The one-year project, which commenced in February 2005, aims to establish an improved, enabling environment for CBDRM through promoting ownership in national programs and local entities, enhancing the capabilities of CBDRM practitioners and the expansion of new and strengthening of existing partnerships in Southeast Asia particularly in the target countries Cambodia, Indonesia, Lao PDR, Timor Léste and Vietnam.

The Asian Disaster Preparedness Center (ADPC), established in 1986 is a regional, inter-governmental, non-profit organization and resource center based in Bangkok. ADPC is Thailand mandated to promote safer communities and sustainable development through the reduction of the impact of disasters in response to the needs of countries and communities in Asia and the Pacific by raising awareness, helping to establish and strengthen sustainable institutional mechanisms, enhancing knowledge and skills, and facilitating the exchange of information, experience and expertise.

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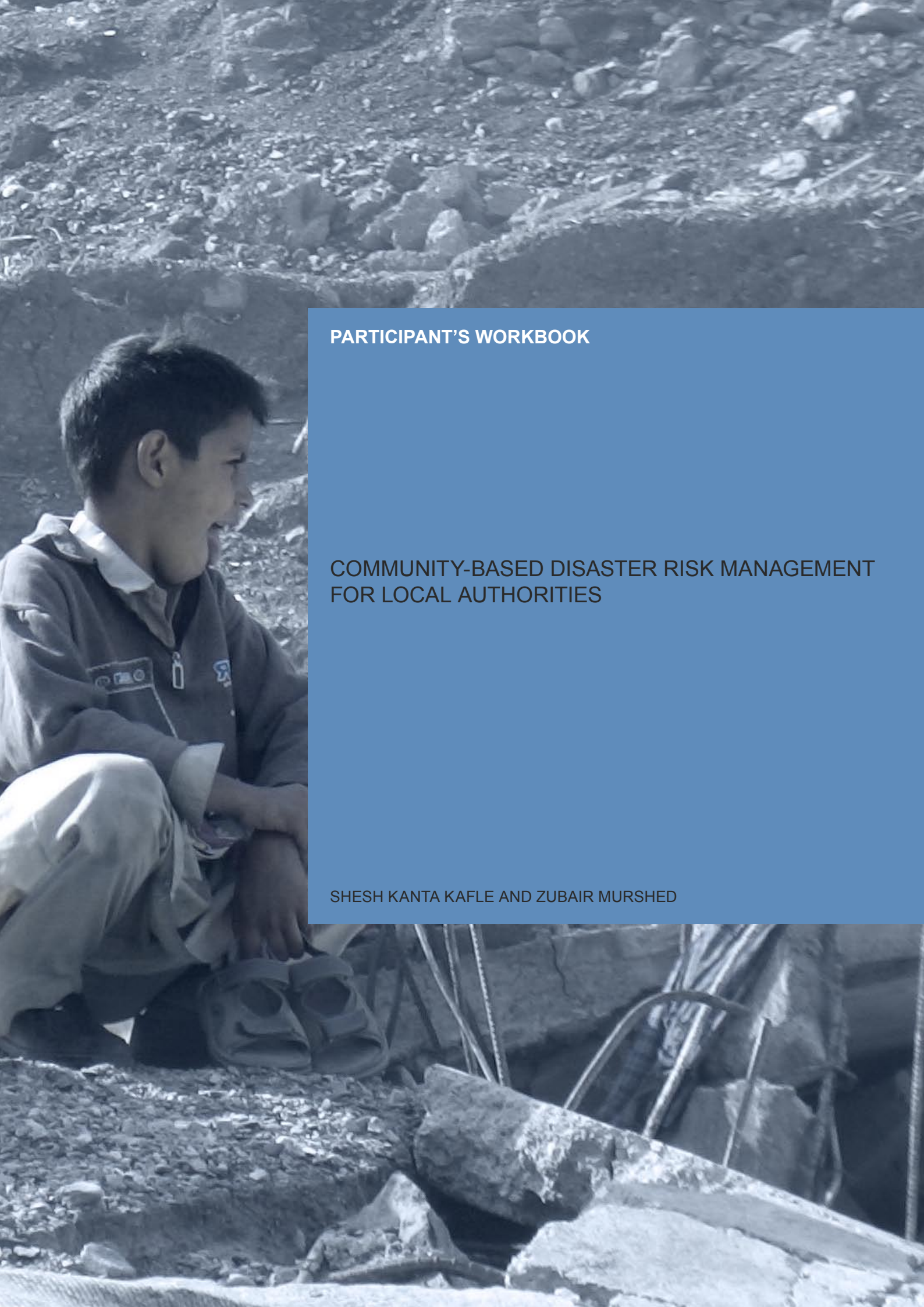

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COMMUNITY-BASED DISASTER RISK MANAGEMENT FOR LOCAL AUTHORITIES

SHESH KANTA KAFLE AND ZUBAIR MURSHED

PARTICIPANT'S WORKBOOK
Community-based Disaster Risk Managment for Local Authorities

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preface

20 years of commitment to safer communities and sustainable development through disaster reduction

The Asian Disaster Preparedness Center celebrates its 20 year anniversary in 2006. I would like to take this opportunity to express my sincere appreciation to all its partner institutions, national governments, numerous UN organizations and other international organizations for their collaboration and support to ADPC during the past two decades. The work of all stakeholders in disaster management, including ADPC staff and alumni have contributed to making communities and countries better prepared, safer, and more resilient in face of disasters. ADPC is proud to have been a pioneer in some of the significant changes-in paradigm, concepts, and practices paving the way to reduction of the impacts of natural disasters.

ADPC was established in 1986 under late Colonel Brian Ward's illustrious leadership to address the disaster management needs of countries in Asia. In its twenty years ADPC responded dynamically to the paradigm shift in disaster management, readily and actively adjusting its operational strengths to address the evolving developments in disaster risk management by structuring its technical focus on climate risk management, disaster management systems, urban disaster risk management and public health in emergencies. This vigorous and comprehensive approach is further reinforced by ensuring that ADPC's projects and programs enhance institutional capacities, apply community-based disaster risk management practices, and promote and support mainstreaming of disaster management into the development processes. These activities complement ADPC's involvement in building national and provincial disaster management systems, identifying disaster risk management needs, and developing strategic solutions. ADPC's standing and twenty years of experience in the region is confirmed by the substantive encouragement and support from various multi-lateral and bi-lateral development and donor agencies; as manifested in the implementation of our extensive array of projects and programs.

As it moves forward beyond its twenty years of operations, ADPC will continue to build upon its operational and technical strengths and to evolve in its role as a regional resource center, and to act as a regional early warning center. ADPC will further pursue operational partnerships and collaborations with all stakeholders in disaster risk management into sustainable development policies and practices throughout the Asia and Pacific regions.

In closing, permit me to express my gratitude to our staff and consultants who have shared commitment, dedication and loyalty to ADPC's goals and mission.

As its Executive Director, it is my honor to be part of this fine organization. I am confident that ADPC will continue to be responsive to the priorities of our key stakeholders in governments and the international community overcoming challenges to serve the region and beyond.

Message From Dr. Suvit Yodmani
Executive Director, Asian Disaster Preparedness Center

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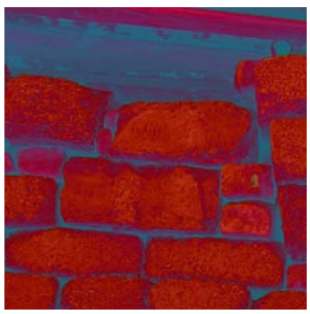

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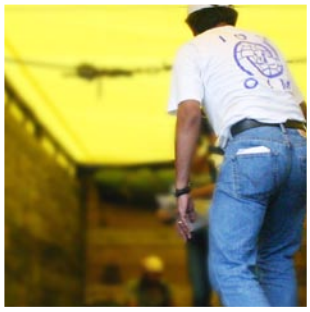

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acknowledgment

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The curriculum development workshop was facilitated by Ms. Zenaida Delica-Willison, of the UNDP South-South Cooperation; and Ms. Mayforth Luneta, from Center for Disaster Preparedness (Philippines), based upon the feedback from the workshop. The curriculum was revised by Kafle and Zubair.

introduction

Purpose and Scope

The purpose of this workbook is to facilitate the capacity building of local government officials on Community-based Disaster Risk Management (CBDRM) in PDRSEA target countries including Cambodia, Indonesia, Lao PDR, Timor Léste and Vietnam. It is expected that the workbook will be adapted and used by National Disaster Management Offices (NDMO) and NGOs in the countries of South East Asia for training the local government officials.

Target Users

The workbook is primarily intended for those who will train the lowest government political structure and those who will facilitate the implementation of CBDRM at the communities; e.g. district authorities giving training to village authorities. They can also be:

- NDMOs
- Trainers at district, provincial and commune levels
- Provincial government officials
- District government officials
- NGOs/CBOs
- Line Ministries
- International organizations; e.g. IFRC, National Societies

The primary beneficiaries of this workbook will be the local government officials who will do CBDRM activities. Secondary beneficiaries will include NGOs and other non-government organizations. This workbook is for the participants during a training course, and is not a manual of operations.

Methodology

The following steps were adopted while preparing the workbook:

- Review of existing training manuals and curricula in the region
- Discussion amongst ADPC staff members about the contents of the workbook
- Regional workshop on curriculum development for local authorities
- Revision on the basis of feedback from the Regional workshop

Training Modules

There are altogether 5 training modules and 20 training sessions in this workbook. The following topics have been covered:

Module 1: Introduction and Overview of Key Concepts
Module 2: Community Risk, Needs and Damage Assessment
Module 3: Disaster Risk Reduction Planning
Module 4: Community Managed Implementation
Module 5: Participatory Monitoring and Evaluation

Each module is structured as:

1. Learning objectives of the session
2. Key concepts
3. Reference materials: content of the session
4. References

Training Methods

This workbook can be used for both in-house training with field exercises and self-study. At the end of each session, note page for ‘New Learning and Reflection’ have been included.

Reference materials

The following publications were extensively consulted while preparing this handbook:

- ADPC, *CBDRM-11 Course Materials*, 2003.

- Abarquez, Imelda. and Zubair Murshed, *Community-based Disaster Risk Management: Field Practitioners' Handbook*, ADPC, 2005

- Kafle, Shesh Kanta. and Govinda, Koirala, *Chitwan District: Disaster Management Action Plan*, UNDP/UNOCHA/DDC Chitwan. Nepal, 2004

- *Disaster Preparedness Manual*, Vietnam Red Cross Society, September 2000.

- UNDP/CECI, *Trainers' Guide on CBDRM*, CECI Vietnam

- *Sustainable Community-based Disaster Management Practices In Asia, A User's Guide*, UNCRD, Kobe, Japan, December 2004

- *Citizenry-based Development Oriented Disaster Management in the Philippines*, CDP, Manila

module one

Module Objectives

At the end of the Module, you should be able to:

- Discuss the key hazards, vulnerabilities and capacities at the local level
- Describe the administrative, political, social and economic structure of the area
- Explain the rationale and process of community-based disaster risk management
- Define the key terms and concepts like hazard, vulnerability, capacity, risk, disaster, disaster risk reduction
- Describe the role of local authorities in Community-based Disaster Risk Management
- Discuss the Disaster Risk Management System in your country

No of Sessions

1. Disaster risks in the local area (district, municipality or commune)
2. Basic concepts
3. CBDRM: Rationale and process
4. Overview of the local authorities
5. Role of local authorities in CBDRM
6. National Disaster Risk Management System

INTRODUCTION AND OVERVIEW OF KEY CONCEPTS

session 1

disaster risk in the local area

Learning Objectives

At the end of this session, the participants should be able to:

- Enlist the major disasters that occurred in your district, municipality or commune over the past 10 years;
- Describe the impact of such disasters upon the life, livelihoods, economy and environment in the locality;
- Define the most vulnerable social groups in the local area, and describe the reasons for their vulnerability;
- Discuss the local resources and capacities to cope with and recover from the disasters;
- Enumerate challenges faced and lessons learnt by different stakeholders;

Key Concepts

- A local area might be exposed to a number of disaster risks. It will be necessary to understand the nature, and impact of these disasters in order to better prepare for future;
- A range of social groups may exist in a district, municipality or commune. The vulnerability of different groups may differ from each other. It is important for local authorities to understand the reasons for vulnerability of different groups;
- The communities, local authorities and civil society groups may have multiple resources and capacities to deal with disasters; e.g. indigenous knowledge, policies, disaster reduction programs, technical institutions, machinery and equipment, and social networks;
- Local authorities must identify the challenges faced and lessons learnt from the past experiences of responding to disasters;

Reference Materials

Disaster Risks in the Local Area

Introduction

This session intends to discuss the status of hazards, vulnerabilities and historical overview of disaster occurrences in the district, municipality or commune. The session will be organized in a discussion manner. A district, municipality or commune might be exposed to a range of natural or man-made hazards. The communities, their livelihoods, local economy and infrastructure and the environment might be exposed to multiple risks from such hazards. Natural hazards may include typhoons, floods, droughts, fires (forest and urban fires), avalanches, earthquakes, tsunamis and landslides. Man-made hazards include social conflicts, industrial and chemical hazards, road and air accidents, nuclear accidents, environmental pollution etc. Different hazards have diverse impact upon the people, their livelihoods, environment and economy and infrastructure. It is important to understand the kind of impact a hazard can have upon the communities in the locality.

A review of the past disasters would allow the local authorities to identify the vulnerable locations and communities. The local authorities can gather information about the past disasters from various sources; e.g. government relief records, local newspapers, research reports in the universities and technical institutions, reports of the relevant government bodies; e.g. the meteorological department, or volcanology department. The analysis of the impact of past disasters on various communities and social groups will help understand the relationship between the nature of hazard and the kind of impact they can have upon various at-risk-elements. Through this analysis the local authorities can also identify the high impact hazards; e.g. those which kill the most people, or those which affect severely the local economy and infrastructure.

The population in a district, municipality, commune or village may be comprised upon multiple social groups. The vulnerability of each group to disasters would be different. It is important the local authorities have knowledge about various social groups and their vulnerabilities. The people living near the hazard sites might be more vulnerable than the one living far. Social groups whose livelihoods are located in dangerous areas would also be more vulnerable; e.g. the fishers, sea gypsies, terrace farmers etc. It will also be useful to analyze the resources and capacities which people used to cope with and recover from the previous disasters.

During this session, the participants and the resource persons can discuss the topics given in the following checklist in order to understand disaster risks in the local area.

1. **Past Disasters in the Local Area**
   - What disasters were experienced in the area over the past 10 years?
   - In which parts of the district or municipality the disasters were occurred?
   - What is the recurrence period of the relevant hazards?
   - What was the severity of various disasters?
   - What was the duration of stay of the hazards?
   - What other hazards might occur in the local area?

2. **Impact of disasters**
   - Which social groups were severely affected by the various disasters?
   - What kind of impact, disasters had upon people?
   - Which social and economic development sectors were severely affected?
   - What kind of impact, the disasters had upon the development sectors?
   - What was the impact of disasters upon the environment?

3. **Most vulnerable communities and groups**
   - Which social groups were severely affected by the disasters?
   - What were the reasons, which made these groups more vulnerable?

- What are their sources of livelihoods?
- What is their socio-economic status?
- What is the percentage of these groups out of the total population size?

4. Local level resources and coping mechanisms

- What capacities and resources communities used to deal with the disasters and recover from them? (Please consider the knowledge, material and financial resources, technical resources, social networks and behaviors that helped people cope with the disasters)
- Which key stakeholders were involved in disaster response and recovery?
- What resources local authorities used to respond to the disasters and organize recovery? (Please consider the resources of local authorities in terms of disaster reduction and response policies, organizational arrangements, technical and research institutions, equipment and machinery disaster preparedness, and recovery program etc.
- What resources the local NGOs and civil society organizations; e.g. women union, youth union, elderly union deployed to respond to disasters?

5. Challenges and lessons learnt

- What problems and challenges did the vulnerable groups face, to deal with the disasters?
- What problems and challenges did the local authorities, NGOs, mass organizations and other stakeholders face, in responding to the disasters?
- What lessons did the above stakeholders learn, in dealing with disasters in an effective manner in future?

References

Murshed, Z., Bangkok, ADPC, 2006

New Learning and Reflections

session 2

basic concepts

Learning Objectives

At the end of this session, the participants should be able to:

- Explain the basic concepts related to disaster risk management; e.g. disaster, hazard, vulnerability, capacity, disaster risk, disaster risk assessment, disaster risk reduction.

Key Concepts

- A disaster occurs when a hazard impact upon a vulnerable community and causes damage, casualties and disruption.
- Vulnerability is a set of prevailing or consequential conditions, which adversely affect the community's ability to prevent, mitigate, prepare for and respond to hazardous events.
- Capacities are resources, means and strengths, which exist in households and in the community and which enable them to cope with, withstand, prepared for, prevent, mitigate or quickly recover from a disaster.
- Disaster Risk is the chance of damage and loss as a result of the occurrence of a hazard.
- Disaster risk reduction includes all activities to minimize the loss of life, property or assets by either mitigating the hazard or reducing the vulnerability of the elements at risk.

Reference Materials

Basic Concepts

1. Disaster

Disaster is a serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses, which exceed the ability of the affected community or society to cope, using its own resources (UNISDR 2004). A disaster happens when a hazard impacts upon a vulnerable population and causes damage, casualties and disruption. An earthquake in an uninhabited desert cannot be considered a disaster, no matter how strong the intensities produced. An earthquake is only disastrous when it affects people, their property and activities.

2. Hazard

Hazard is an event or occurrence that has the potential to cause injuries to life and damage property and the environment. Examples of natural hazards are typhoons, tsunamis, earthquake and volcanic eruption exclusively. Landslides, floods, drought, fires can be described as socio-natural hazards since their causes are both natural and man-made. The distinction between natural and man-made hazards is becoming harder to define. For example, flooding may be increased through landfill, drainage or groundwater extraction; storm surge hazard may be worsened by the destruction of mangroves.

Human-made hazards are associated with industries or energy generation facilities and include explosions, leakage of toxic waste, pollution, dam failures. War or civil strife is also included in this category. Some hazards can cause secondary hazards; e.g. an earthquake causing landslides, which dams a river and then causes flooding. A community may be exposed to multiple hazards as a result of secondary hazards.

3. Vulnerability

Vulnerability is a set of prevailing or consequential conditions, which adversely affect people's ability to prevent, mitigate, prepare for and respond to hazardous events. These long-term factors affect a household or community's ability to absorb losses after disaster and to recover from the damage. Vulnerabilities precede disasters; contribute to their severity, impede disaster response, and may continue to exist long after a disaster has stuck.

Anderson and Woodrow (1990) categorize vulnerabilities into three areas:

- **Physical/Material Vulnerability.** For example, poor people who have few physical and material resources usually suffer more from disasters than rich people. People who are poor often live on marginal lands; they don't have any savings or insurance; they are in poor health. These factors make them more vulnerable to disasters and mean that they have harder time surviving and recovering from a calamity than people who are better off economically.

- **Social/organizational Vulnerability.** People who have been marginalized in social, economic or political terms are vulnerable to suffering from disasters whereas groups, which are well organized and have high commitment to their members, suffer less during disasters. Weakness in social and organizational areas may also cause disasters. For example, deep divisions can lead to conflict and war. Conflict over resources due to poverty can also lead to violence. A second area of vulnerability then, is the social and organizational aspect of a community.

- **Attitudinal/Motivational Vulnerability.** People who have low confidence in their ability to affect change or who have "lost heart" and feel defeated by events they can not control, are harder hit by disasters than those who have a sense of their ability to bring the changes they desire. Thus, the third area of vulnerability is the attitudinal and motivational aspect.

4. Capacity

Capacities are the assets, resources and skills available within a community, society or organization that can be used to reduce the risks or 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. Capacities enable households and communities to cope with, withstand, prepare for, prevent, mitigate, or quickly recover from a disaster. People's capacity can also be categorized in the same categories as was done with vulnerabilities in the previous section.

Even the weakest in the community has capacities. The people whose houses or crops have been destroyed by a typhoon or flood can recover things from their homes and from their farms that can be recycled. Sometimes they have food in storage or crops that can be recovered from the fields or farm implements for planting again. Some family members have skills, which enable them to find employment if they migrate, either temporarily or permanently.

In most disasters, people suffer their greatest losses in the physical and material realm. However, even when everything physical is destroyed, people still have their skills and knowledge; they have family and community organization. They have leaders and systems for making decisions. They have tribal loyalties or church affiliations. They have capacities in the social and organizational realm.

People also have positive attitudes and strong motivations such as the will to survive, love and concern for each other, bravery and willingness to help each other. These, too, are important capacities and form the basis for development just as much as the physical resources that people have.

5. Disaster Risk

Disaster Risk is the chance of likelihood of suffering harm and loss as a result of a hazardous event. It closely depends upon the exposure of something to a hazard. This can be expressed as:

$$Risk = Chance\ (c) \times Loss\ (L)$$

The output of risk analysis is usually an estimation of the risk scenarios

6. Elements at Risk

A societal element is said to be 'at risk' when it is exposed to hazards and is likely to be adversely affected by the impact of those hazards when they occur.

People (their lives and health), household and community structures, facilities and services (houses, access roads, bridges, schools, hospitals, etc.) livelihood and economic activities (jobs, equipment, crops, livestock, etc.) are described as "elements at risk". In many cases, the natural environment is also an element at risk.

7. Disaster Risk Assessment

Disaster risk assessment is a participatory process to assess the hazards, vulnerabilities and capacities of a community. Through hazard assessment, the likelihood of the occurrence, the severity and duration of various hazards is determined.

The vulnerability assessment identifies what elements are at risk and the causes of their vulnerable conditions. The households and groups that are most exposed to a hazard are identified. The assessment takes into account the physical, geographical, economic, social and political factors that make some people vulnerable to the dangers of a given hazard.

In the capacity assessment, the community's resources and coping strategies are identified. The result of the disaster risk assessment is a ranking of the disaster risks of the community as basis of planning for risk reduction.

8. Disaster Risk Reduction

The reduction of disaster risk is the foundation of community-based disaster risk management. Disaster risk reduction includes activities that will minimize disaster-related losses of life, property or assets and environment. Such activities are also described as mitigation measures.

9. Disaster Preparedness

Disaster preparedness covers activities to enhance the ability to predict, respond to and cope with the effect of a disaster. It includes pre-cautionary activities by households, communities and organizations to react appropriately during and following the event.

10. Emergency Response

Emergency response covers measures required in search and rescue of survivors and in meeting basic survival needs for shelter, water, food and health care.

11. Recovery

Recovery is the process to fully restore the community to pre-disaster level of functioning or better than that. This refers to rehabilitation of livelihoods, restoration of social and economic activities and reconstruction of shelter and infrastructure.

12. Climate Change

Climate change is a change in the average weather that a given region experiences. Average weather includes temperatures, wind patterns and precipitation. Today, the climate change is happening at very fast speed. This is enhancing the occurrence of extreme hazard events.

13. Local Auhtorities/Local Government

The terms local government and local auhtorities have been used interchangely throughout this workbook. Local governments are administrative offices of an area smaller than a state. The term is used to contrast with offices at nation-state level, which are referred to as the central government, national government, or (where appropriate) federal government.

In modern nations, local governments usually have less powers than national governments do. They usually have some power to raise taxes, though these may be limited by central legislation. In some countries local government is partly or wholly funded by subventions from central government taxation. The question of Municipal Autonomy - which powers the local government has, or should have, and why - is a key question of public administration and governance.

The institutions of local government vary greatly between countries, and even where similar arrangements exist, the terminology often varies. Common names for local government entities include state, province, region, department, country, prefecture, district, city, township, town, borough, parish, municipality, shire and village. However all these names are often used informally in countries where they do not describe a legal local government entity (Source: *http://en.wikipedia.org/wiki/Local_council)*

Local Governance: Local governance is governing at the local level viewed broadly to include not only the machinery of government, but also the community at-large and its interaction with local authorities.

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Kotze, A. Von and A. Holoway, *Reducing Risk: Participatory Learning Activities for Disaster Mitigation in South Africa*, IFRCRC & Department of Adult and Community Education, University of Natal, 1996

UN/ISDR, *Living with Risk-focus on Disaster Risk Reduction*, Vol. 1, United Nations, New York, 2004

New Learning and Reflections

session 3

community-based disaster risk management: rationale and process

Learning Objectives

At the end of this session, the participants should be able to:

- Briefly describe the concept of CBDRM
- Importance of community-based approaches
- Steps in CBDRM process

Key Concepts

- CBDRM is a process in which at-risk communities are actively engaged in decision-making
- CBDRM contributes to addressing the root causes of vulnerabilities and transforming the structures that generate inequality and underdevelopment.
- Role of vulnerable groups and persons is central in disaster risk management, since ultimately it is about their life.
- Nobody can understand local opportunities and constraints better than the local communities themselves.
- There are six basic steps in CBDRM process. The sequence in the application of these steps might differ depending upon the social, economic, political and organizational factors in a given area.

Reference Materials

Community-based Disaster Risk Management: Rationale and Process

Community-based Disaster Risk Management (CBDRM) is a process in which at-risk communities are actively engaged in the identification, analysis, treatment, monitoring and evaluation of disaster risks in order to reduce their vulnerabilities and enhance their capacities (ADPC 2003). This means that people are at the heart of decision-making and implementation of disaster risk management activities. The involvement of most vulnerable social groups is considered as paramount in this process, while the support of the least vulnerable groups is necessary for successful implementation.

Abarquez and Murshed, 2004

CBDRM approach is people and development oriented. It views disasters as a question of people's vulnerability. It empowers people to address the root causes of vulnerabilities by transforming social, economic and political structures that generate inequality and underdevelopment (Shaw and Kenji 2004). CBDRM approach covers prevention and mitigation, preparedness, emergency response and recovery.

Need for community involvement

The key aspect of community involvement is the sustainability of community level initiatives for disaster reduction. External agencies, like government, non-government organizations may initiate and implement community level programs before and after disasters. However, such initiatives many times discontinue once the external support is ended. There can be many reasons behind this lack of sustainability, some of which may be the lack of partnership, participation, empowerment and ownership of local communities. Unless the disaster risk management efforts are sustainable at individual and community level, it would be difficult to reduce the vulnerability and losses. It is therefore important to involve people in decision making on policies and strategies that should be followed for their development in the community.

Disasters can become uncontrollable, once the event has got underway. Therefore, preventive steps need to be taken before, during and after the disaster events. If the community were not well prepared, control over the disaster event would be usually lost during its occurrence. If each individual in the community is familiar with ways of coping and precautionary measures, then the disruption by a disaster can be reduced (Sampath 2001).

All communities and villages have some vitally important assets to deal with disasters. These may include knowledge of disaster warning signs, locally safe and vulnerable areas, experience of past disasters, methods of survival and social relations that are often vitally important in coping with crisis. Local communities have an active part to play before and after disasters because:

- A good state of disaster preparedness may reduce its impacts
- More number of lives can be saved during the first few hours after disaster has occurred through local response teams, before help arrives from elsewhere.
- The numerous problems of survival and health resulting from a disaster are dealt with more efficiently, if the community is active and well organized (WHO 1989).

There is growing evidence to show that most top-down disaster risk management and responses programs fail to address specific local needs of vulnerable communities, ignore the potential of local resources and capacities and may in some cases even increase people's vulnerability.

The relevance of the community-based disaster management approach is increasing due to changing patterns of disaster occurrence and loss. While occasional large catastrophes continue to occur, it has been documented that rapid increase in disaster occurrence and loss is due to the exponential increase in the occurrence of small to medium-scale disasters associated with socio-natural hazards such as landslide, flood, drought and fire.

General elements of the bottom-up approach include the following:

- Local people are capable of initiating and sustaining their own community development
- While role of local government, private sector and NGOs is important, the primary requirement for grassroots development is with local leadership
- A successful bottom-up strategy will include broad-based local participation in comprehensive planning and decision-making activities that promote motivation
- Educational opportunities should correspond to identified local needs
- Emphasis is on improving the utilization and management of local resources
- Responsible utilization of outside financial assistance is required
- Replication of a community's success is a powerful factor in continuing local initiative
- Responsibility for change rests with those living in the local community
- Various community members and groups in the community may have different perceptions of risk and varying vulnerabilities

CBDRM processes from local authority's perspective

The disaster risk reduction process has six sequential stages, which can be implemented before a disaster occurs or after one has happened to reduce future risks. Each stage grows out of the preceding stage and leads to further action.

The stages in the disaster risk reduction process are given in the figure below:

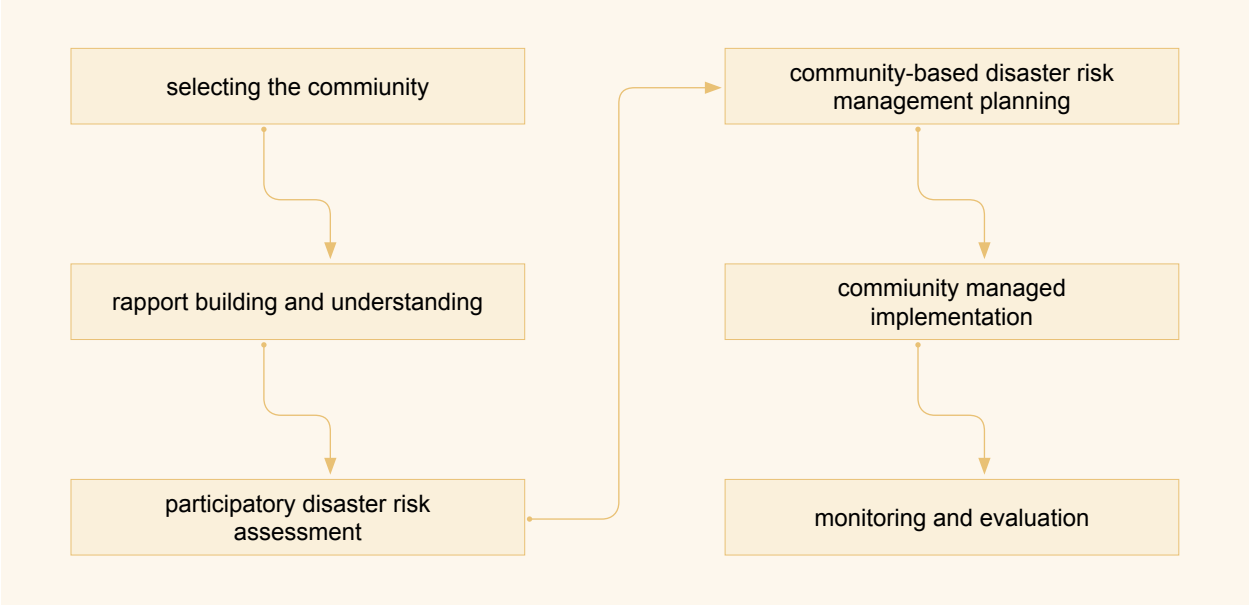

Figure 1. Disaster risk reduction process

A thorough assessment of the community's vulnerabilities, coping capacities and the risks is needed to start any risk reduction activities. The active involvement of communities, subject experts and elected authorities is important in decision-making to promote ownership and sustainability.

1. Selecting the Community

The first task of local authorities is to conduct a detailed risk assessment survey of the whole area under its jurisdiction. The selection of communities for implementation of CBDRM activities depends upon a number of factors and criteria, but most importantly the risk exposure of the particular community. Given below is a list of the criteria for identifying communities for CBDRM activities:

- Severity of community's exposure to risk (most vulnerable)
- Number of people to benefit from Disaster Risk Reduction (DRR) activities
- Readiness of community to engage in Disaster Risk Reduction activities
- Poverty status of the community
- Governmental priority of physical, social and economic vulnerability
- Budget availability
- Accessibility

All of the above mentioned criteria wouldn't be equally important in a given area. The local authorities can make decisions on the basis of factors that might be more important locally, then the others. A thorough survey will need to be conducted for the identification of vulnerable communities. The following table can be used to conduct survey for identifying the vulnerable communities for a transparent decision-making process

Table 1. Community Identification Matrix

communities	criteria						total	rank
	risk exposure	poverty status	will to engage in DRR	no. of potential beneficiaries	accessibility	staff security		
1								
2								
3								
4								
5								
6								
7								
8								
9								

2. Rapport Building and Understanding

Once the most vulnerable communities are identified it would be important to understand the local social relationships and power structures, key economic groups and to build good informal relationship with the local people. This will be crucial in order to ensure participation of various local groups.

The local authorities and NGOs who support the community in disaster risk reduction need to build a picture of the nature, needs and resources of the community. This step usually involves interacting and integrating with the community and gathering basic information to have a general description of the community.

A relationship of trust and friendship is the key to facilitate effective participation. If community members have trust in the outsiders who are working with them, then open sharing about issues, problems, concerns and solutions can take place. Local authorities can take a number of actions in order to develop trust with and an understanding of the community. This can include the following (Chambers, 1997):

- Living in the community
- Being transparent and open about their purpose
- Participating in daily life activities in the community, and cultural events
- Listening to the issues and problems of local people
- Learning new skills from local people
- Performing local tasks

The behavior of local authority staff is very important in establishing a proper relationship of trust and openness. Ways in which they should behave include:

- Show humility
- Respect local culture, problems and way of life
- Be patient
- Have interest in what people have to say
- Be observant rather than judgmental
- Have confidence that local people can achieve what they set out to do, and transmit that confidence

An understanding of the community's development position and the context upon which disasters will impact includes the following basic elements:

Social groups
- The main ethnic, class, religion and language-based groups in the community
- The majority, the minority, and the nature of their relationships

Cultural arrangements
- How are the family and community level structures organized?
- What hierarchies exist?
- What are the common ways of behaving, celebrating, expressing?

Economic activities
- What are the major livelihood sources and what are the associated activities that people carry out?
- What is the division of labor?
- What is the relationship between livelihood activities and seasonality?

Spatial characteristics
- What are the locations of housing areas, public service facilities (e.g. schools, temples, health clinics, evacuation centers), agricultural land etc?

Vulnerable households and groups
- Who might be the most vulnerable groups or households, given the locations of their houses, sources of livelihoods, ethnic and cultural positions, etc?

3. Participatory Disaster Risk Assessment

Participatory Disaster Risk Assessment is a process to identify the risks that communities, villages, communes face and how people overcome those
risks. This will be conducted in most vulnerable and priority communities. This process involves hazard assessment, vulnerability assessment and capacity assessment, and analysis and prioritization of risks. The participatory disaster risk assessment will be conducted by the local authorities with the involvement of local people, community leaders and subject experts.

4. Community-based Disaster Risk Management Planning

At this stage, further analysis will be conducted jointly by the local authorities and communities to analyze the risks and identify strategies and solutions to address them. Based on this analysis, a detailed risk reduction and response plan will be developed for the particular communities. The planning process will involve analysis of local stakeholders and local resources. Roles and responsibilities of the various stakeholders for implementation of activities will be clarified.

5. Community Managed Implementation

The implementation of the plan should be done through the community organization at community level with support from local authorities and technical and research institutions. The implementation process will include various structural and non-structural activities; e.g. community training, disaster response drills, community early warning systems, disaster resilient construction of houses, forest plantations, mangrove plantation, diversification of crops, rainwater harvesting, construction of dykes, bridges etc for vulnerability reduction and hazard mitigation. The community-based organization would be responsible for overall management of the disaster reduction activities. The local authorities should play a facilitating and coordinating role for the implementation of the community plan and mobilization of resources. They would also need to provide essential technical assistance to the communities for hazard mitigation and vulnerability reduction. Since the local communities may not have the technical skills and knowledge to undertake various disaster reduction tasks; e.g. construction of dyke, construction of disaster resistant houses, or hazard assessment.

6. Monitoring & Evaluation

Participatory monitoring and evaluation (PME) involves the local community, development agencies, local authorities and other stakeholders in measuring the progress made, and identifying necessary follow-up actions.

Harmony among all the groups in PME is an important factor for success!!

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New Learning and Reflections

session 4

overview of the local authorities

Learning Objectives

At the end of this session, the participants should be able to:

- Define the political and administrative structure of local authorities in your country;
- Explain the technical, operational, legal and financial capacity of the local authorities for disaster risk reduction;
- Enlist other stakeholders for disaster reduction at local level and their capacities;
- Describe the demographic, economic and development conditions in the local area;

Key Concepts

- Local authorities can mean a range of levels of governmental administration in a country; e.g. district, sub-district, municipal, commune etc. This depends upon the political, administrative and legal systems in a country. It is useful to define the local authorities for your work.
- Each of these different levels of authority may have differential capacities; in terms of technical, operational, financial or legal. It is important to understand the capacities available with these different levels of government. The commune and sub-district levels may have less technical and financial resources in comparison to the district or municipal governments. While the commune and sub-district levels may have much stronger ties with the local communities.
- It is also necessary to analyze the other key stakeholders at the local level and their role and capacities for disaster reduction. This analysis will help in understanding the political system, organizational mandates, and opportunities and resources for disaster reduction and development, in the district, municipality or commune;
- This analysis will help the local authorities to analyze their strengths and weaknesses to deal with disasters, and identify strategies for that purpose.

Reference Materials

Overview of the Local Authorities

Introduction

The local authorities can include a range of geographical levels and administrative and political structures. The local authorities may include:

i) a district government, ii) a municipal administration, iii) a sub-district administration, or iv) a commune. In some countries the local authorities might be very clearly defined under the local government acts. However, in other places the definition of a local authority may not be very well defined.

In federated countries, the local authorities are defined by political representation. The municipality, sub-district and commune levels normally represent the provincial or state authorities and they are considered as the local authority. Since the district level government represents the federation, it is not considered as a local authority.

In countries where system of local government is established, the district level is considered as a local authority. In such systems the district government is represented and managed by elected officials, while the role of bureaucrats is to manage administration. In other places the local authorities are comprised upon bureaucrats. Career officials are responsible for the overall management of the local administration. Sectoral officials represent their departments in the local administration structure.

The district level administration can also vary in different countries. In some countries all sectoral departments are represented at the district level through their technical or management staff. While in other locations only few departments may have their district staff. The presence or lack of district and local level staff of various departments can make important difference in the capacity of the local administration to provide good governance and reduce disaster risks.

For our purposes in relation to disaster risk reduction, we consider all of the above levels and types of government; the district, municipal, sub-district and commune as the local authorities. Irrespective of the political or administrative background, the role of these levels of administration is critical in reducing disaster risks. Since the disaster risks are essentially local, meaning that their impact is directly experienced at the local and community level. Similarly most of the disaster reduction measures are implemented at the local and community levels; e.g. land use and urban planning, environmental management, application of building codes, construction of embankments, or mobilizing community groups community level warning systems etc.

However, the capacity of these different levels of administration differs from each other. For example the district and municipal level administration may have more technical expertise. Similarly their ability to mobilize financial resources for development work will also be stronger, since they can impose taxes. On the other hand the sub-district and commune level administration may not have enough technical capacity to implement disaster reduction activities without external support. They do not have the authority for tax collection; therefore, financially they would be dependent upon the district and provincial governments or upon NGOs and private sector. However, the commune and sub-district level administration may have much better understanding of the local communities and strong relationships with local people and leadership. The district administration on the other hand may find it at a distance from the local communities and would therefore be dependent upon commune authorities to reach out to the communities.

It will be important for a local authority to assess its capacity and resources to deal with disaster risks. Such capacities and resources may include the local development policies, management systems, technical expertise, machinery, communication systems, infrastructure and relationships.

The local authorities must also analyze the resources of private sector, mass organizations; e.g. teachers associations, women union, associations of imams or monks, youth unions etc.

The demographic analysis of the local area will allow the local authorities to understand the capacities and resources of the communities at large.

Analysis of the environmental resources must also be conducted in order to identify the opportunities that might exist for disaster reduction through environment rehabilitation and conservation.

The following table indicates the areas of analysis for local authorities :

Table 2. Areas of Analysis for Local Authorities

#	areas of analysis
	local authorities
1	No. of employees of the local authority
2	No. of employees per sector
3	Percentage of employees per community
4	Technical expertise of the employees for disaster reduction
5	Disaster reduction and response policies
6	Policies in relation to sustainable development
7	Disaster preparedness plans
8	Equipment and machinery available for disaster reduction
9	Funds available for disaster reduction and preparedness
10	Availability of micro-finance services for disaster reduction
11	Community-based programs on disaster reduction
	other stakeholders
1	No. of organizations working on disaster reduction
2	Technical expertise of the organizations
3	Financial resources of the organizations
4	Equipment and machinery
5	Community-based programs on disaster reduction

Timor Léste: Administrative and Political structure at local level

Timor Léste is the youngest and one of the poorest countries in the world with as many as 40 percent of all its inhabitants live in poverty (spending less than 0.55 USD per day). Administratively, the country is divided into 13 districts, 65 sub-districts, 498 villages (Sucos) and 2336 hamlets (aldeias). The national government has a counter part in the districts known as district administration. However, not all Ministries and Departments have line agencies at the district level.

There are no elected authorities at district and sub-district levels in the country. At Suko level, authorities are elected from the people. Since the distinct, sub-district and Sukos do not have authority to collect tax and mobilize them in their priority, they largely rely on the grant from the central government for any local initiatives. In this way, local government in Timor Léste is in a very preliminary stage.

Manatutu is one of the very high disaster-prone districts. The hillside of the Manatutu district has been seriously affected by drought, deforestation and forest fire. The

rain shadow and the traditional practices of agriculture system have led to serious disruption of agriculture crops mainly four sub-districts of this district. In the northern part of the district rice is extensively grown (5000 hectares). At higher areas coffee is also planted as a cash crop. Main livestock are buffaloes, pigs and goats.

Key features of Manatutu district are:

- The total population of the country is 34900 with the surface area of 1706 square kilometers.
- Farming is the main occupation of the people in the district. Maize, cassava and paddy are the three most agriculture crops grown in the district.
- Highland communities are highly affected by drought because of rain shadow effects
- Sukos (villages) of Laclo and Umakeduak sub-districts are highly affected by drought
- Recurrence period of drought is every year from November to February. November is main planting season and it has greatly affected the maize yield.
- Key hazards are drought, forest fire, storm wind.
- Women are suffering most to collect drinking water from far away
- Protection of forest in the upland is necessary to maintain water resource base
- Alternate sources of income are: forest resource, fishing, selling of livestock
- No people in the community works in the government or other offices
- Education status is also very low as only one person in the community has attended university level
- Credit in kind (e.g. pig, boats, goats) schemes can be helpful in mitigating drought impacts for short run.

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New Learning and Reflections

session 5

role of authorities in community-based disaster risk management

Learning Objectives

At the end of this session, the participants should be able to:

- Explain the key roles of local authorities in supporting community action for disaster risk management.

Key Concepts

- Local government concepts emphasis the role of local authorities for better service delivery, and wellbeing and empowerment of the people through providing better opportunities in the development process.
- Local authorities are expected to play a significant role in formulating necessary policies, plans and legal instruments, providing financial and technical resources, coordination and linkage development, building community capacity on early warning, preparedness, relief, rescue, shelter management, first aid and damage assessments. Awareness generation among the community members would be a role that the elected members could play.
- The concept of mainstreaming disaster management into the poverty reduction strategies of the government is emerging as a pre-requisite of development planning.

Reference Materials

Role of Local Authorities in Community-based Disaster Risk Management

The role of local authorities is becoming more important in the South East Asian region since the governments are focusing on decentralization of powers and resources. The local authorities have a crucial role in promoting good governance for the well being and development of people. In this regard they are expected to provide opportunities for people's participation in the local decision making mechanisms and processes. This would allow the people to choose the course of their own development.

Similarly the role of local authorities in promoting local and community level disaster preparedness is also very important. Many times the disaster risks are localized. This has two dimensions. First, the small and medium scale disasters occur more frequently than the large-scale disasters, which are experienced in localized regions. Secondly, the impact of disasters is mainly experienced at the local level. Therefore, the local authorities have a key role in managing disaster risks before; during and after the occurrence of disasters, as they have a very crucial role in disaster preparedness and response. An effective emergency response by the local authorities can play an important role in saving lives in the aftermath of a disaster. On the other hand lack of capacities at the local level for disaster response could contribute to huge loss of life and property, in case of delay in external aid due to the isolation of affected areas.

However, the local authorities alone may not be able to achieve greater success in disaster reduction, preparedness and response without the active involvement and participation of the vulnerable communities because effective disaster risk reduction requires action by all vulnerable individuals, families, communities and organizations. In addition the technical, human and financial resources of the local authorities are very limited, which may not be sufficient to implement disaster risk reduction activities amongst all vulnerable communities. Therefore, it is essential that the local authorities mobilize support from various civil society institutions and involve larger communities.
The local authorities can play the role of a facilitator, enabler and resource provider in order to promote community level risk reduction and preparedness.
There are four key services that are required by the vulnerable communities for disaster preparedness. They include:

1. **Community mobilizing, organizing and capacity building**

   Many vulnerable communities may not be organized and active in the area of disaster risk reduction and preparedness. They may not also have the technical ability to undertake an organized action. Therefore, the local authorities can play an effective role in organizing community groups or mobilizing the existing groups and in building the capacity through training and study visits.

2. **Information on risks, vulnerabilities and preparedness actions**

   In many cases it is the lack of information on hazards, related risks, vulnerabilities and the preparedness actions by the local communities that serves as a hindrance in community action. This is particularly true in the case of migrant and displaced communities in urban centers and in post-conflict situations. An important need of such communities is to receive such information. The local authorities should establish arrangements for the provision of information to communities in relation to hazards, vulnerabilities, risks, capacities and preparedness actions. The local authorities can establish community and local level information centers to provide such information. The existing cultural and social institutions can be used for this purpose; e.g. mosques, temples, churches, schools, associations of farmers, labor unions, or mass unions like the women's union, youth union, elderly union etc. The local authorities must utilize multiple communication systems; e.g. radios, TV, public address systems, mobile

phones, internet, newspapers, posters, exhibitions, and rallies to ensure they reach the at-risk communities and groups.

3. Funds to families and communities groups for disaster risk reduction, preparedness and response

In other cases in poor societies the families and community groups might be hindered by the lack of financial resources to undertake actions on disaster risk reduction and preparedness. Poor families may not be able to access the existing loan facilities from the banks due to lack of collateral. Therefore, they may not be able to construct a typhoon resilient house or find an alternative source of livelihoods that is less vulnerable to droughts or floods. Or a community group might not be able to construct a rainwater-harvesting pond due to the lack of funds. Therefore, the provision of financial resources in the form of micro-credits and small grants is essential to enable families and community groups to implement disaster risk reduction and preparedness activities. It will be important to establish arrangements for the provision of small grants and other funding facilities available to families and social groups for disaster reduction.

4. Technical assistance

This is another very important service that is required by the vulnerable communities. Many Asian communities lack technical experts and capabilities to implement activities on hazard mitigation, vulnerability reduction or even to conduct a risk assessment. For example a community may not have the trained masons who know how to construct typhoon safer houses or they may not have the technical knowledge on earthquake hazard assessment or on drought and flood resistant crops. Lack of such technical expertise may hinder the communities from undertaking disaster risk reduction initiatives. Therefore, they need this service from external sources; e.g. NGOs, local government, universities or research centers. Many government ministries and technical institutions have such kind of technical capabilities. The local authorities have an important role in this regard. They can build the capacity of the local communities in certain aspects of disaster risk reduction. They can arrange the provision of technical assistance from within the government system to the communities; e.g. provision of technical advice on drought resilient cropping by agricultural extension workers. They can link the communities with the technical resource centers; e.g. the universities, NGOs or research institutions.

Within the above broader framework the local authorities can play a pivotal role in facilitating community action through following interventions and initiatives:

- Establish policies as per the local needs
- Identify and prioritize most vulnerable communities
- Conduct local and community level risk assessment
- Document local coping mechanisms and expertise
- Development of local disaster preparedness plans
- Facilitation of community level preparedness planning
- Establish local and community level Early Warning Systems (EWS)
- Capacity enhancement of community volunteers and groups; e.g. training on search and rescue, extrication of the trapped from buildings, first aid, fire fighting, swimming, evacuation drills and risk assessment etc
- Regular up-grading of disaster preparedness and mitigation plan
- Providing resources to community volunteers and groups; e.g.medicine kits, rescue equipment, survival kits, warning equipment, fire fighting equipment, evacuation equipment (boats, transport) etc

- Establish safe storage of essential items near vulnerable locations; e.g. food, medicine, rescue equipment, earth moving machinery etc.
- Establishment of temporary shelters at vulnerable locations to host affected people
- Establishment of local level emergency response teams comprised upon community members and local officials
- Establishment of damage assessment and relief distribution teams
- Coordination and networking among all stakeholders

In recent years, local self-governance and good governance have emerged as key concepts to form the basis of political system. Disaster risk management is a necessary part of local and community development. This is also considered as a key strategy for poverty alleviation. Disaster disrupts the local infrastructures as well as local economy. However, disasters can actually become "vehicle for change" for sustainable and participatory development. The role of local authorities is most important in this regard in promoting a participatory disaster resilient development. They can do this by creating and enabling environment to strengthen community action.

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New Learning and Reflections

session 6

national disaster management system

Learning Objectives

At the end of this session, the participants should be able to:

- Describe the national stakeholders in disaster risk management in your country
- Explain the key features of government's disaster risk management policies and plans;
- Discuss the organizational infrastructure that exist in the national, provincial and local levels for disaster reduction;

Key Concepts

- Considering the importance of disaster risk reduction and preparedness, the national governments have set up appropriate institutional arrangements in this regard; e.g. National Disaster Management Committee (NDMC). In other countries the governments have set up hazard specific arrangements; e.g. the Central Committee for Flood and Storm Control (CCFSC). Such committees are high level decision making bodies to organize disaster preparedness and response.
- In order to support the work of these committees, organizational mechanisms in the form of secretariats and committees at the national, provincial and district levels have been set up; e.g. the National Disaster Management Office (NDMO), or BAKORNAS PBP.
- Aside from the government, United Nations agencies, NGOs and International organizations are also key players in disaster risk reduction; e.g. UNDP, UNHCR, UNICEF, WFP, UN-OCHA amongst the UN agencies, while, CARE, World Vision, Action Contre La Fiam (ACF), Save the Children, Concern Worldwide, Oxfam, National Red Cross Societies, IFRC, ADPC amongst the NGOs and international organizations
- Donors, Media and Private companies are some of the other stakeholders;
- It is important for the local authorities to know about the government and non-government stakeholders so that they can benefit from cooperation with such organizations.

Reference Materials

National Disaster Management System

Introduction

This session intends to provide an overview of the key stakeholders in the national disaster management system. It will cover both the government and non-government sectors. The session will discuss about the organizations, policies, plans, and programs on disaster risk reduction and preparedness. For the government sector it will look at the various institutional and organizational arrangements at the national, provincial and local levels. For the non-government sector it will review the relevant UN agencies, NGOs, and International Organizations.

1. CAMBODIA

In Cambodia, the National Committee for Disaster Management (NCDM) is the authority that is responsible for disaster risk reduction at the national level. The General Secretariat (GS) works under the Executive Committee of the NCDM. The General Secretary is the General Headquarters of the NCDM's functions, which was constituted by Decision No. 48 SSR of the Government. The GS consists of five departments, i.e. Administration and Finance, Information and Relation, Disaster Preparedness and Institutional Development, Disaster Response Coordination, and Search & Rescue Coordination. The establishment of Permanent Secretariats at the provincial and district levels are provisioned by the decree. In order to promote better coordination during disaster response, the NCDM has formed a Working Group on Disaster Coordination Response and Rehabilitation among governmental ministries, UN Agencies and international organizations like the MRC and IFRC. The working group has five sub-groups such as Emergency Relief Assistance Sub-group, Food Security Sub-group, Health Sub-group, Small Scale Infrastructure, Water and Sanitation Sub-group, Preparedness and Mitigation Sub-group.

The NCDM recognizes the CBDRM as an important strategy for disaster reduction. The elements of the Cambodia's National Disaster Management Plan cover preparedness, relief, and recovery phases. The NCDM organizes capacity building sessions and briefings for officials, communities and the armed forces. The idea is to cover all phases of disaster cycle through dividing responsibilities amongst different agencies and with participation of communities for self-help.

In addition, a number of NGOs and international organizations support programs on community-based disaster risk management in the country. They include: Cambodian Red Cross (CRC) Oxfam (GB), ZOA, Dan Church Aid, Prasac, JICA, UNICEF, UNDP, WFP, MRD, MOWRM, MOAF, MRC, AAH, LWF/CWS, CARE International, Seila, Cambodian Social Funds.

The structure of the National Committee for Disaster Management (NCDM) is shown in Figure 2.

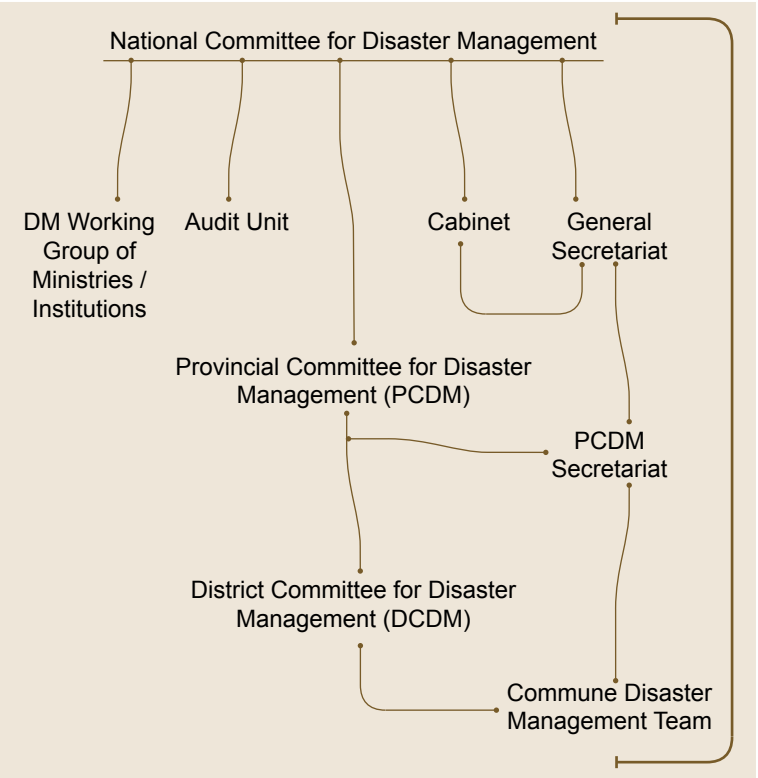

Figure 2. NCDM structure

In order to strengthen community-based disaster risk management, the NCDM secretariat has proposed the establishment of Commune Committees for Disaster Management (CCDMs) in all regions in Cambodia.

Proposed Structure of the Commune Committee for Disaster Management

• Chief of commune	Chairman
• Deputy Chief of Commune	Deputy Chairman
• Chief of police station in commune	Member
• Chief of primary school	Member
• Chief of Health Center in commune	Member
• Instructor in-charge of women affairs & Children in commune	Member
• Volunteers of Cambodian Red Cross	Member
• Representative of oldest person in commune	Member
• All Chiefs of Villages in commune	Member
• Clerk	Secretary

General Duties of the CCDM

- To implement the policy related to disaster management
- To prepare guidelines and support community-based disaster risk management
- To inform DCDM about activities of other sectors, National Association, UN agencies, International Organizations and NGOs in disaster risk management
- To prepare training curriculum, educate and raise public awareness in community about disaster risk management.
- To inform DCDM about disaster situation.
- To prepare a proposal on budget, equipment and resources and intervention forces for disaster risk management activities.
- To report to DCDM about disaster risk situation in community

2. INDONESIA

The National Coordinating Board for Natural Disaster Management (BAKORNAS PBP) was established through the Presidential decree in 1966, which also outlined the institutional arrangements at the provincial and district levels (SATLAKS & SATKORLAKs). In 1990, the Presidential decree expanded the scope of BAKORNAS to include man-made disasters. Key disaster management strategies of BAKONAS PBP include:

1. Disseminate disaster risk reduction and strengthen capacity through training and education
2. Prepare disaster legislation, regulations and standard operating procedures
3. Set up disaster management information systems
4. Disseminate hazard mapping and risk assessment
5. Set up disaster management plans in all levels
6. Strengthen National/Provincial/District emergency operation centre and rapid response team
7. Strengthen local capacity in disaster recovery

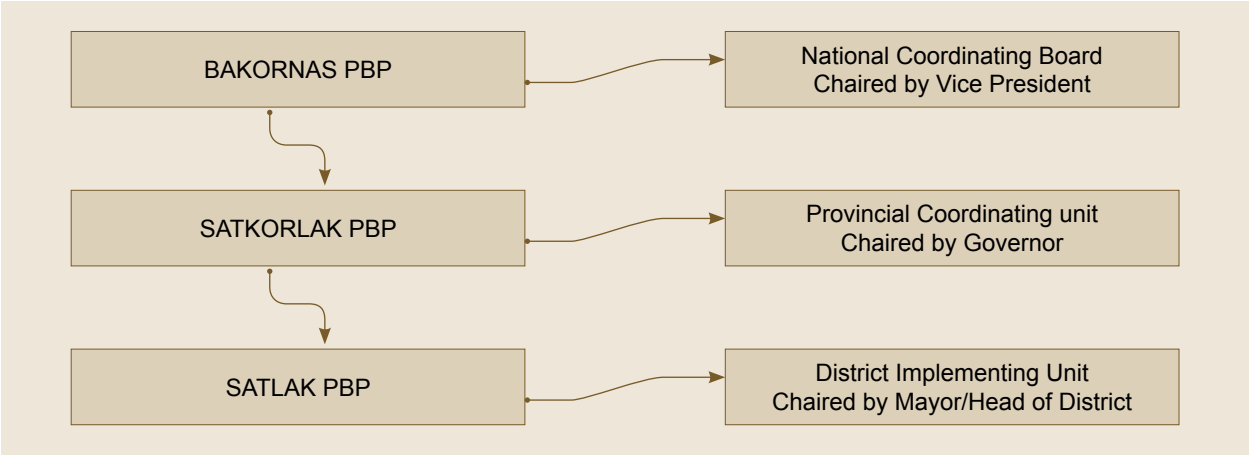

Figure 3. Institutional structure of BAKORNAS PBP

The lowest organizational presence of the disaster preparedness system in Indonesia is at the district level. SATLAK is the constitutional entity for disaster management at this level.

Besides central and local government, some sectors are proactively implementing CBDRM such as Ministry of Education, Ministry of Health and Ministry of Social Affairs. A number of universities are also active in implementing programs on CBDRM i.e. UPN and Gadjahmada of Yogyakarta, Institute of Technology Bandung (ITB) and ITS of Surabaya among others. National NGOs and civil society groups have also started promoting CBDRM by conducting training and seminar and developing technical guidelines and materials. They include IIDP, MPBI, CARE International, Palang Merah, Action Contre La Fiam (ACF), World Vision, IDEP, Oxfam and Yakkum among others.

3. LAO PDR

Lao PDR faces multiple natural hazards such as flood, landslide, drought and fire (urban, village and forest) almost every year. The recurrence period of big devastating flood in Laos is 1.4 years based on the observation of the last

40 years. During the last 40 years (1966-2005) severe exceptional flooding was experienced during: 1966, 1971, 1987, 1995, 1996 and 2000 (ADRC 2003). Agriculture and agricultural infrastructure suffered the worst damage from floods in the northern part of Laos and in the hilly areas in the centre. Drought is another severe hazard. Its localized effect can be more severe because of the high level of impoverished and marginalized rural people. In the history of Lao PDR severe-impact droughts have been experienced in 1977, 1983 and 1988. Drought events also occurred in 1993 and 1994 in the Northern provinces. Deficit in rainfall has particularly serious effects on food availability in the northern areas (ADRC 2003). During the period between 1997 and 2000 the country experienced cases of forest & urban fire & lost more than 30 billion KIPS (NDMO 2000).

In Loa the National Disaster Management Committee (NDMC) is the highest body responsible for disaster risk management. The National Disaster Management Office (NDMO) under the Ministry of Labor and Social Welfare serves as the secretariat for the NDMC. It also is the focal point for the development and implementation of the National Disaster Management Plan. The need for people-centered approach has been recognized in the National Disaster Management Plan (NDMP). Within the framework of the NDMP, a national strategy on integrating community-based disaster risk management (CBDRM) in the government policy, planning and programs has been drafted recently.

The National Disaster Management Committee (NDMC) has its branches at the provincial and districts levels, which are responsible for coordinating disaster management initiatives in their jurisdiction. They include: Provincial Disaster Management Committee (PDMC), and District Disaster Management Committee (DDMC). The work of these committees is coordinated through the NDMO. Although a policy requirement, the committees are not functional in all districts.

The Lao Strategic Plan for socio-economic development has given impetus to building linkages between disaster management and economic development. Long, medium and short-term strategies for disaster risk management have been recommended in this regard (NDMO 2000).

The objectives of these strategies are to:

- Safeguard sustainable development and reduce the damage of natural or man-made disasters to community, society and the economy.
- Shift strategy from relief and mitigation after disaster impact to preparedness before disaster, emphasizing on flood, drought, landslide and fire parallel with continuing mitigation in post disaster period.
- Turn from responsibility of only government agency to people-centered approach in dealing with disasters by building capacity of community.
- Promote protection of the environmental resources such as: forests, and water.

Several NGOs and international organizations such as Concern, World Vision, Danish Red Cross, Lao Red Cross, CARE International, Quaker and Mekong River Commission have been working in the field of community-based disaster management and capacity enhancement of government agencies in the country. Other key players include UNDP and WFP. The coverage of CBDRM programs is far below than the needs. Only eight out of the 18 provinces in the country have been covered by CBDRM activities from now and then. In terms of districts, it is less than 17 out of 142 districts in the country (Refer to the table below).

Table 3. CBDRM Projects Implemented by Government or Non-government Agencies

province	district	responsible agencies
Champasak Borikhamsai	Champasak Soukhoumma Pakading	World Vision Lao
Khammoune	Hinboon	Lao Red Cross
Saravnh	Ta Oya	Oxfam
Savannakhet Khammoune Xaiyabouly	Champhone Sonbouly Yommalat Boilapha Hongsa Xaiyabouly	Care International
Vientianne Capital Luangprabang Champasak	Vientiane Urban Center Luangprabang Pakse	Urban Research Institute
Khammoune Savannakhet	Nongbok Mahaxai Yomalat Champhone Soneboury Outhoumphone Songkhone	Concern World wide

At district level

- District Planning on disaster risk management
- Guiding for the project implementation, evaluation and monitoring the project
- Providing technical support to village
- Continue management of the project while the budget from outside is finished

4. TIMOR Léste

Timor Léste is at-risk to a number of hazards. Each year, heavy seasonal rain causes frequent flash flooding and landslides, which are considered the two major natural hazards. Apart from the casualties and damage to rural communities, these events cause major disruption to the fragile road network, isolating communities and even whole districts for a long duration. From November to April, the country is at risk from tropical cyclones and lesser tropical storms, which can cause coastal flooding and wave damage. In the dry season, drought conditions exist in large parts of Timor Léste. A delay in the onset of seasonal rains can become disastrous as fires can get quickly out of control. Due to the effects of El Niño, severe drought appears in some parts of the country at an interval of two or three years. Geological hazards also threaten Timor Léste. Areas to the north of the island have experienced earthquakes of up to 6.9 on the Richter scale within the last 12 years. These can cause local Tsunamis. A four-meter-high tsunami, caused by a major earthquake, struck the north coast of Timor in 1995. Other hazard which exist in Timor Léste include: marine pollution, forest fire, transport accidents, epidemics, urban fires, agricultural hazards including pests and disease attacks on crops, outbreaks of exotic animal diseases.

Table 4. Status of Hazards in Timor Léste

hazards	vulnerable areas/status	probability of occurence
Landslide	Very high in 3 districts	70% during rainy season
Flood	Mostly in South	70% during rainy season
Earthquake	South coast, Dili, Alor, Wetour areas	Every 10 year interval
Tsunami dkd;l	North coast, Southern coast line	(Timor Léste falls under a subduction zone)
Drought (ElNiño, ENSO)	Throughout the country	4-7 years cycle of ENSO
Storm, Marine flooding, fire, deforestation, pests	Throughout the country	Every year

(Source: NDMO, 2005)

In Timor Léste, the National Disaster Management Office (NDMO) has been established to coordinate and implement disaster management initiatives in the country. The NDMO has prepared a National Disaster Risk Management Plan (NDRMP), which aims to further strengthen national response capabilities. Strengthening community capacities is one of the important aspects adopted by this plan (NDMO 2005). The key strategies adopted in the plan include:

1. A necessary shift in managing disasters from a traditional manner-emergency assistance or crisis management-to disaster risk reduction strategies
2. Comprehensive disaster risk reduction strategies
3. A focus on strengthening community capacities
4. Integration of a gender perspective into all disaster risk management policies.

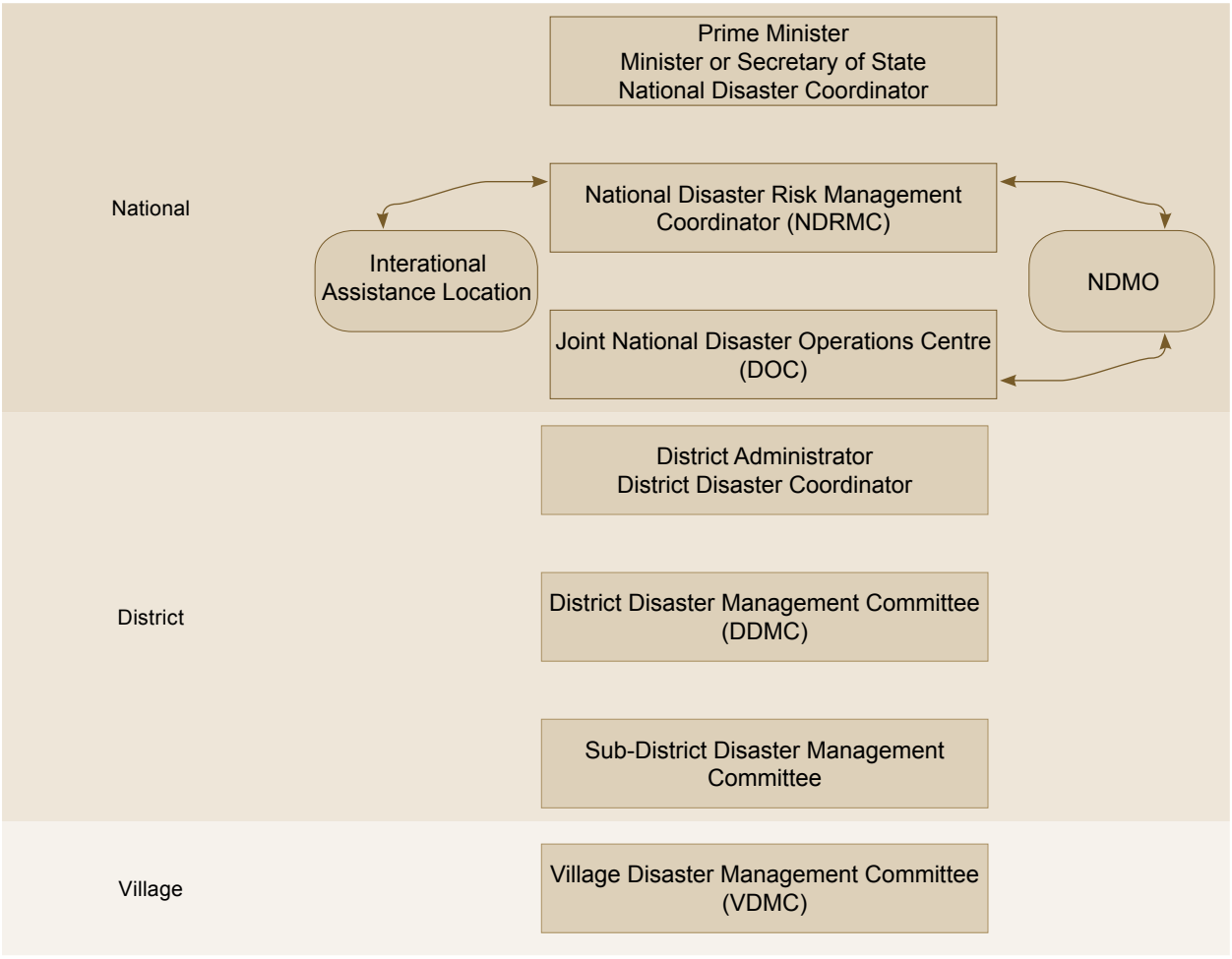

Figure 4. Organizational Structure of Disaster Management Organization in Timor Léste

Within this broader framework, a strategic collaborative action plan for the integration of community-based disaster risk management into the government policy and program has been drafted in consultation with the national and district level stakeholders.

In East Timor, work on community-based disaster management practices is in its infancy. CARE Australia, OXFAM and CONCERN are amongst the few active NGOs working in this field. UNDP and AusAID are also supporting in disaster risk management activities. OXFAM's disaster risk management strategy focuses on strengthening the capacity of government, civil society organisations and communities to reduce disaster risks in a gender sensitive way. It uses a CBDRM approach linked with livelihoods and health as part of a broader development programme. Its focus areas are food insecurity and public health risks. CARE's Community Disaster Preparedness Project aims to strengthen capacity at the household level to overcome vulnerability to food insecurity and malnutrition caused by recurrent drought. CONCERN's Capacity Building for Disaster Risk Reduction in Lautem District intends to contribute to the overall livelihood security for the poorest communities in the Lautem District, Timor Léste, through the reduction of vulnerability to environmental shocks.

5. VIETNAM

Vietnam is exposed to various hazards such as: flood, storm, tropical depression, storm surge, inundation, whirlwind, flash flood, river bank and coastline erosion, hailstone, drought, landslide and forest fire. A combination of the geographic position and topographic conditions form special climate characteristic that result in serious diversified disasters. Disasters occur almost year round in the country. There are typical disasters in each season and particular characters in each region.

Table 5. Key Hazards of Vietnam

	regions	key hazards
1	Northern Mountains	Flash floods, landslides
2	Red river delta	Monsoon river floods, typhoons, drought
3	Central provinces	Flash floods, landslides
4	Central highlands	Flash floods, landslides)
5	Mekong delta	River flooding, typhoon

The Vietnam Central Committee for Flood and Storm Control (CCFSC) is the chief coordinating body responsible for disaster management. It has committees at the provincial and district levels. The national committee is an inter-ministerial institution including representatives of all key ministries. Its secretariat is provided by the Department of Dike Management and Flood Control (DDMFC) of the Ministry of Agriculture and Rural Development (MARD). The government has promulgated the Statues on Dike Management, and Flood and Typhoon Mitigation. The second National Strategy and Action Plan (2001-2020) propose several strategies to reduce disaster risks and their impact on people, property, agriculture, environment, economic well being and equitable and sustainable develop.

The National Strategy and Action Plan acknowledge the importance of community-based disaster preparedness. The CCFSC has recently initiated a pilot project in ten communes on community-based disaster risk management. Through a joint initiative with the ADPC, the CCFSC has drafted the National Strategy Plan on community-based disaster risk management in order to integrate this approach into broader national policy and planning.

The key players on CBDRM in Vietnam include: Vietnam National Red Cross (VNRC), Spanish Red Cross (Cruz Roja), Netherlands Red Cross, Oxfam GB and HK, Save the Children, Development Workshop France (DWF), CECI, CARE International, Action Aid International and UNDP amongst others.

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New Learning and Reflections

module two

Module Objectives

At the end of the Module, you should be able to:

- Discuss the process of Community Risk Assessment
- Describe the process of assessment of Risk Communication Needs of Community
- Explain the steps in post-disaster damage and needs assessment

No of Sessions

1. Community Risk Assessment
2. Assessment of Disaster Risk Communication Needs
3. Damage, Loss and Needs Assessment
4. Community Risk Assessment Tools

COMMUNITY-BASED RISK, NEEDS AND DAMAGE ASSESSMENT

session 1

community risk assessment

Learning Objectives

At the end of this session, the participants should be able to:

- Describe the tools and techniques applicable in assessing hazard, vulnerabilities, capacities and risks.

Key Concepts

- Assessment is a process (usually undertaken in phases) of collecting, interpreting and analyzing information from various sources. Risk Assessment has three interrelated steps including risk identification, risk analysis and risk evaluation.
- Community Risk Assessment is a participatory process of determining the nature, scope and magnitude of negative effects of hazards to the community and its households within an anticipated time period. This is based upon assessment of hazards, vulnerabilities, capacities and an analysis and prioritization of risks.
- Hazard assessment is the process of determining the frequency, severity, potential impact and duration of a hazard.
- Vulnerability Assessment involves estimating the susceptibility of 'elements at risk' (people, household and community facilities and services, livelihood and economic activities, the natural environment) to various hazards and analyzing the causes due to which they are at-risk.
- Capacity assessment is about determining the resources, assets, skills, knowledge and social relations that a local authority or community has to deal with disasters.

Reference Materials

Community Risk Assessment

Introduction

The community risk assessment is a participatory process of determining the nature, scope and magnitude of negative effects of hazards to the community and its households within an anticipated time period. It determines the likely negative effects on 'elements at risk' (people; household and community structures, facilities like schools and hospitals; livelihood and economic activities, jobs, equipment, crops, livestock etc; lifelines, access roads and bridges) and why particular households and groups are vulnerable to specific hazards and others are not? The coping mechanisms and the resources present in the community are also identified.

Participation of community members is an essential component of community risk assessment, which determines the methodologies and tools to be used. CRA combines both scientific and empirical data concerning known hazards and other possible threats to the community. Although indigenous knowledge is vital, but scientific data is especially important in a situation when the hazard has not yet been experienced by the community.

- Community Risk Assessment provides disaster specific baseline data that can be used in development planning purposes.
- Community Risk Assessment provides information that can be used for 'intelligent and informed estimates' to draft emergency appeals. It provides the baseline data that is useful in doing the 'damage, needs, capacities assessment' of the community for emergency response purposes.

Community Risk Assessment expresses the possibility of suffering from a hazard that can cause death, injury, disease, economic loss or environmental damage. Community Risk Assessment has three interrelated steps as follows:

1. **Risk Identification** includes the hazard and vulnerability assessments. Hazard assessment includes identification of the nature and behavior of the hazards the community is exposed to. Sources of threat as well as level of likelihood of its occurrence are also identified. The vulnerability assessment identifies what elements are at risk and why they are at risk (the reasons for their vulnerability). The capacities of the community are also identified in order to determine their ability to deal with the potential risks.

2. **Risk analysis** aims to develop various risk scenarios and establish the degree of risk and its nature. This includes the estimation of potential damages and losses that might be experienced as a result of the occurrence of a hazard. (Standards Australia and Standards New Zealand 2004). This determines consequences and likelihood and hence the level of risk.

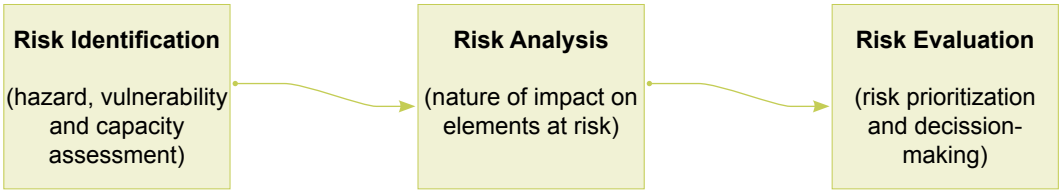


Figure 5. Risk assessment process

Risk analysis should consider the range of potential losses and damages and how these could occur. Assessment of capacities and resources also fall in this category. Capacity assessment identifies the people's coping strategies; resources available for preparedness, mitigation and

emergency response and who has access to and control over these resources. Risk mapping through GIS or manually, is an approach to analyze risks at local level.

3. **Risk prioritization** involves the comparison of risk against the pre-established elements or criteria. Most important risks from the perspective of vulnerable people are identified in this process. This also enables decision making about the potential strategies that should be followed for dealing with different kind of risks.

Figure 6. Concept of risk

1. Risk Identification

Risk can be identified using hazard assessment and vulnerability analysis.

Hazard Assessment
Hazard assessment is concerned with the properties of the hazards or threats. To understand the nature and behavior of hazards we need to identify:

- **Force:** wind, water (rain, flood, overflow, run-off, flashflood, tidal wave, storm surge, epidemic), land (slides, deposits by river, lahar, mudflow), fire (forest fire, settlement fire), seismic (earthquake, tsunami, liquefaction), conflicts (civil war, insurgency, other actions leading to displacement and refugees), industrial/technological (pollution, radio-activity, explosions), other human-related (famine, drought, pests, etc.)
- **Warning signs and signals:** scientific and indigenous indicators that a hazard is likely to happen.
- **Forewarning:** time between warning and impact
- **Speed of onset:** rapidity of arrival and impact. We can distinguish between hazards that occur without almost any warning (earthquake), and hazards that can be predicted three to four days in advance (typhoon) to very slow-onset hazards like drought and famine.
- **Frequency:** does hazard occur seasonally, yearly, once every 10 years, once in a lifetime, etc?
- **When:** does hazard occur at a particular time of the year (wet or dry season; in November to December?
- **Duration:** how long is hazard felt (earthquake and aftershocks; days/weeks/months that area is flooded; length of period of military operations)?

Risk can be identified using hazard assessment and vulnerability analysis.

Figure 7. A view of community hazard mapping in Lao PDR

The Hazard Matrix helps us to systematize information regarding the properties of the community's hazard exposure.

Table 6. Hazards Matrix

hazard type	force	warning signs	force warning	speed of onset	frequency	when	duration
flood							
drought							
earthquake							
civil war							
landslides							
pollution							
epidemic							

There are several other tools that can help in hazard assessment. The most commonly used tools are the following:

- Hazard map: drawn to locate the probable area covered by a hazard's impact and the elements at risk.
- Historical profile or time line: can make us understand how hazards have changed over time; which hazards have happened in the past; or the start of particular hazard occurrence.
- Seasonal calendar: visualizes the time, frequency and duration of common hazards.

In identifying and assessing the characteristics of the hazards, which threaten the community, the following points have to be considered:

- Some hazards also cause secondary hazards. Example, earthquakes cause landslides; drought might cause epidemics and pest infestation; floods might carry pollution and cause epidemics; etc. In such instances, one should consider the main force of primary hazard.
- Although hazard assessment is based on past hazard patterns, we should not forget to look at possible disaster threats that are new for the community and are likely to happen. There are an increasing number of threats due to changes in natural, economical, social and political trends. Threats unnoticed before, simply because nothing was exposed to them, can easily turn into major problems that no one had predicted (ethnic conflicts, industrial hazards, AIDS).
- We should also consider the various intensities, which each hazard may have.
- The rare the occurrence of a hazard in a given area, the less historical information there is to work with. Therefore, other sources should be consulted to provide more reliable information about their prediction and possible behavior.

Vulnerability Assessment

Vulnerability Assessment is the process of estimating the susceptibility of 'elements at risk' to various hazards and analyzing the causes behind their vulnerability. The assessment takes into account the physical, geographical, economic, social, political and psychological factors, which make some people more vulnerable to the dangers of a given hazard while others are relatively protected.

A variety of tools can be used to enrich the community's participation in vulnerability assessment. These are as follows:

- Hazard maps - helps in visualizing the 'elements at risk'
- Transect walk - helps to get a better understanding of the community map and affords opportunity to ask more questions on physical/material vulnerability
- Seasonal calendar - gives insight on periods of stress, diseases, hunger, debt, etc.
- Livelihood analysis - gives a picture of the varying effects of hazards on different households and groups

- Venn diagram - shows the state of coordination among organizations and Government agencies or leadership patterns
- Community drama - enables people to express what happens during disasters and why
- Problem tree and Ranking - shows linkage of vulnerabilities and enables the community to express the priority vulnerabilities to address.

At the local level, the most important factor concerning vulnerability is the level of income (Bishop 1998). The nature of houses adds to the vulnerability of the local people. Homes made of mud and stone, and roofs made of thatch grass and galvanized tins are more vulnerable than the RCC houses. Usually, houses in municipal areas are better protected with majority of them made of reinforced cement concrete in most of the countries.

Poverty status, education, communication and transportation systems, accessibility of public resources such as forest produce, government facilities and drinking water, and presence of agricultural banks/credit banks, NGOs and other service delivery institutions can be used for assessment of vulnerabilities in an area.

Table 7. An Example of Vulnerability Assessment

vulnerable indicators	percent of population with critical facilities			
	c1	c2	c3	c4
telephone				
television				
road access				
availability of drinking water				
radio				
toilet facilties				
RCC housing				
schooling facilities				
health centres				
.....				

Capacity Assessment

Capacity assessment is the process to determine how people cope in times of crisis to reduce the damaging effects of hazards. Through capacity assessment, the community's coping strategies and resources, which are available, for disaster preparedness, mitigation and prevention are identified. The capacity assessment process involves the following key components:

- Understanding people's previous experiences with hazards and the coping strategies they have developed
- Analyzing resources that are available and used by the community to reduce disaster risk

A number of tools can be used to ensure the community's participation in capacity assessment. These include the following:

- Historical profiles and time lines - reveals how people cope with adverse events in the past
- Seasonal calendar - visual presentation of economic activities, coping strategies, availability of money and time, etc.
- Gendered resource mapping and gendered benefit analysis – shows differences in access to and control over resources between men and women in households and in the community
- Livelihood Analysis - insights on the coping strategies of individual households
- Institutional and social network analysis - formal and informal service structures for delivery of community services

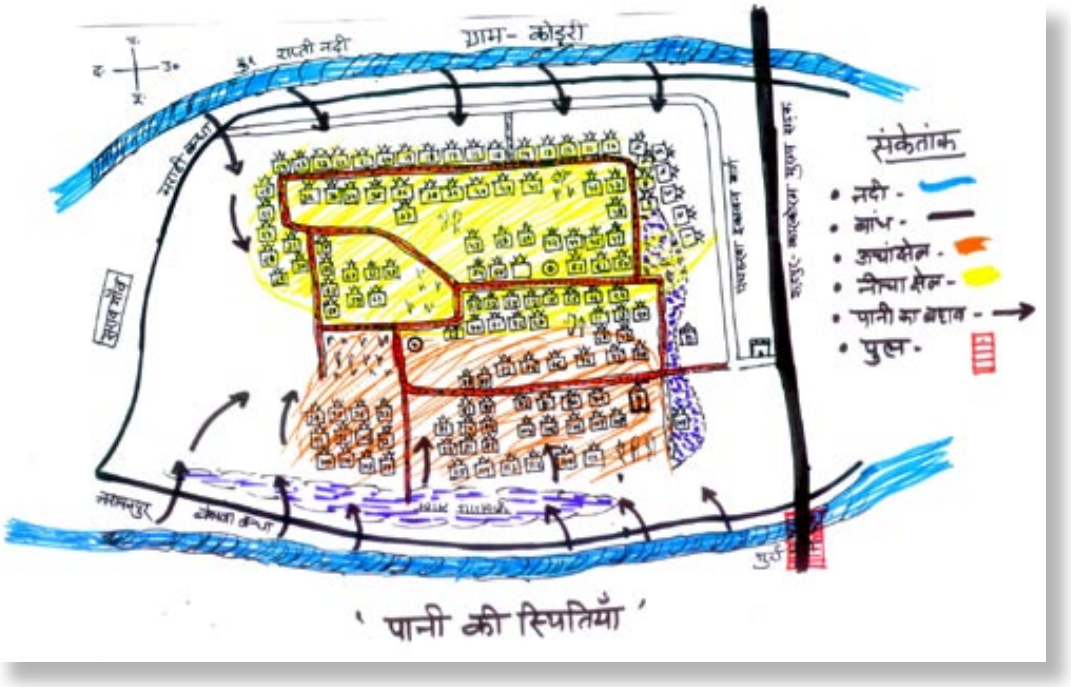


Figure 8. Community resource mapping

Presence of service delivery institutions, banking organizations, human resources, status of media, and availability of disaster preparedness equipment will reflect the capacity of a community or district.

An inventory of various equipment and human resources in the communities and district can be prepared. In the table below, the district has sufficient number of ambulance, transportation means and water tankers. Besides, there are sufficient numbers of doctors, volunteers, food, clothes and utensils. However, fire brigade, boats, skilled divers, rescue and relief operators, dodgers and excavators were insufficient in number

Table 8. Status of Preparedness Apparatus and Human Resource

	particulars	status		source / suppliers	remarks
		adequate	deficit		
1	Fire brigade		•		
2	Dodger (1)		•	District Development Committee	Available mainly in district headquarters
3	Excavator		•		
4	Ambulance (3)	•		Hospital	
5	Transportation means (bus, truck, jeep and rickshaw)	•		Private sector	Confined on highway, district headquarters
6	Water tankers		•	District Drinking Water Office	
7	Doctors / Nurse / HealthAssistants / Other trained health workers		•	District Health Office, Private clinics	But mainly confined on district headquarters
8	Engineers / Over-seers		•	District Technical Office	Confined in headquarters, Not easily available in the village
9	Volunteers / Community Forestry Users Groups	•		Schools, NGOs, Police	
10	Skilled divers		•		
11	Security of belongings left at disaster sites	•		Schools, NGOs	

12	Food, cloth, utensils	•		Private sector, volunteers, Red cross, District Natural disaster relief committee (DNDRC)	
13	Trained rescue and relief operators		•		

(The figures in parentheses indicate the number of the preparedness apparatus and human resource)

Evaluation of resources available in the community could be done taking into account their availability, durability and capability. The following table indicates that majority of the resources are available at the district headquarters and at sub-district levels whereas only few are rarely available at the community level. These resources are essential to cope with the disasters however they are not readily available at the sites of events.

Table 9. Evaluation of Resources

	services / resources	capability			availability			durability		
		VDC level	llaka level	district level	easily	reported	none	short	medium	long
1	Ambulance			•		•		•		
2	Water supply		•			•			•	
3	Power supply			•			•			
4	Fire brigade		•		•			•		
5	Health services		•			•		•		
6	Telecommunications; Communications		•		•				•	
7	Volunteers	•			•			•		
8	Civil supply and food		•			•		•		
9	College / schools / students	•			•			•		
10	Water ways						•			
11	CBOs / NGOs / CFUGs	•				•			•	
12	Private hospitals									
13	Engineering services									
14	Road network		•							

(Source: Kafle 2005)

2. Risk Analysis

After the completion of hazard, vulnerability and capacity assessment, it would be essential to conduct risk analysis. The risk analysis will enable the community and the local authorities to understand the potential impact of various hazard events.

Risk analysis involves the development of risk scenarios based upon the information about hazards, their frequency and intensity and the elements-at-risk. A hazard can impact many elements at risk in different manners. During risk analysis we identify what kind of impact a hazard will have on various at-risk-elements; e.g. people, houses, crops, buildings, roads, schools etc. It also identify the extent of the impact; e.g. how many people might get killed, how many might be injured, how many hectares of land will be negatively affected.

Certain communities may be exposed to more than one hazard. In such areas it will be important to identify the potential losses from the various kinds of hazards. Different hazards may have differential impact upon various elements- at risk. For example, earthquakes can be very dangerous in terms of killing and injuring the people, while floods may not be. On the other hand earthquakes have very little impact upon crops, while floods have very severe impact, depending upon the cultivation season.

As a result of the analysis of risks, risk statements or risk scenarios can be prepared to indicate the impact upon various at-risk-elements from multiple hazards. Visual risk maps can also be produced based on the hazard maps with information on the level of physical vulnerability. The risk map showing the results of both hazard and vulnerability analysis is regarded as the most important tool in risk analysis. In the risk maps, hazard maps are superimposed on maps of physical aspects of vulnerability.

In practice, risk analysis can be done by using hazard probability (hazard) and damage potential (vulnerability) matrix as shown in the table below.

Table 10. Risk Analysis Matrix

damage potential	hazard probability				
	very low	low	medium	high	very high
very low	VLR	VLR	LR	LR	LR
low	VLR	LR	LR	MR	MR
medium	LR	LR	MR	HR	HR
high	LR	MR	HR	VHR	VHR
very high	LR	MR	HR	VHR	VHR

(Source: Singh and Anbalagan 2001)

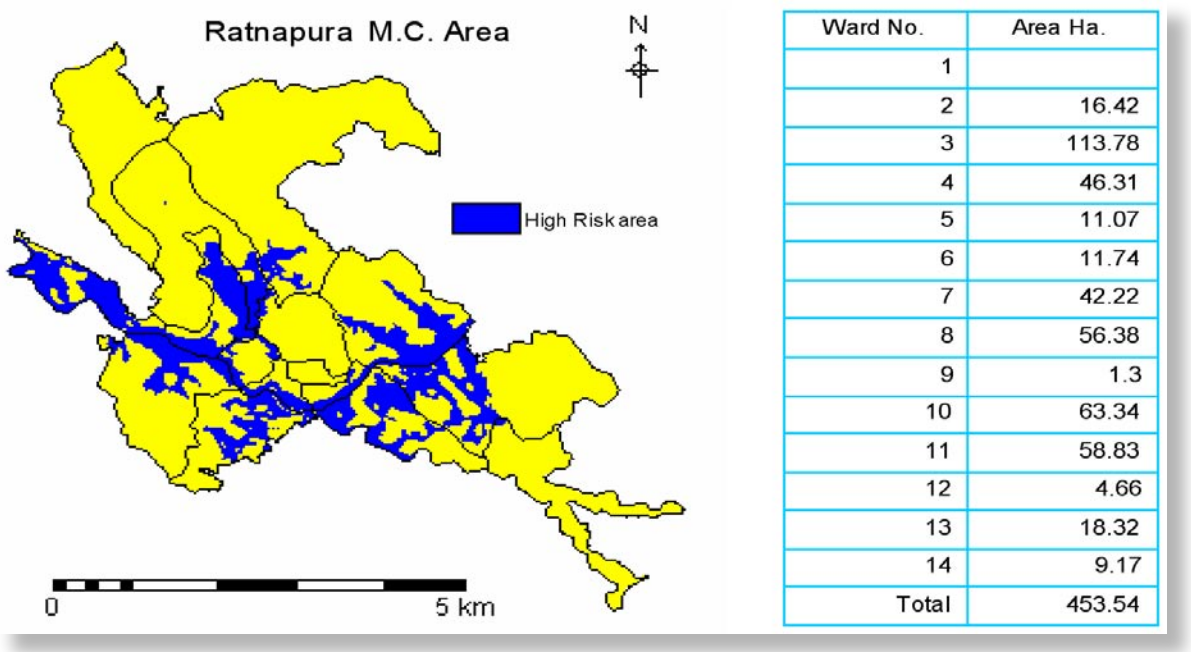
The details of village development committee (VDC) level risk assessment of a district in Nepal are given in the table below.

Table 11. Risk Assembly by VDCs in Nepal (Kafle, 2005)

	VDCs / municipality	hazard probability (Hp)	Damage potential (Dp)	Risk Assessment (R=Hp*DP)
1	Alamdevi	HHP	MDP	HR
2	Arjun Chaupari	HHP	MDP	HR
3	Aruchaur	MHP	HDP	HR
4	Arukharka	MHP	MDP	MR
5	Bangefatke	MR	HR	VHR
6	Bahakot	MHP	VHDP	VHR
7	Banethok Deurali	HHP	MDP	HR
8	Bhatkhola	MHP	VHDP	VHR
9	Bichari chautara	VHHP	HDP	VHR
10	Birgha	VHHP	MDP	VHR
11	Biruwa Archale	MHP	MDP	MR
12	Chandi Bhanjyang	HHP	VHDP	VHR
13	Chapakot	HHP	VHDP	VHR
14	Chhangchhangi	VHHP	HDP	VHR
15	Chilaunebas	VHHP	MDP	VHR
16	Chhinnebas	LHP	MDP	MR
17	Magyam chisapani	MHP	MDP	MR
18	Chitre Bhanjyang	LHP	VHDP	HR
19	Darsing Dahathum	VHHP	MDP	VHR
20	Dhapuk simalbhanyang	MHP	HDP	HR
21	Faparthum	HHP	VHDP	VHR
22	Fedikhola	MHP	MDP	MR
23	Jagat bhanjyang	VHHP	HDP	VHR
24	Jagatra devi	VHHP	VHDP	VHR
25	Kalikakot	VHHP	MDP	VHR

26	Kolmabarahachaur	HHP	MDP	HR
27	Keware bhanjyang	VHHP	VHDP	VHR
28	Khilung Deurali	HHP	MDP	HR
29	Kichanaas	LHP	HDP	MR
30	Kuwakot	HHP	MDP	HR
31	Kyakmi	HHP	MDP	HR
32	Majhkot Shibalaya	HHP	HDP	VHR
33	Malunga	VHHP	LDP	HR
34	Malyangkot	HHP	HDP	VHR
35	Mankamana	LHP	MDP	MR
36	Nibuwakharka	VHHP	VHDP	VHR
37	Oraste	LHHP	MDP	MR
38	Pakwadi	VHHP	VHDP	VHR
39	Panchmul	HHP	MDP	HR
40	Pauwegaude	MHP	VHDP	VHR
41	Pelakot	LHP	HDP	HR
42	Pelkachaur	VHHP	VHDP	VHR
43	Pidhikhola	HHP	LDP	MR
44	Putalibazar	VHHP	LDP	HR
45	Rangbhang	VHHP	VHDP	VHR

VHR= Very high risk, HR= High risk, MR= Medium risk, LR= low risk, VLR= Very low risk.



Ward No.	Area Ha.
1	
2	16.42
3	113.78
4	46.31
5	11.07
6	11.74
7	42.22
8	56.38
9	1.3
10	63.34
11	58.83
12	4.66
13	18.32
14	9.17
Total	453.54

Figure 9. A risk map using GIS. Risk maps can be prepared manually at local level

3. Risk Evaluation

The purpose of risk evaluation is to make decisions about what strategies should be followed for the reduction of various disaster risks. The risk evaluation can also be used to rank the most vulnerable communities. This is done upon the basis of information from risk analysis. Communities and local authorities jointly can agree on criteria to rank the risks. They can decide what levels of risk are acceptable about which no actions need to be taken. The other risks would be ranked as high priority due to the potential damage and loss, which they may cause to people, their

livelihoods or environment. The decision about risk management may include:

1. Whether a risk needs treatment
2. Whether an activity should be undertaken
3. Priorities for treatment

The broad strategies for dealing with different risks are also identified and analysis in order to conduct cost-benefit analysis of various options. This is important because the costs of a risk reduction strategy must be lower than the potential losses in case of non-implementation of such strategy.

Table 12. Risk Treatment Key

Risk Level	Actions
Very High Risk	Immediate action
High Risk	Heightened action
Low Risk	Business as usual

Upon the basis of risk analysis and risk evaluation the local authorities should prioritize the communities based on the potential losses they may suffer. This will be essential for the launching of community-based disaster risk management.

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New Learning and Reflections

session 2

assessment of disaster risk communication needs

Learning Objectives

At the end of this session, the participants should be able to:

- Describe the basic concepts of disaster risk communication;
- Explain the methodology for the assessment of disaster risk communication needs.

Key Concepts

- Disaster risk communication aims to increase the awareness of communities and other stakeholders about risks and protective actions. It helps at-risk people in making informed and sensible choices
- In the DRC needs assessment we need to find the answers to the following questions:
  - What are the behaviors related to hazards and risks?
  - What are the behaviors related to hazards and risks that need to be changed to prevent disasters or help mitigate disasters?
  - How can we best change people's behaviors?

Key areas of the inquiry in disaster risk communications needs are:

- Hazards/risks
- People's perception of risks
- People's knowledge about hazards and where they get them
- People's behavior at the family and the community level: reaction to warning, preparedness activities, activities during emergency (identify indigenous ways or activities)
- People's information about the preparedness and emergency and where they get them.
- Authority to issue warning and evacuation at the family and community level.
- People's indigenous mechanism of information sharing, early warning etc at family and community level (identify indigenous ways or activities).

Reference Materials

Assessment of Disaster Risk Communication Needs

Disaster Risk Communication

Disaster Risk Communication (DRC) aims to increase the awareness of communities and other stakeholders about risks and protective actions. The word communication is derived from Latin; “communicare”, meaning common, to share, indicating a process having joint action as its purpose. To communicate means sharing visions, objectives, attitudes, knowledge, information and opinions. Risk Communication can be described as “An interactive process of exchange of information and opinion among individuals, groups and institutions about the nature of risk, people’s perceptions, and actions that can be taken to deal with the risks”.

Why DRC?

- It is a right of at-risk people to know about the risks they face
- It helps at-risk people in making informed decisions
- It increases mutual understanding and participation by all concerned
- It develops respect for the opinions and views of others

Assessment of Risk Communication Needs

In the DRC needs assessment we need to find the answers to the following questions:

- What are the behaviors related to hazards and risks?
- What are the behaviors related to hazards and risks that need to be changed to prevent disasters or help mitigate disasters?
- How can we best change people’s behaviors?

The key areas of the inquiry

- Hazards/risks
- People’s perception of risks
- People’s knowledge about hazards and where they get them
- People’s behavior at the family and the community level: reaction to warning, preparedness activities, activities during emergency (identify indigenous ways or activities)
- People’s information about the preparedness and emergency and where they get them.
- Authority to issue warning and evacuation at the family and community level.
- People’s indigenous mechanism of information sharing, early warning etc at family and community level.
- People’s coping mechanisms at the family and community level (identify indigenous ways or activities).

Table 13. Data Collection Methods for Assessment of Community’s Risk Communication Needs

	key areas of enquiry	PRA tools	respondents
1	**Hazards** • What are the hazards in the community? • When do they happen? How often? How long do they last? • What are the causes? • Who are affected? • Who are the most seriously affected and why? • What are the most serious hazards in the community using these criteria: death, illness/injury, loss or injury of livestock, damage to property, and damage to infrastructure?	Timeline-history of disaster Hazard map of community Seasonality Ranking	Men Women Children

2	**Risks** • What are the risks or mangers brought about by these hazards? - To life of men, women, children, disabled, elderly? - To livestock? - To property like houses? - To infrastructure like bridges, schools? • What risks are considered most serious? For example, flood is hazard, but drowning is a risk that floods can bring. Or diarrhea is a risk that people face when they evacuate since there is no clean water in evacuation centers.	Ranking Venn Diagram	As per age group but grouped as: Men - children, young adults, adults, elderly Women - children, young adults, adults and elderly
3	**People's behaviors** • What do they do before and during a disaster at the family and community level?	Listing down of activities	Mix group of men and women
4	**Focus on public awareness** • Where do you get information about the hazard? Which source or mechanism do they often use? Why? • What do you hear or read about these hazards? • What information do you receive about how to protect yourself from these hazards? • What of the information do you follow to protect yourself?	Ranking Venn diagram	As per age group but grouped as: Men - children, young adults, adults, elderly Women- children, young adults, adults and elderly
5	**Authority to issue warning or order evacuation** • Who are the most reliable sources of information in the community? • Who do you think should have the authority to give orders to evacuate?	Ranking	As per age group but grouped as: Men - children, young adults, adults, elderly Women - children, young adults, adults and elderly
6	C**ommon problems** • What are the most common problems encountered by the community and the family to reduce disaster risks?	Ranking	As per age group but grouped as: Men - children, young adults, adults, elderly Women - children, young adults, adults and elderly
7	**Priority Needs** • What are the most common problems encountered by the community and the family to reduce disaster risks?	Ranking	As per age group but grouped as: Men - children, young adults, adults, elderly Women - children, young adults, adults and elderly
8	**Recommendations** • What are the people's recommendations to reduce disaster risks at the family and community level recommendations directed to government and non-government agencies?	Ranking	As per age group but grouped as: Men - children, young adults, adults, elderly Women - children, young adults, adults and elderly

Once the required information are collected and analyzed, decisions on the information needs of the community can be determined. The information needs assessment will also help in identification of strategies for community awareness raising. This will include understanding of what messages to develop, what methods, and materials to use, what channels to use.

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New Learning and Reflections

session 3

damage, loss and needs assessment

Learning Objectives

At the end of this session, the participants should be able to:

- Explain the basic methodology of damage and loss assessment.

Key Concepts

- The damage and loss assessment methodology is a tool to estimate the socio-economic impact of disasters.
- The term damage is used to define complete or partial destruction of assets and stocks that occur during or immediately after the disaster.
- The term losses refer to the impact upon the economic activities, including the loss of livelihoods, production and services. The losses occur till the full rehabilitation and reconstruction of the damaged infrastructure and industry in various sectors.
- The needs refer to the basic needs of the disaster survivors in order to save lives; e.g. food, shelter, clothing, water and sanitation, medical first aid, search and rescue etc.

Reference Materials

Damage, Loss and Needs Assessment

Introduction

After a disaster an immediate assessment should be undertaken to estimate direct and indirect impacts of the disaster and the needs of survivors. The assessment should cover the wide range of needs for the survivors and effects upon the social, economic, physical and environmental assets. The assessment of disaster needs, damage and losses will be important to organize an emergency response and determine the short and medium term reconstruction and longer term recovery needs.

Needs assessment

Needs assessment is an urgent humanitarian necessity right after the disaster happens in order to organize an effective and relevant disaster response. This is a challenging but necessary requirement in order to save the further loss of life. Local authorities in collaboration with the affected people will assess the immediate as well as long term needs of the survivors. In case of small-scale disaster a detailed needs assessment could be done at a full scale. However, in case a large disaster sample surveys could be done to assess the immediate needs of survivors for life saving. The areas to be covered in post-disaster needs assessment will include the following:

- Search and rescue;
- Evacuation;
- Protection to the most vulnerable groups; e.g. children, single women, elderly;
- Medical and Health;
- Shelter and clothing;
- Food;
- Water;
- Sanitation
- Lifeline systems (communications, power supplies, transport, etc)

It is important to quantify the needs. Everybody is not a “helpless victim” requiring every sort of assistance. The needs assessment should concentrate on dealing with the effects of the disaster and not attempt to rectify chronic needs. In quantifying needs it is appropriate to follow either international standards or define local standards; for example:

- Per person per day liters of drinking water needed
- Per animal per day liters of drinking water needed
- Number of persons per tent in case of emergency shelter
- Number of person needing warm clothing (in case of winter season)
- Number of patients per day per one doctor
- Number of patients needing to be transferred to hospitals

Definition of Damage and Loss

The natural phenomena that produce disasters - such as earthquakes, drought, cyclones and floods - generate two main types of effects:

- Destruction or damage to physical assets,
- Impact upon the socio-economic activity; e.g. loss of livelihoods, loss of production, and non-availability of services


Needs assessment is
an urgent humanitarian
necessity...

The term damage refers to complete or partial destruction of assets and stocks as a result of the disaster. This include destruction of physical infrastructure, buildings, machinery, equipment, means of transportation and storage, furniture, damage to farmland, irrigation works, reservoirs, environmental assets and the like.

The term losses refers to loss of peoples' livelihoods, loss of production in the agricultural or industrial sectors, and the non-availability of services to communities, the losses result from the damage and destruction of assets and infrastructure; e.g. agriculture, industry, buildings, roads, transport and telecommunication networks, hospitals, schools and government offices. The losses include decrease in production due to damage to crops, to manufacturing plants and to market facilities. They also include increased production costs due to scarcity of raw materials. The duration of losses in a sector depend on the time required for full rehabilitation and reconstruction of the affected assets as well as full economic recovery.

Need for Damage and Loss Assessment

It is important to assess the damages and losses in order to determine the cost of recovery and reconstruction, as well as the needs for international assistance. Traditionally assessments focus on the assessment of damages only, because it is relatively easy to assess the damages. The assessment of losses is difficult, because they are not as clearly visible as the damage. However, it is significant to assess the losses, because they form a large part of the disaster impact.

When to carry out Damage and Loss Assessment

The assessment of damage and losses is undertaken after a few weeks of the occurrence of a disaster. The first few days after the disaster are usually used to attend to the most urgent needs of search and rescue of victims, temporary housing, medical first, aid, food, clothing, water and sanitation and the burial of the dead. It is impossible at that time for people to even think about making estimates of damage and losses.

As a first priority the assessment should determine the safety of damaged buildings for human use. This will be followed by the estimation of reconstruction costs of buildings and other infrastructure in each sector of the economy. Assessment must determine the costs of the introduction of hazard safer construction measures. This will include the need for strengthening or relocation of buildings and facilities to ensure their safety from future events.

Upon completion of the damage assessment, the estimation of losses must be carried out. For this purpose, the time over which losses occur should be determined on the basis of the period required for full rehabilitation, reconstruction and economic recovery of the damaged infrastructure.

Upon completion of the damage and loss assessment, an analysis should be made to estimate the total economic impact of the disaster.

Evaluation of Damage

The assessment of damage is done in each sector separately. Assessment would be done about the damage to buildings, the machinery, equipment, furniture, and the infrastructure; e.g. roads, telecommunication lines, power supply lines, water and sanitation lines etc. The damage assessment will estimate whether a certain building, equipment or infrastructure has been fully destroyed and would require reconstruction or it is partially damaged and would need only repair. The damage assessment of structures should only be done by experienced engineers and technical experts.

Assessment of Losses

In order to assess the losses two key issues should be tackled.

- Develop or access the baseline information on the performance of each sector in pre-disaster situation.
- Determine the time required for full rehabilitation and reconstruction for each affected asset or sector. This will help in estimation of the time required to achieve pre-disaster production levels from each unit, or sector.

In order to assess the losses in a unit or sector you have to work on the following aspects, for example:

- How many bikes were being produced in the factory before the disaster?
- How many bikes the factory is producing after the disaster?
- How long it will take the factory to achieve the pre-disaster production levels?
- What was the pre-disaster per bike production cost of the factory? This will be calculated on the basis of expenses made on raw materials, labor, water and electricity supply etc
- What is the post-disaster per bike production cost of the factory?

SUGGESTED FORMAT FOR A FLASH REPORT

1.	**Situation**	
1.1	Type of disaster	--------
1.2	Date and time	--------
1.3	Affected area	--------
1.4	Possibility of after effects	--------
2.	**Initial estimate of effects**	Very Approximate Numbers
2.1	Dead	--------
2.2	Injured	--------
2.3	Missing	--------
2.4	In need of shelter and for clothing	--------
2.5	In need of food	--------
2.6	In need of water	--------
2.7	In need of sanitation	--------
2.8	Damage to lifeline systems	--------
3.	**Possible Needs for External Assistance**	
3.1	Search and Rescue	Yes/No
3.2	Evacuation	Yes/No
3.3	Protection	Yes/No
3.4	Medical and Health	Yes/No
3.5	Shelter and Clothing	Yes/No
3.6	Food	Yes/No
3.7	Water	Yes/No
3.8	Sanitation	Yes/No
3.9	Repair of lifeline systems	Yes/No

4. Next Report

The next report with more details will be sent at (dd-mm-yy) ☐☐ ☐☐ ☐☐ (time) _____

SUGGESTED FORMAT FOR AN INITIAL REPORT

1. Situation

1.1	Type of disaster	--------
1.2	Date and time	--------
1.3	Affected area	--------
1.4	Number of Dead (approx)	--------
1.5	Next report will be sent at (date/time)	--------

2. Search and Rescue

serial number	location (district town or village. Say if the sites are "deep rescue")	total number of people missing (approx)	response status (local S&R resources deployed	unmet needs for which additional S&R resources are requested (give details, eg: teams rescue boats, special expertise, heavy equipment	priority
a	b	c	d	e	f
2.1					
2.2					
2.3					
total					

Deep Rescue is underground sometimes associated with a risk of further collapse and/or breating difficulties

3. Evacuation

serial number	location (district town or village)	total number of people to be evacuated (approx)	response status (number of people being evacuated under local arrangements)	unmet needs for which additional evacuation assistance is requested	priority
a	b	c	d	e	f
3.1					
3.2					
3.3					
total					

4. Food

serial number	location (district town or village)	total number of people requiring food (approx)	response status (number of people being provided with food under local arrangements)	unmet needs (number of people for whom external supplies of food are requested; say if cooking equipment and fuel are required)	priority
a	b	c	d	e	f
4.1					
4.2					
4.3					
total					

5. Water

	location (district town or village)	total number of people without potable water (approx)	response status (number of people being provided with potable water under local arrangements; condition of supply system and repair status;availability of surface water)	unmet needs (number of people for whom external supplies of water are requested. Say if treatment supplies, containers or trucks required)	priority
a	b	c	d	e	f
5.1					
5.2					
5.3					
total					

6. Sanitation

	location (district town or village)	total number of people without adequate sanitation	response status (number of people being provided with adequate sanitation under local arrangements)	unmet needs (number of people for whom external supplies for sanitation are requested; say, what arrangements are needed e.g. latrine, soap insecticides, chlorine powder, etc.)	priority
a	b	c	d	e	f
6.1					
6.2					
6.3					
total					

7. Medical & Health

	location (district town or village)	injured		response status (conditions of medical facilities, hospital wards, casuality rooms, operating theatre, laboratories, water supply, ancillary equipment)	unmet needs (list personal supplies and equipment required from external sources)	priority
		serious	walking wounded			
a	b	c	d	e	f	g
7.1						
7.2						
7.3						
total						

8. Lifeline Systems

serial number	location (district town or village)	response status (conditions of systems)				unmet needs (list personal supplies and equipment required from external	priority
		roads & brdiges	railways	power supplies	communication system		
a	b	c	d	e	f	g	h
8.1							
8.2							
8.3							
total							

9. Inventory of resources

serial number	reources	location	contact address	available?	committed to	notes

References

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New Learning and Reflections

session 4

community risk assessment tools

Learning Objectives

At the end of this session, the participants should be able to:

- Enlist the methods and tools that can be used to conduct risk assessment at the community level
- Apply these tools in actual practice

Key Concepts

- Community Risk Assessment (CRA) is a participatory process. The CRA assumes that various groups in a community may have different opinions about the disaster problem. Therefore, it is important to ensure everybody's participation.
- In order to engage the community members in disaster risk analysis in an interesting and creative way it is useful to apply non-formal methods and tools. These tools include visual methods, informal discussions, making of models and maps, preparing diagrams etc.
- It is important to use local materials while applying the community risk assessment tools. Such materials may include beads, plant leafs, seeds, stones, clay, paper etc.
- The members of the Community Risk Assessment team must have a friendly and respectful behavior towards the community members, during the interaction.

Reference Materials

Community Risk Assessment Tools

Introduction

The Community Risk Assessment is conducted with the active participation of various vulnerable groups. In this session we introduce the techniques and tools that can be used to allow participation of different groups. These tools help in conducting a comprehensive analysis of disaster risks, because multiple tools help in gathering information about various aspects of community life. The participatory methods can also be used for mobilizing community members for action planning. The Community Risk Assessment process recognize:

- Different social groups in a community may have diverse opinions about the disaster problem. Therefore, it is significant to use different tools to gain participation of different social groups.
- There is need for dialogue amongst the local people and outside experts about disaster risks;
- Community Risk Assessment process should lead to debate about change, and action planning for disaster reduction
- Use local materials for analysis; e.g. beads, seeds, leafs, stones, clay etc.
- Use models and visual techniques for risk assessment in order to generate interest amongst community members.
- Analysis of the community risks will be done in the community

The local authority officials can facilitate community risk assessment by using the methodologies and tools introduced in this session. In order to facilitate community risk assessment in an effective manner the local authority officials should follow the following core principles.

- Build rapport among community members; e.g. men and women, rich and poor, young and old, and people, ethnic minorities, farmers, fishers etc
- Be friendly and sensitive to people's opinions
- Should not make people feel uncomfortable
- Listen to local people and leave time in conversation for additional comments
- Select appropriate risk assessment tools that suit local conditions and social groups
- Be patient and move at a moderate pace in discussions
- Seek views of the weaker and less influential individuals and groups
- Share technical information with the people
- Give people enough time to communicate and consider ideas
- Avoid personal biases in discussions and expressing opinion
- Do not lecture the local people
- Check the validity of information using different sources
- Admit errors and learn from mistakes
- Ensure that villagers' expectations are not raised too high, and avoid making promises that cannot be fulfilled
- Organize risk assessment activities in free time of local people

Planning for the Community Risk Assessment

The local authorities can use the following steps in order to conduct Community Risk Assessment.

- Form a community risk assessment team
- Train or orient the community risk assessment
- Identify the data and information needs
- Identify the methods and tools that can be used for collection of the required information
- Identify individuals and social groups who may be the source of needed information
- Identify any appropriate organizations from which the data be gathered

- Define sequence for the use of various methods and tools for Community Risk Assessment;
- Agree on the roles of team members; e.g. facilitator who will ask questions, observer, note taker etc.

Summary of the CRA tools

1. Secondary Data Review

What: In Secondary Data Review we collect existing information about:
- Background information on community (census, research findings, reports, etc)
- Possible threats to the community
- Scientific information about hazards or threats
- Case studies about hazards and threats in other communities
- Relevant legislation and policies regarding disasters

Why: to get an overview of the situation and context; to save time; to learn from experiences elsewhere

Who: team; community members can validate information

How: visit libraries, government offices, universities, research centers, collect newspaper clippings, maps, etc.

2. Direct Observation

What: In this method the team members will systematically observe objects in community, people's behavior, relations and participation, social and religious events in the community. They should record these observations

Why:
- To get a better picture of the (disaster) situation, especially of things that are difficult to verbalize
- To crosscheck verbal information. Observations are analyzed afterwards (for instance how men and women participate in community meetings).

Who: everybody

How: think about the purpose of why you are in the community, and identify indicators, which you can assess through direct observation. These will make up your checklist

3. Informal Interviews

What: Informal interviews are discussions in an informal way. No formal questionnaire is used, but at the most a checklist of questions as a flexible guide. There are different types of informal interviews: (i) group interview (ii) focus group discussion (iiii) individual interview (iv) key-informant interview

Why: to get information, to analyze problems, vulnerabilities, capacities and perceptions, to discuss plans, etc. Each type of interview has its specific purpose:
- Group interview: to obtain community level information, to have access to a large body of knowledge, not useful for sensitive issues
- Individual interview: to obtain representative, personal info. May reveal differences or conflicts within community

- Key-informant interview: to obtain special knowledge about a particular topic; you interview a nurse if you want to know more about epidemics, a farmer about cropping practices, a village leader about procedures and policies
- Focus group discussion: to discuss specific topics in detail with a small group of persons who are knowledgeable or who are interested in the topic. People can also be grouped according to age, owners of resources

Who: team of 2 - 4 people

How:
- Prepare key issues in advance
- Select one person to lead the interview
- Ask questions in an open-ended way (what, why, who, when, how, how do you mean, anything else?)
- Ask for concrete information and examples
- Try to involve different people (if present)
- Pay attention to group dynamics
- Ask new (lines) of questions, arising from answers given
- Make notes in a discreet way

4. Historical Profile

What: By this method the risk assessment team can gather information about what happened in the past

Why:
- To get insight in past hazards changes in their nature, intensity and behavior,
- Understand present situation in community (causal link between hazards and vulnerabilities)
- To make people aware of changes

When: at initial phases

How:
- Plan a group discussion and ensure that key-informants (old people, leaders, teachers) are present. Invite as many people as possible, especially the young ones, for them to hear the history of their community
- Ask people if they can recall major events in the community, such as:
  - Major hazards and their effects
  - Changes in land use (crops, forest cover, etc.)
  - Changes in land tenure
  - Changes in food security and nutrition
  - Changes in administration and organization
  - Major political events
- The facilitator can write the stories down on a blackboard or craft paper in chronological order.

  Life histories: another method is to ask individual informants to give a detailed account of their life or regarding a specific issue from a historical perspective

  History tracing: ask individuals or group to begin with current experiences and to go back in time. Purpose is to find reasons and causes which contributed to the occurrence of a certain experience.

5. Mapping

What: The community members with the help of the risk assessment team will make a spatial overview of the community's main features

Why: maps facilitate discussions on important issues in the community. Maps can be drawn for many topics:

- Spatial arrangement of houses, fields, roads, rivers, and other land uses
- Social map (houses, social facilities and infrastructure, i.e. temple, stores, rice mills, school, pharmacy, trails and roads, water pumps, irrigation, recreational facilities, etc.)
- Hazard map, elements at risk, safe areas, etc
- Resource map showing local capacities
- Accessibility map (route and condition of access to evacuation center or shelter)
- Mobility map

When: Mapping is done in initial phase of community risk assessment

Who: community members

How:

- Decide what kind of map should be drawn
- Find men and women who know the area and are willing to share their experiences
- Choose a suitable place (ground, floor, paper) and medium (sticks, stones, seeds, pencils, chalk) for the map
- Help the people get started but let them draw the map by themselves

6. Transect Walk

What: It is a systematic walk with key-informants through the community to explore spatial differences or land use zones by observing, asking, listening and producing a transect diagram

Why:
It help in visual observation about the physical environment and human activities over space and time.

- Identifies danger zones, evacuation sites, local resources used during emergency periods, land use zones, etc.
- Seeks problems and opportunities

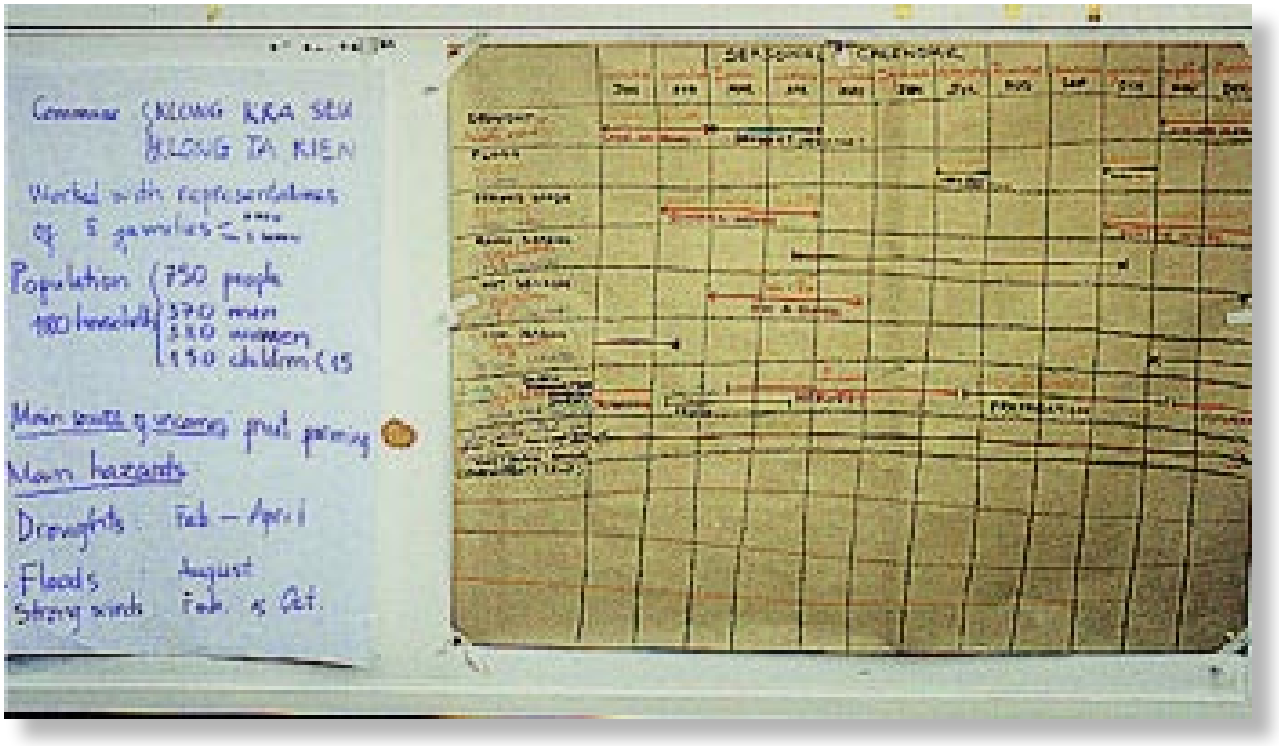
When: In initial phase of rapport building and community risk assessment

Who: team with six to ten community members representing the cross-section of the area

How:

- Based on map, select a transect line (can be more than one)
- Select a group of 6 to 10 people who represent the cross-section, and explain purpose
- During walk, take time for brief and informal interviews at different places in the transect
- Focus on issues like land use, proneness to particular disasters, land tenure, and even changes in the environment to draw a historical transect

7. Seasonal Calendar



What: A calendar is made showing different events, experiences, activities, conditions throughout the annual cycle.

Why:

- Identify periods of stress, hazards, diseases, hunger, debt, vulnerability, etc.
- Identify what people do in these periods, how they diversify sources of livelihood, when do they have savings, when do they have time for community activities, what are their coping strategies.
- Identify gender specific division of work, in times of disasters and in normal times.

Who: team and community members; have separate sessions for men and women

How:
- Use 'blackboard' or craft paper. Mark off the months of the year on the horizontal axis. Ask people to list sources of livelihood, events, conditions, etc., and arrange these along the vertical axis.
- Ask people to enumerate all the work they do (e.g. ploughing, planting, weeding, etc.) for each source of livelihood by marking months and duration, adding gender and age
- Facilitate analysis by linking the different aspects of the calendar: how do disasters affect sources of livelihood? When is workload heaviest? Ask for seasonal food intake; period of food shortage, out-migration, etc.
- You can continue the discussion on coping strategies, change in gender roles and responsibilities during times of disasters, or other issues you think are relevant

8. Resource Mapping

What: A map is made to show local resources and capacities, and gender differences in access to resources

Why:
- Identify available local capacities and resources people rely on in times of disasters
- Identify which resources are easily affected by disasters
- Identify resources accessible and owned by community, or individuals

Who: team and selected individual households belonging to different income groups

How:
- Ask persons to draw a map of their household and resources on which they depend for their livelihood and survival (remember material/physical, social/organizational, motivational/ attitudinal capacities)
- Ask household how they contribute to support other households, community, larger economic and social environment
- Ask people to use arrows to indicate flow of resources to and from household
- Ask household member(s) who uses and controls resources (consider gender, class, ethnicity, religion, and age)
- Ask questions while making the maps, and put answers on the map

9. Institutional & Social Network Analysis

What: This is a diagram that shows key-organizations, groups and individuals in a community, the nature of their relationship and level of importance to community.

Why:
- Identify organizations (local & outside), their role/importance, and perceptions that people have about them.
- Identify individuals, groups, organizations that play a role in disaster response and can support the community.

Who: team and community members

How:
- Become familiar in advance with the names of the organizations
- Ask people to determine criteria for the importance of an organization and to rank them according to the criteria
- Ask people about the linkages amongst organizations; note kind of relationship

- Draw circles to represent each organization or group; size of circle indicates importance
- Continue focus group discussion on history of organizations; activities undertaken in community; how well do they function; how good is coordination; which organizations, groups, individuals are important in times of disasters, community level decision making mechanisms, etc.

10. Livelihood/coping Strategies Analysis

What: It is a combination of household interview and making diagrams presenting different income or food sources.

Why: to understand livelihood strategies, behavior, decisions and perceptions of risk, capacities and vulnerabilities of households from different socio-economic background.

Who: team can split up in smaller teams to conduct individual household interviews simultaneously.

How:

- Review hazard map, seasonal calendar, and resource map, and determine criteria to select households belonging to different socio-economic groups (sample should not be at random)
- Decide how many and which households in particular you will interview
- Conduct the interview (1 hour); introduce yourself and reason for interview
- Start with getting to know household members, composition, age, and gender, followed by questions about livelihood and coping strategies
- Draw block or pie diagrams to facilitate discussion on livelihood sources
- Continue discussion on how the household copes in times of stress (material-social-motivational)

11. Problem tree

What: It is a flow diagram in the shape of a tree showing relations between different problems, their reasons and effects.

Why: identify local major problems and vulnerabilities as well as root causes and effects

When: during later part of situational analysis or community risk assessment

Who: team facilitates community members' meeting (optional to have separate meeting for men and women)

How:
- Various concerns and problems are identified
- Give all people small pieces of paper and ask them to write one major problem on each card, and to put these on the wall (people can draw problems in case they do not know how to write and read)
- Ask two or three volunteers to group the problems according to similarity or interrelationship
- Now the making of the 'problem tree' can start: the trunk represents the problems; the roots are the causes; the leaves are the effects
- Ask why issues on the cards are problems. Ask 'but why?' after each explanation to arrive at the root causes
- To arrive at the effects, ask for the consequences of each problem

12. Assessing Capacity of Community Organization

What: It is a tool for organizational analysis.

Why: to determine the kind of organizational support a community organization needs to address problems and risks, and to gradually build up its management capacity

Who: team facilitates discussion with community members and leaders

How:
- Conduct informal interview with guide-questions like:
  - What is the history of the community organization? When was it formed? For what purpose?
  - How many members are there? Active? Inactive? Increasing or decreasing in number? Attendance during meetings
  - How are decisions made?
  - Does the organization have a community development plan?
  - Are committees functioning?
  - What did community organization contribute to community so far?
- Conduct a SWOT-analysis (strengths, weaknesses, opportunities and threats)
- Identify measures to address weaknesses and threats, while using strengths and opportunities

13. Modeling

What: Small scale models of the community to show the spatial relationships of the area's main features; e.g. households, community facilities, evacuation routes, etc

Why: Clear visual representation of any or all of the following aspects of the community:
- Spatial arrangement of houses, fields, roads, rivers, and other land uses
- Social map
- Hazard map, elements at risk, safe areas, etc
- Resource map showing local capacities
- Accessibility map
- Mobility map

Who: community members

How:
- A model of the community can be made on the basis of the community map
- Earth, clay, sand, colored boards and papers, plywood, sticks, stones, seeds and the like can be used.
- Help the people get started but let them make the model by themselves

14. Daily Routine Analysis

What: A diagram of daily routine, activities, tasks of men, women and children

Why: to determine the gender division of labor and tasks; learn about the share of children in household chores; to determine when the community members are available for risk reduction activities such as training, meetings, etc.; identify roles played in disaster risk management activities

Who: team and separate groups of men, women, and children

How:
- Group men, women, and children separately
- Discuss with each group their daily activities and the amount of time allocated to accomplish these
- Use a diagram to aid discussion

15. Mobility Map and Analysis

What: A map identifying patterns of spatial mobility for different segments of the community; a data gathering and analysis tool.

Why: spatial mobility can be used as an indicator for a person's contact with, and knowledge of the outside world and his authority in the community.

Contacts with the "outside world' and decision-making power in a community are often closely linked. Contacts with the outside world may also indicate freedom, wealth, empowerment, education, or consciousness.

Who: team with subgroups of based on gender, job, marital status, and with or without children.

How:
- Divide into groupings based on gender, job, marital status, etc.
- Use different colors or patterns for different activities
- Trace on the map where the group goes for work, education, health care, shopping, visiting, and recreation

16. Pocket Charts

What: Investigative tools which use pictures as stimulus to encourage people to assess and analyze a given situation.

Why: visual tool to raise more complex issues with minimum verbal exchange; identifying and ranking problems and solutions through voting

Who: team and community

How:
- Team prepares the pocket chart. "pockets" are made of cloth, paper or cardboard and are attached to a poster-sized piece of paper or cloth. Rows and columns of pockets are arranged into a matrix. Alternatively, jars or pots can be used in place of the pockets.
- Drawings or pictures are put at the top of each pocket to serve as captions. For example, pictures may show uses of water – cooking, drinking, washing, watering plants, animals, etc.
- Slips of paper, straw, cloth or leaves can be used as ballots. Provide each participant with enough ballots to use in voting. For example, to show the activities in which he or she uses water.
- After all have voted, participants count the ballots and discuss the findings
- To add the next dimension to this activity, pictures can be added to the front of each row to show the different sources of water available to the community – for example a well, a river, a pump and so on.
- The voting is repeated, this time showing who uses which water source for which activities.

17. Matrix Ranking and Scoring

What: A tool for exploring people's perceptions, elicit their criteria and understand their choices in measuring and prioritising.

Why: to identify criteria and determine preference; to identify differences in perceptions and reasons; to encourage problem solving through discussion and ranking the problems and the solutions; for comparative studies

Who: team with community members

How:
- Criteria or characteristics for comparing items are listed by the community members
- Criteria used are put on one side of the matrix or table (y-axis)
- Items being compared are put on the x-axis
- Points are given by putting stones, seeds, etc.

18. Wealth Ranking

What: A tool to determine the economic attributes of household in a community; shows information on the relative wealth and well-being of households

Why: know local indicators and criteria of wealth and well being; investigate perceptions of wealth differences and inequalities in a community; determine the social and economic status of households in a community; identify the poor households in the community

Who: team with key informants, including women, independently

How:
- Make a master list of households in the community. Assign a number to each household. Write the name of each household head and the number in the master list on a piece of paper.
- Select several key informants from the community. Have 3 to 5 informants to make sure that results are reliable. Criteria for informants: have lived for a long time in the community, knowledgeable about the other households, and should represent different economic status in the community.
- Select a place where the interview can take place, preferably in the informant's house where no one is watching. In some places the topic of wealth is considered sensitive and can be embarrassing for the one being ranked.

- Ask the informant to sort out the pieces of papers in as many piles as he/she perceives to be the wealth categories - rich, average, or poor - in the community. If the informant is not literate, read out the name on the paper and let him choose the pile on which to place it. The informant should be allowed to classify the households into 5 categories at the most.
- Use numbered or illustrated baskets or small boxes to help the informant to remember the piles. This also helps the team to record the scores without mixing the piles.
- After sorting, ask the informant the criteria for each pile and the differences between the piles.
- After each exercise, make a list of households classified under each pile. If the informant sorted the households into 5 piles, assign the number 5 to the highest and the number 1 to the poorest. Numbers 2, 3 and 4 are assigned to the not so poor, average and not so rich. If there are 4 categories, number 4 will be assigned to the richest and number 1 to the poorest.
- Compute the average scores for every household using the formula below:

$$\frac{\text{Category number} \times 100}{\text{Number of categories}}$$

Example 1: Informant no. 1 made 5 piles/categories. The score of the richest will be computed as follows:

$$5 \times \frac{100}{5} = \frac{500}{5} = 100$$

Therefore, each card in the richest category of 5 piles will be assigned a score of 100.
The score of the poorest category of 5 piles will be computed as follows:

$$1 \times \frac{100}{5} = \frac{100}{5} = 20$$

Therefore, each score in the poorest category of 5 piles will be assigned a score of 20.

Example 2: Another informant made 4 categories. The score of the richest will be computed as follows:

$$4 \times \frac{100}{4} = \frac{400}{4} = 100$$

The score of the poorest category of 4 piles will be computed as follows:

$$1 \times \frac{100}{4} = \frac{100}{4} = 25$$

- Repeat the process with 3 to 5 key informants. Then, compute the average score for each household by adding all the scores given by the informants, which will be divided by the number of informants. The bigger the average score, the higher the category or ranking of the household, i.e. households with scores ranging from 90 to 100 will emerge as the richest. The poorest will be those with lower scores.
- Arrange the households according to wealth categories such as rich, average and poor (or into whatever categories that will emerge).The categories should not exceed the number of piles given by the informants.
- Identify wealth indicators of the households in each category or grouping.

19. Force Field Analysis

What: A method for listing, discussing, and evaluating the various forces for and against a proposed change

Why: to analyze all forces impacting on a projected change and weighing the pros and the cons; to develop strategies to reduce the impact of the opposing forces and strengthen the supporting forces.

Who: team and community members

How:
- Start with the goals in risk reduction and key risk reduction measures
- Brainstorm what are the driving forces (pros) and the restraining forces (cons). Types of forces to consider: available resources; traditions; vested interests; organizational structures; relationships; social and organizational trends; attitudes of people; regulations; personal or group needs; present or past practices; institutional policies or norms; agencies; values; desires; costs; people; events
- Write on board, wall or floor
- Discuss the driving and restraining forces, which have been identified. Are they valid? How do we know? How significant are each of them?
- What is their strength? Which ones can be altered? Which cannot? Which forces can be altered quickly? Which ones only slowly? Which forces, if altered, would produce rapid change? Which only slow change in the situation? What skills and/or information are needed and available to alter the forces?
- Assign a score to each force, from 1 (weak) to 5 (strong). The score is based on (a) the strength of the force and (b) the degree to which it is possible to influence this force.
- Calculate the total score for the driving forces and the hindering forces.
- Decide if the goals, key risk reduction measures or proposed change are feasible. If so, devise a manageable course of action which:
  - Strengthens positive forces
  - Weakens negative forces
  - Creates new positive forces

20. Health and Nutrition Needs Assessment

What: A tool to assess health and nutrition condition and needs

Why: conducted to get an insight of the health and nutrition condition of men, women, children and babies in the community

Who: team and key informants (like midwife, Community Health Workers, staff of health center, etc), individual households and during focused group discussions

How:
- Use tools like focused group discussion, informal interviews, direct observation, seasonal calendar and mapping
- Look into the following aspects:
  - Nutritional status of women and children (age-height-weight assessment, quantity and quality of food intake, food preparation methods, etc.)
  - Food security situation (availability of sufficient food, stability of food supply throughout the year, access to available food, quality and diversity of food)

- Available health services in the community (RHU, health workers, herbal medicines, quality of services, etc)
- Sanitation (quantity and quality of water supply, presence of comfort rooms, waste and garbage disposal, hygiene practices, etc.)
- Common diseases (kind of diseases occurring in the community, morbidity, mortality, when do diseases occur (seasonal), treatment given to diseases, etc.)
- Prevention (immunization, animal vaccination, hygiene and cleanliness of surroundings, etc.)
- Women's health condition (no: of pregnant women, no: of (ab) normal deliveries, problems related to pregnancies, delivery and child rearing, family planning methods, etc.)
- Caring capacity (caring tasks for babies and children by community or households considering time, education, nutritional habits, breast feeding, early stimulation, knowledge on health and nutrition, etc.)
- Traditional medicine/healing (# and role of traditional practitioners, kind of traditional medicines used, beliefs regarding health and illness, etc.)

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New Learning and Reflections

module three

Module Objectives

At the end of the Module, you should be able to:

- Define the community disaster risk management planning process;
- Describe the steps involved in community disaster risk management planning;

No of Sessions

1. Community Disaster Reduction Planning

COMMUNITY DISASTER REDUCTION PLANNING

session 1

community disaster reduction planning

Learning Objectives

At the end of this session, the participants should be able to:

- Explain the process of community disaster risk reduction planning
- Conduct community disaster risk reduction planning

Key Concepts

- Once the participatory disaster risk assessment is completed, a disaster risk reduction plan for the community is prepared
- In this process the identification of the disaster risk reduction measures is the most important task, which are then prioritized
- Analysis of the key stakeholders and available resources is also conducted during the planning process
- The action plan would describe the disaster situation including hazards and vulnerabilities, community resources, disaster risk reduction measures, roles and responsibilities of key stakeholders, time schedule and verifiable indicators.

Reference Materials

Community Disaster Reduction Planning

Introduction

Upon completion of the participatory disaster risk assessment, community disaster risk reduction plan is prepared. Community members identify risk reduction measures with the help of local authorities in order to address the hazards and the vulnerability. In this regard following aspects are considered:

- Vision of their ideally prepared and resilient community
- Decision on whether an identified risk can be reduced, transferred or lived with
- Capacities and resources that are available in the community and locally
- Stakeholders who could become partners in the implementation of the plan
- Stakeholders who might be against certain risk reduction activities and who would need to be neutralized

Visioning: the local authorities officials should facilitate a community session on visioning. Team facilitators ask the community members to dream about the kind of "safe community" they want to attain in relation to disaster risks they identified. The ideas of community members on "safe community" can be written on the flip chart by the local authority officials. This is the time when the local authorities, community members and other stakeholders can have a thorough discussion on what they want to achieve in the disaster risk reduction process.

They must set up concrete and achievable targets. The community members, local authority officials and other stakeholders should jointly establish indicators in order to measure whether targets have been achieved or not.

Identify Risk Reduction Measures: The community members and local authority officials in collaboration with other stakeholders identify activities that will help in mitigating the hazards and minimizing vulnerabilities. The role of local government officials and other technical experts will be important in providing relevant information to the community members regarding the strategies for hazard mitigation and vulnerability reduction. The risk reduction measures may include; construction of rainwater harvesting structures, flood and typhoon dykes, retrofitting of houses, improvement in sanitation system to allow proper flow of water, diversification of crops, forestation, mangrove plantation and land use planning etc. Initially a list of all potential risk reduction measures can be identified. Later on through analysis of local resources, culture and the benefits of various risk reduction measures, they can be prioritized.

Identify resource requirements: The group can refer to the data collected during the capacity assessment stage in order to identify the various resources that are available in the community. The group can further discuss about the additional resources needed for implementation of risk reduction activities and the potential sources; e.g. the local government, an NGO, a research institution, a bank etc. The amount of money required to implement each activity is estimated. A budget is prepared to correspond to each of the activities.

Responsibility and schedule: After the prioritization of risk reduction measures and identification of resources, the group should assign responsibilities to various stakeholders on who will do what. A realistic time frame should be set up for implementation of the activities. The group can discuss the arrangements for monitoring of the implementation process.

After identifying resources needed and the available resources, the community members and local authorities can together help form an action group (community based organization) to perform the tasks identified within an agreed time frame.

It will be important to present the community disaster reduction plan to the whole community and get feedback from various groups. The plan should be revised upon the basis of community feedback.

Table 14. An example of disaster risk management plan (See Kafle, 2005; Kafle and Koirala, 2004)

activities	locatiion	responsibility	time (start-end)	budget	verifiable indicators
Fire Prevention: Make people aware on the proper use of electricity and not to throw inflammable materials carelessly such as cigarette buts.	Settlement near to forest areas.	Community Disaster Information Center	On-going Before Dry Summer and dry seasons		Awareness materials have been prepared and disseminate-d to each household and schools.
Fire Prevention: Apply fire prevention codes in industries/factories and building	Industries and factories	Mitigation Committee of CBO and local authorities	At the time of construction		Fire prevention codes are strictly followed while constructing buildings and factories.
Flood Preparedness drills	All house holds and farming land	Evacuation Committee Community Disaster Information Center	Before Flood Season; e.g. May-June		Report of the CBO

References

Kafle, Shesh Kanta, *District Disaster Management Action Plan of Syangja District, Nepal*, UNDP/DDC Syangja, Nepal. 120 pp. (Unpublished document), 2005

Kafle, Shesh Kanta and Govinda, Koirala, *District Disaster Management Action Plan of Chitwan District, Nepal*, UNOCHA/DDC Chitwan, Nepal, 2004

New Learning and Reflections

module four

Module Objectives

At the end of the Module, you should be able to:

- Define the process of community organizing, training,
- Describe the role of local authorities in promoting CBDRM
- Discuss the role and management of community information centers
- Describe the process and strategies of systematic disaster risk communication
- Enumerate the elements of a community early warning system
- Define the importance and management of a disaster reduction fund
- Enlist the measures communities can take to mitigate geological and hydro-meteorological hazards

No of Sessions

1. Community Organizing
2. Community Training
3. Community Disaster Information Center
4. Disaster Risk Communication
5. Community Early Warning System
6. Community Disaster Reduction Fund
7. Role of Local Authorities in CBDRM
8. Mitigation of Hydro-meteorological Hazards
9. Mitigation of Geological Hazards

COMMUNITY MANAGED IMPLEMENTATION

session 1

community organizing

Learning Objectives

At the end of this session, the participants should be able to:

- Define the role of community organization and steps in forming a community organization;
- Discuss the various committees of a CBO and their roles
- Explain the characteristics of a functional CBO

Key Concepts

- To enable the community to undertake disaster risk reduction measures on a sustainable basis, it is essential to form a community-based organization or strengthen an existing one to deal with disaster risk reduction.
- A good time to form a CBO is during the Action Planning process. However, in other cases a CBO can be formed even before that; e.g. before the conduct of community risk assessment. The steps in forming a community organization may differ in various communities. They will depend on the community's social, economic, political, and disaster context.
- CBO will implement disaster risk reduction activities during the pre, during and post disaster phases. These activities may include action planning, awareness raising, community mobilizing, organizing drills; relief needs assessment, emergency response, camp management, and recovery after disaster.

Reference Materials

Community Organizing

Introduction

To enable the community to undertake disaster risk reduction measures on a sustainable basis, it is essential to form a community-based organization or strengthen an existing one to deal with disaster risk reduction. The form of community organization can vary depending upon the situation in a community. It is important to have an understanding of the existing organizations within the community, which might be a youth group, women's union, farmers' association, community cooperative or a local elected committee. However, if there is no organization yet in the community, a Community-based Organization (CBO) can be established. The objective of the Community-based Organization (CBO) is to implement community disaster reduction plan. This will enable local community to become better prepared for impending disasters and to become disaster resilient in the long term.

Steps in Forming a Community Organization

The steps in forming a community organization may differ in various communities. They will depend on the community's social, economic, political, and disaster context. A good time to form a CBO is during the Action Planning process. However, in other cases a CBO can be formed even before that; e.g. before the conduct of community risk assessment. The following steps are one example of establishing a community organization:

- Identification of vulnerable community;
- Rapport building and understanding the community;
- Identification of socially accepted leaders;
- Community training including the training of the leaders;
- Community risk assessment;
- Formation of community-based organization;
- Action planning by community-based organization;
- Implementation by community-based organization;

Examples of Community Organizing for Disaster Risk Reduction

Community organizing processes adopted by Cambodia Community-based Flood Mitigation Program included following steps:

1 Selecting project sites, targeting the most vulnerable;
2 Selecting community members as volunteers and training them;
3 Organizing communities and village level Disaster Management Committees; CBDMC composed of at least 4 elected villagers
4 Identifying, estimating and ranking local disaster risks through risk mapping;
5 Building consensus on mitigation solutions;
6 Mobilization of resources and implementation of community mitigation solutions;
7 Drawing, sharing, and learning lessons from implementation;
8 Replication and overall improvement of the community-based disaster mitigation and preparedness system.

Steps followed under the Bangladesh Urban Disaster Mitigation Program in Gaibandha & Tongi included the following:

Step 1: Identify project goal and objectives and rapport building
Step 2: Identification of volunteers by the Municipal Disaster Management Committee (MDMC)
Step 3: Analysis of root causes of problems through PRA tools
Step 4: Enhance cohesiveness through self help-organization (CBO)
Step 5: Criticism and sharing through feedback session
Step 6: Mitigation plan proposal, prioritizing activities
Step 7: Scheme Implementation Committee (SIC) formation
Step 8: SIC assumes lead role in project implementation
Step 9: Community incorporates into its culture the effective practices

Functions of the CBO

The functions of Community-based Organization (CBO) can be divided into three categories in concurrence with the phases in disaster risk management, the pre, during and post. The CBO can establish various sub-committees to implement the disaster reduction activities in pre, during and post disaster phases. Such committees may include: awareness committee, early warning committee, evacuation committee, mitigation committee, livelihoods support committee, search and rescue committee, public health committee etc.

Preparedness Functions of CBO

- Develop and share Disaster Risk Reduction Plan with all community members
- Mobilize community members to implement the disaster risk reduction measures
- Mobilize resources that the community can not produce or access on its own
- Conduct disaster preparedness training with community members
- Raise community awareness on what to do before, during, and after a disaster
- Monitor disaster threats, conduct drills, and draw lessons to improve the plan
- Network and coordinate with government disaster management committees or councils, NGOs, other communities, etc.
- Engage in advocacy and lobby work regarding disaster risk reduction issues to support local and community disaster risk reduction
- Expand membership of the disaster risk reduction committees

Emergency Functions of CBO

- Issue warning
- Manage evacuation
- Organize search and rescue with community participation
- Provide first aid and arrange subsequent medical assistance
- Conduct damage needs and capacity assessment
- Report damages and needs to government and other agencies for assistance
- Coordinate, plan, and implement relief delivery operations with aid agencies

Recovery Functions of CBO

- Facilitate social, economic and physical rehabilitation of community; e.g. livelihoods, trauma counseling, reconstruction of houses and infrastructure
- Coordinate with government and aid agencies to receive assistance in rehabilitation

- Ensure that risk reduction measures are integrated during the reconstruction and rehabilitation phase
- Evaluate the performance in terms of CBO capacity and effectiveness to promote community safety and identify strategies for future improvements.

Characteristics of a Functional CBO

- Members agree to develop the community into a prepared and resilient community
- Members include representatives of most vulnerable groups
- Has elected officers and committees to perform disaster risk management functions
- Agree on the plan, policies and procedures
- Agree on pooling of community resources for disaster risk reduction activities
- Coordinate with external agencies to tap financial and technical support
- Members are informed about developments affecting the community
- Members have sufficient knowledge & skills on disaster risk reduction programming;

Principles of Community Organizing

People are the primary agents of change: This principle maintains that people should be the key actors in disaster risk reduction. Therefore, all initiatives by local authorities should be implemented with the full participation of local people.

Organizing is a means, not a solution: Only the formation of a CBO is not enough. The CBO must plan and implement appropriate disaster risk reduction actions.

Start simple: Keep the structure of the CBO simple and the scale of activities small. Developing a complex organizational structure may create management problems.

Build upon the existing groups: Preferably the capacity of the existing groups in the community should be developed for disaster risk management, instead of creating another group. However, in many situations it might be advisable to form a new group in order to ensure the participation of all vulnerable groups.

References

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Kafle, Shesh Kanta, *Local Good Governance and Poverty Alleviation in Nepal*, Published by Ms. Narayani Kafle, Kathmandu, Nepal, 2003

New Learning and Reflections

session 2

community training

Learning Objectives

At the end of this session, the participants should be able to:

- Define the need for community training
- Enumerate activities to be undertaken in the community training
- Answer the following questions: How effective was community training? How was the efficacy of the training measured? What are the success / failure factors? Strengths and Weakness? Problems encountered? Lessons Identified? Over-all results?

Key Concepts

- Training of Community-based Organization (CBO) and community members is an effective strategy to enhance their capability for disaster reduction
- Training topics would include;
  - Orientation about disaster risk reduction,
  - Leadership and organizational management training
  - Hazard specific response drills and simulation exercises, training for structural mitigation i.e. training of masons on flood resistant

construction.

- Training should be conducted in the community with the use of local resources as far as possible.

Reference Materials

Community Training

Training is important to enhance capability of community-based organization and community members to reduce disaster risks. The aim of training is to enable the community-based organization and other community members to understand the disaster risk reduction activities on their own.

In the case of a newly established community disaster response organization training needs would be much higher and broader. The training should be provided to: i) the members of the community organization, ii) members of the community at large, iii) special technical experts; e.g. masons, paramedics, teachers, farmers, and staff of the local authorities. The training can cover following range of broad topics.

1. Disaster Risk Reduction Training for CBO
   - Orientation on disaster reduction
   - Disaster risk assessment
   - Action planning
   - Disaster Risk communication
   - Local early warning system
   - Hazard mitigation; e.g. flood, typhoon, drought mitigation
   - Strengthening livelihoods
   - Advocacy for community vulnerability reduction

2. Emergency Response Training for CBO and other experts
   - Search and Rescue
   - Medical First Aid
   - Relief coordination, distribution
   - Emergency Shelter Management
   - Evacuation Management
   - Camp Management
   - Water and Sanitation
   - Food and Nutrition

Drills or simulation exercises are an important part of the community preparedness. Two kinds of drills can be organized with the community; i) table-top exercises, ii) functional drills. Some of the skills can only be taught and strengthened through drills. The functional drills could include a range of areas as following.

- Early warning and follow-up action by concerned people;
- Evacuation drills;
- Search and Rescue drills;
- Medical first aid drills;
- Evacuation center management;
- Relief operations management;
- Individual safety measures in response to earthquake/flood/landslide;
- Fire suppression

3. Organization Management Training for CBO
   Training on leadership and management would be very important in order to transfer skills and knowledge to members of community-based organization, in case the organization is established newly and the leadership does not have essential skills. The leadership development and management training would include following subjects.
   - Leadership (meeting facilitation, community mobilizing, public speech etc)
   - Planning (project planning, monitoring and evaluation)
   - Negotiation, conflict management and conflict resolution
   - Budgeting and financial management

- Proposal writing and report writing
- Documentation
- Networking, campaigning, negotiation
- Fund raising

4. Technical Training for Specific Target Groups
   Technical training of certain target groups to promote community-based hazard mitigation will be important in order to develop local capacity. Examples of such training are as below.
   - Training of masons to teach flood/earthquake resistant construction & retrofitting;
   - Training of masons and households on constructing rainwater-harvesting tanks that could contain more water for longer time periods;
   - Training of families or masons to improve efficiency of catchment areas for rainwater harvesting;
   - Training community doctors or indigenous healers on public health during a disaster situation;
   - Training family members and mothers on water purification techniques;
   - Training on micro-business management for members of saving group;
   - Training carpenters on preparation of boats for evacuation;
   - Household level training for food-storage to avoid loss during flooding;
   - Training on swimming for men, women and kids to save themselves in flooding;
   - Training on individual actions to avoid injury and casualty in an earthquake;

Training Methodology and Materials

It is important to use learning by doing approaches in the training. Using creative ways to get attention of people is also important. Lecture method should be kept to the minimum or avoided if possible. It is good to use fieldwork, discussions, and visual aids for the training. Use of participatory techniques of learning such as problem tree, ranking, mapping, model-making, transect, time-line, focus group discussions would be more effective and practical. It is good to use local materials, e.g. leaves, crops, bricks, sticks, colors, plants.It might be difficult to access certain groups in various cultural contexts; e.g. women in tribal areas or in certain Muslim countries, minority groups, poorest of the poor. Therefore innovative and insightful methods will be required to approach such groups to enhance their coping capacity.

The process for designing of community training include following 6 steps.

1) Training needs assessment

2) Designing the training outline

3) Testing the training materials with the community members

4) Concluding the training

5) Evaluation and feedback

6) Revision

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New Learning and Reflections

session 3

community disaster information centre

Learning Objectives

At the end of this session, the participants should be able to:

- Describe the role of community disaster information center;
- Discuss the management aspects of the disaster information center

Key Concepts

- Establishment and strengthening of a local disaster risk management mechanisms is important for effective disaster planning and implementation. The purpose of Community Disaster Information Center (CDIC) is to collect, collate, analyze and disseminate disaster related information in the local area.
- The Community Disaster Information Center will be involved in facilitating disaster risk communication and community early warning systems.
- The CDIC will be connected with the local authorities and other relevant technical organizations in order to access the necessary information and share it with community members, and vice versa.
- The CDIC will use multiple strategies to promote learning about disaster risks and organize early warning; e.g. posters, meetings, announcements by public address system etc.

Reference Materials

Community Disaster Information Centre

Introduction

Establishment and strengthening of a Community Disaster Information Center (CDIC) is important for effective disaster risk reduction planning and action. The purpose of CDIC is to collect, collate, analyze and disseminate disaster related information in the community. There should be a regular flow of information between the community groups and the local level government and non-government organizations; municipal authorities, local government, police, NGOs, research institutions, professional organizations; e.g. teachers association, masons, Red Cross and Red Crescent Societies.

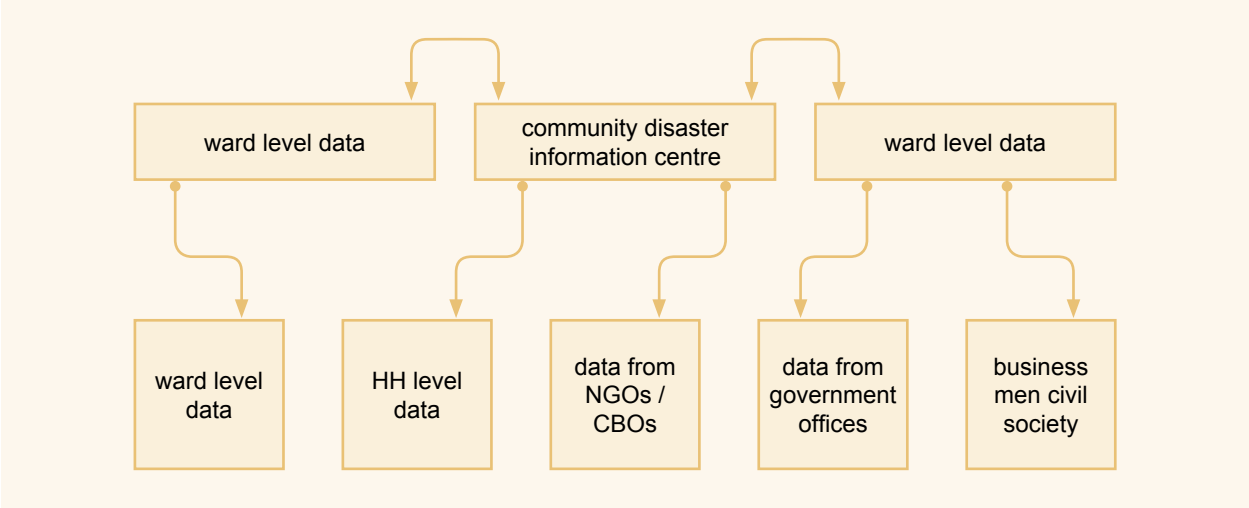

Figure 10. A framework of community level disaster information system

Information Gathering and Dissemination

The following information will be collected, analyzed and disseminated through the CDIC:

- Hazards
- Vulnerability
- Resources
- Coping mechanisms
- Disaster history of community
- Disaster reduction and preparedness measures
- Disaster risk reduction plan
- Service delivery institutions
- Financial institutions
- Physical facilities (road accessibility, telecommunications, drinking water facilities, toilet facilities, airport etc)
- Human resources
- Disaster preparedness institutions and equipment

Management of the CDIC

The Community Disaster Information Center can be managed by a sub-committee of the Community Based Organization. The local authorities should help the CBO to establish a small disaster information center. The Community Disaster Information Center should perform the following key functions:

- Disaster Risk Communication to enhance learning of community members about disaster risks and actions to be taken to reduce them
- Community Early Warning system to inform community members about impending hazards and precautionary measures; e.g. evacuation,

The local authorities should equip the Community Disaster Information Center with appropriate machinery and equipment; e.g. telephone, radio, TV and small collection of disaster related audio-visual materials. The CDIC should collect relevant publications and materials on disaster risks and disaster preparedness. The Community Disaster Information Center (CDIC) can use a number of strategies to promote community learning about disaster problem. For example community workshops, community walks, posters, drawing/painting competitions, community level exhibitions, study visits to other communities. Some of the other participatory exercises would include community hazard mapping, vulnerability mapping, transect walk etc.

The community disaster information center should contact relevant NGOs, government agencies and research institutions and collect relevant information from them. It can invite resource persons from the above agencies to raise awareness of community members on specific issues.

Another important task that CDIC should perform is to inform the local government, and NGOs and other relevant organizations like the Red Cross and Red Crescent about the disaster related problems of the community in order to mobilize support for community level disaster reduction activities.

References

Murshed, Zubair, Bangkok, ADPC, 2006

Kafle, Shesh Kante, Bangkok, ADPC, 2006

New Learning and Reflections

session 4

disaster risk communication by local authorities

Learning Objectives

At the end of this session, the participants should be able to:

- Define the purpose of disaster risk communication
- Explain the concept of disaster risk communication at community level
- Describe the steps in disaster risk communication process

Key Concepts

- Risk Communication is a process of exchange of information and learning amongst community members, local authorities, NGOs and other stakeholders. This involves dialogue about the nature of risk, reasons of disaster risk and strategies to reduce the risks. People can share their concerns, opinions, or reactions in order to develop a common understanding to deal with the disaster problem.
- A specific disaster risk communication campaign may be aimed at influencing the opinion of other groups or organizations about a specific disaster problem. Disaster risk communication process involves
  - define the purpose of risk communication,
  - identification of the needs,
  - development of risk communication materials or methodology,
  - testing of the materials,
  - implementation of risk communication,
  - evaluation of the impact of risk communication campaign.

Reference Materials

Disaster Risk Communication by Local Athorities

Introduction

Disaster risk communication is a very important activity for a community mobilizing for disaster risk reduction. However, the public awareness approach assumes that people are ignorant and therefore government, NGOs and technical experts need to raise their awareness. The experience has shown that the local communities may know a lot of strategies to deal with the disasters. The experience also show that it is important to develop a common understanding amongst the local authorities, communities, and other actors like the media, schools, monks or imams, and business owners in order to promote effective disaster preparedness. It is significant that all parties living in an area understand each other's opinion and form a common strategy. This approach of communication and learning amongst the local level partners is described as disaster risk communication.

Objectives of Disaster Risk Communication

From the local authority's perspective, the purpose of disaster risk communication is to increase the awareness of community members and other social groups; e.g. business, media, teachers, students and other social groups in the area about disaster risks and the actions that can be taken to deal with it. The specific objectives of disaster risk communication may include:

- Facilitate exchange of information to understand the nature and perceptions of risk
- Develop mutual understanding about disaster problems
- Formulate common approaches to risk issues
- Encourage specific action by communities for disaster preparedness

The actors in disaster risk communication at local level may include:

- District, municipal or commune authority
- Local level NGOs
- University or research institutions
- Local media
- Community members
- Business; e.g. factory or shop owners, logging companies
- Religious leaders
- Teachers and students

Systematic Planning Approach to Risk Communication

The local authorities can follow a five-step approach to planning and implementing disaster risk communication campaign at the local level. They are:

1. **Define the role of risk communication**
   The first step is to define the role and importance of disaster risk communication to achieve specific objectives in a community or local area. It may be good to conduct a dialogue with the local people to identify the need for risk communication.

2. **Design the risk communication plan**
   After the identification of the need and role of disaster risk communication, the next phase is to plan for a risk communication campaign. Research to assess the information needs of various groups in the community is very important to develop a good risk communication plan and campaign.

The research involves the conduct of a Participatory Disaster Risk Assessment in order to:
- Identify the risks
- Identify the target group for risk communication activities; e.g. the most vulnerable groups
- Analyze people's existing knowledge about disaster risks
- Identify behaviors that need to be changed to mitigate & prepare for disasters
- Determine how people's behavior could be changed
- Identify local modes of communication, for disaster risk communication
- Identify local influential individuals and institutions, which influence people's opinions.

It is important to decide about the methods, messages and channels of communication of risk messages at the design stage.

The following criteria are suggested to ensure responsible risk communication:
- The goal of communication message and the communicator's intentions should be clearly described in the risk message
- The risk information must not be misleading. The communicator must be able to demonstrate the correctness of his risk claims
- In case of scientific doubts, the public should be made aware of such doubts
- The risk information must be complete. Do not hide any relevant information
- Be cautious in using risk comparisons and statistical information

3. Conduct small-scale pre-testing

It is important to get feedback of the target groups about the content of the risk communication message and the channels being used for reaching the target group.

The local authorities can organize a workshop with a small group of the target audience. The message and materials developed should be presented in the workshop in order to get feedback. During the pre-testing the target group representatives may propose some changes in the message or the channels of communication. In the absence of pre-testing there is a risk that the risk message may not be relevant, or interesting for the target group.

4. Implementation

The content of the message and its design should be modified on the basis of feedback from pre-testing. Similarly the channels of communication should also be modified if needed. After the appropriate modifications the local authorities should implement the disaster risk communication campaign at a larger scale. This may include distribution of advertisements, posters, leaflets, brochures, films or organization of theatre, exhibitions and simulations.

5. Evaluation

The local authorities should conduct a survey to assess whether the disaster risk communication activities achieved the objective of changing people's perception and behavior in a positive manner for disaster preparedness.

What are the Considerations for Drafting a Message?

It is important for the local authorities to consider following aspects while developing a risk message:

- It should be target group specific
- Information should be clear
- Use examples to explain your point
- Message should not arouse unnecessary fear

- Information can be verified
- It provides a solution and guide on what to do
- Provide realistic information
- Message should not be too long
- Use various means to convey the same message
- Written message is distributed

What Can Make a Message Ineffective?

- Probabilistic information may increase confusion
- Statistical information may not be understood by target group/s
- People find difficult to relate depersonalized information

References

Abarquez Imelda and Zubair Murshed, *Community-based Disaster Risk Management: Field Practitioners' Handbook*, ADPC, 2004

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New Learning and Reflections

session 5

early warning by local authorities

Learning Objectives

At the end of this session, the participants should be able to:

- Explain why early warning is necessary
- Describe the components of an effective early warning system
- Discuss how to establish a community level early warning system

Key Concepts

- Early warning informs the individuals, households, groups and the community about an impending danger and what to do to prevent, avoid or minimize damage from the hazard.
- For early warning to be effective, it should: be hazard- and audience- specific; give advice on what to do; inform about possible effects of not following the advisory

Reference Materials

Early Warning by Local Authorities

What is Early Warning?

Early warning is about provision of information to individuals, households, groups or a community about i) the existence of a danger or hazard, and ii) what can be done to prevent, avoid or minimize the danger.

Why do We Give Warning?

There are three purposes in giving an early warning. They are i) to inform the community about hazards: Who is at risk? What is the risk? ii) to advise on means of protection and preparedness; e.g. preventive evacuation, sandbagging to reinforce the flood dike, or fire suppression etc, iii) to instruct them who will do what to deal with the impending hazard.

Different ways of giving warning and/or receiving warning include:

- Village/community meetings
- Notices/posters/billboards
- Verbal or pictorial messages
- Cartoon series / Mascots
- Radio
- Films
- Other indigenous forms and channels

Things to Consider When Giving Warning

1. **Inform the people of the different phases of the warning and their meaning**

   Example:

   Cyclone Warning
   Alert Level 1 or Cyclone Signal # 1
   Alert Level 2 or Cyclone Signal # 2

   Community defined warning system/s:
   Flood Warning # 1 2 ft. floodwaters at Village Square
   Flood Warning # 2 6 ft. floodwaters at Village Square

   Main road is not passable

2. **Inform or update the evacuees/community of the forecast and the warning of agencies or community monitoring team using symbols or sounds that everybody can understand.**

   Example:

Typhoon Warning	**Symbol or Sound**
Alert Level # 1 or	# 1 sign or square or whistle
Alert Level # 2 or	# 2 sign or triangle or drums
Typhoon Signal # 2	
Alert Level # 3 or Typhoon Signal # 3	# 3 sign or rectangle or siren

- The symbols can be painted or mounted in plywood or boards that can be read or seen even from afar

- Make sure to change the symbol or sound when a change in the warning or forecast is made by warning agencies or by the community monitoring team

3. "Information Boards" can be placed in important locations like:

- Temple, church, schools or government buildings
- mountains or high places
- stores and transportation facilities
- other places where people frequently pass or gather

4. Organize a committee on information

The task of this committee will be to monitor and prepare all the materials for the dissemination of early warning information and the monitoring of all hazards (natural or human-made). The flow of information from the "field" until it is processed and packaged for information dissemination to the community should be clear.

5. Identify roles and responsibilities

For every role, a committee or an official must be responsible in order to undertake the tasks.

Two methods of describing these roles and responsibilities can be used by the community committee,

a. List organizations involved and describe their roles for each hazard
b. List hazards and identify the lead/support organizations for each hazard.

The description of roles and responsibilities by organization is useful for each team leader, coordinator, organizations involved to review their (individually and) organization's overall involvement

6. The warning should:

- Be area specific and target group specific
- Be hazard specific
- Be based on the Community Hazard, Capacity and Vulnerability Assessment
- Give advise on what to do
- Inform community of the possible effects / risks that may cause them if they don't follow or do what is advised

Example:

Typhoon Warning	Symbol or Sound
Alert Level # 1 or Typhoon Signal # 1	# 1 sign or square or whistle / ready
Alert Level # 2 or Typhoon Signal # 2	# 2 sign or triangle or drums / get set
Alert Level # 3 or Typhoon Signal # 3	# 3 sign or rectangle or siren / go

Figure 11. Flood early warning system

8. **Community should know the meanings of actions to be taken (What "READY, GET SET AND GO" mean). Or recommended action should be specific like: pack-up things, proceed to pick-up point or proceed to evacuation site**

9. **Warning is given in simple form and in the local dialect**

Example:

> ATTN: Fellow residents of CARE Village,
>
> Based on the latest warning of (warning agency), Typhoon George may pass our region within 24 hours. Floodwaters are expected to flow through river "A" and shall inundate "H" Village, which is located near the "A" river. "H" village shall be inundated by floodwaters burying houses and farms by as much as 10 feet.
>
> All residents are advised to evacuate to the village temple on the north corner. Please bring the following: food, cooking utensils, bed sheets and water. Farm animals shall be evacuated at the hill.
>
> We have three hours to prepare before our organized evacuation. Proceed to the village square where vehicles are waiting to pick us up going to the Temple. It is estimated that floodwaters will recede within three days. We can go back to our homes then on the fourth of November.

References

Abarquez Imelda and Zubair Murshed, *Community-Based Disaster Risk Management: Field Practitioners' Handbook*, ADPC, 2004

New Learning and Reflections

session 6

community disaster reduction fund

Learning Objectives

At the end of this session, the participants should be able to:

- Describe the importance and the purpose of disaster reduction fund
- Discuss the management aspects of the disaster reduction fund

Key Concepts

- In order to sustain the community level disaster reduction activities, the provision of funds to community members and community groups is essential. This will enable the local communities to implement disaster risk reduction activities at the family and community levels.
- Rationale of creating the trust fund.
  - To sustain existing community based disaster reduction activities
  - To strengthen the resilience of most vulnerable social groups
  - To develop an ownership of disaster reduction activities
  - To organize immediate relief, rescue and recovery activities so that lives and property can be protected without waiting for external aid

Reference Materials

Community Disaster Reduction Fund

Introduction

In order to sustain community level disaster reduction activities, the development of a continuous source of funds is very important. This will enable the families and community groups to implement disaster risk reduction and preparedness activities, which were identified in the community action plan. Therefore, the local authorities must help the most vulnerable communities to establish a fund through providing seed money. The development of this fund would also allow the local community to use this seed money to mobilize further funds from other agencies. The community members should be able to borrow micro-credits from this fund in order to undertake disaster reduction measures; e.g. raising the foundation of the house, retrofitting of the house or school, purchase of drought resistant seeds and plants etc.

Rationale

- To sustain existing community based disaster reduction activities
- To strengthen the resilience of most vulnerable social groups
- To develop an ownership of disaster reduction activities
- To organize immediate relief, rescue and recovery activities so that lives and property can be protected without waiting for external aid

Sources of Fund

The local authorities should provide the seed money from the municipal or district development fund to establish Community Disaster Fund in most vulnerable villages or neighborhoods. In addition to the local authorities a number of other agencies could be the sources of funds for the establishment or strengthening of the Community Disaster Fund.

- Department of social welfare
- Department of local development
- National Disaster Management Office
- Banks
- Contributions from the members of CBO
- Donations from business owners in the locality
- Sale of community products
- International donors and UN agencies
- NGOs

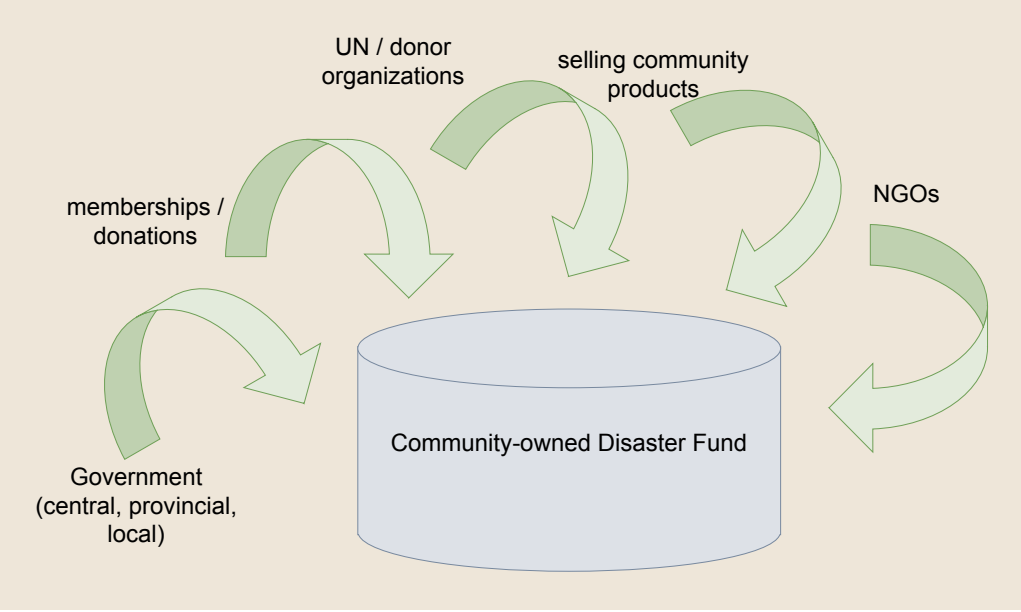

Figure 12. Sources of funding for community-owned disaster fund

Management of the Fund

The CBO can manage the fund with the help of a special Disaster Funding Committee. The committee should be comprised of representatives of vulnerable groups, CBO leaders and local authorities. All decisions on allocation of funds to community members should be made on the basis of a criteria and consensus amongst the committee members. The local authorities should help the committee to prepare policies and procedures for the management of the Community Disaster Fund. This will include policies on membership of the fund, contributions to the fund, disbursement of micro-credits in pre and post disaster situations, repayment, and write-off. The fund should be managed in a transparent manner.

Experience shows that the formation of a micro-credit group can be an important strategy to sustain the fund. The group members would make contributions to the fund on a weekly or monthly basis, as agreed. The group members would then be eligible to access the fund for disaster reduction activities based upon the criteria. Depending upon the size of the vulnerable group and the interest of the community the amount of contributions from every member can be decided.

District or Municipal Disaster Fund

In order to support the establishment and functioning of Community Disaster Fund, the local authorities can establish a District or Municipal Disaster Fund. This fund can then be used to provide seed money to community groups to establish Community Disaster Fund. The municipal or district authorities could also utilize a portion of this fund for other disaster reduction activities. This kind of municipal or district fund can be established with the participation of key local level stakeholders as given below:

- Head of the local, municipal, district or commune government
- Representative of National Disaster Management Office (NDMO)
- Representative of line departments; e.g. Forest, Agriculture, Education, Health, Social Welfare
- Bank officials from interested banks
- Representatives of interested business companies and associations
- Representative of the Womens Union
- Representatives of vulnerable groups; e.g. fishermen, farmers, youth, elderly, disabled, minority

References

Murshed, Z., Bangkok, ADPC, 2006

Kafle, S.K, Bangkok, ADPC, 2006

New Learning and Reflections

session 7

role of local authorities in community-based hazard mitigation

Learning Objectives

At the end of this session, the participants should be able to:

- Describe the importance of community based hazard mitigation
- Define the role of local authorities in supporting community level mitigation activities, and the various functions they can perform;

Key Concepts

- Hazard mitigation activities aim to reduce the loss of life, injuries and damage to property and environment from disasters in the longer term. The individuals, households and community groups have an important role in mitigation. However, the communities may not have necessary technical expertise to undertake such activities. Therefore, the role of local authorities in promoting community based disaster mitigation is very important.
- Local authorities can provide various kind of support and assistance to community groups in hazard mitigation; e.g., technical training, technical experts, technical information, funds, equipment and machinery. They can organize study visits to other communities for the learning of the community.

Reference Materials

Authorities in Community-Based Hazard Mitigation

Introduction

Hazard mitigation activities aim to reduce the loss of life, injuries and damage to property and environment from disasters in the longer term. The individuals, households and community groups have an important role in mitigation. For example, retrofitting of houses, or hazard resilient construction of buildings, construction of an embankment or dyke, forestation, mangrove plantation, harvesting of hazard resilient cropping, land use planning, diversification of livelihoods, relocation and a range of other activities. However, the communities may not have necessary technical expertise to undertake such activities. Similarly they may lack other essential services; e.g. information, funds. Therefore, the role of local authorities in promoting community based disaster mitigation is very important.

Local authorities can provide the following assistance to community members in hazard mitigation:

- Provide technical experts to conduct risk assessment; e.g. hazard mapping and analysis; e.g. flood engineers, seismic experts, drought experts, climatologists etc
- Provide technical experts for mitigation of hazards; e.g. engineers trained in hazard safer construction, flood mitigation engineers, land use planners, environment and forestry experts and agricultural experts.
- Develop technical skills of community experts; e.g. training of masons on safer construction, capacity building of farmers on drought mitigation, training of community health workers on medical aid during and post-disaster.
- Provide relevant machinery and equipment to community groups; e.g. digging machines, cranes, flood gauges etc
- Develop rules and guidelines to support community level mitigation work, such as construction of fire lines; hazard-resilient construction guidelines, guidelines on hazard resilient agricultural practices, guidelines on land use planning in rural and urban areas etc
- Formulate plans in order to encourage community initiatives in hazard mitigation
- Assist communities in establishing community disaster information centers
- Provide funds to community groups for hazard mitigation
- Organize study visits for community groups to show model hazard mitigation projects in other communities
- Integrate community disaster plans into local government planning
- Organize consultative meetings and workshops with community groups and other stakeholders to review existing initiatives and identify new strategies for community level hazard mitigation

Key Principles of Hazard Mitigation

Few key principles that the local authorities should follow:

- **Foster a culture of mitigation as a way of life and doing business**
  Local Authorities should encourage both citizens and government entities to protect themselves and their property to the best of their ability at all times.
- **Integrate mitigation into development**
  Mitigation, disaster prevention and preparedness should be integrated into every development activity. Local authorities can use various incentives to promote community level mitigation. Mitigation and prevention activities should be linked with development planning.
- **Mitigation must be central to all government activities**
  Ensure that the everyday activities of a local government, like issuing building permits and approving development plans, promote hazard mitigation.

References

Murshed, Z. Bangkok, ADPC, 2006

New Learning and Reflections

session 8

mitigation of hydro-meteorological hazards

Learning Objectives

At the end of this session, the participants should be able to:

- Describe the nature and reasons of hydro-meteorological hazards;
- Define the actions that households and community groups can undertake to minimize the risks from floods, typhoons, drought and fire
- Explain the actions that individuals, households and community groups can undertake to prepare for impending disasters, respond to them and recover from their impacts.

Key Concepts

- Hydro-meteorological hazards like floods, typhoons, droughts, and fires, cause severe impacts upon community livelihoods and assets
- Such hazards occur on a seasonal basis. The severity of such hazards is increasing due to changes in the climate.
- Households and community groups can undertake a range of actions to mitigate these hazards, as well as prepare for them and recover from the impact

Reference Materials

Mitigation of Hydro-meteorological Hazards

Introduction

Hydro-meteorological hazards are frequently experienced by communities. Such hazards occur on a seasonal basis and are caused due to the interaction amongst air pressures, water and sunlight. The frequency and intensity of hydro-meteorological hazards depend upon the characteristics of the climate of a region. Due to their specific climatic conditions, certain regions are exposed to floods, while others to typhoons or droughts. The severity and frequency of such hazards is increasing due to the rapid changes in global climate.

Hydro-meteorological hazards mainly impact peoples' livelihoods in the agriculture sector, fisheries, gardens, forests, and other natural resources. The impact of hydro-meteorological hazards in terms of loss of life is lesser in comparison to the geological hazards. In this session, we discuss the nature and causes of various hydro-meteorological hazards and the actions that communities can undertake to reduce their impact.

1. Flood Mitigation

Flood is the overflow of water from a river or similar source of water, occurring over a period of time. Periods of heavy rain can result in extra volume of water coming into the waterways, leading to a rise in the water level of streams and rivers. A flood happens when the carrying capacity of the waterways fail to hold the total volume of increased water at any given time. A flood can create widespread inundation and lead to disaster conditions. Floods can be divided into the following types:

- Flash Floods: Results from relatively rapid recession soon after rainfall, causing high flow velocities that damage crops and properties.
- Rain flood due to high intensity rainfalls: Very high rainfall during the monsoon season will often generate water volumes in excess of the local drainage capacity, causing local floods.
- Monsoon floods from major rivers: Major rivers generally rise slowly and the period of rise and fall may extend over 10-20 days, or more. Spillage through distributaries and over the banks of major rivers is a common cause for extensive flood damage, particularly when several major rivers rise simultaneously.
- Floods due to storm surges in coastal areas: Storm surges generated by tropical cyclones and tidal waves cause flooding and extensive damage to life and property.

Who are Vulnerable?

People, who live near rivers or in low-lying coastal areas, live with the threat of floods. They are vulnerable to floods as they live in an area, which can experience different levels of flooding. The closer the waterway is to the living area on a flood plain, the higher the vulnerability to flood will be.

Flood Impacts

- Injury or death to people and animals
- Damage to houses, property and infrastructure. These include damage to facilities like hospitals, clinics, schools, roads, railways, telephone and electricity supplies
- Affect livelihood of people because floods destroy crops, farmlands and livestock
- Can cause food shortage
- Long-lasting floods can disturb routine cultivation pattern
- Can cause soil erosion. After floods, the land is usually covered with debris, sand or boulders which reduce farming areas and fertility of soil

- Disrupts clean water supplies and/or contaminates sources of water which can subsequently cause diseases
- Triggers epidemics, water borne diseases, help mosquitoes to breed resulting in the spread of malaria

Flood Mitigation and Preparedness Activities

Communities living in flood prone and riverine areas can reduce the loss of life and property by the following measures:

- Follow flood resistant construction design and materials in the making of your house
- Plant bamboo or appropriate trees around the houses and in the common areas to prevent erosion
- Stop cutting trees. Instead, plant trees. They provide a strong natural protection against floods
- Do not throw trash in rivers or canals
- Do not throw anything like cigarette butts, wrappers especially those made of plastic or non-biodegradable objects, anywhere which may clog or block the drainage system thereby impeding the flow of water
- Grow crops that can withstand flood or would suffer less damage
- Build an evacuation center for the community
- Construct a place of evacuation of animals
- Develop a flood early warning system
- Ensure that all communities and family members living in flood prone areas understand the dangers properly
- Know the flood history of your area
- Understand the flood warning messages, what will be the impacts of flooding to your area, and what are the areas vulnerable to different degrees of flooding

- In times of adverse weather conditions, always listen to the official warnings issued by local authorities and news reports on the local radio or television
- Prepare a flood emergency kit
- Prepare and discuss the details of local flood hazard map, with the involvement of other community members
- Indicate the flood path and possible sequences of flooding in the area in advance
- Evacuation plans should be made in advance. Each member of the family must be given specific instructions and responsibilities in case of evacuation
- If your community has boats, make sure that they are well maintained and properly tied up to a tree or other permanent objects
- Protect community water supply sources
- Store essential food supplies and documents at a safer place
- Inspect escape routes, houses, etc before floods for weaknesses. If you find any, help to protect them by building up a wall of sand bags to block the floodwaters.
- If communities are subject to flash floods, organize groups and plan for flood level monitoring and have a discussion on how the information can be disseminated.
- Organize a search and rescue (S&R) team and identify the areas which will be isolated in case of flooding and prepare a plan for the S&R team
- Organize a first aid team and ensure it has proper first aid equipment and emergency medicine kit

Preparing an Emergency Kit

To survive during and after a flood, it is wise to prepare a flood emergency kit for each family member. The kit should contain:

- A portable radio and torch with fresh batteries
- Several fresh batteries
- Candles and water-proof matches
- Reasonable stocks of drinking water, canned food and food items such as instant noodles
- A medical first aid kit (with topical antibiotic, bandages, etc)
- A supply of essential medicine for cold, cough, diarrhea, headache, fever and other common illnesses etc.
- Strong shoes and if possible, a pair of rubber gloves
- A water proof bag for clothing, documents and valuables
- A plastic bucket to collect fresh water until you get water supplies
- Your emergency contact numbers and addresses (whom should be informed in case of emergency)

2. Typhoon Mitigation and Preparedness

A Typhoon is an intense tropical disturbance characterized by a low-pressure area at the center. Warm, moist air above the sea rises quickly to the cooler high altitudes causing a very low-pressure area and formation of clouds. Surrounding air at the sea surface moves into, to take the place of rising air. Rotational forces of the earth results in a circular motion of the winds and cloud formations around the central low-pressure area. The motion is clockwise in the South Pacific. Colder air is drawn slowly to the center of the system forming the eye of the storm. Winds close to the eye become very strong (hurricane force). Entire cyclone systems move along by the trade winds at a speed between 10-25 km per hour.

The Eye of the Typhoon

The "eye" of a typhoon is a small central area of some 10 to 50 kilometers in diameter. It is characterized by relatively calm or light winds, clear to partly cloudy skies, high humidity, warm temperatures, and usually fine weather.

Classifications of Tropical Cyclones

Tropical cyclones are classified according to the strength of the accompanying winds. The three categories into which tropical cyclones fall are:

- Tropical Depression. Maximum wind speed near the center is less than 63 kilometers per hour
- Tropical Storm. Maximum wind speed near the center ranges from 63 to 118 kilometers per hour
- Typhoon. Maximum wind speed near the center is 118 kilometers per hour or greater

Impacts of a Typhoon

- Loss of lives and property
- Injuries
- Disruption of public services and utilities, including communications, transportation of all types, electrical power, water supply and sanitation
- Damage to roads, bridges, dams, runways and harbors
- Damage and total destruction to agricultural farms
- Massive floods and flash floods

Typhoon Mitigation

Non-Structural measures
The following non-structural measures can be adopted for typhoon mitigation at community level.

- Typhoon-resistant shelter
- Check the house for weak points – loose or damaged wooden frame or wall cladding, loose or missing nails, termite or moisture damage to wooden structure- particularly the house corner sand bracing. Make any necessary repairs
- Check the roof for loose sheeting or loose nails etc. Use spiral thread nails for repairs
- Ensure that windows can be protected either by shutters (make some if necessary) or by taping
- Clear trees and branches that overhang the house and any dead trees from around the house.
- Relocation/resettlement of typhoon-prone communities
- Safe dikes/dams/levees/drainage/culvert installation and riff- rapping banks of bodies of water to control flood waters
- Bridge/road construction, reinforcement or repair
- Erosion-control and coastal conservation
- Mangrove plantation and rehabilitation
- Coral reef rehabilitation and preservation
- Sand dune preservation
- Monitoring and early warning system, community look-outs/monitors and rapid warning/ response teams

- Evacuation mapping system – prepare safe places that the people can evacuate to
- Transport network/system for typhoon-prone communities
- Credit/micro-credit cooperative
- Crop/typhoon insurance
- Public awareness and education about vulnerability
- Make sure gutters are not broken and will take water to the tank if you have one
- Clear gutters, drains, creeks and streams of any debris so that they can carry rainwater away quickly and reduce the risk of flooding
- Plant crops in places where they are sheltered from the wind (taro under trees, etc.)
- Livestock owners should identify a safe fenced enclosure, above flood level, to which their animals could be moved when a typhoon approaches. If none exists, neighborhood farmers might work together to prepare an appropriate enclosure
- Prepare a home emergency kit and make someone responsible for maintaining it (a good job for a 10 year old child). It should include:
  - Water containers with covers (large jars, soft drink bottles etc)
  - Dry or tinned food and a can opener
  - Plastic sheeting, bags and sacks
  - Battery powered or wind-up radio
  - Lighting (torch or candles or a hurricane lamp with fuel and spare wick)
  - Spare batteries for the radio and torches, matches
  - First aid kit (bandages or clean cloths, band aids, antiseptic, antibiotic, pain reliever, etc)
  - Any medicines that family members must take
  - Change of clothing for everyone
  - Rope/string, hammer and nails to tie things down
- Keep important papers in one place, preferably in a plastic bag so that they are protected and can be collected quickly if evacuation is necessary
- Have a family conference and plan for typhoons, making sure everyone knows: -what is in the emergency kit and where it is kept
  - The nearest safe shelter if the house is threatened or damaged
  - How to get safely to that shelter?
  - The most important items to be looked after, and where they are kept
  - Where to meet if the family cannot get home in time (children may be at school or parents away working or visiting)?
  - How and where to get help if needed?
- Find out about the typhoon warning system, particularly where warnings can be obtained
- Find out about the local disaster plan and particularly where official shelters are situated

Evacuation Before the Typhoon

- If you live in area subject to river flooding, or close to the beach at a low level, you should move to a safe shelter above flood level before the typhoon arrives. Don't wait until the last minute in the hope of saving all your possessions. You could disappear with them!
- When you are evacuating, make sure everyone knows where you are going and that thee is plenty of time to get there. If time is limited, take only blankets, clothes and food. If there is time to gather supplies, follow priorities. Suggested priorities are:
  - Plastic sheeting
  - Important documents and paper
  - Emergency water
  - Matches and a lamp
  - Torch with spare batteries
  - Extra food
  - The rest of the emergency kit
  - Other valuables
- Wear strong clothing and shoes (not things) to protect against glass cuts
- Put cooking utensils etc. from outside kitchens in the house

- Switch off electricity and gas and lock the house before you leave
- While evacuating, be careful of -
  - Washed out bridges
  - Broken power lines
  - Floating debris in streams
  - Falling trees and branches
  - Flowing building debris, particularly glass and corrugated iron
- Do not walk through water more than knee deep. Flood currents can be very strong
- On arrival at any official shelter, register so that somebody knows where you are.

During the Typhoon

Actions here are focused on preventing human injury and loss of life:

- Stay inside
- Keep calm until the emergency has ended
- Shelter in the strongest part of the house where most walls are helping to hold the roof up
- Stay well away from glass windows and doors, particularly glass louver windows
- Open windows a little on the side of the house opposite to that on which the wind is blowing. This helps to equalize pressure and reduces the risk that the roof will lift off. As the wind swings round, close the original windows and open windows on the new downwind side
- Beware of the calm 'eye' of the storm. This can last for an hour or so. If the wind drops suddenly, stay inside unless you have to make emergency repairs.
- Close the windows and be ready to open them on the new downwind side as soon as you know where the wind is coming from. If you have to go outside, take shelters again as soon as you hear the sound of wind rising. It will probably rise very quickly, be very strong and come from a new direction
- If the house starts to break up, protect everyone with mattresses or blankets; hold on to strong fixtures or shelter under beds or strong tables
- Listen to the radio whenever you can, for forecasts and messages

3. Drought Mitigation and Preparedness

Drought has many definitions. One of the most commonly accepted definition is that drought occurs in circumstances arising due to "temporary reduction in water availability below the normal or expected level for a specified period". There are three types of drought namely, meteorological, agricultural and hydrological.

- **Meteorological drought.** Meteorological drought is defined as occurring when the seasonal rainfall received over an area is less than 75% of its long-term average value.
- **Agricultural drought.** Occurs when there isn't enough soil moisture and rainfall adequate to support crops. Agriculture drought happens after meteorological drought
- **Hydrological drought.** Refers to marked depletion of surface water and fall in water tables. Generally, hydrological drought follows agriculture drought.

What are the different periods when drought can occur?

Drought can occur due to lack of rainfall in the following three periods:
Early Season Drought. The early season drought occurs in association with delay in commencement of rains.
Mid Season Drought. Occurs in association with breaks in the monsoon. If it occurs during the vegetative phase of crop growth, results in reduced or slow plant growth.
Late Season or Terminal Drought. Occurs because of early cessation of the rain season.

Causes of Drought

There are several causes due to which drought can occur. Some of the main causes are

- Failure or erratic behavior of monsoon
- Over exploitation of surface and ground water
- Inadequate water conservation measures
- Depletion in forest cover
- Sloppy and undulating terrains
- Shifting of agricultural practices (low to moderate water demand crops to high water demand crops)
- Meager irrigation facilities
- Poor water management practices at Household and Farm level

Impacts of Drought upon Community Life

The drought has a multifaceted impact, which includes physical, bio- physical, social and economic consequences.

Physical
- Scarcity of water for drinking, domestic and irrigation purposes
- Depletion in ground water level
- Reduced flow from perennial water sources
- Land degradation

Bio-physical
- Increase in deforestation
- Scarcity of fodder
- Damage to crop quality
- Livestock death or incapacitation
- Unusual movements of flocks and herds in search of pasture
- Impaired productivity of forest lands
- Direct loss of tree, especially young ones
- Extinction of endangered species and loss of bio- diversity
- Drying up of water sources and deterioration in water quality
- Damage to fish habitat
- Decline in crop production / negative impacts on agriculture economy

Economic
- Loss from dairy / fishery / other livestock production
- Loss of livelihoods / employment Opportunities
- Increased prices of Food / Fodder
- Falling of current agricultural and non agricultural wages

Social
- Migration of people in search of alternative livelihood
- Loss of human life (heat stress / suicides / starvation deaths / unhygienic conditions in the working areas)
- Distress sale of assets (movable and non movable)
- Increased inequity among social groups
- Increased conflicts - water user's conflicts, political conflicts and other social conflicts.
- Negative impacts on nutritional status

- Increased mental & physical stress (e.g. anxiety, depression, loss of security, domestic violence etc.) and morbidity
- Increase in crime rate
- Social cost of migration, e.g breakup of communities and families
- Inability of certain group within the population to afford increased food prices results in switch to cheaper and sometimes less preferred foods / reduction in overall food intake etc.
- Loss of education due to reduction in school attendance by children lacking energy and / or money for fees, and increase in child labor

Drought Mitigation and Preparedness Activities

- Control desertification
- Rehabilitate degraded land
- Promote forestation and vegetation
- Construct rainwater harvesting tanks to collect water at household and community level
- Plant trees around the rainwater tanks in order to reduce evaporation of water
- Examine your water use efficiency and irrigation needs.
- Keep up-to-date forage inventories. Accurate forage inventories in silos; hay mows and other storage areas help you determine feed supplies during a drought.
- Consider alternative on-farm activities. Diversification can be a good long-term approach to revenue shortfalls from drought. Some potential businesses include:
  - Alternative crops such as shiitake mushrooms, ginseng, specialty vegetables, greenhouse plants, dried and/or cut flowers, etc.
  - Alternative livestock
  - Non farm-related activities such as camping, free hunting/shooting preserves, trout ponds, farm vacations, resort establishments, summer camps on the farm, herd sitting, boat and camper storage, and farm markets.
  - Home-based enterprises including sewing, crafts, catering services, upholstery etc.
  - Food for work or cash for work programs in collaboration with local authorities
- Arrange reasonable buffer stock of food grain and fodder
- Assess fodder requirements in drought affected areas and locate areas where shortages are likely to occur and arrange supplies from outside
- Cultivate fodder wherever feasible
- Manage livestock population to reduce pressure on fragile arid ecosystem
- Follow inter-cropping system
- Apply sprinkler and drip irrigation system
- Implementation of crop and livestock insurance schemes

During the drought

- Discuss with the agricultural extension workers for information on managing during a drought.
- Adjust fertilizer use. If you haven't already applied fertilizers, adjust the amount of fertilizer based on lower yield expectancy for the drought year.
- Protect livestock from heat.
- Consider alternative crops.
- Consider selling unprofitable livestock
- Provide shade to animals during hot weather.
- Turn cows outside at night to cool them and cool the barn. Since animals cool themselves primarily through breathing, barns tend to get warm and humid quickly.
- Maintain access to water. Provide automatic drinking cups so animals can meet their requirements during hot weather. Keep water containers clean.

Don'ts
- Misuse of water
- Destroy natural vegetation
- Overgraze animals
- Crop water loving plants in water scarce areas
- Don't promote monoculture in drought prone areas and encourage mixed cropping.

4. Fire Prevention and Preparedness

Fire is a chemical reaction between three elements: oxygen, heat and fuel. If any of the three elements disappear, the fire will disappear too.

1. **Fuel** - Fuel or combustible materials e.g. newspapers, clothing, curtains, carpet, furniture, etc.
2. **Oxygen** - Present in the air.
3. **Heat** - Flames, electricity, hot metal, or even a tiny spark of fire.

If conditions are right, a fire can start almost anywhere at any time. Most fires occur when the weather is dry and hot.

The source for starting a fire can be natural, for example a lightning strike, or human-made, like careless use of fire or even cigarettes. Fuels include anything from dry grass and leaves to branches, wood or houses! Different types of fuel burn at different temperatures, because each substance has a so-called "ignition temperature". The oil in the leaves of eucalyptus trees is one of the most explosive fuels that exist in nature due to its low ignition temperature.

Forest Fires and their Impact

The most common natural cause of wildfires is lightning. However, most wildfires are caused directly or indirectly by people, for example, fires can grow larger when farmers burn the land to make it more fertile or by children playing with matches. Fires can also start when people are careless in using cigarettes, when cooking in the woods or in using campfires. Sometimes, people even start fires intentionally (arson). If it gets out of control, fire can become dangerous both for people and nature. Here are some examples of both positive and negative effects of fire for people and in nature.

People:
- Positive effects: useful tool in agriculture, pastoralism and forestry
- Negative effects: harmful for human health and safety, destroys property (houses, stores, public buildings, schools, important equipment, etc.)

Nature:
- Positive effects: Fire can be useful in maintaining the ecosystems, it can stimulate the growth of grass, help some plants to reproduce as some seeds can germinate only after a fire.
- Negative effects: large and destructive fires can destroy and reduce the number of different types of plants and animals in an area, and can thereby permanently spoil the richness of the landscape

What can be Done to Prevent Forest Fires from Happening?

As most wildfires are caused by people, many of them can also be prevented. Here are some ideas on how you can prevent fires in your community:

- Monitoring and early warning system, community look-outs, warning and rapid response teams and firefighters
- Wind- and fire-breakers, defensible spaces around developments in fire-prone forests
- Seed-banking, promotion of indigenous crop varieties e.g. through annual seed fairs and exhibition
- Indigenous seed exchange (lending and collection of indigenous seeds per cropping season),
- Contingency cropping
- Community gardens with bore hole
- Forest resources conservation and management, agro-forestry, watershed management, reforestation, community forestry, wood resource management,
- Never play with matches. One stick can burn the whole forest!
- If you see someone playing with fire or throwing a cigarette butt in the woods, tell an adult about it immediately.
- Never make a campfire without the help of your parents or other adults.
- If the weather is windy and dry, do not make a campfire.
- If the conditions are good and you decide to make a campfire, select an open place, far from trees, dry leaves and branches. Clean the earth of rubbish for 3 meters around the place where you plan to build a campfire.
- Never leave a fire alone!
- Before leaving the area, put out the fire carefully with water and earth.
- Keep the forest environment clean. Do not leave bottles or glass litter in the forest. They might act as a magnifying glass and start a fire.
- Plan landscaping with fire prevention in mind; create fire breaks (such as a green lawn, rock garden, or well-spaced trees) 10-30 feet around your home
- Clear debris, prune dead and thin trees near any building

Fires at Home

Your home together with your loved possessions can be destroyed by fire mainly due to carelessness. It can also injure or kill members of your family. The **major causes** of fire in homes include:

- Matches & smoking hazards
- Overheating & cooking hazards
- Electrical hazards
- Lighted Joss-sticks and Candles
- Children playing with matches & other lighting apparatus
- Flammable liquids; e.g. petrol, paints, thinners
- Domestic Liquefied Petroleum Gas
- Burning rubbish
- Curtains

Home Fire Escape Plan

Hopefully, you'll never have a fire in your home. But if a fire does occur, your safety will depend on calm, rational action. An escape plan can be your key to a safe way out.

Designing a home escape plan

Draw the floor plan of your home on a piece of paper. Post your plan where it can easily be seen (such as on your refrigerator). Be sure to include:

- All doors and windows
- Primary and alternate exits
- Emergency phone numbers
- Outdoor meeting place
- Special assignments (who will call fire department, sound the alarm, check that everyone got out, etc.)
- Location of smoke detectors

Hold fire drills regularly

Your plan may look good on paper, but will it really work? Regular drills allow you to test your plan and adjust it as needed. Practice using alternate escape routes. Children should practice getting out of windows (only while under a parent's/guardian's supervision)

Special plans/arrangements

Certain people face greater risks during a fire. You may need to make special arrangements for:

- Infants/ Children
- Elderly People
- Hearing Impaired
- Visually Impaired
- Mentally Retarded
- Physically Handicapped

Fire Survival Tips

- Crawl to the door on your hands and knees, not on stomach. Smoke and gases rise to the ceiling and the air is safer close to the floor.
- Feel the door before opening it. If it's cool, brace yourself against it and open it carefully. If you notice smoke or heat, close it immediately.
- Use an alternate exit (second way out - window if possible) if the door is hot or smoke comes through it.
- Signal for help by waving a sheet or any light colored clothing if you cannot escape through the window.
- Go to your family meeting place in front and away from your home to check that everyone got out and to meet the fire department.
- Never go back into a burning building. Tell firefighters immediately if someone is left in the building.
- Seek medical help for burns and other injuries

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New Learning and Reflections

session 9

mitigation of geological hazards

Learning Objectives

At the end of this session, the participants should be able to:

- Discuss the nature and causes of geological hazards; e.g. earthquakes and landslides
- Describe the actions that households and communities can undertake to minimize the vulnerability to geological hazards;

Key Concepts

- Geological hazards include events like earthquakes, tsunami, landslides, volcanic eruptions;
- Such events are caused due to the movements of the various parts of the earth and due to other processes that are underway inside the earth; e.g. plate movements, rock movements, burning of various elements etc.
- Households and communities can undertake a range of actions to reduce their vulnerability to geological hazards.

Reference Materials

Mitigation of Geological Hazards

Introduction

Geological hazards include events like earthquakes, tsunami, landslides, and volcanic eruptions. In this session we discuss the causes of earthquakes and landslides. The session will also discuss the actions that households and community groups can undertake to reduce their vulnerability to earthquakes and landslides.

1. Earthquake Vulnerability Reduction

Earthquakes are sudden, rapid movements of the earth caused by sudden rupture and shifting of rock beneath the earth's surface. The movements of the earth can range from barely noticeable to catastrophically destructive. There are three classes of earthquakes that are now recognized: tectonic, volcanic and artificially produced.

Tectonic quakes are, by far, the most common, devastating and most difficult to predict. They are caused by stresses set up by movements of a dozen or so huge plates that form the Earth's crust. Most earthquakes occur at the boundaries of these plates, where two plates slide over, under and collide against each other; some earthquakes do occur in the middle of plates.

Volcanic quakes are seldom very large or destructive; they often precede or accompany volcanic eruptions.

Artificially produced earthquakes are earthquakes induced by activities such as the filling of new reservoirs or the pumping of fluids deep into the earth through wells. This type of earthquakes can be noticeable but are hardly destructive.

What are Aftershocks?

Aftershocks are smaller earthquakes that follow the main shock and can cause further damage to weakened buildings. Aftershocks can continue to occur in the first hours, days, weeks, or months after the quake.

What Are the Common Effects of Earthquakes?

Ground shaking from earthquakes can destroy structures such as buildings, houses and bridges resulting in death, injuries and extensive property damages; disrupt flow of gas, electric and telephone services.

Earthquakes can also trigger environmental hazards to both urban and rural areas in several ways including landslides, land faulting, liquefaction, tsunamis and flash floods. Finally, there is the formidable threat of fire.

What Are The Recommended Protection Against Earthquakes?

Asia is very prone to earthquakes and there is a strong possibility that an earthquake may occur at anytime. Unfortunately, there is still no way to predict an earthquake. Therefore, it is crucial to learn how to prepare, in advance, before an earthquake strikes. With proper mitigation and preparedness, the damages caused by an earthquake can be minimized. Lives and properties could be saved.


STAY CALM...

Earthquakes are sudden, rapid movements of the earth caused by sudden rupture and shifting of rock beneath the earth’s surface.

Things to do Before an Earthquake Occurs

Majority of damage due to earthquakes can be prevented. Therefore a good preparation would minimize the effects of earthquakes, both injuries and financial losses.

- Make sure every family member knows how to respond in case of an earthquake.
- Know the safe spots in each room - (under a sturdy table or desks, against the interior wall or a column, under a door frame).
- Practice DROP, COVER, AND HOLD in each safe spot. - Drop under a sturdy desk or table, hold on to its leg, and protect your eyes by pressing your face against your arms.Practicing will make these actions an automatic response. When there is an emergency, many people hesitate, forgetting what they are supposed to do.Responding quickly and automatically will help to protect you from injury.
- Know the danger spots - near windows, mirrors, hanging objects, tall, unsecured furniture, shelves holding heavy objects.
- Locate safe places outdoors - In the open, away from buildings, bridges, trees, telephone and electric post and lines and overpasses.
- Identify exits and alternative exits - Always know all the possible ways to leave your house and work place in emergency situations. Practice getting out of your home or building; check and see if the planned exits are clear of obstacles.
- Know the location of the shutoff valves for water, gas, and electricity. Learn how to operate those valves.
- Learn first aid.
- Develop an emergency communication plan - in case family members are not together during the earthquake, that is, when adults are at work and children are at school.

Make the Home a Safe Place by Doing the Following

- Secure heavy furnishings such as cupboards and bookcases against walls to prevent them from falling over and injuring persons.
- Keep large, heavy object and breakables on lower shelves to prevent you from serious injuries caused by falling objects.
- Store all flammables or hazardous liquids outside the house, in their proper containers, away from structures since earthquakes may trigger fires or explosions within the building.
- Hang heavy items such as pictures and mirrors away from beds, couches, and anywhere people sit.
- Brace overhead light fixtures to prevent them from falling during the earthquake.
- Pull down and close shutters or draw curtains, as protection from flying glass, especially for windows that are near the bed in the event of an earthquake occurring at night and people are asleep.

Ensure that a Stock of Appropriate Supply is Kept

- Food and drinking water.
- First-aid kit and essential medicine.
- Flashlight with extra batteries, keep them in several locations.
- Portable radio with extra batteries. Radio will be the best source of information following the earthquake especially when the electricity power is out.

Don't forget that you also need to store adequate supplies in each vehicle in case you are driving when a tremor occurs.

Things to do During an Earthquake:

STAY CALM. If you are indoors, stay indoors. If you are outdoors, stay outdoors. Many injuries occur as people enter or leave buildings.

If you are indoor:
Stay inside. Move away from windows, doors, tall cabinets, breakables or heavy objects that could fall. Take cover under a desk or sturdy table and hold on or stay against an interior wall or column. Remember that most fatal injuries are head wounds, therefore, **DROP, COVER AND HOLD.**

If you must leave a building, do so in an orderly manner. Rushing to get out can result in injuries. Do not use the elevator. As a precaution against possible fires, use the stairs.

If you are outdoors:
Move to a clear area away from the trees, signs, buildings, electrical wires and poles. DROP AND COVER your head until the shaking stops.

If you are in a vehicle:
Stop and remain inside until the shaking stops. Avoid buildings, overpasses, bridges, power lines, and roads beside ravines and cliffs in which landslides may occur. Be cautious of possible road damages while you proceed.

2. Landslide Mitigation and Preparedness

A Landslide occurs when part of a natural slope is unable to support its own weight. For example, soil material on a slippery surface underneath, can become heavy with rainwater and slide down due to its increased weight. A landslide is a downward or outward movement of soil, rock or vegetation under the influence of gravity. This movement can occur in many ways. It can be a fall, topple, slide, spread or flow. The speed of the movement may range from very slow to rapid. The mass of moving material can destroy property along its path of movement and cause death to people and livestock.

Causes of Landslides

The basic causes of slope instability can be:
- Weakness in the composition, material or geological structure of rock or soil formation.
- External factors, which impact the ground water regimes, such as:
  - Heavy rain
  - Snowmelt
  - Changes in ground water level, etc.
- Earthquakes or volcanic activities
- Changes to natural slope due to construction activities.

The following human activities may cause significant change in slope surface and ground water regimes and cause the instability of slopes.

- Construction without proper engineering inputs
- Farming activities
- Deforestation
- Burning down of vegetation
- Excavations can increases the slope angle
- Fill operations carried out without specialist advise

- Mining, blasting rock or reclamation of land can also destabilize slopes.
- Commercial logging resulting in deforestation.

There are several natural factors as given below, that can cause slope failure.

- Intense rainfall or deposition of snow will raise the ground water table; decrease the soil strength and increase the weight of associated material.
- Rapid snowmelt in mountains - Rapid melting of snow adds water to soil mass on slopes.
- Fluctuation of water levels due to tidal action
- Lowering of water level in rivers, reservoirs, etc.
- Erosion caused by continuous runoff over a slope.
- Deposition of loose sediments in delta areas
- Deposition of rocks
- Ground vibrations created during Earthquakes.
- Volcanic activity

Direct Impacts of Landslides

Physical damage - anything on top of or in the path of a landslide will suffer damage.Debris may block roads, supply lines (telecommunication, electricity, water, etc.), and waterways.
Casualties - Deaths and injuries to people and animals.
Indirect loses - Loss of productivity of agricultural and forests land, reduced property values, erosion, flooding in downstream area, etc.

Indirect Impacts of Landslides

Influence of landslides in dam safety
The safety of a dam can be severely affected by land sliding in the upstream area or on the slopes bordering the reservoir. Possible impacts include:
- Flood surges caused by movements of large masses of soil into the reservoir. The wave formed by those failures can overtop the dam causing downstream flooding and possibly failures to the dam.
- Increased sedimentation in the reservoir, resulting in loss of water storage and increased likelihood that the dam will be overtopped during periods of excessive runoff.

Landslides and flooding
Landslides and flooding are closely associated because both are related to intense rainfall, runoff and ground saturation. Debris flow can cause flooding by blocking valleys and stream channels, forcing large amount of water to back-up. This causes backwater flooding in the upstream area and if the blockage gives away, quick downstream flooding too. In turn, flooding can cause landslides, due to rapidly moving floodwaters, which often undercut slopes or abutments. Once support is removed from the base of saturated slopes, land sliding often takes place.

Features that might be noticed prior to major landslides or rock fall in mountainous areas.
- Sudden appearance and rapid expansion of cracks on road pavements or ground surface
- Sudden appearance of springs, seepage traces or patches with ground saturation in areas that have not typically been wet before
- Sudden movement of soil masses away from building foundations
- Movement of pavements, decks, sidewalls of structures, or bulging of retaining walls relative to the main structure
- Tilting or leaning of trees, lamp posts, telecommunication poles, fences, retaining walls etc.
- Sudden breakage of water supply lines and other underground installations

- Subsidence of roads, pavements, ground, etc.
- Rapid increase in water levels in pools, creeks, streams, etc. in mountainous areas.
- Increased turbidity in stream water flow.
- Sudden appearance and disappearance of creeks.
- Sudden appearance and rapid enlargement of cracks on walls of houses.
- Sticking doors and windows, visible open spaces between windows and their frames.

Landslide Preparedness Measures

- Meet the authorities and discuss the problem of landslide mitigation.
- Prepare hazard map and define the limits of danger zones so as to regulate the community activities within those zones
- Organize Watch Groups and Rescue Teams within the community.
- Try to protect the slopes. Prevent people from excavating, removing materials from the soil or cutting trees without proper advice from technical experts.
- Replant trees where they have been removed to prevent soil erosion.
- Keep records of erosion, landslide masses and falling rocks. Never construct buildings on their debris without proper guidance. Loosened masses can subside when load is added to them.
- Avoid building houses at the base of slopes that are prone to landslides.
- Before purchasing a piece of land or building on your own land, try to get as much information as possible on its history of landslides. Elders of the area can give you information on past incidents.
- Observe the features on the up slope area before you start any construction. Fill areas constructed above, lacking appropriate slope retaining structures, rock debris or boulders can move into your land. Make sure about the stability of the up slope area before you start to build on your land. If you are in doubt obtain advice from a specialist on the subject.
- Do not obstruct natural streams or drainage paths during construction. Be mindful of the other structures on the down slope. Avoid dropping rock pieces, boulders, loose earth, etc. down the slope during construction. Introduce a retaining structure to prevent movement of fill material, if you need to fill your land located on the slope.
- When constructing on a slope, use a design that suits the natural slope. This will also save on the cost of construction. Do not remove vegetation and large trees while constructing.

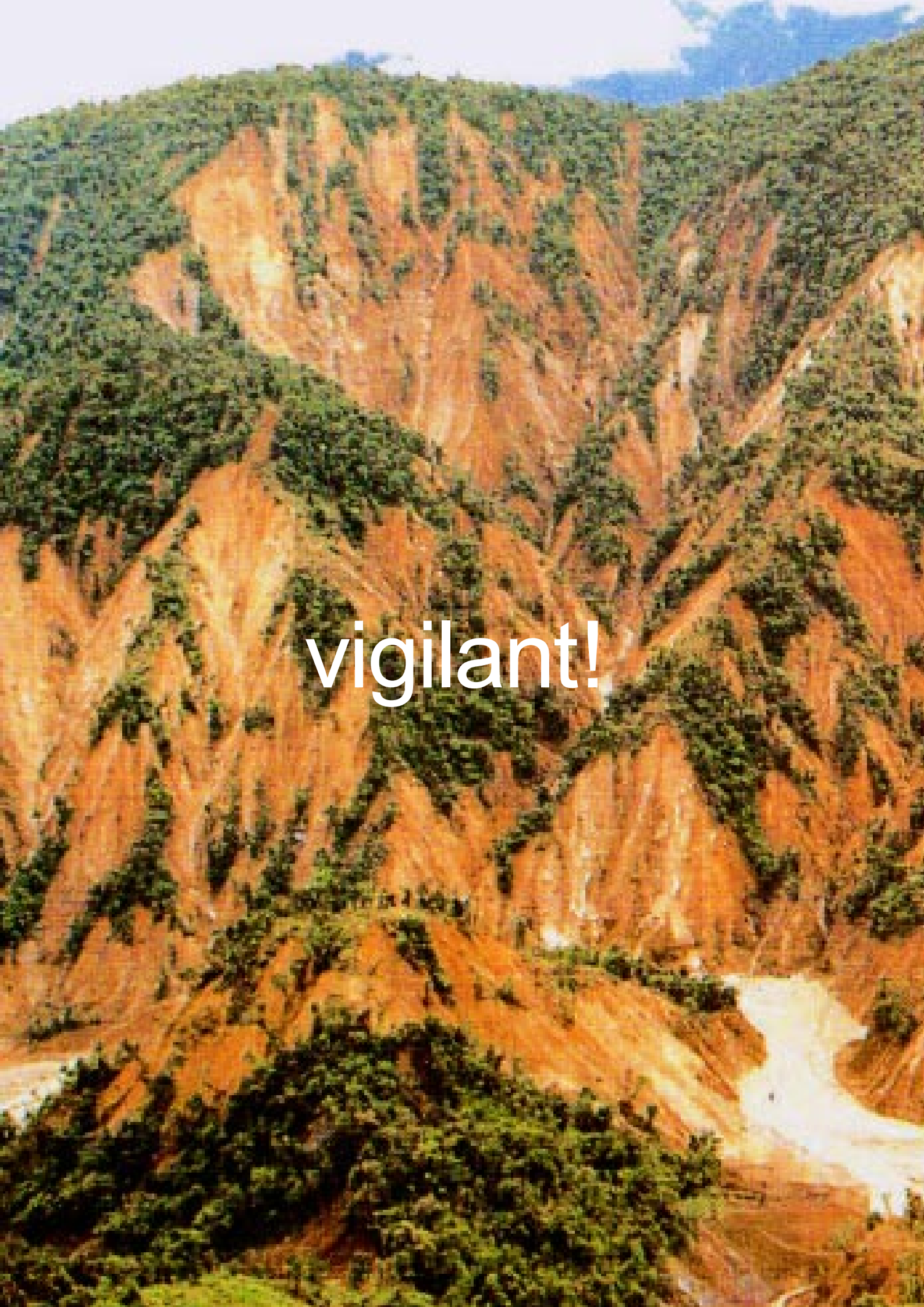
General Advise

Preparedness measures for those living in landslide prone areas, to be observed during periods of heavy rain.

General guidelines for those living in a landslide - prone area

- Listen to weather forecast on the radio, TV about heavy rains. Continuous heavy rainfall during a 24-hour period or a high-density rainfall within a period of a few hours has the potential to trigger landslides. This threshold limit may vary depending on the strength of material and slope gradient.
- Be alert if you are living in an area in which landslides occur regularly. Organize groups to inspect the slopes.
- Remain awake during nights of heavy continuous rain and be ready to move to a safer location.
- Observe the symptoms mentioned above such as appearance of cracks and their rapid expansion over the slope. They may indicate the possibility of a landslide. Inform the authorities when such symptoms are recognized.

Be


vigilant!

- Listen for abnormal sounds of soil and rock movement or breaking of trees. They may be associated with landslide movements.
- Observe abnormal behavior of domestic animals such as dogs and cats. They are very sensitive to natural hazards. They might indicate the danger by making unusual sounds, unruly behavior, etc.
- Never go closer to observe cracks on the slope. If you spot cracks, inform the authorities and move out from the area.
- In case you need to evacuate, do so immediately. Do not try to collect your belongings. Landslides can occur suddenly.
- While evacuating, do not cross possible landslide paths.
- When you see falling rocks, seek cover behind trees and other solid objects.
- There is a strong possibility that an earthquake may trigger landslide especially in areas where landslides occur regularly. Therefore, be alert when an earthquake occurs. Try to organize groups to monitor the situation
- Landslides that occur as a result of ground shaking can create a large volume of mudflow along the slope into the valley. Therefore, do not move in the direction of the valley if you are requested to evacuate, move to elevated areas.

If a landslide occurs near your home, check the foundation and walls of your home for cracks. Search for any new cracks in the surrounding area. Look out for any symptoms of landslide movement. Be vigilant during the monsoon period. Be especially vigilant during and after intense rainfall.

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New Learning and Reflections

module five

Module Objectives

At the end of the Module, you should be able to:

- Define and understand the process of monitoring and evaluation in CBDRM

No of Sessions

1. Monitoring and Evaluation

MONITORING AND EVALUATION

session 1

monitoring and evaluation

Learning Objectives

At the end of this session, the participants should be able to:

- Discuss the concept of coordination and monitoring and evaluation.

Key Concepts

- Co-ordination is about working relationships with other organizations or individuals for effective management of the existing or future programs.
- Capacity building of local authorities and CBOs about coordination and linkage development is essential.
- Monitoring is the overseeing by stakeholders and management of the implementation of an activity to ensure that input deliveries, work schedules, targets outputs and other required actions are progressing according the plan.
- Monitoring can be divided into three categories; i) Process monitoring, ii) Effect monitoring, and iii) Monitoring change
- Evaluation is as an activity whereby the results of a project are analyzed to estimate the achievement of project objectives.

Reference Materials

Monitoring and Evaluation

Introduction

To Monitoring and evaluation are important to guide the local authorities and the communities about the successful implementation of a project or activity on disaster risk reduction. Local authorities and the community members jointly can agree on the purpose and methodology for the monitoring of their activities. It is important that representatives of the local authorities, community and any other local organizations; e.g. NGOs, mass unions participate in the process.

Monitoring

Monitoring is the review and overseeing by stakeholders and management of the implementation of an activity to ensure that input deliveries, work schedules, targets and outputs are achieved according to the plan. Through monitoring we get timely, accurate and complete information on project effectiveness. Through monitoring we learn whether the activities are implemented on time, and in the right manner as planned. If the implementation is not going as per the plan, the local authorities and community members will decide to take appropriate action to achieve the desired results. In the implementation of a project monitoring can be done for the following aspects:

- **Process monitoring:** This involves overseeing whether the activities are implemented on time with the essential inputs, as planned. In case the implementation is behind the schedule, the local authorities and the community members can take various actions to rectify this situation. They can decide to hire new staff to fast track the implementation. Or they may decide to purchase more equipment and machinery to facilitate implementation. In case enough money is not available for staff hiring or purchase of equipment and materials, they may either decide to enhance the duration of the project or cut down some of the activities.

- **Effect and change monitoring:** In effect monitoring the local authorities and the communities will review whether the activity is making a positive impact upon the target beneficiaries or not. They will also monitor any negative impacts of the project on either the target beneficiaries or any other groups in the community. In case all target beneficiaries are not able to benefit from the project activity, the local authorities and community members can analyze the reasons and identify strategies on how it benefits everybody. If some groups are negatively affected by the project activities, the local authorities and the community members will need to make appropriate changes to stop the negative effects.

Monitoring can be done through various means, as following:

- Review meetings between the project staff and the project management
- Visits to the project site by the local authorities and the community members
- Progress reports on the implementation of the activities
- Survey with the project beneficiaries to assess their opinions about the success and effects of the project

Evaluation

Evaluation will help the local authorities and the community members to assess the achievements, results and effects of a disaster risk reduction project or activity. Evaluation is usually done after the completion of an activity or project. However, evaluations can also be done during the implementation itself. The purpose is to find out whether the activity or project is successful or not in achieving its objectives of disaster risk reduction.

Evaluation results will inform the local authorities and the community members about the effects of the risk reduction activities on vulnerability reduction of the target groups. If vulnerability is not significantly reduced, the reasons for this should be analyzed. Evaluation will also help them in learning about successful strategies that were applied. They would like to continue the good practices in future activities and promote them to other areas. Evaluation can also analyze if some groups in community are affected negatively by the project activities. Identify the appropriate actions to rectify the situation to avoid negative impact upon people.

On the basis of evaluation and analysis the local authorities and the communities can identify lessons to improve their future disaster risk reduction activities. In order to conduct a good evaluation it is important to focus on the following:

- Clearly defined purpose of the evaluation
- Areas of focus of the evaluation
- Participation of multiple stakeholders in evaluation process; e.g. local authorities, community groups, project beneficiaries, other local organizations; e.g. NGOs, mass organizations, etc
- Commonly agreed methodology for evaluation

The evaluation process involves following aspects:

- Review the project proposal and project progress reports
- Consult with project staff
- Consult with project beneficiaries
- Consult with other social groups, which may have been positively or negatively affected by the project activities
- Consult with other key stakeholders; e.g. mass organizations
- On-site assessment of the project activities; e.g. infrastructure

Evaluation can be conducted by an independent team of experts who don't belong to the implementing organization or the beneficiary community. In this way the local authorities and the community can get an independent opinion about the impact of their project. However, in other cases evaluations are conducted by mix teams comprised upon external experts and project stakeholders. The external experts guide in implementation of the process, while representatives of local authorities and communities including project beneficiaries participate in conducting the evaluation. This methodology allows the views of all stakeholders to be considered in setting the purpose, focus areas, methodology of evaluation and indicators of success or failure.

Coordination and Linkage Development

Co-ordination is about building linkages and relationships with different organizations and groups who may have an interest in the disaster risk reduction activities implemented by the local authorities and communities. The purpose of coordination is to establish contacts between the local authorities, communities and other organizations; e.g. NGOs, donors, mass organizations, labor unions, private sector in order to:

- Mobilize support for the project,
- Mobilize additional resources,
- Share technology and knowledge to achieve better results.

In order to establish good coordination, the local authorities can organize meetings with the stakeholders to share about the project objectives, activities. They can also seek the views of the stakeholders to improve the project activities.

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