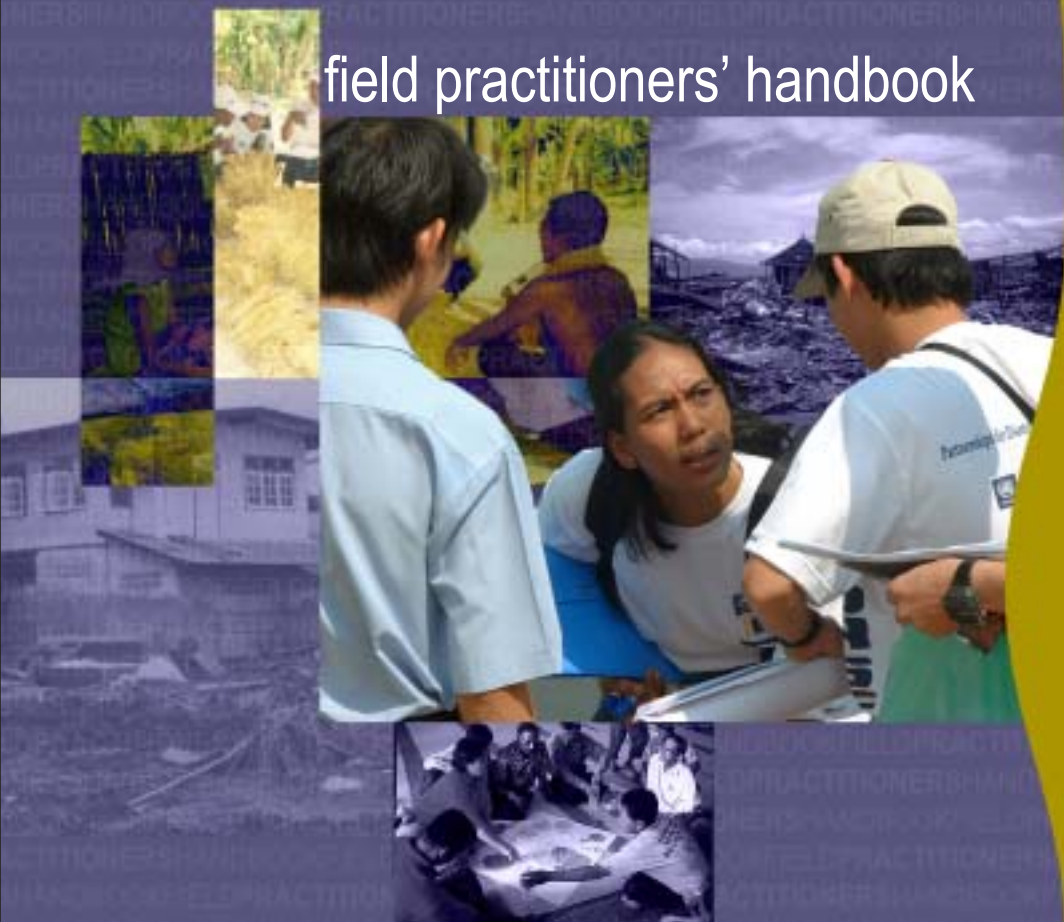**adpc**

COMMUNITY-BASED DISASTER RISK MANAGEMENT

field practitioners' handbook

Imelda Abarquez and **Zubair Murshed**

UNESCAP

The Partnerships for Disaster Reduction - South East Asia is a regional project implemented by ADPC, with funding support from the European Commission Humanitarian Aid Office (ECHO) under its 'Third DIPECHO Action Plan for South East Asia'. The one-year project, which commenced in June 2003, aims to strengthen capacities and to prepare and protect at risk communities from natural disasters through training and information exchange in targeted South East Asian countries in the region namely, Cambodia, Indonesia, Lao PDR, the Philippines, Thailand and Vietnam.

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The **Asian Disaster Preparedness Center** is a regional resource center dedicated to disaster reduction for safer communities and sustainable development in Asia and the Pacific. Established in 1986 in Bangkok, Thailand ADPC is recognized as an important focal point for promoting disaster awareness and developing capabilities to foster institutionalized disaster management and mitigation policies.

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Field Practitioners' Handbook

Imelda Abarquez and Zubair Murshed

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Acronyms

CBDRM Community-Based Disaster Risk Management

CDRMO Community Disaster Risk Management Organization

CMDRR Community-Managed Disaster Risk Reduction

CVA Capacity and Vulnerability Analysis

DRC Disaster Risk Communication

DRM Disaster Risk Management

DRMP Disaster Risk Management Plan

IDNDR International Decade for Natural Disaster Reduction

ISDR International Strategy for Disaster Reduction

PDRA Participatory Disaster Risk Assessment

PME Participatory Monitoring and Evaluation

PLA Participatory Learning and Action

PRA Participatory Rural Appraisal/ Participatory Reflection and Action

Acknowledgements

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Executive Director
Asian Disaster Preparedness Center

Introduction

The concept of Community-based Disaster Risk Management (CBDRM) has emerged during the past two decades in South East Asian countries. The promoters included NGOs, citizen's organizations, humanitarian agencies and government departments in different countries in the region. Despite this rapid expansion in application, a great majority of CBDRM practitioners lack opportunities for skill development and capacity building. Although there are a number of courses available on community-based disaster risk management, it is not possible for all practitioners to participate in such courses due to problems of funding and language.

The PDR SEA project, under the guidance of UNESCAP, took steps to fill that need by producing information and training materials such as this handbook.

The purpose of the CBDRM Field Practitioners' Handbook is to help equip CBDM or CBDRM practitioners with theories and practical tools that can be applied in community work. The Handbook is divided into three parts:

Part 1
Community-Based Disaster Risk Management: A Framework for Reducing Risk

The purpose of the first part is to clarify the basic concepts of CBDRM.

Part 2
Resource Packs

The second part covers essential tools for implementing various stages of the CBDRM process. It provides step by step instructions to facilitate specific activities. It includes narrative instructions, tables and charts. The topics covered are Participatory Project Cycle Management, Participatory Disaster Risk Assessment and Action, Formation and Training of Community Disaster Risk Management Organizations and Participatory Monitoring and Evaluation.

Part 3
Major Considerations in undertaking CBDRM

The third part discusses tools on two cross-cutting themes related to CBDRM - Gender Conscious Approach to CBDRM and Disaster Risk Communication (DRC).

There are three key concepts that have been introduced in this handbook. These are:

• Community-Managed Implementation
• Participatory Disaster Risk Assessment and Action
• Gender Conscious Approach to Disaster Risk Reduction

Community management of development programmes or risk reduction measures is the implicit philosophy behind Community-Based Disaster Risk Management (CBDRM) and Community-Based Disaster Preparedness (CBDP). Community-managed implementation as described in Section 6 of Part 2, refers to a process where at risk communities (or groups) are directly and actively engaged in planning, implementation, monitoring and evaluation of their risk reduction measures. This includes Participatory Disaster Risk Assessment (PDRA) and Analysis, identification of risk reduction measures, development of action plans and implementation and evaluation of plans.

Participatory Disaster Risk Assessment and Action are discussed in detail in Chapters 3 & 4 of Part 2. It is hoped that its inclusion in this handbook will advance the practice of Community-Based Disaster Risk Management in the South East Asia region. These sections build on earlier experiences by other CBDRM practitioners. It is important to mention that many NGOs embark in Participatory Capacities, Vulnerabilities Assessment (PCVA by Roger Ricafort, et al. in Oxfam funded CBDM projects in the Philippines and in East Timor), vulnerabilities, capacities assessment (VCA by Red Cross Society in South East Asia) and hazards, capacities, vulnerabilities assessment (HVCA by ADPC). In all of these, practitioners extensively use participatory rural appraisal (PRA) tools to collect and exchange information, facilitate dialogue, and encourage communities at risk to decide on acceptable levels of risks and take concrete action.

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Disasters affect men and women, boys and girls differently because of their position in family and society. The Gender Conscious Approach to CBDRM is making use of existing tools of analysis to enable CBDRM practitioners to sensitize the risk reduction programmes and processes as well as to contribute to the improvement of women and girl's position in society. A useful process for achieving this is included in Chapter 2 of Part 3: Gender Conscious Approach to CBDRM, Major Considerations.

This handbook has been described differently by colleagues as unfinished, preliminary draft, 1st edition. However, these descriptions convey only one meaning – that we, CBDRM Practitioners in South East Asia region, have just begun the task of putting down into "book form" what we do in our practice. The obvious limitation of this handbook is that it will not address all concerns and expectations of CBDRM practitioners. This is by no means a complete set of tools and resources on CBDRM. The document is also written in English, a language that many of us in South East Asia are not completely familiar with.

Indeed, writing and producing this handbook is an initial brave effort to bring together theory and practice from the six South East Asian countries – Cambodia, Lao PDR, Viet Nam, Thailand, Indonesia, and the Philippines. Feedback on its usefulness and how else it could be made useful will help make this resource material more relevant. CBDRM practitioners are therefore encouraged to test and experiment with the tools and methodologies presented in this document and communicate their experiences to the writers, to ADPC and to each other. It is only through this constant dialogue among CBDRM practitioners that we can improve our theory and practice.

We look forward to hearing from you all, and particularly to hearing your experiences and suggestions. If there is sufficient need and interest we will take steps to produce a second edition of this Handbook to reflect the inputs of those who have been using it.

Imelda Abarquez and Zubair Murshed

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part **1**

CBDRM:
A Framework for
Reducing Risks

chapter1
Terms and Concepts

1.1 Disaster Risk Terms

In understanding the concept of disaster risk, it is important to grasp the following terms: hazard, vulnerability, capacity, risk and disaster and their interrelationship.

Disaster. The serious disruption of the functioning of society, causing widespread human, material or environmental losses, which exceed the ability of the affected communities to cope using their own resources. Disasters occur when the negative effects of the hazards are not well managed.

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Hazard. Any phenomenon, substance or situation, which has the potential to cause disruption or damage to infrastructure and services, people, their property and their environment.

Capacities. The resources and skills people posses, can develop, mobilize and access, which allow them to have more control over shaping their own future and coping with disaster risks.

Vulnerability. A concept which describes factors or constraints of an economic, social, physical or geographic nature, which reduce the ability of a community to prepare for and cope with the impact of hazards.

Risk. The probability that negative consequences may arise when hazards interact with vulnerable areas, people, property and environment

Risk Reduction Measures. These are various activities, projects and programs that the communities may identify after assessing and analyzing the risks that they face. These measures are specifically intended to reduce the current and prevent future risks in the community.

Figure1•**Basic Disaster Terms and Concepts**

hazards

capacities

vulnerable
community

7
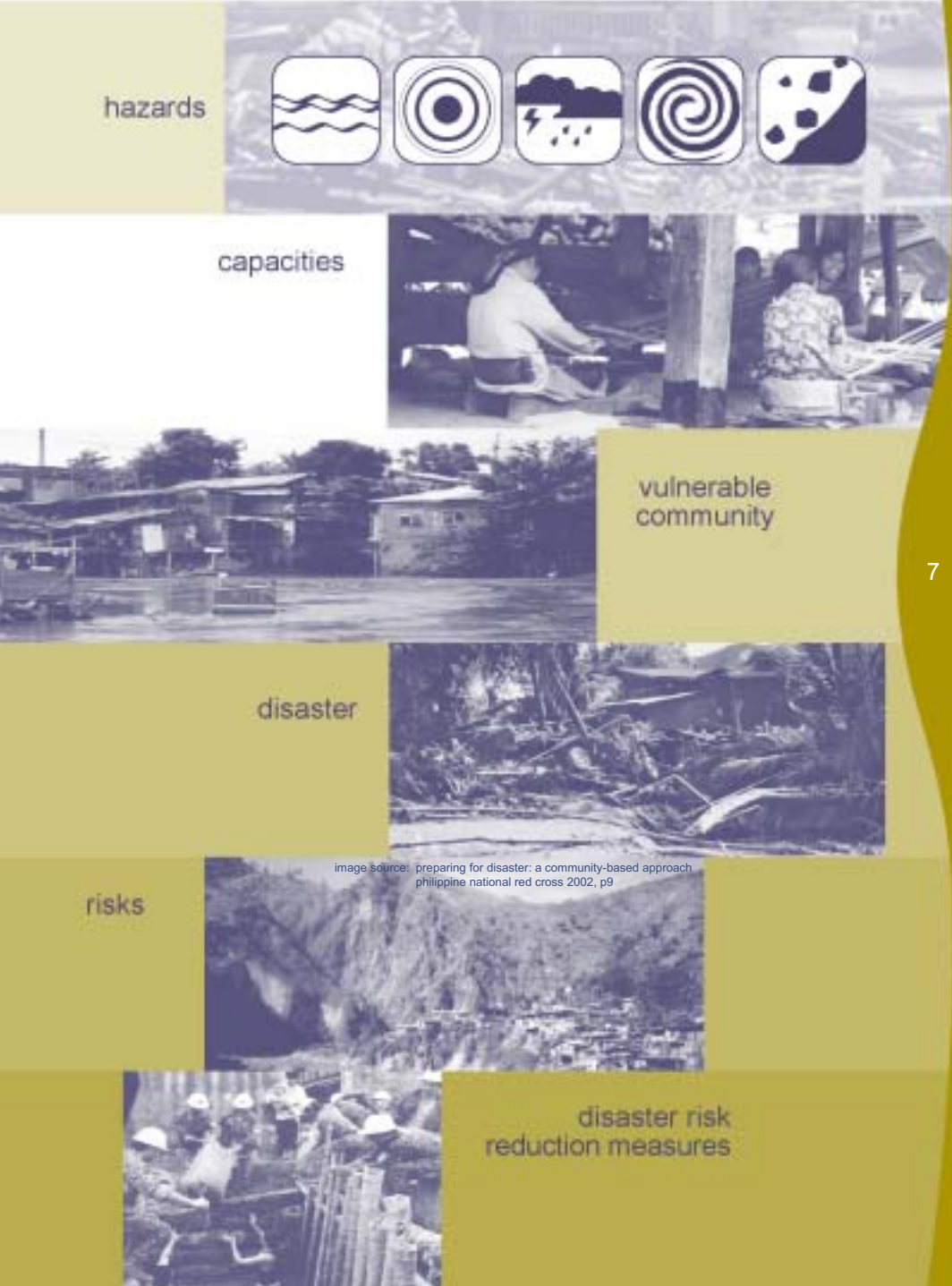
disaster

image source: preparing for disaster: a community-based approach
philippine national red cross 2002, p9

risks

disaster risk
reduction measures

1.2 Project Management Concepts

Community. In the context of disaster risk management, a community can be defined as people living in one geographical area, who are exposed to common hazards due to their location. They may have common experience in responding to hazards and disasters. However, they may have different perceptions of and exposure to risk. Groups within the locality will have a stake in risk reduction measures (either in favor or against). (See Understanding Community, Resource Pack 2).

Project. An organized social process involving the provision of inputs (cash, labor, technology, methodology) over a defined period of time to implement activities and generate outputs or results, to achieve a previously defined objective or purpose and desired development goal (impact/effect).

Project Planning. Sequencing of tasks to achieve the project objectives through timely project implementation and ensuring efficient use of resources. It includes determining tasks, benchmarks of achievements, assigning responsibilities, developing a timetable based on activities, and determining resource allocation and timing.

PRA/PLA. Participatory Rural Appraisal (PRA) has been described as a set of approaches, behaviors and methods for enabling people to do their own appraisal, analysis and planning, take their own actions, and do their own visuals, such as diagrams and maps. Other practitioners describe what they do as Participatory Learning and Action (PLA). (Chambers, Whose Reality Counts: Putting the First Last**,** 2002, p.7).

Participatory Disaster Risk Assessment (PDRA). PDRA is a process whereby all concerned parties collect and analyze disaster risks information, in order to make appropriate plans and implement concrete actions to reduce and/or eliminate disaster risks that will adversely affect their lives. It is both a dialogue and a negotiated process involving those at risk, authorities and other stakeholders.

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Monitoring. The continuous or periodic review and overseeing by stakeholders of the implementation of an activity, to ensure that input deliveries, work schedules, target outputs are proceeding according to plan.

Evaluation. The assessment of results and impact of a project in order to see to what extent the project objectives have been achieved. Mid-term evaluation is done to analyze the project halfway and if necessary, make some adjustment or changes. Terminal evaluation is undertaken to determine whether the overall purpose of the project is reached.

Disaster Risk Management. A systematic application of management policies, procedures and practices to identify, analyze, assess, treat, monitor and evaluate risks. This involves decision making based on the examination of those risks, which includes hazard, vulnerability, and capacity of people and institutions (ADPC, DMC-30, 2003).

Community-Based Disaster Risk Management (CBDRM). A process of disaster risk management 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. This means that the people are at the heart of decision making and implementation of disaster risk management activities. The involvement of the most vulnerable is paramount and the support of the least vulnerable is necessary. In CBDRM, local and national governments are involved and supportive (ADPC-CBDRM-11, 2003).

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In CBDRM, people are at the heart of decision-making and implementation of disaster risk management activities.

chapter2
Importance of Community-Based Disaster Risk Management[1]

"Preventive measures are most effective when they involve participation at all levels, from the local community through the national government to the regional and international level."

(IDNDR Conference Papers, Japan, 1994).

2.1 Understanding the Term "Community"

Community is a term that has a wide range of usage, which includes the following:

Community can be defined geographically: such as a cluster of households, a small village, or a neighborhood in a town.

Community can be defined by shared experience, such as particular interest groups, ethnic groups, professional groups, language groups, particular hazard-exposed groups, etc.

Community can be defined by sector, such as the farmers, fisherfolk, business sector, etc.

Community can be used to refer to groupings that are both affected by and can assist in the mitigation of hazards and reduction of vulnerabilities.

The advancement in information and communications technology gave birth to new forms of communication and arguably to a new form of community. Computer-mediated communication[2] (Fernback n.d.) leads to formation of virtual communities. Rheingold in 1993 defines virtual communities as "social aggregations that emerge from the (Internet) when enough people carry on those public discussion long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace" (Rheingold cited in Fernback n.d.).

A common concept of community is that a community is harmonious, having a harmony of interest and aspirations, and bound by common values and objectives. This definition implies that a community is homogeneous. In reality, a community can be socially differentiated and diverse. Gender, class, caste, wealth, age, ethnicity, religion, language, and other aspects divide and crosscut the community. Beliefs, interests, and values of community members may conflict. Therefore a community need not be homogenous.

For our purpose in Community-Based Disaster Risk Management (CBDRM), a community can be taken as a group that may share one or more things in common such as living in the same environment, similar disaster risk exposure, or having been affected by a disaster. Common problems, concerns and hopes regarding disaster risks may also be shared. However, people living in a community have different vulnerabilities and capacities, for example men and women. Some may be more vulnerable or more capable than others.

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In CBDRM, a community can be taken as a group that may share one or more things in common such as living in the same environment and similar disaster risk exposure.

2.2 Recognition of the Need for Community Involvement

Community involvement is essential in the development process because of the following practical considerations:

Nobody can understand local opportunities and constraints better than the local communities themselves who therefore need to be involved in the identification and resolution of disaster vulnerability issues.

Nobody is more interested in understanding local affairs than the community whose survival and well-being is at stake. Therefore the information should be generated in a manner and language that is understood by the community.

There is growing evidence to show that most top-down disaster risk management and response 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.

As a result, a broad consensus has been reached among disaster risk management practitioners to put more emphasis on community-based disaster risk management programs. This means the vulnerable people themselves will be involved in planning and implementing disaster risk management measures along with local, provincial, and national entities through partnership.

2.3 Key Points on the CBDRM Approach

The aim of CBDRM is to reduce vulnerabilities and to strengthen peoples' capacity to cope with the disaster risks they face. The direct involvement of the community in undertaking local level risk reduction measures is a must.

Some authors differentiate between community participation and community involvement. For our purposes in CBDRM, community

involvement and community participation are used interchangeably, which means that the community takes responsibility for all stages of the program including both planning and implementation.

Experiences in the implementation of CBDRM point to the following essential features:

Centrality of the role of community in disaster risk management. The focus of attention in disaster risk management is the local community. The CBDRM approach recognizes that the local people are capable of initiating and sustaining their own development. Responsibility for change rests with those living in the local community.

Disaster risk reduction is the aim. The main strategy is to enhance capacities and resources of most vulnerable groups and to reduce their vulnerability in order to avoid the occurrence of disasters in future.

Recognition of the link between disaster risk management and the development process. CBDRM should lead to general improvement in people's quality of life and the natural environment. The approach assumes that addressing the root causes of disasters, e.g. poverty, discrimination and marginalization, poor governance and bad political and economic management, would contribute towards the overall improvement in the quality of life and environment.

Community is the key resource in disaster risk management. The community is the key actor as well as the primary beneficiary of the disaster risk management process.

Application of multi-sectoral and multi-disciplinary approaches. CBDRM brings together the many local community and even national stakeholders for disaster risk management to expand its resource base.

CBDRM as an evolving and dynamic framework. Lessons learned from practice continue to build into the theory of CBDRM. The sharing of experiences, methodologies and tools

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by communities and CBDRM practitioners continues to enrich practice.

CBDRM recognizes that different people have different perceptions of risk. Specifically, men and women who may have different understanding and experience in coping with risk also may have a different perception of risk and therefore may have different views on how to reduce the risks. It is important to recognize these differences.

Various community members and groups in the community have different vulnerabilities and capacities. Different individuals, families and groups in the community have different vulnerabilities and capacities. These are determined by age, gender, class, occupation (sources of livelihoods), ethnicity, language, religion and physical location.

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Community involvement is essential. Nobody can understand the local situation better than the local communities themselves.

chapter3
Community-Based Disaster Risk Management Process[3]

As defined above, CBDRM is a process of disaster risk management in which at risk communities (people) are actively engaged in the identification, analysis, treatment, monitoring and evaluation of disaster risks in order to reduce their vulnerabilities and enhance capacities. This means the people are at the heart of decision making and implementation of disaster risk management activities.

3.1 The CBDRM Process

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In the CBDRM Process, a thorough assessment of the community's hazard exposure and analysis of their vulnerabilities as well as capacities is the basis for activities, projects and programs to reduce disaster risks. The community should be involved in the process of assessment, planning and implementation. This approach will guarantee that the community's real needs and resources are considered. There is more likelihood that problems will be addressed with appropriate interventions, through this process.

The CBDRM process has seven sequential stages, which can be executed before the occurrence of a disaster, or after one has happened, to reduce future risks. Each stage grows out of the preceding stage and leads to further action. Together, the sequence can build up a planning and implementation system, which can become a powerful disaster risk management tool.

The following are the seven steps in the disaster risk management process. These steps are further elaborated in the resource packs contained in this handbook.

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Selecting the Community. This is the process of choosing the most vulnerable communities for possible assistance on risk reduction using a set of criteria. *Please see Resource Pack 1 for details on selecting community.*

Rapport Building and Understanding the Community. This is basically building the relationship and trust with the local people. As relationship is established, general position of the community in terms of social, economic, political and economic aspects is understood. Deeper appreciation of the community dynamics will happen later, when participatory risk assessment is undertaken. *Please see Resource Pack 2 for details on Rapport Building and Understanding the Community.*

Participatory Disaster Risk Assessment (PDRA). This is a diagnostic process to identify the risks that the community faces and how people overcome those risks. The process involves hazard assessment, vulnerability assessment and capacity assessment. In doing the assessments, people's perception of risk is considered. *Please see Resource Pack 3 for details on Participatory Disaster Risk Assessment.*

Participatory Disaster Risk Management Planning. This follows after the analysis of the results of participatory risk assessment. People themselves identify risk reduction measures that will reduce vulnerabilities and enhance capacities. These risk reduction measures are then translated into a community disaster risk management plan. *Please see Resource Pack 4 for details on Participatory Disaster Risk Management Planning.*

Building and Training a Community Disaster Risk Management Organization (CDRMO). Disaster risks are better managed by a community organization that will ensure that risks are reduced through implementation of the plan. Therefore it is imperative to build a community organization, if there is none yet or strengthen the current one, if there is any. Training the leaders and members of the organization to build their capacity is important. *Please see Resource Pack 5 for details on Building a CDRMO and Training.*

Community-Managed Implementation. The CDRMO should lead to the implementation of the community plan and motivate the other members of the community to support the activities in

the plan. *Please see Resource Pack 6 for details on Community Managed Implementation.*

Participatory Monitoring and Evaluation. This is a communication system in which information flows amongst all the people involved in the project: the community, the implementing staff and the support agency, concerned government agencies and donors. *Please see Resource Pack 7 for details on Participatory Monitoring and Evaluation.*

Figure2•**The Seven-Step Process**

selected community

Rapport Building and Understanding the Community

Participatory Disaster Risk Assessment

Participatory Disaster Risk Management Planning

Building and Training a Community Disaster Risk Management Organization

Community-Managed Implementation

Participatory Monitoring and Evaluation
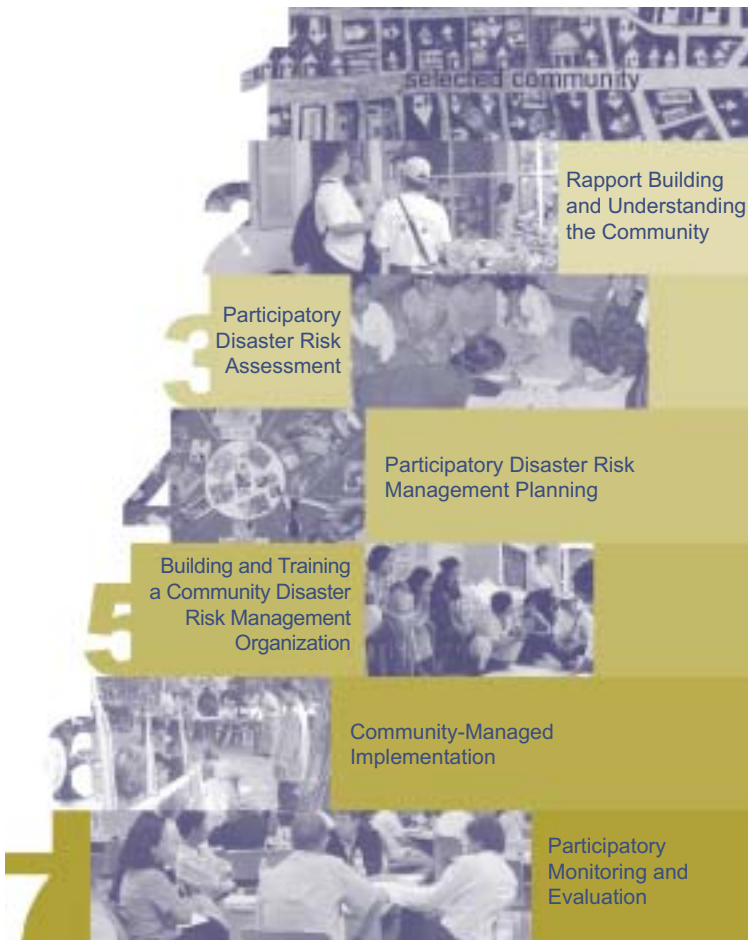
3.2 Actors in CBDRM

There are multiple stakeholders and actors in the community-based disaster risk management process. The CBDRM actors can be divided into two broad categories, the Insiders and the Outsiders. The term Insiders refer to those individuals, organizations and stakeholders who are located within the community. Outsiders refer to those sectors and agencies which are located outside of the community and want to reduce community vulnerability and enhance its capacities for disaster risk management.

Amongst the Insiders, the community disaster risk management organization (CDRMO) is the focal point to ensure the management of disaster risks. The CDRMO with the help of its members and committees facilitates the implementation of disaster risk reduction measures. Aside from the CDRMO every individual, family, organization, business and public service within a community has a role to play in reducing disaster risks, as all of them would be affected by disasters. The implementation of multiple actions is essential for effective disaster risk management. The CDRMO should mobilize men, women, farmers, fishers, laborers, youths and other people with special needs to implement the multitude of actions. In order to establish working relations, the CDRMO should recognize differing perceptions, interests and methodologies and facilitate a broad consensus on targets, strategies and methodologies among the multiple stakeholders in the community.

The Outsiders include the government departments and agencies, NGOs, UN, private sector and other outside agencies. Their role is to support the community's efforts in reducing their vulnerabilities and enhancing capacities for the longer-term. They can do this through providing technical, material, financial and political support. The outside agencies may initiate the process as part of their agenda or the community may contact them in order to receive support. The abundant financial resources, technical expertise and political clout of outside agencies can put them in a dominant position

vis a vis the community, so they might be inclined to push forward their agenda at the cost of community priorities. However, exertion of control by outside agencies over community decision-making process can harm community capacity. Thus, Outsider agencies must be extremely careful and sensitive to community capacity building.

Figure3• **Various Stakeholders and Actors in the CBDRM Process**

3.3 Outcomes of the CBDRM Process

The CBDRM process should lead to progressive improvements in public safety and community disaster resilience. It should contribute to equitable and sustainable community development in the long term. For the purpose of CBDRM, we use the following most widely known definition of sustainable development which comes from the Brutland Commission.

"development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Rees, William E. and Roseland, Mark. 1991. Sustainable Communities: Planning for the 21st Century. Plan Canada. 31: 3. 15. http://www.rec.org/REC/Programs/SustainableCities/What.html

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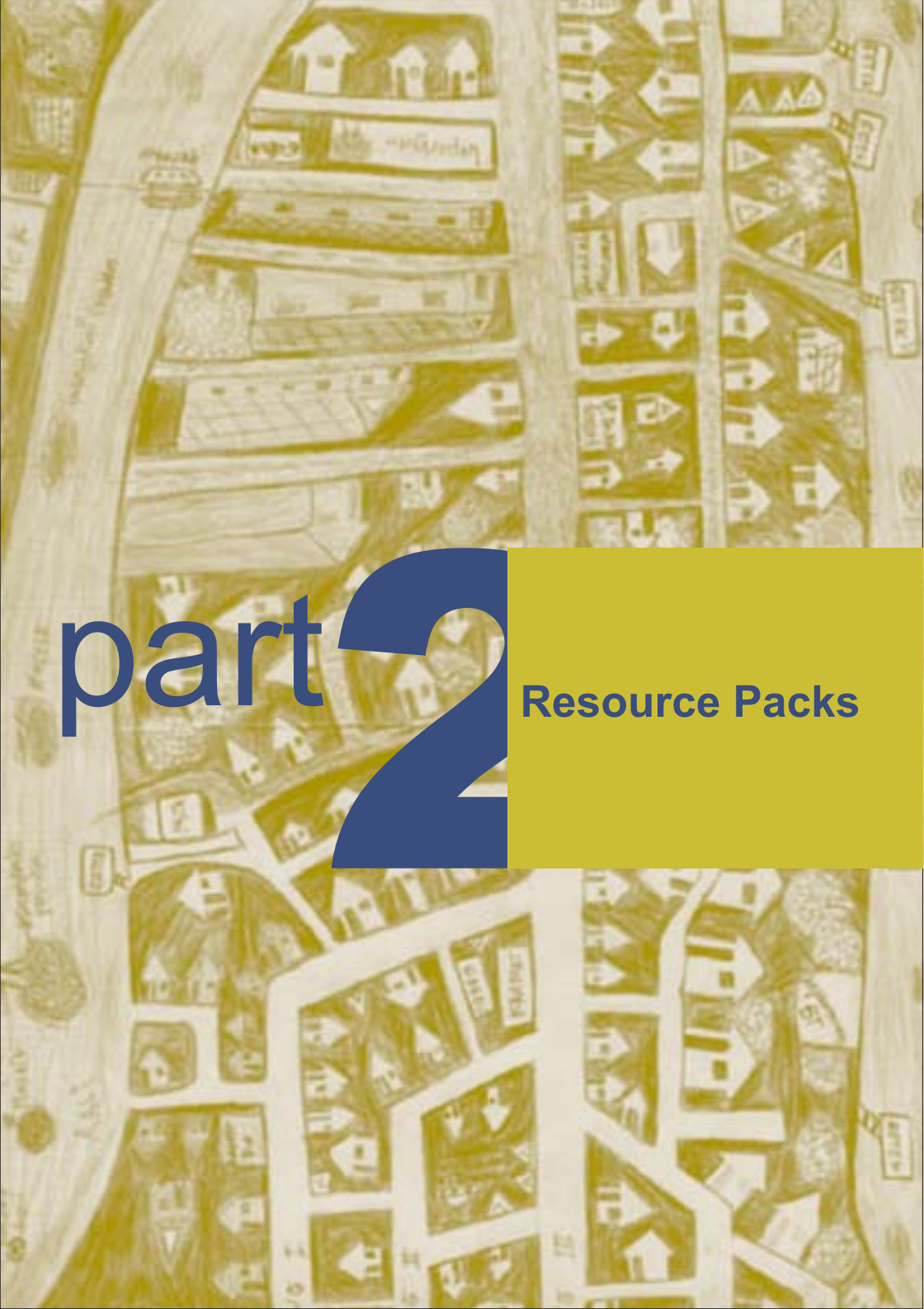
part**2**

Resource Packs

resource*pack*1
Selecting the Community

1.1 Factors Influencing Selection of a Community

In many cases, selection of a community for a development project or a disaster risk management project is determined by:

* **mandate**[4] of the selecting organization
* **cost benefit** or number of people who will benefit from the project
* **profile** and the need to be seen
* **personal interests**

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Mandate
The mandate of a majority of NGOs is to serve the poorest of the poor and contribute to their empowerment. Therefore, in the selection of communities they focus on selecting the most marginalized and poor communities.

Government selection of communities on the other hand is often based on economic or political necessity. For example, the government decides to implement a risk assessment and public safety project. It will prioritize protecting districts that generate revenues for the government. Its policy will be to protect the commercial/business districts simply because if disasters occur in these areas, both private and public sectors will incur losses. Those losses could be translated to loss in taxes and loss of capital and jobs.

Cost benefit
Resources available for development and disaster risk management are very limited. Decision makers will always measure the impact of the project against the funding, staff time and technology utilized in the project. A certain community maybe

highly at risk but if the number of beneficiaries is low and impact of the disaster risk in macro economic terms is low, decision makers may not decide to implement a disaster risk management project in the community. There are a number of tools developed by economists in this regard. Either the decision makers can hire a professional to do the cost-benefit analysis, or they can develop their own methods to weigh the costs versus benefits in their given situation.

Profile and the need to be seen
Decision makers and program staff are sometimes pressured to do something in a particular locality. The people themselves can exert pressure when they claim their rights for basic social services like health and education.

Sometimes pressure comes from their own agencies or organizations, specifically from headquarters or national offices. This is most strongly felt during an emergency where even without sufficient data, an agency or an organization will be pressured to respond in order to be seen. It is important to be seen because visibility, especially in the media, translates to increase in fund raising or to increase in number of votes during election.

Personal interests
Motivation to do good is not always driven by the desire to help. There is a need to recognize that human nature acts on something (positively or negatively) because that action will satisfy particular requirements, such as the need to promote his/her self, ideology, or particular belief or political party.

1.2 Criteria in Selecting a Community

To make an informed judgment about where to work or which community to choose, a set of criteria should be developed for the selection process. Below are some considerations:

- severity of community's exposure to risk (most vulnerable community)
- number of people to benefit from DRM program
- readiness of community to engage in DRM

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- accessibility of the community
- security of staff

Using matrix ranking, decision makers and program staff can reflect and make better decisions on community selection.

1.3 Considerations in Selecting a Community

The government agencies can conduct a national survey on the risk exposure of communities and can prioritize the areas for their interventions.

The NGOs normally consider the following aspects in selecting communities for their interventions:

Communities near roads or town centers are more often the recipients of projects, some developmental and others experimental.

Communities that are in remote areas and which are difficult to reach during typhoon and rainy season may be excluded in the selection.

It is always important to know what on-going conflicts exist within the community organizations with which you want to work. These conflicts may be based on ideology, resources or clan wars. Conflicts impact on staff welfare, the organization and the project.

There are always multiple-stakeholders in any development or disaster risk management program. When negotiating access to these communities, it is important to know the interests of the various stakeholders so as to maintain independence and neutrality with the organizations represented.

How to select communities using Matrix Ranking

- Using a set of criteria, rank the communities.

- Reflect the evaluation of each community by using beans if in the field.

- 10 beans is the highest number that a community can receive.

- The community that receives the highest number (for example 10 beans) is the community that satisfies most of the criteria used. Communities should not be ranked equally. As much as possible, only one community should be ranked with ten beans

Figure4•**Example of a Community Selection Using Matrix Ranking**

Name of Districts	Severity of Community's exposure to risk	Number of people to benefit from DRM	Readiness of community to engage in DRM	Accessibility of the community	Total
Prey Veng	5 beans	3 beans	1 bean	1 bean	10 beans
Peam Ro	3 beans	2 beans	1 bean	2 beans	8 beans
Kampong Trabek	2 beans	2 beans	1 bean	2 beans	7 beans
Sithor Kandal	4 beans	3 beans	1 bean	2 beans	9 beans

This set of criteria was used in the selection of districts for project disaster reduction in Cambodia funded by DANIDA.
Source: NCDM Cambodia, Thearat Touch ADPC staff

resource*pack*2
Rapport Building and Understanding the Community[5]

2.1 Rapport Building

After selection of the community the next step is to build rapport and trust. A relationship of trust, friendship and rapport is the key to facilitation of appropriate 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. In addition to gaining the trust of local people, rapport building will also lead to a greater understanding of the local culture, another essential component of the CBDRM process.

Outsiders can take a number of actions in order to build trust with community people. These can include the following:

*   Living in the community
*   Being transparent and open about who they are and what is being done
*   Participating in daily life in the community, as well as community activities and cultural events
*   Listening to local people about their life, issues and problems
*   Learning new skills from local people
*   Performing local tasks.

An NGO worker participates with community members in making a fish net.

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The behavior of outsiders is very important in establishing a proper relationship of trust and openness. Ways in which outsiders 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 (Chambers, 1997)

Outsiders can learn new skills from local people.

2.2 Understanding the Community

This involves the gathering of information in order to develop a general understanding of the nature, needs and resources of the community. A framework for understanding the community's development position (i.e. the level of development) and the context in which disasters could impact includes the following basic elements:

Social groups
What are the main ethnic, class, religion and language-based groups in the community?
Who is in the majority, who is in the minority, what is 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?

resource*pack*3
Participatory Disaster Risk Assessment (PDRA)

3.1 Conceptual Framework

Disaster Risk Management (DRM) as a conceptual framework focuses on reducing threats and potential losses and *not* on managing disasters and their consequences. DRM contributes to ISDR's aim of developing a "culture of safety" and creating "disaster resilient communities". (ISDR, 2002)

Participatory Disaster Risk Assessment (PDRA) is the fourth step in CBDRM. PDRA is both a dialogue and a negotiated process involving those at risk, authorities and other stakeholders. It is a process whereby all parties concerned collect and analyze disaster risks information, in order to make appropriate plans and implement concrete actions to reduce and/or eliminate disaster risks that will adversely affect their lives.

Where other risk management framework and practices exclude those who are at risk or potentially at risk, PDRA puts at risk communities at the heart of the entire disaster risk management process. Where other risk assessments stop at the determination of whether an undesirable event will occur, PDRA moves on to the determination of people's capacities and encourages the use of individual and community resources to reduce disaster risks that affect their lives. PDRA is the basis for Participatory Disaster Risk Management Planning. This is founded on the belief that local people can and will help themselves to prevent or reduce disaster risks.

PDRA involves seven steps. However, the process is not entirely linear; thus, simultaneous activities are involved in the disaster risk assessment process.

At the end of the disaster risk assessment process, all parties should be able to accomplish the following objectives and outputs:

Figure5•**Disaster Risk Assessment Design**

		Objectives	Outputs
Risk Assessment	Step1	describe hazards in the community	list and nature of hazards
	Step2	conduct hazard mapping	community hazard map, community resource map digitized map *Image source: http://www.adpc.net/audmp/ProjectOutputs/Lao/lao-vientiane.html*
	Step3	describe vulnerabilities and capacities of community, of women and men	Capacities Vulnerabilities Analysis (CVA)
	Step4	determine disaster risks	comprehensive list of risk faced by the communities
	Step5	rank disaster risks	prioritized list of risks
	Step6	decide on acceptable level of risk	agreed levels of risk for family and community security
	Step7	decide whether to prevent, reduce, transfer, or live with the disaster risk/s	agreed strategies

Once collation is completed, assessment team members from the community present the findings back to the community for validation. In the presentation, disaster risks and their threat to life, property, livelihoods and community infrastructures are identified and discussed. Based on community feedback, add or revise as necessary.

3.2 Disaster Risk Assessment

ADPC describes community disaster risk assessment as 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." (ADPC, CBDRM 11)

Step 1 identifies hazards in the community. Its output should identify, list down and describe the nature of hazards in terms of its recurrence, seasonality, location, possibility of early warning and general knowledge of the people about the hazard.

Step 2 captures the hazards, vulnerability and natural resources and facilities of the community in community and/or digitized maps.

Step 3 identifies and assesses the vulnerabilities and capacities of the community in general but makes sure that there is gender disaggregation of data; special needs groups like the children and disabled are given utmost considerations as well.

Community disaster risk assessment also facilitates a process of "determining the probable or likely negative effect (damage and loss) on elements at risk (people – lives and health; household and community structures, facilities and services – houses, schools, hospitals; livelihood and economic activities (jobs, equipment, crops, livestock); lifelines – access to roads and bridges)". (ADPC, CBDRM 11)

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3.3 PRA: Brief Overview

PDRA uses *participatory rural appraisal* tools in community disaster risk assessment and planning. Use of PRA in community risk assessment invites community participation, lively exchange of ideas, and negotiated decisions between the community and other stakeholders.

PRA was developed in India and Kenya during the early 80s and since then has been widely used by development workers and practitioners of CBDRM. PDRA and PRA share the same goal of community empowerment and promote the same principles of participation, reflection and action.

Facilitation

In PDRA, team members facilitate discussions using PRA tools. Each group has a facilitator to moderate group discussions and a note-taker to record the minutes of discussions and observations on community processes.

As a general rule, PDRA facilitators should ensure that every member of the group is given the opportunity to share and that no one dominates the discussion or makes the decision for the group. There should also be no physical barriers like tables separating the facilitators and community members. Forming groups in circles allows everyone to interact with each other.

PRA Materials

Useful materials in PRA are beans, different sizes of stones and leaves, 10 stones, markers, flip charts, crayons, color papers, glue and masking tape. Every PDRA practitioner must have a PDRA bag containing these materials.

Documentation

The name of the community and names of community members involved in group discussions are written at the back of PRA notes or flip charts used. Note-takers write the responses of community members and their observations using the following format:

Figure6•**PRA Flipchart Example**

Name of Location:	Date:
Name of Note-taker:	Total No of Participants:
Name of Facilitator/s:	Number of Men:
Method Used:	Number of Women:
Results: Answers given to key questions:	
1. What is the impact of the hazard (for example: flood, drought, forest fire) in your life? In the environment?	
2. Has the impact always been like this?	
3. When did you begin to notice that the impact of these disasters have started to become more serious than before?	
4. Why are these disasters more serious than before?	
Additional information:	
Observations:	

Source: format of note taking from FAOs PRA ToolBox

3.4 Disaster Risk Assessment Design

Part of preparation for PDRA is knowing what relevant information is required and appropriate methodologies to use. It is good practice to include representatives from the community and other stakeholders in the PDRA team.

Key area of inquiry is the focus of the research.
Key questions detail the information the PDRA team wants to obtain.
Methodology refers to how the team will obtain the information – –e.g.–PRA tools, secondary materials, and interview of key informants.
Key respondents are the village headman/woman, teacher, monk, community members esp. those who have lived in the community for a long time, village police, etc.

Figure7•**Disaster Risk Assessment Design**

Key area of inquiry	Key Questions	Method	Respondents
A. Perception			
1.Disasters	Describe a disaster that happened in your family and in the community the last ten years. Why do you consider it a disaster?	• Transect Walk • Ranking	• Community Leaders
2.Disaster Risks	What are the things that threaten your personal, family and community's welfare and security? • To life of men, women, children, disable elderly • To live stock • To property like houses • To infrastructures like bridge, schools What are the risk or danger that considered most serious? What are the common problems encountered by the community to reduce the disaster risk?	• Transect Walk • Seasonal Calendar • Ranking	• Community Leaders • Community Members
3.Gender	What are the characteristics of a woman/girl, man/boy? What are their defined roles in the family, in the community and in the wider society?		• Community Leaders • Community Members

Key area of inquiry	Key Questions	Method	Respondents
4.Quality of Life	Describe who are rich in the community. Who are poor? Who cannot protect themselves from disaster threats? Who find it difficult to recover from disasters? Monthly income? Livelihood?		• Community Leaders • Community Members
B. Physical/Material			
1.Area Profile	What is the size of the community? What are its borders? What are the resources found in the market and factories nearby the community (crops, marine life, metals, gas, etc.) What are the major sources of food and income in the community? Locate in the map the following: • Fire hydrant • Schools • Public building • Water pipes • Water paints • Sewage (drainage systems) • Water facilities • Gas station • critical infrastructures found in the community • soil type and crops produced if community is a rural farming community • marine resources if community is a coastal community • graze land if community is pastoralist	• Transect Walk	• Community Leaders
2.Demo-graphic Profile	What is the total population of the community? How many are men? How many are women? How many are boys and girls? How many are pregnant and lactating women? How many are elderly? How many of the elderly are living alone? How many are disabled? How many of the disabled and elderly live alone? Locate where the special needs groups are in the map.	• Focus Group Interview	• Community Leaders • Community House Center
3.Access and Control of Resources	Who use, own, control or manage the resources in family or community (Resources: income, cash)? What are men, women, children's role in the use, ownership, control or management of these resources?	• Ranking • Focus Group Discussion	• Men • Women • Children

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Key area of inquiry	Key Questions	Method	Respondents
4.Security from natural disasters/ technologi- cal disaster	What are the most destructive natural disasters experienced by the community over the last ten years? (Most destructive in terms of losses in life, property, livelihoods, critical facilities in the community) How many people were affected? Were they displaced? For how long? What were the effects/impact of displacement on the families/community? What are the immediate effects and long-term impact of the disasters in people's lives, property and livelihoods and critical facilities of the community? During the past ten years, what did the community do before, during, after a disaster hit the community? What activities were done before that are not being done now – on the family and community level? What other disaster threats and risks does the community project to happen in the next ten years?	• Historical Transect • Mapping • Seasonal Calendar • Ranking • Group Discussion	• Community Leaders
C. Social/Organizational			
1.Access to Basic Services Other services • offered by NGOs • offered by churches • offered by business/ private sector	What government basic services are available in the community – health care, education, water and sanitation, relief assistance, livelihood assistance, security and legal assistance? Are there other organizations providing basic services to the community? What services are available to the community before, during, and after a disaster occurs? Who have access to basic services of government? Are there existing community-based organizations, people's organizations in the community?	• Interview • Venn Diagram	• Village team • Community People *to translate the information

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Key area of inquiry	Key Questions	Method	Respondents
2.Cohesion of family/ community Re-consider or Delete	What is the concept/definition of a family? Who are the members of the community (ethnic composition)? Where do they come from? What community events give a venue for different groups to meet and help each other? In what ways do different groups help each other before, during, after a disaster? How have the disasters positively and negatively affected the relationships of community members among themselves? How do they help each other during and after disaster? What are the functions/roles of the elected village council and council of elders? What other organizations have been established in the community? How do these organizations help reduce disaster risks or help the community prepare for, respond to and mitigate disasters?	Interview Documents Review	• People Organization • People
D. Motivational/Attitudinal			
1.Sense of ability to bring about change and plan effectively	Are there existing community-based organizations, people's organizations in the community? How many existing organizations related to Disaster Management in the community? Do they have the volunteer unit in the community? What is the community's plan to reduce disaster risks and impact and what have been done?	• Group Interview and individual interview	Community Leaders Local Authority Villagers
2.Ability to cope with trauma, uncertainty, insecurity	What are the trauma, uncertainties, insecurities people experience before, during, after a disaster? What do the community feel before, during, after disasters? What do community members do to deal with all their feelings?	Questionnaires and discussion	Commune leader and villagers

If targeted communities are exposed to threats (like fire and earthquake) but have not experienced the disaster, ask:

*   what hazards threaten the community
*   where and how hazards will happen
*   why will these hazards happen
*   if these hazards happen, what will happen to their life, property, livelihoods and critical facilities in the community

3.5 PRA Tools Used in Disaster Risk Assessment

Most commonly used PRA tools in Steps 1-2

Timeline

Timeline is a very simple tool that narrates the disaster history and significant events that happened in the community. One column gives the year and the other column lists down the events that took place.

Objective
To learn what are the significant disaster events that occur in the community

Sample Key Questions
1. What are the disaster events that happened or are happening in the community? When did they happen?
2. What significant events affected the community? When did they happen?

How to Facilitate
This is a very effective tool to use while waiting for community members to arrive.

1. A PDRA facilitator can begin by asking a few community members about what disasters happened in their community and what year did they occur.
2. The PDRA facilitator can initiate writing the answers on a flip chart.

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3. As community members are discussing, writing on flip chart can be passed on to a community member who is able to do this.

Figure8•**Timeline Example**

Date	Event
1994	Normal annual flood and road project
1995	Normal annual flood
1996	Big flood and occurrence of leptospirosis
1998	Normal annual flood, dengue, then followed by long drought
1999	Normal annual flood
2000	Normal annual flood
2001	Normal annual flood, availability of telephone and water utilities
2002	Big flood, occurrence of leptospirosis, then followed by long drought
2003	Normal annual flood, dengue, road project
2004	Normal annual flood, dengue

Source: Risk assessment in Kampung Melayu, Jakarta, Indonesia conducted by participants to the PDRAA regional course under PDR SEA, with assistance from the Provincial Government of Jakarta and Action Contre La Faim (ACF).

Hazard and Resource Map

Description
Community members know the hazards that confront their communities. For their sake alone, they do not have to draw the hazard map. Hazard maps are made for the benefit of "outsiders" like NGO workers. But hazard and resource mapping is a tool that allows community members to identify graphically the vulnerable members of the community especially the elderly and disabled who are put at risk by hazards like floods. This tool also enables community members to look at their resource base and make an inventory of their capacities. Children make very good maps of their community.

Objectives
1. To identify areas at risk from specific hazards and the vulnerable members of the community
2. To identify available resources that could be used by community members in disaster risk management

Sample Key Questions
1. What are the hazards that put the community at risk?
2. What places/areas in the community are at risk?
3. What community infrastructures or critical facilities are in danger?
4. Who are the people that are most exposed to risk and will likely need assistance?
5. What resources can be found in the community?
6. Who have the least resources in the community (family or community members)?
7. Who have access and control over the available resources?
8. What resources are at risk?
9. Why are they at risk?

How to Facilitate
Mapping is another activity that can be done while waiting for other members of the community to arrive. This activity can always be interrupted any time. If the map is made on a flip chart, this can be hung on a wall where community members can add to the map any time they want. Oftentimes, community members will just draw the map using sticks or their fingers on the ground. Do not interrupt the process. The note taker will then have to copy the map on his/her notes.

1. The PDRA facilitator asks the community members to identify a landmark in the community.
2. Initially, the PDRA facilitator puts a mark or a stone to stand for the landmark.
3. The PDRA facilitator asks the community members to draw the boundaries of the community.
4. This will be followed by drawing the location of houses, critical facilities and resources in the community.
5. The PDRA facilitator asks questions like who have access and control over the resources
6. Community members will then be asked to mark the areas at risk from hazards like drought or flood.
7. After this, community members will identify who are the members of the community who are most at risk because they are in vulnerable locations and have little resources to prepare for or recover from a disaster.

Figure9•**Hazard and Resource Map Example**

Source: Community disaster risk assessment in Barangay Bonbon, Municipality of Sagay, Camiguin, Philippines. Assessment was conducted by the Center for Disaster Preparedness (CDP), a national NGO based in Quezon City, Philippines. The project was supported by the Canada-Philippines Local Government Support Program in Camiguin.

Seasonal Calendar

Description
The seasonal calendar contains a lot of information about seasonal changes and related hazards, diseases, community events and other information related to specific months of the year. Using ten stones (ten being the highest score) indicates degree, severity or extent of the change.

Objective
To learn about seasonal activities, hazards and disasters

Sample Key Questions
1. What are the different seasons in a year?

2. What are the hazards/disasters that occur in the community? When do they happen?
3. When is there scarcity in food supply?
4. What are the common illnesses during rainy season or cold season?

How to Facilitate

1. The PDRA facilitator must prepare a calendar on a flip chart before the activity.
2. It is common to start this activity by asking the community members which months are the rainy and summer seasons or when are the planting and harvest seasons.
3. Different community members use different ways to mark the calendar. Some draw straight lines to indicate the months of the rainy and summer seasons. Others use a tick (✓) or (X) per month to say that these are the cold or the hot months. Still, others use symbols like the sun to indicate summer or rice stalks to indicate harvest season. There are many creative ways people use to express themselves.

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Figure10•**Seasonal Map Example**

PLA Done in Nandi Village (seasonality diagram: flood, drought and fire)

	J	F	M	A	M	J	J	A	S	O	N	D
rainfall				1	1	2	2	2	1	1		
drought	1	1	4	4								
forest fires		2	4	4								
birth of children							1	2	4	4		
food availability most difficult					1	2	2	3				
times when difficult to leave the village						2	2	2	2			
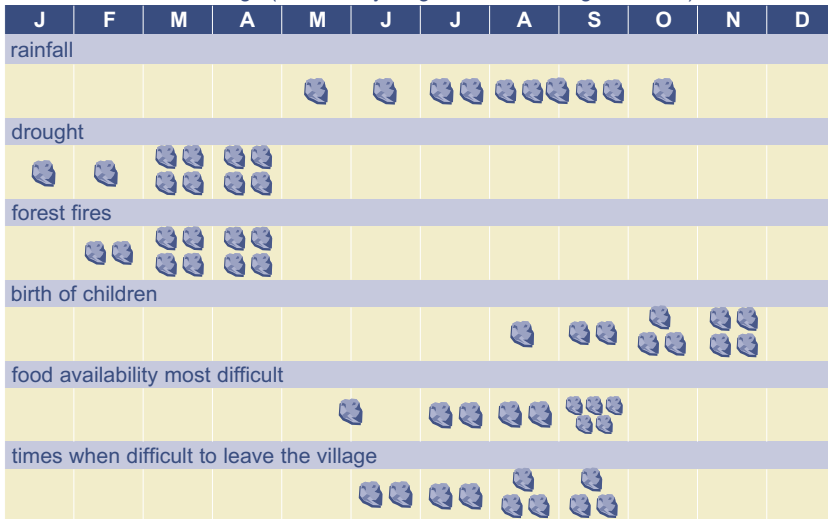
Source: Rapid assessment conducted by Dr. Ravi Jayakaran for World vision International in Lao PDR. PRA exercise using seasonal calendar was used in Nandi village in Champasak District in Lao PDR.

Ranking

Description
Analyzing problems or weighing solutions can be facilitated by the use of ranking exercises. One very useful tool is to use different sizes of leaves or stones to order the problems, needs or solutions. Leaves and stones do not cost anything and are found everywhere in the community. Ranking is usually a long exercise because community members discuss the reasons why problems or needs must be order in such a way. The value of this exercise to the community is that it facilitates discussion and negotiation.

Objective
To know the priorities of community members or the most significant problems faced by the community.

Sample Key Questions
1. Why are young people in the community using drugs (narcotics)?
2. If you are to rank all the reasons, which is the first biggest factor why young people take drugs?
3. Which is the second? The third?

How to Facilitate
1. The PDRA facilitator asks the community members or the young people what do they think the reasons are why young people take drugs.
2. These reasons are listed down on a flip chart either by the facilitator or a member of the community.
3. After all the reasons have been listed down, facilitator asks the community members to rank the causes of drug addiction of young people in the community. Do NOT use marker as ranking can change as community members discuss.
4. Stones or leaves are good to use in ranking (even color papers of different sizes) because they can be moved around when community members change their ranking based on the discussions and negotiations going on.
5. When markers are used to rank, community members sometimes hesitate to erase their ranking.

Figure11•**Ranking Example**

Causes of drug addiction of youth in Kampung Pulo	Ranking	
unemployment		(2)
lack of attention of parents		(3)
influence and peer pressure of friends		(1)
desperate, frustrated, hopeless		(5)
lack of artistic and sports activities		(10)
lack of education		(7)
poor intelligence		(6)
have more money so sell drugs		(8)
parents not strict, children lack discipline		(9)
trend		(4)

Source: PDRA conducted in Kampung Pulo in Jakarta, Indonesia during the PDRAA course in March 2004. Respondents were young people, both boys and girls from the Pulo community.

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Transect

Description
Transect is a highly enjoyable activity since this involves walking in the community following a certain path or direction. When someone dominates the group discussion, it is advisable to involve that person in transect walks.

Objective:
To get a picture of the vulnerability of the community and the resources that are available or maybe available for disaster risk management

Sample Key Questions:
1. What resources and facilities can be found in upland areas?
2. What resources and facilities can be found in lowland areas?
3. What resources and facilities can be found near the sea shore?
4. What resources and facilities can be found in the sea?

Figure12•**Transect Example (Pook Paliparan, Dasmariñas, Cavite, Philippines)**

	upland	lowland	creek	lowland	canal	village	upland	creek	upland
water source									
	rain	rain irrigation	rain runoff/seepage	rain irrigation		rain well	rain	rain	rain
soil									
	sandy loam		rocky	clay	rocky	sandy clay loam	sandy clay loam		clay
crops									
	rice sugarcane eggplant beans corn	rice sesbania pepper beans tomato	bamboo	rice sesbania pepper beans tomato	bamboo	okra horse-raddish grapes beans	peanuts cassava rice corn beans	bamboo	rice bean sugarcane
forages									
	grassland for grazing	glirici-dia	grass	azolla	grass		weeds in plots	guines grass	grassland

Source: Taken from the book Recording and using indigenous knowledge: A Manual, published by the International Institute of Rural Reconstruction, p. 101.

How to Facilitate

1. Discuss with community members the kind of information needed from this activity i.e. areas at risk to flooding or fire, resources available and which may be at risk too, critical facilities and others.
2. Get advise from community members what direction to take and the best path to follow.
3. Walk with community members who can give information while transect walk is being made.
4. PDRA facilitator and note taker write down their observations and input from community members.
5. Draw the map after the transect walk and validate with key informants from among community members.

	upland	lowland	creek	lowland	canal	village	upland	creek	upland
trees									
	gliricidia mango leucaena guava banana tamarind	glirici-dia	banana glirici-dia leucae-na	gliricidia bananan leucae-na acacia neem	gliricidia leucae-na	acacia mango guava coconut leucaenia jackfruit	mango		mango tamarind starapple
animals									
	cow carabao goat		catfish mudfish carp frog crab	golden snails pig fish duck frog	catfish frog snail	dog cat pig goat cattle turkey	goat carabao cattle	snail catfish	cattle carabao goat
problems									
	erosion lack of water	pest and disease				lack of cohesive-ness among local officials	erosion lack of water		erosion lack of water
opportunities									
						accessibi-lity to road			

Historical Transect

Description
Historical transect is the graphic presentation of the history of disasters and development in the community. Community members can review their history based on a ten-year or a five-year period. They can also decide that the last five years may be the most important period to trace the impact of disasters on their lives.

Objectives:
1. To learn about the history of disasters in the community, the factors that led to the disasters and the impact on the environment and people's lives
2. To describe how much natural resources have been affected by disasters and how much more could be remaining

Sample Key Questions
1. What is the impact of the hazard (for example: flood, drought, forest fire) in your life? In the environment?
2. Has the impact always been like this?
3. When did you begin to notice that the impact of these disasters have started to become more serious than before?
4. Why are these disasters more serious than before?

How to Facilitate
After hazard mapping, historical transect can be used to explain the causes and effects of disasters in the community.

1. The PDRA facilitator asks the community members about the impact of disaster/s in their lives.
2. Facilitator writes the year the disaster/s took place.
3. A follow up question on the causes of the disaster/s is asked by the facilitator. Answers are written initially by the facilitator.
4. Facilitator then asks the community members if there were those kinds of disasters maybe fifty years ago. Facilitator suggests that community members review their community history fifty years back or 30 years back, dividing the period every 10 or 5 years.
5. Recording the answers is then handed over to a member of the group.

Figure13•**Historical Transect Example**

1960-1970	Ocean was quite far from the roads and streets There were many trees around. There were many fishes to catch. Only few houses near the shore. Rice fields were small due to absence of irrigation system. Only few people were living in the mountains. There were many birds Easy living
1970-1980	Same environment as years 1960 – 1970 but there were more residents and houses as before.
1980-1990	Started cutting the trees. Birds were few People started to plant bananas The rice fields widened because of the presence of irrigation system. Residential houses expanded.
1990-2000	Seashores expanded toward the streets. More people were living near the shore and mountains. Many people cut coconut trees and plants. Few fishes Few birds fly

Source: Community disaster risk assessment in Barangay Bonbon, Municipality of Sagay, Camiguin, Philippines. Assessment was conducted by the Center for Disaster Preparedness (CDP), a national NGO based in Quezon City, Philippines. The project was supported by the Canada-Philippines Local Government Support Program in Camiguin.

Most commonly used PRA tools in Steps 4-5

Matrix Ranking
Ranking tools are used to prioritize hazards or disaster risks, needs or options.

Description
There are many variations of ranking. The example below uses a set of criteria to determine the impact of the disasters on people's lives. The community members use beans to rank the hazards. Ten beans are used to indicate the most significant indicator and 1 bean to indicate the least significant indicator.

Objectives
To determine the hazard that has the most serious impact on the community

Sample Key Questions
1. What are the hazards the community face?
2. What is the impact of each hazard?
3. Which is the most destructive of all the hazards?

How to Facilitate
Some PDRA facilitators find it hard to use matrix ranking because indicators can be difficult to establish. If community members are asked what indicators they use, they may not be able to understand what PDRA facilitators mean.

1. PDRA facilitator or community member lists down the hazards. This list can be extracted from the seasonal calendar and mapping activities.
2. The facilitator then asks the community members for the impact of the hazard. Broad categories are impact on life, property, critical facilities like irrigation, public buildings, and the environment.
3. For example, the facilitator can ask: "What happens to your house when there is a flash flood?"
4. Try asking at least one impact per hazard. The list of impacts can be used as the set of indicators. See the example below.
5. Ask the community members to look at the list of indicators

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Figure14•**Matrix Ranking Example**

Hazard	Life		Property		Livelihoods	Education	Total/ Rank
	Sickness/ Injury	Death	Home	Others	Loss of economic activities Loss of economic opportunities	Disruption	
Floods							58/(2)
Fire							60/(1)
Diseases							35/(4)
Drug Addiction							40/(3)

Source: Hazard ranking by men community members in Kampung Pulo, Jakarta, Indonesia during the PDRAA training in March 2004.

Proportional Piling

Description
Proportional piling is another tool to rank priorities. Instead of counting the beans, community members use piles of beans to indicate categories such as low, medium or high. As discussed earlier, ranking exercises call for negotiation, so it is not advisable to use markers unless an agreement among community members has been reached. Using piles of beans or corn seeds to rank is more flexible than using markers. Community members can add or reduce the number of beans .

Objective
To determine the most critical facilities at risk

Sample Key Questions
1. What critical facilities are at risk during flooding?
2. Which of these facilities face the most risk?

How to Facilitate
1. PDRA facilitator asks the community members to identify the most important facilities in their community that may be affected by floods.
2. Facilitator or a community member lists down the critical facilities.
3. Facilitator explains to the community that they will use 3 categories – low, medium, high. These categories will be represented by piles of beans or corn seeds – small pile of beans for low category or big pile of beans for high category.
4. Facilitator asks the community to rank the critical facilities.

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Figure15•**Proportional Piling Example**

Flood Risks to Property and Critical Facilities	High (always, all the time)	Medium (Often, but not all the time)	Low (Occasionally)
Artigala Mawatha (Sub-Road)			
Transformer and Electricity Substation			
Muslim Maha Vidyalaya (Secondary School)			
Bodiramaya (Buddhist temple)			
CWE (Cooperative Shop)			
Kovil (Hindu Temple)			
Mosque			

Ward 9 : Warakathoda, Ratnapura, Sri Lanka
Source- Emergency Management and Response Plan for Ratnapura, Sri lanka.
AUDMP Working Paper No 4, July 2000

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Sample criteria that may be used for Step 6

In actual practice for disaster risk assessment, step 6 is usually missed out. Before any disaster risk management planning is made, community members and other stakeholders must decide the acceptable level of risk they are prepared to take.

A sample matrix is provided below. The criteria will depend on the most serious disaster risks identified by the community.

Figure16•**Criteria Matrix Example**

Criteria	Number (how many?)
Number of acceptable loss of life among people	
Number of children with diarrhea	
Number of acceptable loss of life among farm animals	
Number of acceptable sickness/injuries among farm animals	
Etc.	

3.6 Data Collation Using CVA Framework

At the end of each assessment day, collate and cross check data. Each team member is to write one data item on one piece of paper so that the data can be moved around when necessary.

Note very well: Watch for the following cards. (1) Some data will be duplicated. Spot those cards and group them together. (2) Some data will contradict each other. Note down and verify with concerned individuals or agencies as appropriate. (3) Some "data" will be recommendations. Group them together and "park" in one corner of the room until group is ready to conduct action planning.

Data should be collated and analyzed according to capacities and vulnerabilities framework (CVA). CVA is a framework for analysis developed by Mary Anderson and Peter Woodrow. Organization of data requires grouping of related ideas.

Figure17•**Sample Data Collation Using CVA Framework**

	Vulnerabilities
Physical/Material	
What productive resources, skills, and hazards exist?	*Hazards: Flooding (annual flood, big flood); floods happen every year for the past 10 years; biggest flood was in 1996 and 2002* 　　Houses are along the river banks; houses expanding along the river 　　No proper garbage disposal, garbage thrown in the river, river getting shallow 　　Durian season creates many garbage 　　Flood risk reduction not its full potential 　　Public facilities like latrines destroyed by big flood 　　Raining causes flood, flood comes from Bogor area *Fires happened in 1962 in & 1992* Illness/Diseases: Dengue epidemic, diarrhea, skin diseases, leptospirosis, acute respiratory condition *Population density is high* *Low education, only up to elementary education sometimes junior high school – lack of competency and capability* High cost of education *Low income; limited work available* Unemployment Water system is bad; lack of clean water
Social/Organizational	
What are the relations and organizations among people?	Crimes committed in the community Drug addiction among the young
Motivational/ Attitudinal	
How does the community view its ability to create change?	
Risk Perceptions 　Flood is accident 　It is not will by Allah	

Source: Risk assessment conducted by PDRAA participants in Kampung Pulo and Kampung Melayu, Jakarta, Indonesia.

Capacities

Availability of early warning system in case of flood

Availability of communication facilities like phones

Many people know how to swim

Availability of evacuation centers like schools

Presence of village head office in the community

Houses have 2nd floor

Availability of public latrines

Clean water is provided by PAM

Availability of equipments like tyres and floods

Market: source of income

Women can find jobs more easily – washing, vending

Community self help
Availability of public health service, clinics and schools
Availability of assistance from NGOs and relief supplies from government
Availability of public health care
Medicine for emergency available in public health service
Religious groups extend assistance
During emergencies, there is public kitchen
Community members help their neighbors
Put ropes so people can hold on to them during flooding

Help themselves
Burn their garbage
Community members secure their property

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3.7 Preparing for PDRA

Assuming that at risk communities have been identified, proceed to do the following steps to prepare for risk assessment activities in the target communities:

Establish linkage or co-operation with relevant government agencies and non-government organizations in the province, municipality or commune. This can be done by:

Sending a letter of introduction to concerned agencies or organizations preferably signed by the head of the organization which will work in the target communities.

Following-up after sending the letter of introduction by calling the heads of concerned agencies and organizations and formally introducing yourself, your organization, explaining what the activity is and its purpose. Request for the most suitable date and time to visit concerned agencies and organizations.

Visiting concerned agencies and organizations on the agreed date and time bearing the letter of introduction. Once again, introduce yourself, your organization, and the nature and purpose of the PDRAA activities.

As linkages are being established, make sure that the following initial preparatory activities are carried out:

Get skilled volunteers who can be part of the PDRAA team from concerned agencies and organizations.

Collect secondary data - maps, development plans, health and economic reports, disaster reports, profile of communities

After getting approval and endorsement of project from concerned authorities and organizations:

Meet with community leaders to discuss objectives of PDRAA activity. Get feedback on relevance of proposed activity and leaders expectations of the PDRAA team.

Request community leaders to organize a community meeting so activity can be explained and discussed with the wider members of the community. Before the end of the meeting, request for volunteers who will be part of the PDRAA team as facilitators and logistics preparation.

After activity was approved by community leaders:
Meet with community members and explain the purposes of the PDRAA activity. Make sure to get community feedback about relevance of the activity and their expectations of how and when it should be conducted.

Before the end of the meeting, request for volunteers who will be part of the PDRAA team as facilitators and logistics assistants.

Meet with community leaders again to:
Finalize arrangements and process of activity.

Get commitment of community leaders to ensure that activity will be given high priority.

After meeting with community leaders and members:
Give feedback to concerned agencies and non-government organizations onthe status of the proposed activity.

Organize a PDRAA Team composed of external facilitators and volunteers from the community. PDRAA team must be multi-disciplinary. In rural farming areas, a multi-disciplinary team can be composed of an agriculturist, veterinarian, hydro-meteorologist, water engineer, health worker and a disaster risk management practitioner. In urban areas, a multi-disciplinary team can be composed of an urban planner, health worker, fire marshal, industrial safety engineer (if community is located near industrial zone) and a disaster risk management practitioner. External facilitators are members of the PDRAA team who are not community members.

Train members of the PDRAA team in using participatory learning and action tools and analyzing data using the capacities and vulnerabilities analysis (CVA) framework.

During training, draft a disaster risk assessment design.

Identify tasks and define roles of each member of the PDRAA team. Group PDRAA team members into small groups who will work together during the actual fieldwork.

Conduct at least one field work in one of the target communities during the training. Evaluate fieldwork activity and make recommendations. Improve and finalize disaster risk assessment design based on lessons learned from the fieldwork.

Finalize logistics arrangements and meet with community leaders for final arrangements.

Communicate progress of PDRAA preparations to concerned agencies and organizations.

3.8 Participatory Disaster Risk Assessment Groups

Organize the PDRA team into the following suggested groups: (Note that in most cases, communities and even agencies participating in PDRA may have no GIS capability and therefore Group 7 may not be relevant).

Group 1: facilitate discussion of key respondents
community leaders (elected and community elders): baseline information (demography, special needs groups such as the disabled and the elderly, sources of income, etc.), hazards, disaster history of the community, which hazards become disasters and why, impact of disasters on lives (of men and women, boys and girls), property, livelihoods, economy of the community and the municipality/commune, what different sectors in the community do to reduce disaster risks that threaten life, property and livelihoods

teachers: educational attainment of people in the community, current enrollment and drop out rate, disasters that happened in the community in the last ten years, impact of disasters on the community, among teachers' lives, in children's education,

Children should also be involved in the awareness campaign.

what different sectors in the community do to reduce disaster risks that threaten life, property and livelihoods

health workers: common illness and injury at different times of the year and reasons for illness and injury, disasters that happened in the community in the last ten years, impact of disasters in the community, among the lives of the health workers, among the people especially among children from 0-5 years old, the elderly, and the disabled, what different sectors in the community do to reduce disaster risks that threaten life, property and livelihoods

elders: history of the community, disaster history of the community, most destructive disasters in their living memory and why, impact of disasters on life, property and livelihoods, what different sectors in the community do to reduce disaster risks that threaten life,property and livelihoods

municipal/commune leaders: hazards, disaster history of the community, which hazards become disasters and why, impact of disasters on lives (of men and women, boys and girls), property, livelihoods, economy of the community and the municipality/commune, what government does to reduce disaster risks that threaten life, property and livelihoods

NGOs implementing projects in the community: hazards, disaster history of the community, which hazards become disasters and why, impact of disasters on lives (of men and women, boys and girls), property, livelihoods, economy of the community and the municipality/commune, what government does to reduce disaster risks that threaten life, property and livelihoods

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Group 2: facilitate discussion of community members (mix men and women groups, children)

prepare hazard map of community: identify location of community resources, household and special needs groups, parts of community at risk from different hazards, schools, etc.

disaster history of community

Group 3: facilitate discussion of men's group, women's group (gender perspective)

gendered perception of disaster risks

disasters that struck the community in the past ten years and why they suffer from those disasters

differential impact on men and women

impact on vulnerable groups: 0-5 years old, elderly, disabled

impact on health, education, livelihoods

what men, what women do to reduce disaster risks

To get gendered perceptions of disaster risks, the PDRA may be organized into specific groups; men's group and women's group.

Group 4: facilitate discussion of children

disasters that strike the community they can remember

impact on children

impact on their health, education, livelihoods of the family

what children do to reduce disaster risks

Group 5: Review secondary data
review documents collected from all sources

collate data using CVA framework

Group 6: Collect technical information
conduct transect work

contribute to various maps to be produced by community

collect information on soil types, water system, etc.

Group 7: GIS
collect digitized information about the province or municipality and community

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produce basic digitized maps

add input from PDRAA to basic maps

produce simulation and probabilistic forecasting and show to community

produce hazard and vulnerability maps of target communities

Group 8: Logistics arrangement
arrange sleeping quarters for PDRAA team external facilitators

arrange meals for PDRAA team

arrange for team's transportation

ensure that there are enough supplies for the team

arrange for translators where needed

resource*pack*4
Participatory Disaster Risk Management Planning

Planning begins with the desire to change existing undesirable conditions. Disaster risk management action planning starts with an aspiration for safety for the self, the family and the community.

Participatory Disaster Risk Management Planning is a process where all parties propose concrete risk reduction measures based on the following:

- vision of their ideally prepared and resilient community
- determining the acceptable level of risk
- decision as to whether identified risk can be prevented, reduced, transferred or lived with
- their own capacities and other resources that can be generated outside of their community.

Taking off from the results of the PDRA, in which the community ranks the disaster risks according to priority for action, the PDRA team will now proceed to participatory disaster risk management planning. The following steps may be followed:

Visioning: PDRA team facilitators facilitate a community session on visioning. Team facilitators ask the community members to dream about the kind of "safe community"

Community members present their vison of a "safe community" in the form of drawing.

they want to attain in relation to disaster risks they identified during the risk assessment. Community members can present their dreams in the form of drawing, song, or role-playing. PDRA teams write down in the flip chart the ideas of a "safe community" described in the community's dream.

Discussion: PDRA teams facilitate discussion between authorities and other stakeholders about the dream for a "safe community" from the point of view of community members. This is the stage where community members, authorities and other stakeholders negotiate and agree about what all of them want to achieve in the risk reduction process.

Targets must be concrete and measurable. Setting indicators will help the community and other stakeholders measure whether targets have been achieved or not. *Refer to resource pack 7 on Participatory Monitoring and Evaluation, section 2 Indicators.*

Identify risk reduction measures: After the visioning exercise, community members identify measures that will help attain their vision of a safe community. Each activity needs to have its corresponding dates or time frame.

Identify resource requirements: PDRA team members ask the community what resources are needed to implement the identified risk reduction measures.

PDRA teams will ask the community to review the list of capacities and opportunities enumerated during the earlier risk assessment process.

Refer to collated data to identify capacities. Facilitators help community members and leaders to identify and list the capacities that will enable the community to move towards the vision.

PDRA team facilitators proceed to assist community members and leaders to identify resources and technical assistance that are available within the community. Resources and technical assistance which are needed and can be found outside the community will also be listed down.

Institutional and Social Network Analysis

Venn Diagram

Source
Social network analysis conducted in Kampung Melayu, Jakarta, Indonesia during PDRAA training in March 2004.

Description
Institutional and social network analysis is a pictorial presentation in circles of different individuals groups and organizations involved in the community. The significance of these individuals, groups and organizations are reflected in size of their circles. Relationship of the community to these individuals, groups and organizations is shown in the circles position in the diagram. A local NGO may be implementing a small project (represented by a small circle) in the community but people trust them. This trusting relationship can be shown by putting the small circle very close to the community.

Objective
To identify different individuals groups and organizations that are supporting community activities and programmes

Sample Key Questions
1. What benefits does the community get from outside assistance?
2. Which individuals, groups and organizations extend assistance to the community?
3. What kind of assistance do they give?
4. Which is the most important organization and why? Rank the rest of individuals, groups and organizations involved in the community.

How to Facilitate
1. PDRA facilitator prepares color paper circles of different sizes.
2. Facilitator asks community members to write the names of the individuals, groups and organizations involved in the community and the nature and amount of assistance they extend to the community.
3. Facilitator then explains to the community members that each circle represents an individual, group or organization – that the biggest circle represents the individual, group or organization that may have given the community the biggest amount of

assistance. For example, providing wells or farm animals or regular health services. The smallest circle provides the least assistance in terms of amount. For example, helping the community get organized as a community disaster risk management organization.

4. Community ranks the individuals, groups and organizations using the circles. Facilitator instructs the community members NOT to paste them yet.

5. After the first ranking exercise, the facilitator asks the community members which of the individuals, groups and organizations are the most important and significant to them. Importance and significance will be reflected in how far or near these circles are to the community.

6. Allow community members to discuss and as they do so, they will keep moving the circles until everyone has agreed. Lines can be drawn to indicate the relationship of the community and these groups. Heavy solid lines can indicate trusting relationship and good coordination while broken lines can mean poor coordination.

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Figure18•**Venn Diagram on Community Resources**

The amount of money required to implement each activity is estimated. A budget is prepared to correspond to each of the activities.

After identifying resources needed and the available resources, facilitators help community members and leaders get organized for community action. Leaders and community members are organized into groups to perform defined tasks within an immediate time frame. *Please refer to Resource Pack 5 Building a Community Disaster Risk Management Organization and Training*

PDRA team facilitators present and explain a format of an action plan. Community members make the action plan based on Steps 1 - 7.

Disaster risk management action planning starts with an aspiration for safety for the self, the family and the community.

Figure19•**Community Disaster Plan**

Barangay Hubangon, Municipality of Mahinog, Camiguin, Philippines
Prepared by: Hubangon Disaster Coordinating Council

Hazards	flood, typhoon, earthquake, landslides, volcanic eruption, drought
Objective	Conduct orderly evacuation, search and rescue of affected population in the community
Indicator	Zero loss of life

Activities	Time Frame	Resources Available	Resources Needed	Amount of Resources Needed (in Php)	Committee/ People Responsible
Hazard: Flood					
Phase 1					
Preparedness Period Conduct evacuation drills	Before rainy season (before August)	Family, community and church organizations – manpower Skills and knowledge	5 Handheld radio units 5 chainsaw units 3 rolls of rope 5 pcs megaphones		Evacuation Chair: Rey Lawrence Tan
Conduct education campaign	Before rainy season (before August)	Community leaders Teachers Church leaders, artists Papers, markers for posters Schools	Training on public awareness		Training & Education Chair: Ricardo Lagunay

Source: Extracted from the Community Counter Disaster Plan of Barangay Hubangon.

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resource*pack*5
Building and Training a Community Disaster Risk Management Organization[6]

To effectively undertake risk reduction measures, it is best to have an organization within the community that will deal with disaster risk management. The form of organization can vary depending upon the situation in a community. It is important to have an understanding of the existing organizations within the community. A disaster risk management committee can be one committee within an existing organization. However, if there is no organization yet in the community, a Community Disaster Risk Management Organization (CDRMO) can be initiated.

The objective of the Community Disaster Risk Management Organization (CDRMO) is to enable communities to become better prepared for impending disasters and to become disaster resilient in the long term.

Through the CDRMO, communities will be able to implement the activities outlined in the Disaster Risk Management Plan.

5.1 Steps in Forming a Community Organization

The steps in forming a community organization may not occur in sequence. They will depend on the community's social, economic, political, and disaster context. *The following steps are often used in community organizing: site entry and rapport building, situation analysis, identification of priority sectors and natural leaders and facilitate community planning of risk reduction measures.* These steps have been discussed in the CBDRM process, in which

CDRMO is an important step. After the participatory disaster risk assessment and planning the issue of community managed implementation is discussed. At this point the need for forming a community committee or organization is discussed, if one does not exist already. There might be a need to persuade the community at this stage to form an organization for plan implementation. In other contexts, the communities themselves might realize this need and so persuasion won't be required. However, the communities may need technical guidance to form an organization.

5.2 Functions of the CDRMO

The functions of CDRMO can be divided into three categories in concurrence with the phases in disaster risk management, the pre, during and post.

Preparedness functions of CDRMO

Share community Disaster Risk Management Plan with all community members

Mobilize community members to implement the planned disaster risk reduction measures

Mobilize resources that the community can not produce or access on its own

Raising community awareness before disaster strikes in vulnerable communities is one of the functions of CBDRMO.

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 management and development- related issues to support local and community disaster risk management

Expand membership and involvement in disaster risk management committees and activities.

Emergency functions of CDRMO

Issue warning

Manage evacuation

Organize search and rescue with community participation

Provide first aid and arrange subsequent medical assistance

Conduct Damage Needs Capacity Assessment and report damages and needs to government and disaster management agencies for assistance

Coordinate, plan, and implement relief delivery operations with aid agencies.

Recovery functions of CDRMO

Facilitate social, economic and physical rehabilitation of community; e.g. livelihoods, trauma counseling, reconstruction of houses and infrastructure

Evaluation helps to find out whether the project has been successful or not; all parties involved should agree on the indicators.

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 CDRMO capacity and effectiveness to promote community safety and identify strategies for future improvements.

5.3 Characteristics of a Functional CDRMO

The members agree on common goals and objectives to develop the community into a prepared community in the immediate-term and into a resilient one in the long-term

Members should include representatives of most vulnerable groups

Has elected officers and formed committees to perform disaster risk management functions

Members of the CDRMO have agreed on the plan, policies and procedures

Have agreed on how to pool resources for disaster risk management activities

Have identified and networked with agencies to tap for financial and technical supports

Well informed about developments affecting the community

Commitment and leadership in mobilizing the community-at-large in implementation of the plan

Members have sufficient knowledge and skills on disaster risk management program development and implementation;

5.4 Principles of Community Organizing

People are the primary agent of change: This principle maintains that community people are the central actors in bringing social change in their lives. Therefore, all initiatives should recognize this primacy of the people's role. If any initiatives by outsiders will try to bring change, without the consent and full participation of people, these may result in negative changes or irrelevant changes.

To effectively undertake risk reduction measure, it is best to have an organization within the community that will deal with disaster risk management.

Organizing is a means, not a solution: This principle means that only the establishment of a CDRMO is not enough. The CDRMO is only a means to achieve the goal of a disaster resilient community. Therefore the CDRMO must take appropriate actions.

Start simple: Keep the structure of the CDRMO simple and the scale of activities small. The CDRMO can be further developed later on. Developing a complex organizational structure at the start may create problems in management.

Transformation is through people's collective strength: This principle emphasizes the need for mobilization of broader community and consensus building.

Organizational structures should encourage and contribute to people's participation and control

Maximize the power of numbers and unity: This principle refers to enhancing the membership of CDRMO and building harmony by addressing issues and concerns of members.

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5.5 Training the CDRMO

The aim of training is to build and enhance the CDRMO capacity to successfully implement its disaster risk management related functions and to work as an independent organization to reduce disaster risks.

The two main areas in which training will be required are:

- Training in community based disaster risk management
- Training in organizational management and development.

The **disaster risk management training** will focus on the following aspects:

Disaster Preparedness and Response, which will cover the following:

- Search and rescue
- Medical first aid
- Relief coordination, distribution
- Emergency shelter management
- Evacuation management

Capacity building in disaster risk reduction, which will cover the following:

- Orientation on disaster reduction
- Conducting risk assessment
- Designing and conducting risk communication
- Designing local early warning systems
- Structural mitigation
- Livelihood sustainability
- Advocacy for community vulnerability reduction

Organizational management and development training

This training is for the staff and members of the CDRMO to equip them to manage the roles and functions of the CDRMO effectively. Subjects to be covered are the following:

- Leadership
- Planning
- Negotiation, conflict management and conflict resolution
- Community mobilization
- Budgeting and financial management
- Proposal and report writing
- Facilitating a meeting or training
- Documentation

The process for designing training for a CDRMO

This will be determined using the following 5 steps:

- Training needs assessment
- Design and testing of training materials
- Conducting the training
- Evaluation and feedback
- Revision

resource*pack*6
Community-Managed Implementation

6.1 Implementation Actions

The result of the participatory planning process will be a Disaster Risk Management Plan. In some cases it may include only a few small-scale activities. In other communities it may take the form of a comprehensive disaster risk management program or project.

A Community Disaster Risk Management Organization (CDRMO) should implement the risk reduction measures as per the plan. The effective operating of such an organization will ensure that planned activities are implemented on time and within the given resources. This includes a number of tasks and processes; e.g. tasking, mobilizing community resources, capacity building, monitoring and review, and making adjustments.

Tasking

The Community Disaster Risk Management Organization should set up appropriate committees to implement the various risk reduction measures which have been identified as being necessary, e.g. risk communication committee, health committee, evacuation committee, early warning committee, agricultural committee etc. It should assign clear responsibilities to these committees, and make sure that they have access to individuals and groups with the necessary skills to implement the tasks they are given. In addition, the Community Disaster Risk Management Organization could mobilize the broader community and its resources in order to ensure the various activities can be carried out.

Committees should have at least one person to carry out each of the following roles:

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- Leadership role (will have overall responsibility for the activities of the committee)
- Management role (to ensure the implementation of agreed activities)
- Technical role (to provide inputs)
- Financial management role (to ensure proper accounting)
- Administrative role (to assist in management)
- Social mobilization role (to mobilize community resources)

The CBDRMO should assign individual tasks to community members to ensure efficient implementation of risk reduction measures.

Capacity Building

It is important that responsible individuals and committee members have the technical capability to implement their tasks. The quality of risk reduction measures will suffer if they do not, which makes capacity building an essential component in this process. Depending upon the local situation and the existence or non-existence of a CDRMO, capacity building can be done either

before the start of participatory disaster risk assessment and planning or during the implementation process. The CDRMO, once formed, can get assistance from partner NGOs and government organizations to build the skills of its staff. *Please see Resource Pack 5 for details on Building a CDRMO and Training*.

Mobilizing Resources

The process of resource mobilization starts during the participatory disaster risk assessment and planning stages. However, it will continue during the implementation phase, as there will always be a need to ensure sufficient resources are available. If the required technical skills are not available within the community, the CDRMO should mobilize external partners and stakeholders, e.g. government departments, NGOs, and business organisations, to meet the needs. This should involve the mobilizing of resources to build the capacities of CDRMO members and committees, and should include mobilization of an appropriate range of resources; e.g. human, physical/material, natural and financial. *Please see "6.2: Facilitating Resource Mobilization" in this Resource Pack for details*.

Monitoring

The CDRMO should arrange participatory monitoring activities in order to track progress on the implementation of agreed risk reduction measures. The monitoring should cover the progress on activities, time frames, budget, indicators, outputs, objectives and the impact of the risk reduction measures. It should also observe who might be negatively affected and whether anyone has dropped-out and, if so, why. The participatory monitoring system should be established with the involvement of all stakeholders, to ensure their different needs can be met in relation to what they would like to monitor, and how and when they would like the data to be collected. The monitoring process will involve data collection, review meetings and reporting.

Periodical review of the progress being achieved in the implementation of risk reduction measures should be an essential component of a community-managed implementation process. The CDRMO should organize periodical meetings with all

stakeholders to review the progress. The meetings can be organized on a bi-weekly, monthly, bi-monthly or quarterly basis, depending upon the duration of project, the requirements of the disaster risk reduction plan and the concerns of stakeholders. The review should include reporting from all implementing individuals and groups. *Please see, "6.3: Facilitating Participatory Review" in this Resource Pack for details.*

In addition to participatory review activities, written reporting can be used to monitor and document progress. Reports can be prepared to meet the demands of donors and partners. The format of reporting can be discussed and decided by the stakeholders, considering the kind of information they would like to see reported. Broadly speaking a monitoring report should cover the following.

- Date of report preparation
- Agency preparing the report
- Period covered by the report
- Progress on activities
- Achievements on indicators
- Achievements on objectives
- Problems faced
- Actions taken to address the problems
- Recommendations
- Financial Report

Please see Resource Pack 7 for further details on Participatory Monitoring and Evaluation.

Adjustments in targets and plan

Adjustments may be required in order to ensure that risk reduction measures achieve their objectives as envisioned during the planning process. During the implementation, the CDRMO and other stakeholders may find that some activities are not as relevant and effective as they were thought to be during the planning process. Or some activities might be having a negative impact upon other groups. The CDRMO should make necessary adjustments in activities, indicators, time frames and the budget in order to continue to fulfill the objectives. The CDRMO might

need to mobilize additional resources to implement the newly identified activities and targets. *Please see, "6.4: Facilitating Adjustments in Targets and Plan" in this Resource Pack for details.*

6.2 Facilitating Resource Mobilization

The Community Disaster Risk Management Organization should call stakeholders meetings to discuss the inputs and resource needs, and to identify possible sources for them. During these meetings the facilitator should:

organize discussion on possible risk reduction measures, the inputs required to implement those measures and the resources required in order to deliver those inputs;

encourage discussion on the resources required in terms of human resources (social and technical resources), material/ physical resources, natural resources and financial resources;

ensure that internal and external sources are identified, and that it is clear where the required resources can be mobilized from. The internal stakeholders may include individual community members, families, community groups or local elected officials; the external stakeholders could include government departments, NGOs, private businesses and charitable organizations.

Gender Resource Mapping, Livelihoods Analysis and a Venn Diagram are other tools which can be used to identify resources at the community level. The matrix shown below in Figure 20 can be used as both a tool and an end product of the resource mobilization process. It is useful to note that human, physical and natural resources can be directly employed for delivery of inputs, while financial resources can be used to hire the other three kinds of resources.

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Figure20•**Resource Mobilization Matrix**

INPUTS	Resources Required				Sources		
	Human	Physical	Natural	Financial	Community	Outsiders	
						NGO	Govt
Technical							
What kind of expertise is required							
How much is required							
When is it required							
Where is it required							
For how long is it required							
Material							
What kind of material inputs are required							
How much is required							
When is it required							
Where is it required							

6.3 Facilitating Participatory Review

The CDRMO should establish a participatory review process by inviting stakeholders to periodical review meetings. The following preparatory actions are required:

The CDRMO invites all the stakeholders to a Periodical Review Meeting through word of mouth, letter or telephone as necessary. It sends them a reporting format as agreed, and issues as many reminders as needed

The CDRMO arranges the meeting venue and essential facilities for the meeting; e.g. meeting room, flip charts, markers, computer and projector if available and required

The CDRMO appoints a note taker, who will prepare the meeting minutes and distribute them to meeting participants.

The following should take place during the meeting:

The CDRMO welcomes all the meeting participants and briefs them about the purpose of the meeting

All the participants should introduce themselves, in case they are meeting each other for the first time or if some of them are new

Different responsible individuals/ group representatives should report on the progress of activities, indicators, objectives and expenses. They should also report on any problems encountered and the actions taken to address the problems

The meeting facilitator should ask the participants for any clarifications or concerns. These clarifications and concerns can then be referred, to be addressed by the relevant individuals

Considering the previous progress, issues and problems, and scheduled activities, the meeting facilitator should initiate a discussion on future planning. This may involve subsequent adjustments to the inputs, schedule and budget, and/or changes in indicators and objectives

The meeting facilitator should ask the participants if they have any other concerns or agenda items; if the participants do not have any other items to discuss the facilitator can then thank everybody and close the meeting.

6.4 Facilitating Adjustments in Targets or Plan

The stakeholders review the progress on activities, indicators, objectives and impact of the risk reduction measures in their periodical review meetings. They can analyze the progress achieved by asking the following questions.

Have the activities been implemented as planned? Have they met the objectives?

How have the activities contributed towards achieving the objectives?

Are the activities achieving the desired impact on (or change in) peoples' perceptions, behaviors, material and social well being and empowerment?

Why are the objectives not being met? (If applicable) Do we need to change activities or objectives?

What new activities are required to achieve the objectives? What indicators can be used to assess their impact?

Are any groups or individuals being negatively affected? Have any groups or individuals dropped-out? Why is this so?

Are the current objectives still valid or do we need to change? What new objectives need to be established?

What new activities are needed to fulfill the new objectives?

Are current resources enough to implement the new activities or do we need more resources?

What and how many new resources are needed?

Do we have those resources available in the community? Who has these resources?

Do we need to need to mobilize resources from external sources? If so, how much and from whom?

6.5 Principles of Participatory Implementation Process

A participatory implementation process will integrate the participation of all stakeholders at community level. The strong involvement of all stakeholders in determining risk reduction measures and methods for their implementation increases the

likelihood of success and sustainability, and will enhance self-reliance. The participatory implementation process enhances the bottom-up planning process. Given below are **8 guiding principles for a participatory implementation process**. These have been previously utilised in the Participatory Project Cycle Management (PPCM) approach of the Asian Productivity Organization.

1   *Participation of all stakeholders:* Encourage active involvement of individuals, social groups, organizations, and other stakeholders from the beginning of the project planning process.

2   *Dialogical Communication*: Respect the diversity of opinions. People of different cultures, groups, disciplines, social and economic classes can work together to find better solutions to problems through continuous exchange of ideas and interactions.

3   *Sequential process*: The application of different methods and tools should follow a logical and systematic process to analyze the situation, establish a clear understanding of the problems, and formulate a sound vision for the community.

4   *Cyclic process*: Carry out planning in a cyclical manner, through several feed-back loops in order to modify project activities according to the experience gained. In this process plans are valid until new insights and findings make it necessary to revise them. Flexibility in decisions and plans is regarded as the strength of the participatory project cycle management process.

5   *Systematic analysis*. The project is analyzed in relation to both its internal and external environment in which it operates.

6   *Cross-cultural sensitivity*. Use methods and tools that are acceptable to various sub-groups in the community, given their cultural context. The process should be flexible to change.

7   *Transparency*. Encourage open communication among stakeholders, continuous feedback on results of decisions and the use of methods and instruments.

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8   *Consensus orientation*. In the participatory planning process, complete agreement during discussions may not always be possible due to diverse groups and interests. However, the transparency established by the process leads to developing relationships based on mutual understanding and concurrence among those involved in the planning process. This process works towards achieving the best consensus in each situation.

The CDRMO implements the risk reduction measures as per plan through tasking, mobilizing community, capacity building, monitoring and review, and making adjustments.

resource*pack*7
Participatory Monitoring and Evaluation[7]

Participatory monitoring and evaluation (PME) involves the local community, development agencies, donors and other stakeholders deciding together how progress should be measured and what actions need to be taken as a result of this analysis. This approach assumes that all concerned parties need to know how effective the project efforts have been. It may be challenging, because it encourages people to examine their assumptions on what constitutes progress, and to deal with contradictions and conflicts that may emerge[8].

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7.1 Principles of PME

There are 4 broad principles at the heart of PME:

Participation. Multiple stakeholders participate in PME. These may include beneficiaries, project or program staff at all levels of the implementing organisation, researchers, government agencies, and donors.

Learning. The emphasis is on practical, or experiential, learning. Participants gain skills, which strengthen capacity for planning, problem solving, and decision making. They also gain a greater understanding of the factors or conditions that affect their project, reasons for successes or failures and why alternates may be tried.

Negotiation. PME becomes a social process for negotiation between people's differing needs, expectations, aspirations, and visions.

Flexibility. There is no one way to do PME. It is flexible and adaptive according to project-specific circumstances and needs.

7.2 Monitoring

Monitoring is the continuous or periodic review and overseeing by stakeholders in every level in the hierarchy of the implementation of an activity, to ensure that input deliveries, work schedules, target outputs and other required actions are proceeding according to plan.

Monitoring provides management with timely, accurate and complete information on project effectiveness with regard to inputs being utilized to produce desired results. It enables field operations to be modified to realize the most effective combination and sequences of inputs to achieve project objectives. Monitoring provides information and enables stakeholders to assess progress of implementation and to take timely action/decisions to ensure progress is maintained according to schedule.

There are at least three kinds of monitoring that can be distinguished in the context of project management.

Process Monitoring. Process monitoring is collecting information on the use of inputs, the progress of activities, and the way these are carried out. Process monitoring looks at why and how things have happened; it looks at relevance, effectiveness and the efficiency of processes. It involves stakeholders and beneficiaries in planning, in deciding what is to be monitored, and in developing and recording monitoring processes. Process monitoring requires documentation of how the process was carried out. The benefits of process monitoring are:

- Understanding change
- Learning lessons
- Identifying problems and priorities in projects
- Determining what is actually happening rather than what was planned
- Promoting the approach and its transparency

Effect Monitoring. Effect Monitoring is collecting information on progress towards achieving objectives, and on what the effects are in relation to these objectives. Effect monitoring is a form of continuous self-evaluation. If it is done well, formal evaluations will be needed less often, and if a formal evaluation is carried out, the program staff will already be familiar with their work in relation to their objectives. They will be able to participate more fully in the evaluation, and find it less threatening. All monitoring systems should include both process and effect monitoring.

Monitoring Significant Change. The "significant change" method of monitoring is not new, but it is not widely known (STREAM, 2002). The method has been used by Australian Overseas Volunteers to assess their contribution in development agencies, during their overseas appointment. The first step to take is for the staff of the implementing organization to identify what areas, or *domain*s, of change they want to monitor using the significant change method. The primary focus should be on two types of change: changes in the lives of individuals, and changes in the organization. The basis of the significant change method is a simple question. "*Describe what you think was the most significant change that you contributed to your project*". The significant change you choose can be in:

- the lives of beneficiaries of the organization with which you worked
- the lives of individuals in the community where you lived
- colleagues with whom you worked, or;
- an aspect of the organization with which you worked, or the wider policy environment

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7.3 Evaluation

Evaluation can be defined as an activity whereby the results and effects of a project are assessed, to see to what extent the project objectives have been achieved. After a project has finished, an evaluation helps to find out whether the project has been successful or not. If not, it has to be determined why not; maybe the project still has to be continued or needs to be adjusted in order to obtain the desired results. Evaluation is also an

organizational process for improving activities still in progress and for aiding management in future planning and decision making.

Process for conduct of evaluation

The baseline study (participatory disaster risk assessment) conducted before the start of the project should be the basis of evaluation. At the time of evaluation, information on the same aspects should be gathered by using the indicators formulated during the conceptualization of the project objectives. Then practitioners can analyze changes in the situation, by comparing the 'baseline' situation with the situation after the implementation of the project.

Following are the steps for planning and conduct of an evaluation.

1. Define the purpose of the evaluation

- Why is there an evaluation?
- Who wants it?
- Who are the beneficiaries?
- For what decisions?
- How will the results be used?

Different people might have different purposes for conducting evaluations, for example:

To determine the full extent of positive and negative outcomes and impacts, usually at the end of a project or program.

To identify lessons that can be applied to future program strategies and improve effectiveness of interventions.

To document experience for advocating policy change and institutionalization.

To collect data that demonstrates quality and effectiveness that can be used for institutional marketing.

To ensure and demonstrate accountability.

To be able to improve monitoring methods.

To critique their own work.

To see where strengths and weaknesses lie.

To compare the program with others like it.

To be able to share experiences.

To see if work is costing too much and achieving too little.

2. Formulate indicators

Indicators are central to most monitoring and evaluation processes. When we select indicators, we need to clarify what we want to know, what changes we want to happen and how can we monitor these changes. They should help us decide what information we need to collect. All parties involved should agree on the indicators used, although community members might use different indicators than the assisting agency (STREAM, 2002). An appropriate set of indicators can be produced by undertaking the following:

Review with the community members, the project objectives: general and specific. Review in the same way the project outputs and effects.

Review external factors that might affect the community and influence the project results. This requires updating of indicators when necessary.

Review the criteria the community members formulated when they selected the most favorable solution to address their problems. Why do they prefer certain solutions?

Formulate questions, which need to be answered in order to monitor the relevant issues and changes.

As explained above, indicators can have different focuses: on the process of project implementation (inputs, outputs) or on the effects of the project (outcomes). Process and effect indicators can both be quantitative and qualitative. Good indicators are (C. Shutt, 2003, ADPC):

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- Specific and reflect things that the project intends to control
- Direct - closely tracks results
- Verifiable - can be checked
- Measurable
- Sensitive enough to capture changes over time
- Time-bound - when a change is expected
- Adequate - provide enough relevant information

3. Define the focus of the evaluation

- What are the key issues?
- What are the specific questions to be answered?
- What information is to be looked for?
- Who and what will be the sources of information?
- Which indicators will be used to assess achievements and performance?

4. Define methodology for the conduct of the evaluation

- What methods will be used to gather the information?
- Who will participate in the evaluation?
- When will information be gathered?

5. Define methods for the analysis of the evaluation results

- How will gathered information be analyzed?
- Who needs what information?
- In what form?
- Who will validate results and how?

6. Define how the evaluation report will be written

- What is the outline of the report?
- What is the expected output of the evaluation: lessons, recommendations about what?
- Who will write the report?
- How will evaluation results be used, and by whom?

7. Finalize the overall evaluation plan

- Determine schedules of evaluation activities
- Prepare a budget for the evaluation

- Clarify roles and responsibilities of all people involved in evaluation
- Inform all people involved and ensure they all agree on the terms of reference

Figure21•**Key Areas of Change and Specific Indicators**
(Adapted from Roche, 2001)

Key areas of change	Dimensions	What to look at and possible starting points for developing indicators (e.g., increase/decrease of…)
Economic well-being	productive assets, occupational status, food security, , income and savings, access to markets, environmental awareness and practice, etc.	Land holding, farm animals Housing status Household expenditures and consumption Indebtedness Market mobility Quality of diet Ability to cope with crisis
Social well-being or human capital formation	health status, education, water and sanitation, etc.	Literacy rates Educational level School attendance rates Health education and awareness Infant mortality Adequacy and reliability of water supply
Political empowerment	ownership and control over assets, perceptions of well-being and quality of life, participation in decision-making and public institutions, access to public resources, dependency and mobility, etc.	Conflict resolution mechanisms Awareness and exercise of civil-political rights Degree of influence in decision making
Women's empowerment	access to public resources, gender awareness, self confidence and identity, valuation of reproductive roles	Women's involvement in income-generation Ownership and control of assets Degree of economic dependence Perceptions of own well-being Literacy rates Maternal mortality/morbidity Women's workload Time and space for recreation

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Figure22•**Oxfam GB's Disaster Management Program (Philippines)**

Project Goal	Objectives
To reduce the vulnerability of communities to disasters	Increased communities capacities to prevent, prepare for and mitigate disaster risks
Fewer people will die, suffer or fall sick as a result of natural disasters and armed conflict	To ensure access to quality humanitarian assistance of communities affected by disasters

Indicators		
Output	**Effect/Outcome**	**Impact**
Trained a core of 10 committed DM volunteers in each of the 10 villages within 6 months	Communities are able to access resources from the municipal calamity fund within two days after a disaster strikes	Casualties, damages and destruction to lives and properties reduced by 50%
Set-up one CBDRM structure in 10 villages within 12 months	Community members have increased levels of awareness and confidence about their capacities and resources	Increased status of women as a result of their enhanced participation in CBDRM structures
Counter disaster plans have been formulated in a participatory manner in 10 villages within 12 months	Communities are able to plan, implement, monitor and evaluate disaster risk mitigation measures in a timely manner	
Built 20 wells in 5 villages capable of supplying safe potable water by the end of 6 months	1000 households in 5 villages have access to adequate and safe drinking water Women's time spent for fetching potable water is reduced by 50 percent	Incidence of water-borne diseases in the communities is reduced by 50% Improved security of productive assets
Trained 10 women community health volunteers in 5 villages capable of conducting hygiene promotion	Community health volunteers have increased status and recognition in the communities Competent CHVs actively participate during pre and actual disaster events	Incidence of kinship transfers reduced by 50%
Conducted hygiene promotion campaign in 10 villages	Women, men and children have increased awareness of good hygiene practices	

Figure23•**Disaster Management and Governance Project (SIKAT-Philippines)**

Project Goal	Objectives	ProjectComponents/ Activities
To build the foundation for institutiona-lizing a community-empowering and development-oriented DM work in the municipality of Botolan	To develop and strengthen partnerships among local government units (LGUs), people's organizations and other local institutions/ structures for a development-oriented DM work in selected pilot communities	Capacity building and program integration Staff development on DM concepts, PCVA Formulation of PCVA tool Review of local governance and formulation of Barangay Disaster Preparedness Planning process & module
	To assist the selected pilot communities in reviewing and implementing the disaster management plan they have formulated	**Partnership development and management** - LGUs - POs - NGOs PO strengthening
		Conduct of PCVAs
		Review of Barangay Development and Disaster Preparedness (BDPP) Plan
		Monitoring and evaluation of BDPP implementation

Indicators		
Output	**Effect/ Outcome**	**Impact**
3 staff dev workshops conducted for SIKAT staff within 2 months Increased understanding of CBDRM and PCVAs among SIKAT staff	SIKAT staff demonstrate increased competence in facilitating a participatory CBDRM process	Men and women villagers are more pro-active in claims-making LGUs are more responsive & accountable to its citizenry Decreased social conflict among different stakeholders
Increased awareness of project stakeholders of importance of CBDRM 4 PCVA reports produced at the end of 6 months	Key stakeholders (LGUs, PO leaders & members, school teachers, etc.) contribute resources (time, funds, etc) to CBDRM activities CBDRM integrated into government plans (Barangay/ Municipal Development Plan)	

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What to evaluate?

What should be evaluated depends on the purpose of the evaluation. The objective of the evaluation determines its focus.

If the purpose of evaluation is to assess whether the project has achieved its objectives, all project activities will be measured by using the effect indicators. The 'baseline' situation will be compared with the situation after project implementation, and conclusions drawn.

If there is a need to see whether the management systems are in place or can be improved, then the key issues deal with planning, budgeting, staffing, communication, monitoring, decision-making, etc. The focus of the evaluation is the process and support system of project implementation.

If the purpose is to know whether the project or program was implemented according to the community based disaster risk management framework, the focus of the evaluation will be different, and another set of questions and indicators is needed.

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Who evaluates?

A good evaluation team should include:

• Professional expertise relating to the issue being evaluated;
• Knowledge of the country/region; and
• Cross-disciplinary skills e.g. social, economic, and institutional, if required;
• In a participatory monitoring and evaluation, beneficiaries should also be part of the evaluation team

The evaluation could be:

• An internal or self-evaluation by the implementing agency.
• An external evaluation by independent agencies or experts not directly associated with the program.
• Collaborative team evaluations that include internal and external parties.
• Participatory evaluations that are conducted with multiple stakeholders.
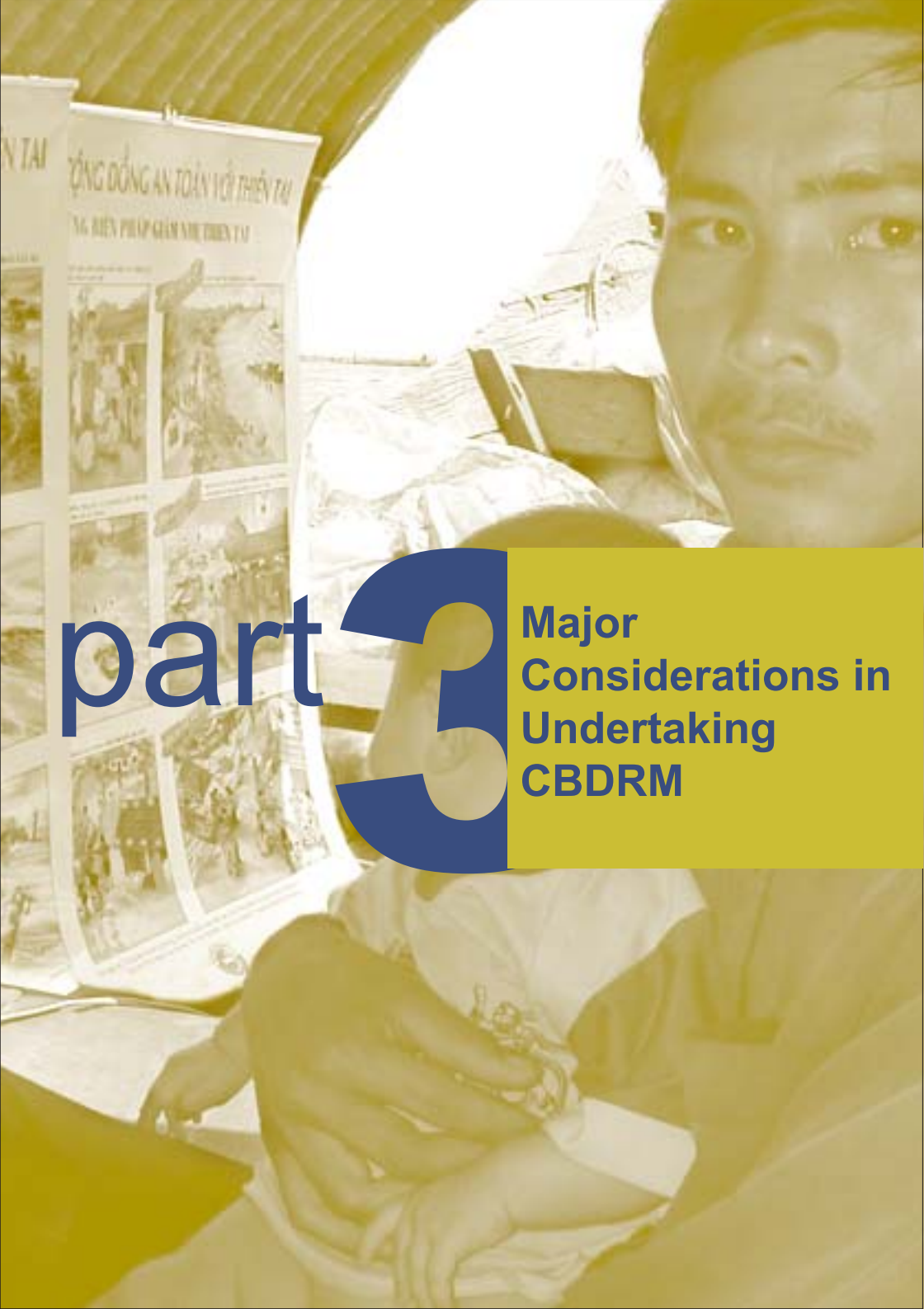
part**3** Major Considerations in Undertaking CBDRM

chapter1
Disaster Risk Communication at Community Level[9]

1.1 Framework for Disaster Risk Communication

Disaster Risk Communication is popularly known as public awareness or public education. It is a very common strategy in disaster risk management. Public awareness aims to increase the awareness of communities and other stakeholders about risks and protective actions. However, the traditional top down approach to public awareness has many limitations. Therefore it has not proved very effective. Considering the limitations of the traditional public awareness approach, the practitioners recommend the new approach, called Disaster Risk Communication. This part of the handbook introduces this new approach and how it should be implemented.

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. Communication is a continuous process of coding, decoding and interpretation.

Risk Communication can be described as "*An interactive process of exchange of information and opinion among individuals, groups and institutions, often involves multiple messages about the nature of risk or expressing concerns, opinions, or reactions to risk messages or to legal and institutional arrangements for risk management*" (US

Various methods of communication used at community level.

Substance Abuse and Mental Health Services Admin, 2002, pp4).

Actors in risk communication are: government, local authorities, the private sector, scientific organizations, employers and employees, the news media, civil society organizations, environmentalists, at risk groups, individual citizens and those whose actions induce risks.

Risk Communication is vital to ensure that stakeholders agree on different risk management measures. Joint action is an absolute must in the disaster risk management framework. Disaster risk management actors are present on different levels and represent multiple interests. Planned risk communication ensures that all stakeholders' perceptions and views are heard and considered.

Risk communication must help improve transparency of decisions and increase the potential of acceptance of the outcome.

Risk communication is different from public awareness. Public awareness is aimed at "educating" the public about the risks, as perceived by a technical agency or experts. Risk communication is a reciprocal process in which different stakeholders listen to each other and form a common

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understanding about risks, their acceptability and actions needed to reduce risks.

1.2 Importance of Risk Communication

- It is a right of at-risk people to know about the risks they face
- It helps at-risk people in making informed and sensible choices
- It ensures legitimacy of the professional bodies through transparency and openness
- It increases mutual understanding, shared responsibility and participation in decision making by all concerned
- It develops respect for the opinions and views of others

1.3 Objectives of Risk Communication

The objectives of risk communication are to:

- Facilitate exchange of information in order to understand the nature and perceptions of risk
- Formulate common approaches to risk issues
- Support or influence the framing or structure of risk decisions
- Develop mutual understanding rather than to promote one party's point of view (PDRSEA 2/ADPC, 2004)

Risk communication is an interactive process of exchange of information and opinion among individuals, groups and institutions.

1.4 Risk Communication: Some Considerations

Communication is a dynamic process, in which people simultaneously act as both source and recipient. Communication takes place in a social context. Many psychological variables influence the perception of messages and contribute to their impact. Examples of these psychological variables are existing knowledge and prior experiences, belief and value systems, emotions, and the opinions of significant others.

The concept of meaning is two-sided. A meaning is intended by the source of the information, but the receiver of information also attributes a meaning to the information. The source can express a particular intention with a message, but the receiver can interpret the message in a manner which is quite different from the sender's intention. This means communication can have both intended and un-intended effects on receivers. Therefore, the role of feedback is crucial in communication. Five factors can be distinguished for a successful process of communication (Gutteling et al, 1996). They are:

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Source: the originator of the message. *Please see* "1.8: Sources of Risk Messages" for details.

Message: the (verbal) information from the source. Please see *"1.9: Risk Communication Messages" for details.*

Receiver: the audience for the message. *Please see "1.6: Target Groups in Risk Communication" for details.*

Channel: the means or medium of communication used by the source.

Destination: e.g. possible effects of the message, such as information transfer, attitude or behavior change, reduction of feelings of fear or insecurity, long-term or short-term effects.

To conduct a meaningful risk communication process, you must identify target groups and intended effects. In the absence of clearly identified objectives and target groups, you can never

evaluate the effectiveness of your communication. Evaluation helps to decide whether the pre-formulated goals of risk communication have been achieved. Risk communication may have effects that are contrary to its goals. The unintended consequences of communication are referred to as side effects. In the worst case, these side effects can be detrimental to the communicator's goals.

Research before the formulation of risk messages is essential to empirically determine how much the recipients know about a topic to begin with and how additional information will be interpreted. So, the discussion on the development of risk communication is not only thinking about the goals to be achieved. The effectiveness and feasibility of risk communication should also play a major role in this discussion. Studying how and why risk communication works is essential to a systematic planning approach.

It is not desirable or acceptable that the risk communication process is one-sided for all or most of the time. A significant part of the risk communication process should consist of dialogues between the interested parties (Fisher, 1991).

Risk communication is a political process. In this process more fundamental public values are at stake. Persuasive techniques used to influence people's values will be interpreted as manipulation, consequently leading to a loss of trust and source credibility, public controversy, outrage etc.

Ethical problems are likely when target groups need more fundamental types of risk information, such as information to support or influence the framing of risk decisions, and if the source of information denies or hides such information. Hiding of certain information, if exposed later on, can cause a loss of trust.

1.5 Risk Communication: A Systematic Planning Approach

Risk communication should be based on the systematic planning of information sharing, based on scientific research and social

perceptions, to prevent, solve or mitigate the risk problem with customized information (risk messages) for specific target groups. Risk communication is a social process in which different types of communication (i.e. one-way, two-sided or multi-sided dialogues) will be applied depending on the circumstances and the phase of the planning process (Gutteling et al, 1996).

The initiative to begin a process of risk communication may come from the community in search of particular information or from risk management-related organizations and experts.

The systematic planning approach to risk communication generally takes several steps, each step referring to decisions. They are:

Policy Formulation. The first step is the policy preparation and development of a communication strategy in which plans are laid out and the role of risk communication is discussed. If insufficient data are available, research must be conducted, or a dialogue with social groups or the community may be necessary.

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Designing the risk communication plan. After the formulation of the risk policy and communication strategy, the next phase is the designing of a communication plan. In the plan, the method of communication is defined based on decisions about the content of communication, the source and the channels to be used. The basic tasks in the design phase are to make decisions about which risk communication methods, messages, sources and channels will be used, and what effects are expected. Research is very important in designing an effective disaster risk communication plan. The research involves the conduct of a Participatory Disaster Risk Assessment in order to:

• Determine the nature of risks and identify the most vulnerable groups which could be the target group of risk communication activities
• Analyze people's existing knowledge about disaster risks
• Determine people's attitudes and behavior related to hazards and risks
• Identify behaviors that need to be changed to prevent or

mitigate disasters and/ or their effects
• Determine how people's behavior could be changed
• Identify locally popular channels of communication, which could be used for disaster risk communication activities
• Identify locally influential individuals and institutions, who influence people's opinions

The following criteria are suggested to ensure adequate and responsible risk communication:

• The communication's goal 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

Pre-testing. Conduct small-scale pre-testing of the risk messages with target groups in order to get essential information about the content and design of messages and materials.

You can organize a workshop with members (small group) of the target group for pre-testing. Pre-testing assists in understanding whether the target group representatives perceive the content, design, and channels of communication as appropriate or they want some changes. *Please see the criteria for pre-testing and evaluation of risk communication below in "Risk Communication Messages" (page 115).*

During pre-testing and implementation be aware of the side effects that incorrect risk communication may have on the target group/s. For example, a false positive reaction in a low risk area wastes people's money unnecessarily. While a false negative reaction in a high-risk area could lead to a life and death situation.

Figure24•**A Systematic Approach to Risk Communication**
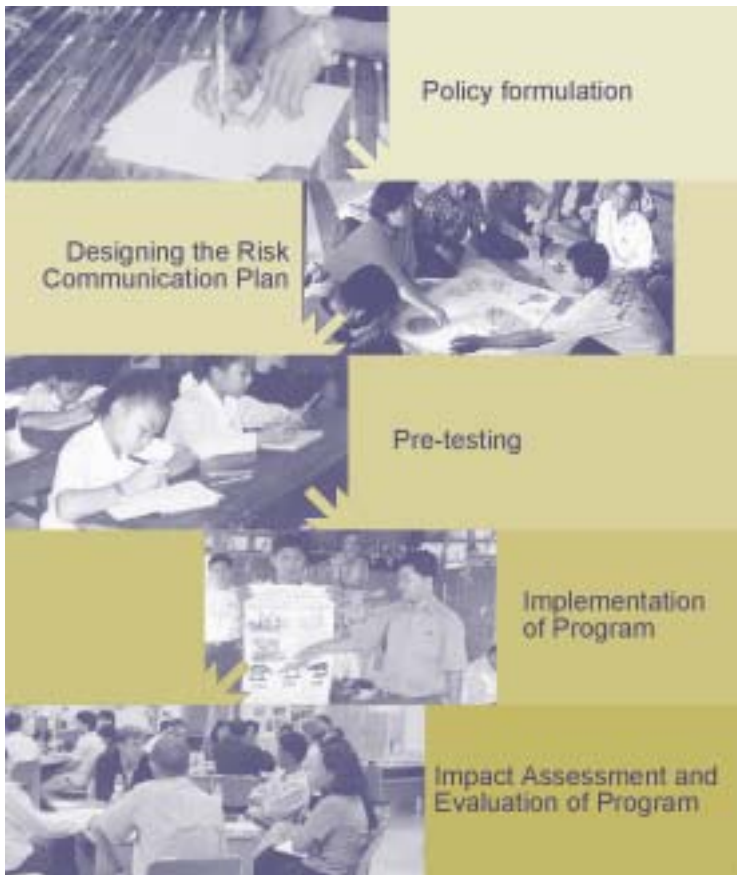
Implementation of program. After pre-testing, modify the content, design and channels in the light of target group opinions. Then the implementation of the communication plan begins. Advertisements, leaflets, brochures, theatre, exhibitions, simulations, or films can be produced as per the recommendations of target groups. The campaign can involve a range of activities including the following:

• Distribution of materials to target group, posters, leaflets, brochures, booklets, videos

- Organizing events for risk communication, e.g. rallies, meetings, conferences, celebration of a disaster day or week or exhibitions
- House to house visits to ensure that messages are passed on to other members of the family
- Discussion forums with the target group/s after distribution of materials

The community educators have a very important role in risk communication. The community educators are those individuals and institutions who influence people's opinions and knowledge. It can be a teacher, a monk, a priest, a community leader, a community elder or a traditional doctor in a given community. In some contexts community educators may have more influence on people's opinion-making than the formal channels of communication; e.g. radio and television. Therefore, the risk communication practitioners must work in collaboration with the community educators.

Evaluation and Impact Assessment of Program. The assessment of impact of a Disaster Risk Communication campaign is an important step. Objectives of the impact assessment of a disaster risk communication campaign should be established before the start of the campaign. The assessment of a disaster risk communication will be done against the established objectives.

The purpose of impact assessment is to establish whether the disaster risk communication project has been effective. This goes beyond a description of what activities were carried out and how much money was spent. Ultimately the assessment should draw conclusions about the worth of the communication activity to the community (PDRSEA 2, 2004, DRC at community Level).

Assessment can be conducted against the outputs and outcomes. Assessment of outcomes will focus on changes in viewpoints and perceptions of target group and changes in behaviors and actions. It involves 4 steps.

Step 1. Ensure impact assessment is considered as part of the project design activity, and in particular;

- Nominate an assessment team
- Specify assessment requirements

Step 2. Assessment team develops a detailed strategy for conduct the assessment

Step 3. Conduct the assessment

- Collection of information
- Assess information and make decisions

Step 4. Report results to stakeholders

Basic questions

- Did we achieve our objectives?
- If we did not fully achieve our objectives, what were the reasons for the shortfall?
- Did we achieve anything beyond our objectives?
- Was there a negative impact from our activities?

Output assessment criteria

- Overall rating by target group
- Most useful/least useful methods and materials
- Changes the target group would like to see
- Do facilitators understand the message?
- What, if any, difficulties were experienced by users?

Outcome assessment criteria

The extent to which the target group

- Can remember the messages
- Have acted on the messages, or intend to act
- What actions have been taken as a result of the project? Are the results sustainable?
- Is the campaign sustainable?

- What are the future plans for DRC?
- What additional support is needed from government and NGOs?

Possible sustainability criteria

- Number of requests received for disaster talks or technical assistance
- Number/type of disaster articles published in the newspapers
- Reference by business to disaster resilience of products
- Demand for implementation of laws
- Calls for new or amended legislation
- Formation of the disaster management bodies/organizations
- Implementation of risk reduction initiatives by target groups

Conclusion

The systematic planning approach to risk communication may be helpful to increase the risk communication's effectiveness. It implies acting upon empirical evidence about what is and what is not working in communications about a particular risk. Because the context and the circumstances in which risks occur may vary, every stage of the systematic planning cycle must be completed for each risk situation for which communication may be needed. Other considerations are:

The continued exploration of the psychological factors underlying risk perception and risk mitigating behavior remains extremely important to the further development of risk communication.

A ground rule of communication is to customize the information to the receiver's needs. This issue has three aspects.

- The information is an answer to questions relevant to the target group,
- It does not try to answer irrelevant or never-asked questions,
- The information must be comprehensible, and not contribute to further confusion.

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1.6 Target Groups in Risk Communication

At-risk communities need basic knowledge about exposure, effects, and mitigation processes relevant to making informed decisions about the hazardous process. Individuals differ in their needs for information. Therefore, determining target groups is a way to classify people on the basis of their mutual needs for information about particular risks.

People can be classified into target groups on the basis of social, economic and political factors such as age, gender, profession, income, behavior patterns, hobbies, ethnicity, language and religion etc.

Some potential target groups at community level may include students, teachers, parents, farmers, fishers, women, old-age citizens, and disabled. Other target groups may be masons, engineers, municipal officials, medical personnel, architects, religious leaders, social workers and transporters.

Different target groups in the community.

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One important target group could be *the people responsible for creating risk situations* through human activities: e.g. industry owners and employees, craftsmen, sand miners, construction contractors, property developers, workers involved in the plantation sector etc.

You must conduct diagnostic research to determine the risk understanding of target groups. Research should assess the knowledge, risk attitudes and opinions, risk perceptions and behavior of target groups in order to develop relevant risk communication interventions.

People's coping styles

It is important to understand people's reactions, coping styles and determinants of their opinions about risks. People's reactions to risks include fear, or feelings of insecurity and coping reactions such as information seeking or adopting protective behavior.

Interviewing community members on their opnions on coping mechanisms.

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Stress plays an important role in determining the nature of individual reactions. Stress is caused by an imbalance between the pressure exerted by the threatening situation and the individuals' capacities to cope with these pressures. People assess their capabilities to cope with a certain situation on the basis of their personal experiences in similar situations. (Gutteling et al).

An individual experiencing a negative emotional phase is motivated to reduce or control this situation. S/he adopts a problem-focused strategy or an emotion-focused strategy. When the individual perceives a hazard as controllable, he is more likely to adopt a strategy to do something about the problem.

When individuals experience a lot of insecurity and feel they cannot do any thing about it, adoption of emotion-focused coping is more likely. In this coping mechanism people tend to deny the presence of risk or play down the risk. Denial reduces their perceived tension.

Cultural and role-based differences between men and women also influence individual reactions. For example, traditionally men

deny or minimize feelings of fear, whereas women show more concern and anxiety, and are less inhibited in displaying feelings of fear. This does not mean women actually have more feelings of fear than men, but merely they are less inhibited to share these feelings.

The most prevalent coping response is information seeking in order to confirm the warning message. They focus on confirming the warning message, gathering further information and establishing a warning belief. If they think the warning is correct they focus on estimating the personal risk. They assess the probability and seriousness of the negative consequences, as well as their ability to control the situation. As a result, people may take mitigation action/s.

People determine risk reduction measures based on their knowledge of appropriate and inappropriate behavior, the perceived outcomes of action, and their personal ability to perform the necessary behavior.

Factors affecting people's behavior to adopt protective action

The *beliefs* a person holds about the hazards and risks are important in determining his attitude. Two aspects of beliefs are important: the belief strength and the belief evaluation. The individuals' attitude is a result of the strength and evaluation of all salient beliefs.

Perceived *personal control* is another predictor of behavior. This refers to the individuals' assessment of his or her own abilities to mitigate the risks. Sometimes people find themselves hardly capable of doing anything about the hazards. This indicates a low personal control. After assessing ability to control dangers, one feels relatively safe and is inclined to take risks, which are perceived as unacceptable by individuals feeling less capable of exercising control.

A person's *previous experience* is also crucial in determining his perception about his/her ability to control. The estimation of the extent to which one is capable of carrying out certain risk-related

tasks strongly depends on prior knowledge and a comparison with similar tasks.

Severity and probability may be significant predictors of the intentions to perform protest behavior.

Perceived ethical obligation also influence people's behavior to perform control. Ethical obligation can be illustrated as: "I feel I have an ethical obligation to avoid eating food produced by gene technology."

Warning belief can be an important predictor of the intentions for both appropriate and inappropriate risk mitigation. If people believe the warning is correct, they may adopt a protective behavior, but if they believe the hazard will not occur, they may not take any action.

People do not make decisions about their attitude towards a risk in isolation. Their response will be determined in *consultation with their family* and in the context of their *community's perception of the risk*. It is this combination of actual and perceived risk plus the perceived benefits and costs of behavioral change that determines the vulnerability of a community and their willingness to accept safety messages.

One of the important variables is the *perception of their vulnerability* to the risk. For people to be prepared to try new behavior, the perceived benefits have to be greater than the cost of acting. For example, people who are confronted with the devastating effects of a future severe flood may deny that it can happen and reject safety information. This is because they may consider there to be a low risk from a severe flood, coupled with low benefits from becoming flood prepared and a high cost to adopt flood protection behavior in terms of their time and effort.

Community norms as an incentive or hindrance to change is an important factor in a low perceived but high actual risk environment, and highlights the need to work closely with community expectations.

The public tends to find the risks of *voluntary activities* (e.g. skiing) more acceptable than involuntary risks (e.g. food additives) even if objectively these voluntary risks could be many times greater.

People may be willing to accept higher risks from very *beneficiary activities*, in particular when exposure to the risks is voluntary. Perceived controllability, catastrophic potential, and knowledge also influence the relation between risk perception, perceived benefits, and acceptability.

Remembering information on risks is also an important problem. As time passes, *people tend to forget*. Therefore one time risk communication campaigns cannot serve long term purposes. Repeated, consistent information will have more value and effects than a single information communication.

Repeated warnings are very important to convince people about the seriousness of risks. Warnings must contain concrete information about the place of disaster impact, the nature of the disaster, and about the recommended actions for those at risk. Generalized information is accepted less promptly than concrete information. A disaster warning which is certain (or lacks uncertainty) about the probability and seriousness of the disaster, will have a positive influence on the warning belief.

The *people will often personalize* risk with the same conviction that most scientists depersonalize it. People usually rate the risk to themselves as less than they rate the same risk to others or to "people in general". People react more strongly to hazards that are salient to their personal situation than to other risks, and they react much more strongly to risks if they have had related previous experiences.

Ultimately, the people will decide how much risk is acceptable and their decision will be based on personal factors.

The supposition that merely informing the individual or community about a hazard will lead to awareness, and awareness to action, and then to sustained behavioral change has not proved true.

Because the risk communication process is so deeply embedded in broader social issues, communicators are faced with many

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barriers. A key barrier is the term "risk" itself, how it is measured, described, and ultimately perceived. Stakeholders perceive risk differently, and people do not believe that all risks are of the same type, size or importance.

Figure25•**Risk Perception**

(US Substance Abuse and Mental Health Services Admin, 2002)

Risks perceived to	Are more accepted than
Be voluntary	Risks perceived as being imposed
Be under an individuals' control	Risks perceived to be controlled by others
Have clear benefits	Risks perceived to have little or no benefit
Be distributed fairly	Risks perceived to be unfairly distributed
Be natural	Risks perceived to be manmade
Be statistical	Risks perceived to be catastrophic
Be generated by a trusted source	Risks perceived to be generated by an untrusted source
Be familiar	Risks perceived to be exotic
Affect adults	Risks perceived to affect children

1.7 Communicating Disaster Risks: Avoiding Myths

Do not assume that communities don't have any information about the risks they are faced with. The communities may have a lot of information already available within (Bhatt, 2003).[10]

Do not assume that you need to educate the people. In good risk communication, process is as important as the message. It should be a dialogue process.

The information people need is not only about the risks. They may need information about what resources are available, what other communities are doing, what will be the cost of risk reduction, what may happen if they do not focus on risk reduction.

Don't assume that risk communication is a one-time short-term activity. It should be an ongoing process.

Don't assume that people cannot understand scientific information. If presented in appropriate form, they may well understand it.

1.8 Sources of Risk Messages

The individual or office sending a risk message or interacting with other individuals, groups, or organizations in a risk communication process, the risk manager, risk message developer, risk analyst or other expert is a **source of risk message**.

Source characteristics and source behavior are very important in communication. Almost every bit of information people receive from others is weighed, sometimes explicitly but mostly implicitly, by the views and opinions people hold about that individual or agency. Is he or she credible, is he or she attractive? What are the experiences with this source; has he or she told the truth before? People's perceptions of sources dramatically influence the impact of communication. In this section we discuss some of the source characteristics that may influence the risk communication process.

Building trust and credibility for risk communication

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Your ability to establish constructive communication will be determined, in large part, by whether your target group perceives you to be trustworthy and believable. Consider how they form their judgements and perceptions. Key factors in assessing trust and credibility are: empathy and caring; competence and expertise; honesty and openness; and dedication and commitment. (Covello,1992). Covello describes five rules, as given below, for building trust and credibility:

Accept and involve the public as a partner.

Appreciate the public's specific concerns. Be sensitive to peoples' fears and worries on a human level.

Be honest and open. Never mislead the public by lying or failing to provide information that is important to their understanding of issues.

Work with other credible sources: Coordinate your information and communications efforts with those of other legitimate parties in order to avoid confusion and disagreement.

Meet the needs of the media: Never refuse to work with the media. The media's role is to inform the public, which will be done with or without your assistance. Work with the media to ensure that the information they are providing the public is as accurate and enlightening as possible.

Being straightforward and honest build trust and credibility from target groups.

Source expertise is also important in determining its credibility. The source expertise depends mainly on the source's level of formal education, intelligence, social and religious status, familiarity with the issue, and professional abilities in a given society.

Source attractiveness is also an important factor. It is based on the liking of a target group for the source, existence of an attitudinal similarity between target group and source and the familiarity of the source to target group. The greater the liking or familiarity, the more influence a source will have.

The presence of more then one source of information may confuse the target groups. When a target group actively searches for information, the information need may be clear, but the target group may still be puzzled. Which source of information should be selected? It is important to find out which factors determine the target group's choice for a particular source. Some of them may be:

- The availability and accessibility of a particular source,
- The effort needed and costs related to consulting the source,
- The previous experiences with the source.
- Target group's perception of the source's expertise and trustworthiness.

Normally people have lot of trust in informal and locally influential sources of information; e.g. a religious leader, a teacher, an NGO worker or a local government official;

1.9 Risk Communication Messages

A written, verbal, or visual statement containing information about risk may or may not include advice about risk reduction behavior. A formal risk message is a structured written, audio, or visual package developed with the express purpose of presenting information about risk. In this section we provide guidelines for developing effective risk communication messages.

It is important that the risk messages in leaflets follow hazard-specific approach. Issuing general guidelines for multiple hazards might be confusing for the target group and can lead to inappropriate responses.

Information on risks can be presented in different styles. An example of these styles is given below. All of these styles can be applied. They have their limitations. It will be useful to apply different styles in presentation and check the reactions of your target group during the pre-testing phase. This can help in identifying more effective styles of information presentation in a given context.

- Absolute terms (e.g. 34,290 lung cancer deaths per year),
- As a percentage (e.g. 6% of all deaths per year are due to lung cancer),
- As a proportion (6 of every 100 deaths per year are due to lung cancer),
- In a pie-chart (without additional numerical information) or
- In a bar-chart (without additional numerical information)

Reducing ambiguity in risk communication: explicit conclusions

Messages with explicit-conclusion can prompt more attitude change than the messages with non-explicit-conclusions. The application of explicit conclusions may have a positive impact on the target group's perception about the credibility of the source.

Applying numerical probabilistic information in risk communication may not be very useful. It can create or support the existing doubts about risk communication information.

Comparison may be a good instrument to reduce message complexity or ambiguity, and is important for the public's understanding of risk.

Vivid Information versus non-vivid information

Vivid information would be processed more efficiently and stored in memory in larger quantities. Vivid material would allow the receiver to form a clearer mental picture of the information. It is also easy to retrieve vivid information from memory than non-vivid information. Vivid material is emotionally more interesting than non-vivid material.

Positive and negative messages

We can point out the consequences of a hazard or situation in many ways in a risk message. It is possible to focus on the positive consequences, or highlight the negative consequences. It is better to produce comprehensive information. Chances are that one-sided information is distrusted or ignored by the public.

Considerations for drafting a message

If a message is rated not very difficult, understandable, not very long, not very frightening, and rather credible, such messages will be judged positively and could be considered as adequate tools in the risk communication process.

A negative consequence of a more complex message may be a lack of comprehensibility and, consequently, less change, or a lack of motivation in the receivers to process the information.

Make probabilistic risk information more comprehensible to the general public. Comparison of the risk of complex hazards with other, more familiar risks may answer this problem.

Consider following aspects while developing a risk message:

• Target group specific
• Information is clear and comprehensive
• Information is credible. It can be verified
• Information is solution oriented, guide on what to do
• Provide realistic information
• Message does not arouse unnecessary fear
• Length of the message is appropriate and not too long
• Use various means of conveying the same message
• Think how the message will be received
• Written communication leaves a record
• Choice of words and the tone of language is important to build trust

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A good message must

• Address public concern
• Contain what people want to know;
• Give guidance on how to respond
• Provide accurate and timely information
• Use examples, stories, and analogies to make your point.
• Not assume there is a common understanding between expert and target group

What can make a message ineffective

• Probabilistic information may increase confusion.
• Numerical or statistical information may not be understood by target group/s
• People might not relate to rational and depersonalized information

chapter2
Gender Conscious Approach in CBRDM

There is a need to differentiate between sex and gender so as not to mistake one for the other. Sex is the biological difference between men and women and is the same all over the world.

Gender refers to the social construction of roles of women and men and the resultant role-perceptions about men and women. The roles and expectations of men and women are not the same all over the world. Gender addresses both men and women separately and in relation to each other.

Gender relations depend on context and can change over time and in some instances by a disaster event. Gender relations can be described to be unequal power relations between men and women and manifested in the marginalization of women or men in social, economic, political and cultural spheres of life. Women's role in many societies has been restricted to certain tasks and spheres; e.g. household related duties, reproductive process, child and family care etc. Opportunities and access to material and non-material resources - land ownership, inheritance, education, training, has been restricted for women in many cases. Gender relations are also affected by other determinants like religion, culture, class, caste or age.

Due to their gender-roles and life conditions determined by gender relations, men and women have differential capacities and vulnerabilities. They are affected by disasters differently.

In many contexts, men are better connected with early warning mechanisms due to their movement in public space and access to formal and informal channels of communication; e.g. radio, TV, informal community networks and interaction with officials.

Figure26•Between Sex and Gender

Given the paradigm shift from scientific to social, relief to disaster risk reduction, top-down to bottom-up, it is recommended that a Gender Conscious Approach should be adopted in disaster risk management efforts at all levels, particularly at the community level.

A gender conscious approach to CBDRM means going beyond awareness about gender issues and taking actions to transform prevailing unequal gender relations during and through disaster risk management.

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A Gender Conscious Approach does not only demand the fulfillment of the practical needs of women and men in disaster situations but asserts the roles of women and men as disaster managers at family, community and organizational levels. A Gender Conscious Approach will allow better disaster risk management, thus make communities safer from future disasters. In this section we will discuss about the adoption of a Gender Conscious Approach at family and community level only.

A Gender Conscious Approach to disaster response can be adopted in all three phases, before, during and after a disaster at community level. Different frameworks have been developed and can very well be applied in community-based disaster risk management.

The **Harvard Analytical Framework** or more commonly known as the Gender Roles Framework or Gender Analysis Framework describes the work of men and women in the family and in the community. Data gathered would be useful for project planning

Figure27•The Activity Profile

Gender Roles	Before the disaster		During the disaster		After the disaster	
	women	men	women	men	women	men
ensuring food availability	✔		✔	✔	✔	
care for children	✔		✔	✔	✔	
collect water	✔			✔	✔	
collect fuel	✔		✔		✔	
go to market	✔		✔		✔	
clean house and wash clothes	✔	✔			✔	✔
take care of sick	✔		✔		✔	
give health education	✔		✔		✔	
repair house	✔	✔			✔	✔
attend community meeting	✔	✔			✔	✔
draw evacuation plans	✔	✔		✔	✔	✔
receive warning	✔				✔	
evacuate families and others	✔	✔	✔	✔	✔	✔
guard house	✔			✔		
get capital for small business	✔					

(Harvard Analytical Framework)
Source: Sample activity profile taken from PDRA results in Kampung Pulo, Jakarta, Indonesia during the PDRAA training in March 2004

Moser Framework developed by Caroline Moser can also assist project planners to plan programs that can empower women. Some of the tools are appropriate to apply in CBDRM.

Triple role is almost similar to Gender Roles Framework except that it makes explicit the triple burdens of women: economic or productive, reproductive or nurturing, and community managing work. Each one role requires not only the attention but also participation of women. Roles of men and women are not static. They change when confronted by disasters and the need to survive and recover.

Figure28•**Triple Role**

Activities	Before		During		After	
	women	men	women	men	women	men
Productive work						
Production of goods and services for consumption and trade (farming, fishing, etc.)						
Earn cash	✔		✔		✔	
Take care of animals						
Get relief supplies like food assistance						
Prepare rice and rice seed in the stock house.						
Get rehab assistance like seeds and livestock assistance						
Reproductive work						
Care & maintenance of household & members Care for children	✔		✔	✔	✔	
Prepare food	✔	✔	✔		✔	
Collect water	✔			✔	✔	
Collect fuel	✔		✔	✔	✔	
Go to market	✔		✔	✔	✔	
Clean house & clothes	✔	✔			✔	
Take care of sick	✔		✔		✔	✔
Give first aid						
Give health education	✔		✔		✔	
Repair house		✔			✔	✔
Community work						
Collective organization of social events						
Attend in community meetings for community programs (health, production, etc.)	✔	✔			✔	✔
Make evacuation plans	✔	✔	✔	✔	✔	✔
Receive warning	✔					
Disseminate warning						
Security and protection						
Evacuate family & others	✔	✔	✔	✔	✔	✔
Guard the house	✔			✔	✔	
Guard the animals & other property						

Moser Framework

Source: Sample activity profile taken from PDRA results in Kampung Pulo, Jakarta, Indonesia during the PDRAA training in March 2004

Apart from understanding the activities of men and women in various phases of disaster risk management cycle, project planners must understand and analyze who between men and women have access and control over resources and other assistance in the form of training or credit facilities for example. Project planners can use this framework when planning for disaster risk reduction projects.

Figure29•**Access and Control Profile**

	Access		Control	
resources	men	women	men	women
relief assistance:				
- food				
- water				
- medicine				
- housing materials				
recovery assistance:				
- rice seeds				
- vegetable seeds				
- working animals				
- capital for small business				
benefits:				
- cash income derived from either relief or recovery assistance				
- ownership of assets (house, working animals, etc)				
- training				

Moser Framework

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The other tool refers to the short-term needs of men and women or their practical gender needs and the need to change their position in the family and even in the larger society.

Figure30•**Practical and Strategic Gender Needs**

	Practical Gender Needs		Strategic Gender Needs	
Assistance	men	women	men	women
food				
water				
medicine				
shelter				
skills training				
gender training				
loan/credit				
literacy				
organizing				

Moser Framework

The use of this framework can certainly enhance the CVA framework earlier discussed. Analysis must include the factors that facilitate or limit a more equitable relationship between men and women.

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Figure31•**Influencing Factors**

Describe how the following factors shape and/or contribute to roles of men and women in family and in the larger society:
community norms and social hierarchy, such as family/community power structure and religious beliefs
demographic factors
legal parameters
access to training and education

Moser Framework
source: Oxfam, A Tool Kit Concepts and Frameworks for Gender Analysis and Planning

It is always advisable to get a gendered perspective of problems and recommendations. It is also very important that both women and men are involved in planning and decision making in disaster risk management. (Refer to Section on PDRA).

But more importantly, capacities and vulnerabilities of men and women have to be assessed in order to determine not only the practical needs of men and women but also determine each group's strategic interests.

Figure32•**Gender Conscious Assessment of Vulnerabilities, Capacities and Risk Perceptions of Men and Women**

Vulnerabilities (lack of access to and control over resources and decision making related to emergency response, preparedness, recovery)		Capacities (coping mechanisms, skills and resources for emergency response, preparedness, recovery)	
men	women	men	women
1. Physical/Material			
Under-employed as rice farmers Decreased ability to catch fish, other aquatic organisms Need for plastic sheeting and family boats, temporary shelters Need for fishing nets Lack of safe boats	Decreased ability to catch fish, other aquatic organisms Need for plastic sheeting and family boats, temporary shelters Need for fishing lines and hooks Lack of safe boats Lost/reduced opportunities for income generating activities Inability to swim, fear of handling & riding on boats, fear of leeches	Livestock raising Boat transportation Rice farming (ploughing, harvesting, transporting) Agricultural and non-agricultural labour force More fish to catch and sell Construction of temporary shelters Cutting and collecting trees for firewood, collecting fodder Post flood heavy structural construction	Housework, cooking Collecting fruit Rice farming (transplanting, harvesting) Agricultural and non-agricultural labour force More fish to catch and sell, process Health care provider Water managers New activities include fishing and fodder collection Ability to collect, sort, dry and stockpile firewood Preparation for stockpiling Post flood construction of wall and roof

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Vulnerabilities (lack of access to and control over resources and decision making related to emergency response, preparedness, recovery)		Capacities (coping mechanisms, skills and resources for emergency response, preparedness, recovery)	
men	women	men	women
2. Social/Organizational			
Migration to cities and Thailand for work (seasonal or permanent)	Migration to cities for work (seasonal or permanent)	Take charge of productive activities, movement/ evacuation	Ability to arrange, manage and re-negotiate loans
Personal and safety concerns	Additional responsibilities to replace lost labour	Availability of migrant workers returning from outside	Availability of migrant workers returning from outside
Little evidence of organized community spirit; responses are mainly ad hoc	Availability of loans with high interest from private money lenders	Post flood community duty road reconstruction	Availability of Traditional Birth Attendants despite risks
All-male village authorities, decision making done by them	Personal and safety concerns	All-male village authorities	Availability of loans with low interest from credit agencies
Male-dominated and non-participatory decision-making process	Little evidence of organized community spirit; responses are mainly ad hoc	Take precautions for personal and family safety and security	Post flood community duty road reconstruction
Male dominated committees not able to meet needs of women and girls as there is no representation	Expected to provide labour for community road building or hire make labour outside	Principal decision-maker, final	Migrant workers going as a group and staying with host families together
Makes decisions without agreement of wife	Involvement limited only to receiving emergency aid	Availability of information about flooding from village public address system, radio, tv, other villagers	Take precautions for personal and family safety and security
Poor communication/ information about flooding from different sources	Poorly represented in village structures, local political structures and decision-making bodies, Wat committees		Can influence decision making if she has greater earning power
	Culture prevents disagreeing with husband		Can make decisions for domestic issues or if little money is involved
	Not able to concentrate to listen for information or watch tv due to other tasks/less access to information/ communication		

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Vulnerabilities (lack of access to and control over resources and decision making related to emergency response, preparedness, recovery)		Capacities (coping mechanisms, skills and resources for emergency response, preparedness, recovery)	
men	women	men	women
3. Motivational/Attitudinal			
Inability to ensure family survival through rice production	Inability to ensure family survival through rice production	Ability to fish and sell for cash income to buy other food items	Ability to fish and sell for cash income to buy other food items
Working hard to feed family	Working hard to feed family	Able to cope with flood evacuation/relocati-on, refuge conditions	Able to cope with flood evacuation/ relocation, refuge conditions
Inability to repay loans	Inability to repay loans	Don't consider difficulties faced as disastrous	Don't consider difficulties faced as disastrous
Reduction of household expenditures	Insecurity when husbands/fathers are away	More mobile, able to use boat transport	Determination to find food and money to feed children
Alcoholism leading to domestic violence	Desire to permanently migrate to other places	Reduction of household expenditures	Reduction of household expenditures
	Increased workload after flooding, increased stress, exhaustion		Convenience and safety (defecation inside house than outside)
	Self-reduction in food consumption due to lower energy requirements leading to weakness, susceptibility to illness, reduced effectiveness		Desire for children to have more equal status with men and more equal influence in decision making
	Reduction of household expenditures		
	Cultural belief about leeches enhances fear of swimming		
	Victims of domestic violence		
	Lack of privacy and sanitation		
	Unconcerned about village environmental hygiene and water-related diseases		

Source (figure32 pp124-127): Extracted from the research conducted by CARE International "Flood Impact on Women and Girls Prey Veng Province, Cambodia", June 2002.

men	women
4. Risk Perception	
Normal occurrences, part of nature & life	Normal occurrences, part of nature & life
Results in food shortage (esp rice production & availability)	Results in food shortage (esp rice production & availability)
Threatens food security, family survival, health	Threatens food security, family survival, health
Evacuation/relocation	Evacuation./relocation
Migration for work	Migration for work, exposure to physical & sexual abuse, harassment
Increased workload during flood	Less normal work during flood but additional new activities
Reallocation of gender responsibilities especially among older children	Reallocation of gender responsibilities esp among older children
Increased exposure to high-risk activities	Psychological/mental stress in child care and concern for husband, family health, worry & fears
Destruction of agricultural production	
Changes in farming practices	
Increased debts/inability to repay loans	Increased workload, exhaustion, stress and worry, after flood
Alcoholism, domestic violence	Changes in farming practices
House fires caused by women	Increased debts/inability to repay loans
	Increased domestic violence
	House fires blamed on women
	Leads to pregnancy and child birth complications, including transportation and safety

The **Gender Analysis Matrix (GAM)** developed by Rani Parker makes clearer the impact of any program or project on women, men, household and community. This can be used during the planning to plot potential impact of the project on four key areas: labor, time, resources, and culture. It also allows for a disaggregated response between men and women, between household and community.

Figure33•**Project Objective: Organize Men and Women in the Community into a Disaster Prepared Community**

	Laborer	Time	Resources	Culture
women				
men				
household				
community				

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The following matrix shows detailed guidelines for action by major areas of action and phases of disaster in order to build the capacity of women as disaster managers at community level. The guidelines are interdependent. Some strategies identified could also be carried out during more than one phase; such as information management. The guidelines reflect the perspectives of women, and seek to encourage maximum use of this human resource and ensure their contribution at all stages of the disaster risk management process.

Figure34•**Matrix of Women's Role in Disaster Mangement**

Community level action strategies	IMPLEMENTATION		
	Prepared-ness	Response	Recovery
Policy making in disaster management			
Integrate women into the political and policymaking process and use their capacities and expertise to influence decisions in emergency management	x	x	x
Involve all groups in recovery operations to ensure nondiscriminatory allocation of benefits	x		x
Development of Human Resources			
Develop training programs to increase women's knowledge skills in disaster management. This could include leadership training, training on search and rescue, first aid, data collection and hazard and vulnerability analysis	x		
Information Management			
Involve women in collecting data to assess risk and identify resources within their communities	x		
Involve women in identifying and using formal & informal communication systems to expedite dissemination of information in a disaster situation	x	x	x
Involve women in collecting and using information for immediate damage/needs assessment		x	
Mobilization of Women			
Organize women's groups to involve women in emergency response activities and general education within households, workplaces, and the community	x		x

Encourage maximum input from women's organizations and their members by recognizing them and assisting them in addressing women's special emergency-related concerns	x	x	x
Form male and female micro-credit groups for long-term disaster risk reduction	x		
Local Emergency Management Committees			
Institutionalize women's contribution via local emergency management committee	x	x	x
Help outside agencies recognize and work with local capabilities and coping mechanisms			x
Facilitate cooperation between outside relief agencies and local organizations	x	x	x
Representation/Participation in Decision Making			
Ensure full representation of women on technical and managerial decision-making bodies that impact on emergency management	x	x	x
Priorities for Women in the Organization of Recovery Program			
Involve women in reestablishment of community services			
Involve women in restoration of food production, and improved housing construction			x
Organize/implement programs for post disaster psychological needs of affected communities	x		x
Introduce co-ownership of houses by husband and wife in the reconstruction work, it may not be always possible, but it might be an effective way to promote gender equality	x	x	x
Warning systems and response mechanisms			
Use appropriate media to ensure you are reaching all sections of the population, especially women?	x	x	
Ensure that all the warning mechanisms you plan to put in place are sensitive to women's needs and abilities?	x	x	
Tap women's talents as informal educators?	x	x	x
Consider women's heavy domestic workloads when designing training and crisis rehearsals?		x	x
Women's Involvement in Response and Relief Operations			
Promote collaboration and coordination with emergency management and development agencies to address concerns of women			
Orient and involve professionals and volunteer women in all aspects of response and relief operations	x		x
Encourage women survivors in the disaster-relief process? Relief plans should not overburden women as caregivers?	x	x	x

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Source: Noel, Gloria. E. 1998. "The role of women in health-related aspects of emergency management: A Caribbean Perspective" in The Gendered Terrain of Disaster: Through Women's Eyes, International Hurricane Center, MiamiFlorida.

A gender conscious approach asserted the role of women as disaster managers at family, community and organizational levels.

Figure35•**General Guidelines on Promoting Gender Sensitive Disaster Risk Reduction Measures**

Ensure gender sensitive economic decision-making, land ownership and use, natural resource management, and human and social development in order to increase the capacity of women and men to live more safely in hazard prone environments.

Increase access of women to economic resources, transportation and housing.

Increase women's access to employment, technology, financial resources and time.

Ensure that the voices of women survivors and responders are heard when decisions are made, relationships forged, and agendas set.

Engage women as equal partners in disaster risk management and include women's organizations in broad-based community disaster coalitions.

Utilize women's resources, including their leadership skills, informal and formal community networks, family, community and environmental knowledge, and professional and technical expertise.

Develop context specific guidelines for disaster response for key groups of women such as: pregnant and lactating women, unaccompanied girl minors, and abused women.

Promote gender equity in regional and international collaboration on disaster reduction.

part**4** **Disaster Risks in**
South East Asia

chapter1
South East Asian Region: An Overview[11]

1.1 Socio-Economic Review

The Association of South East Asian Nations (ASEAN) has ten South East Asian countries as its members, i.e., Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. East Timor though geographically it is part of this region has still not joined the ASEAN. The land area covered by these countries is 4.4 million square kilometers. The climate is tropical and influenced by monsoons and the temperatures range from 25-30°C. The population of these countries is 522 million and as of 2000 it comprises 8.6% of the global population (ASEAN State of Environment 2000). Indonesia is one of the world's most populous countries whereas Brunei is one the smallest countries in the world with a population of only 354 thousand (UNESCAP 2002).

The region is very diverse in culture. Religious beliefs include Animism, Buddhism, Cao Dai, Christianity, Confucianism, Hinduism, Islam, Shamanism and Taoism. Population growth rate in the region is high at 1.4% with Cambodia having the highest growth rate at 2.5%. Cropped land per capita in the region decreased by 16% in the last decade (ADB 2001). From 1995-1997, arable land per capita ranged from less than 0.09ha in Indonesia and Vietnam to 0.33ha or more in Cambodia and Myanmar. Growth in cropped land has been at expense of the forested land. There has been rapid urbanization in the ASEAN region in the past decade. Urban population growth is the net result of natural increase, migration from rural areas, reclassification, and annexation or boundary expansions (ASEAN State of Environment 2000)

The urban population of Malaysia, Indonesia, Philippines and Thailand increased from 25.2% in 1980 to 42% in 2000 (ADB 2001). The extent of urbanization in ASEAN ranges from less than 25% in Cambodia, Lao PDR, Vietnam and 75% in Brunei Darussalam and100% in Singapore (ASEAN State of environment report 2002). Rapid urbanization puts pressure on urban infrastructure as the concentration of poor increase in the cities and the vulnerability to hazards increases. Countries with large population and high urban densities, couples with low affluence levels, tend to face severe environmental conditions and hazard vulnerability.

Economies in the region range from agricultural, as in the case of Cambodia and Lao PDR, to the developed modern economy of Singapore. Cambodia and Lao PDR have GNP per capita of US$ 260 and US$ 280 respectively; Thailand and Malaysia have US$1,960 and US$ 3,400 respectively; while Singapore has US$ 29,610 (UN ESCAP, 2002). Disasters most affect countries with weak economic well being, the poor having less capacity to cope with disasters.

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On an average ASEAN member countries have achieved medium Human development index in terms of longevity, knowledge and a decent standard of living (Disaster Management in South East Asia, ADPC).

Figure36•**South East Asia Socio-Economic Index**

Country	Income classification**	Human development index (rsnk)	Human poverty index rank
Brunei	high income	high (32)	n.a.
Cambodia	low income	medium (121) LDC*	78
Indonesia	low income	medium (102)	38
Lao PDR	low income	low (131) LDC*	66
Malaysia	middle income	medium (56)	13
Myanmar	low income	medium (118)	43
Philippines	middle income	medium (70)	23
Singapore	high income	high (26)	n.a.
Thailand	middle income	medium (66)	21
Vietnam	low income	medium (101)	45

Source: UNDP, 2001
Note: *Least developed country
       **based on World Bank classifications: high income - GNP pe capita of US$ 9,266 or more in 1999; middle income - US$ 756-9,265; low income - US$ 755 or less

Aside from being disaster stricken, Asia also comprises some of the poorest nations in the world

The lower the human development index, the lower the mean wealth, the literacy and the average health state of the population, which would increase the vulnerability to physical hazards. Poverty is one of the major vulnerability criteria.

South East Asia alone accounts for 2/3 of the world's tropical forests (Asia Magazine, 1984 as cited in Tadem 1990). ASEAN is one of the heavily forested regions of the world; over 48% of the land area is forested as compared to only 18% for Asia and less than 30% globally. But rate of deforestation is 1.04% per year in ASEAN region compared to 0.23% per year in the world (ASEAN State of environment report 2002). Deforestation is one of the major causes of floods- the plague of the region.

Biodiversity is of enormous value to ASEAN and the world economically, socially and in terms of essential ecosystem services. Three of the ASEAN countries – Indonesia, Malaysia and the Philippines are considered the mega diversity countries. Biodiversity is under tremendous threat in the region and loss of biodiversity, as is known, is essentially irreversible (ASEAN State of Environment).

Coastal and marine resources are also abundant and varied. The region is defined by a coastline of 173,000 km and speckled by a total of 404, 420 sq km of lakes, rivers, and seas. Indonesia and the Philippines possess two of the longest coastlines in the world. The ASEAN marine fish production is 14% of the world total and ASEAN fish exports are 15% of the world total. The

ASEAN coral reefs are the most species diverse in the world and account for 25-30 % of the world total.

East Timor is a half island country of 863,617 people. The total land area of East Timor is approximately 14,609 sq km. The country has low rainfall and is extremely dry. Its soil is relatively unproductive. Owing to its topography, the country has very steep slopes with shallow soils that are prone to erosion causing sedimentation of waterways and reservoirs. The climate is tropical. The country has a total coastline of 656.6 kilometers and lies close to the Indonesian borders. Its mangrove ecosystems are in a good condition and its beaches with good coral reefs (Proceedings of the conference on sustainable development in East Timor 2001). Timor gap is defined as one of the world's twenty richest oil deposits. Poverty is high where it is estimated that about 50% of the population is poor.

1.2 Natural Hazards in the Region

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Asia has been suffering from about 38% of the major natural disasters of the world. Meanwhile, Asian region accounts for 57% of killed people by natural disasters and 88% of the affected people. South East Asia is exposed to all types of hazards and has been coping with their effects for hundred of years.

Geological location has a lot to do with the hazards that plague South East Asia. The region is located in one of the world's hazard belts: in the Pacific Rim of Fire and the South China Sea where monsoons and violent typhoons are formed.

On the whole the most common threats of disasters in East Asia are nature-induced but they work on vulnerabilities that describe a pattern of enduring social inequities, and these vulnerabilities also reveal new or intensified social imbalances that give rise to new threats.

Earthquakes are one of the major hazards in the region. One of the countries seriously threatened by earthquake is the Philippines, which lies between two of the world's most active tectonic plates.

Earthquakes under the sea surface generate tsunamis or seismic sea waves. They primarily affect the coastal countries in the region. Indonesia and the Philippines are particularly more subject to this hazard.

Volcanic eruptions are also most frequent in Indonesia and the Philippines, having 129 and 21 active volcanoes, respectively.

Typhoons averaging about 30 a year happen most frequently during the months of June and November in the Philippines and Vietnam.

The areas surrounding the Mekong, Huang Ho and Yangtze Rivers are considered the great flood plains of South East Asia. Cambodia, Lao PDR and Vietnam are seriously affected by flooding in the Mekong.

Volcanic eruptions like Mt. Pinatubo in 1991 can displace thousands of families and destroy livelihoods around the area. Photo source: http://pubs.usgs.gov/ pinatubo/

The climate variability in the Pacific Ocean known as El Niño and La Niña cause severe droughts and floods.

Indonesia hosts the third largest tropical rain forest in the world. However these forests face a constant threat of destruction from fires. One of the major ones in 1997-1998 destroyed more than 11 million hectares of forest.

Landslides are common in countries such as Indonesia, Philippines and Vietnam. Excessive rains, unstable land and deforestation are some of the causative factors.

Figure37•**Relative Intensity of Natural Hazards Faced by Countries in the Region**

Country	Typhoon	Flood	Drought	Land-slide	Tsunami	Earthquake	Volcano	Fire
Cambodia	L	S	L					L
Indonesia	L	M	M	L	L	S	M	M
Lao PDR	L	S	M					M
Malaysia	M	S*	S	L	M			L
Myanmar	M	M	M	M		S		S
Philippines	S	S	L	S	S	S	M	S
Thailand	L	S*	S	L		L		L
Vietnam	M	M	L	S	S	L		L

Source: Whitehouse and Burton, 1999, ADB 1991, country reports
Legend: S - severe; M - moderate; L - low
Note: * coastal flooding

Figure38•**Characteristics of Hazards in South East Asian Region**

Hazard	Recurring	Defined Seasonality	Defined Location	Possibility of Early Warning	Generally Well Known
Floods	X	X	X	X	X
Drought	X	X	X	X	X
Typhoon	X	X	X	X	X
Landslide	X	X	X	X	X
Earthquake	X	n.a.	X	n.a.	X
Volcanic Eruption	X	n.a.	X	X	X
Epidemic	X	X	X	X	X
Conflict	X	X	X	X	X
Forest Fire	X	X	X	n.a.	X

1.3 Vulnerabilities in South East Asia

People's vulnerability to disasters depends on the social, cultural, economic and political environment. A study by CRED, 2001 concluded that in the past decade, on an average, every disaster in low human development countries claimed about 1,062 lives, and each disaster in the middle human development countries claimed 145 lives. These figures stand in stark contrast to the average of 22.5 people killed per disaster in high human development countries (WR, 2001) (Disaster Management in South East Asia).

Poverty and its complex dimensions - discrimination, lack of opportunities for acquiring and developing skills and capabilities, lack of access and control over basic necessities including production resources, decent living conditions, livelihoods, and adequate incomes - are the vulnerabilities for millions of East Asians.

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Strategies for economic growth and development in the region as well as global trends in the same have demonstrated their ability and potential to enhance and/or diminish these vulnerabilities, but also to produce new threats for the poor.

Lack of off-farm paid employment to replace the disappearing agriculture-based jobs - this is the single, biggest factor pushing rural people to the cities and it contributes greatly to the unplanned expansions of cities, and the presently dangerous urban living conditions that threaten to get worse.

Environmental degradation shows up now as a huge cost for the poor in the form of unsustainable livelihoods and disasters.

The erosion of state subsidies in many countries resulted in high unemployment rates, deepening previous poverty in rural and urban centers. Basic services like health and education were significantly reduced.

Women in general are more vulnerable than men because of the roles assigned to them by society and their limited access to and control over resources.

Three South East Asian countries belong to the fifteen largest countries in the world. Indonesia, Philippines and Vietnam.

The countries which have high to very high population densities are assumed to have higher vulnerabilities. Highly concentrated populations suffer more losses from disasters, and high population is also a major cause of environmental degradation, which increases future risks.

The Asia-Pacific region has the largest population in the world affected by desertification.

Detrimental fishing practices like use of explosives and careless anchoring of boats destroy corals and important fauna.

Destruction of natural habitat worldwide is the greatest factor contributing to the loss of bio-diversity. Central to this problem is the extent of commercial activities going on to sustain economic growth. What is ironic is that destruction of bio-diversity will ultimately result to the destruction of the indigenous and poor rural communities dependent on them. Bio-diversity and survival of these poor communities are inextricably linked.

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East Timor is one of the poorest countries in the world. The country's economy is "still vastly undeveloped" (Humanitarian assistance and emergency rehabilitation pillar- Final report 2001). A mainly rural, subsistence based agricultural economy, lack of modern means of agriculture, environmental damage, poor quality of roads, marketing and transportation systems, marginalized and unequal position of women are the structural causes of poverty and vulnerabilities in East Timor (Recovery and Reconstruction of East Timor - Joe Chung, 2001). The three major community problems are damaged irrigation canals, houses damaged by floods and lack of fishing equipment. The lack of infrastructure has also affected the health and the educational services in the country.

1.4 Disaster Characteristics and its Impact in the Region

Most common and recurring disasters in the region are induced from flooding and drought that occur according to its associated season, compounded periodically by the El Niño/La Niña phenomena, to the less predictable but nonetheless nature-induced earthquakes and volcanic eruptions.

Next to these, armed conflict and perilous urban living conditions bring about disasters that are even less easy to anticipate. The current situation in the region however, indicates that these two latter types of disasters could become more frequent or more destructive than they are now.

The region being predominantly rural is a paradox since one of the most vulnerable groups in the region is the subsistence farmers (and the hordes of unorganized landless farm workers), fishers and small herders dependent on land based or marine and coastal resources. They may loose all their physical possessions, the meager resources - their crops, livestock, equipment and most of the time, their homes.

Illegal logging is one of the major activities contributing to the degradation of our natural habitat.

Disasters result to loss of lives. Top ten natural disasters in the region alone from 1900 to 1999 recorded 10, 749, 750 deaths (OFDA/CRED 2000). Flood and typhoons are the most common hazards associated with these deaths.

Destruction of natural habitat worldwide is the greatest factor contributing to the loss of bio-diversity. Indonesia has about 1.43 million square kilometers of tropical forests and the largest area of rainforest after Brazil. Numerous small-scale ground fires have been caused by farmers and other people clearing the lands, in anticipation of the rain. Due to prolonged drought and the very dry climatic conditions, these fires rapidly spread out of control. Numerous fires have been burning on the islands of Java, Kalimantan, Sumatra, Sulawesi, and Irian Jaya, causing heavy air pollution in several countries in South East Asia, including Malaysia, Singapore, Brunei, and Thailand. The smoke has reached as far north as the Philippines and as far south as Australia. At current logging rates, the World Resources Institute estimates that Indonesia will lose 12.5% of its forest cover in the next decade. It has been estimated by the World Wide Fund for Nature (WWF) that 7,500 Km© of forest were destroyed by the 1997 forest fire in Indonesia with 262 deaths; and the haze affected 70 million people in six countries. Factories, schools, and offices were closed, while tourism suffered a sharp decline in affected areas; and an estimated 20 million people did not see their shadows for up to three weeks. The intense haze in 1997 blanketed and choked many South East Asian countries for approximately three months.

For the period of 1996-2002, the significant populations of internally displaced people in selected countries were: Indonesia - 1,400,000 in 2001 and 800,000 in 2002, East Timor - 300,000 in 1999, Philippines - 135,000 in 2001 and 45,000 in 2002 and Myanmar - estimates range from 500,000 to a million (World Disasters Report 2003).

The drought induced by El Niño in 1997-1998 and the La Niña that followed in 1999 affected Indonesia and Vietnam severely. Cambodia was stricken by food shortage in 1998 and in the same year, there was dengue epidemic. Cholera outbreak was reported in 1999 killing 130 people affecting 500 indigenous people.

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Central Vietnam suffered both drought and flood in 1998 and 1999 respectively.

Environmental refugees are those people who can no longer gain a secure livelihood on their homelands because of long-term environmental problems such as soil erosion, deforestation, desertification and record drought. About 7.2 million people were rendered homeless by various natural disasters that struck the ASEAN region in the period 1990-1999 and for the period 2000-2003 already 12.5 million have been rendered homeless. (EM-DAT the OFDA/CRED International database). The major causes were windstorms, floods and earthquakes, with Philippines and Vietnam being the worst affected countries in the region.

The economic consequences of disasters are of major importance given the repercussions they have on the economic development of the countries. In the Philippines for example the nine disasters that occurred in 1992 costs US\$ 6.5 billion, which is about 13% of the GDP of the year. The agricultural sector appears to be the most vulnerable sector because of the important role it plays in the creation of national wealth and the population needs (**Natural Disasters in South East Asia and Bangladesh - Vulnerability Risks and Consequences**, Robert D' Ercole and Patrick Pigeon, March 1998).

In the decade 1990-1999 estimates show that cost of damage because of wild fires in Indonesia was US\$ 17.2 million whereas US\$ 2.9 million was the cost of damage due to windstorms in Philippines in that period (EM-DAT The OFDA/CRED International database).

The flood in the year 2000 in Cambodia inflicted damage amounting to US\$145 million. Three hundred and forty seven persons were reported dead and more than 3.5 million people affected, many of whom had to evacuate from their flooded homes for more than a month. About 31% of the houses were destroyed. Thirty-one percent of the country's rice crops were destroyed and 87.4% of the wells contaminated.

Floods caused by acute deforestation are the most serious disaster in East Timor. Windstorms and bush fires are also the

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hazards faced by the country. Road slippage, landslides, communication cut off, destruction of water pipelines affecting the supply and quality of water to the population are the additional threats. The impact of floods results in increased poverty, which accounts for lack of income and consequently lack of access to education, lack of nourishing food and lack of access to health care.

The impact of hazards in the SEA countries is shown in the table below. For countries such as Indonesia and Vietnam, economic loss due to disasters can set back a decade of economic development. For countries like Cambodia and Lao PDR the effect is even worse as scarce resources that could have been used for social and economic development are lost on recovery efforts.

Figure39•**Disaster Events in South East Asian Countries in the Period 1990-2003**

Country/ disaster type	Frequency of occurrence	No of deaths	Total affected	Cost of damage In US$
Cambodia				
Flood	8	1104	9486561	41542
Drought	2	0	95000*	115000*
Epidemic	5*	162	396703*	-
Famine	3*	0	5900000*	-
East Timor				
Flood	3<	4<	3508<	-
Indonesia				
Drought	3	672*	1170000	88000*
Earthquake	33	3495	797856	292404
Epidemic	18	2205	60161	-
Flood	43	1788	2002495	264652
Land Slides	18	718	322097	18698
Volcano	10	133*	76042	9000*
Wild fire	5*	63*	3034008*	17235000*
Lao PDR				
Epidemic	5	721	17929	-
Drought	4	0	20000	1000*
Flood	9	57	2586550	21828*

Country/ disaster type	Frequency of occurrence	No of deaths	Total affected	Cost of damage In US$
Malaysia				
Epidemic	7	391	5934	-
Flood	12	55	75506	3605<
Land slides	4	152	285*	-
Myanmar				
Flood	5	72102	651534	557520
Earthquake	2	11*	100296*	36100*
Windstorm	1	17*	64970*	10000*
Philippines				
Drought	4	8	3981345*	64453
Earthquake	7	2511	20405999	375914
Epidemic	7	366	13178	-
Flood	33	1205	5542223	149430
Slides	11	688	294630	31000
Volcano	9	719*	1322324	212280
Wind Storm	65	11494	32296268	3132370
Singapore				
Epidemic	3	36	2238	-
Thailand				
Drought	4	0	13500000	4300
Epidemic	3<	98<	1955<	-
Flood	32	1225	17878915	3115005
Windstorm	16	122	2916355	190293*
Vietnam				
Drought	4	0	6700000	416770*
Epidemic	6	499	17771	-
Flood	27	3185	19302823	5486100
Slides	3	294	39034*	2300*
Wind storm	35	5454	5802139	921575

Source: "EM-DAT: the OFDA/CRED International database, www.em-dat.net"
* Data available for the period 1990-1999
< Data available for the period 2000-2003

Endnotes

1 Adapted from ADPC, CBDRM–10 & 11 Participants Workbook, 2002 & 2003

2 Online world of communication through use of computer.

3 Adapted from ADPC, CBDRM–10 & 11 Participants Workbook, 2002 & 2003

4 According to Oxford Dictionary, mandate means (1) an official order or permission to do something; (2) the authority to carry out a policy

5 This Resource Pack covers 2 steps of the CBDRM process; e.g. Rapport Building and Understanding Community.

6 Adapted from ADPC, CBDRM–10 & 11 Participants Workbook, 2002 & 2003

7 This resource pack has been developed through liberal use of the following: Arcilla, M. J. D., Delica, Z. G. et al (Eds), 4B: *Project Development, Monitoring and Evaluation in Disaster Situations, 1998*: Quezon City, Philippines, Citizen's Disaster Response Center.

8 Institute of Development Studies, 2002, *Overview of Participatory Planning Approaches*, IDS and Indonesian Partnership for Local Governance Initiatives (IPGE), Bandung

9 This Resource pack has been prepared through generous use of Gutteling and Wiegman, 1996, *Exploring Risk Communication: Advances in natural and technological hazards research*, Kluwer Academic Publishers, Dordrecht, The Netherlands.

10 Mihir Bhatt and Medul Pandya can be contacted at the Disaster Mitigation Institute, Ahmedabad.

11 Adapted from research written by Imelda Abarquez and submitted to the Oxfam, 2000. Data updated by Shalini.

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About the Authors

Imelda Abarquez has fifteen years experience in the field of disasters and development. She has extensive experience in managing disaster risk reduction programmes in South East Asia and made innovations on disaster risk communication in Cambodia, Lao PDR and Vietnam. Synthesizing her experience in risk assessment and capacities, vulnerabilities analysis she developed the concept and framework of participatory disaster risk assessment and action. Before working for ADPC in 2001, she also worked as Humanitarian Programme Manager in the Philippines, Albania and West Timor in conflict situations. Presently, she is the Project Manager of the DIPECHO funded project "Partnerships for Disaster Reduction in South East Asia" (PDR SEA).

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