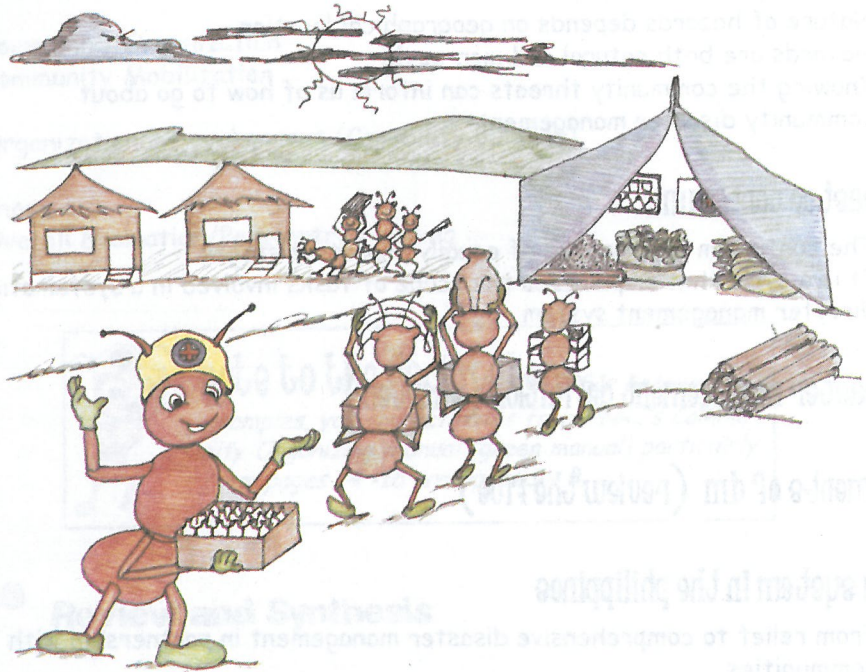


## session 2:

# DISASTER PREVENTION, MITIGATION AND PREPAREDNESS



## Topic 1: Concepts and Framework of PMP



### general objectives:

For the participants to have a basic knowledge on concepts and principles of disaster prevention, mitigation and preparedness.



## INTRODUCTION

### Interactive Input

**DISASTER PREVENTION** refers to any action taken to eliminate or avoid harmful natural phenomena and their effects. It covers those measures which are aimed at impeding the occurrence of disaster event and/or preventing such an occurrence having harmful effects on communities. Examples of prevention include cloud seeding to control drought, pest control to control locusts swarms, or construction of dams to prevent flooding.

**MITIGATION** refers to any action taken to reduce the impact of a natural or man-made disaster on a community. However, while it may be possible to prevent some disaster effects, other effects may obviously persist. The concept of mitigation recognizes this and maintains that the application of certain measures such as land-use planning, improved disaster-resistant infrastructures, and better agricultural practices can moderate or reduce disaster effects.

**PREPAREDNESS** refers to those actions taken to limit the impact of a disaster phenomena by structuring responses and establishing mechanisms for effecting a quick and systematic reaction. Preparedness measures include the formulation of viable disaster plans, the maintenance of resources, and the training of personnel.

## STRATEGIES IN PREVENTION AND MITIGATION

- **Planning** - could mitigate the impact of hazards. This include adjusting the urban and housing development plans in consideration of the hazards, establishment of new settlements, forestry projects, agricultural management, economic diversification that will help protect the economy against natural disasters, and developing disaster-resistant economic activities within the region.
- **Regulations** - formulate or reinforce existing regulatory laws to aid disaster managers. Such laws include zoning, land use, building codes, and performance standards.

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Source:

W. Nick Carter. Disaster Management: A Disaster Manager's Handbook, 1991

- **Strategic Development or Investment** - Encouragement of development away from hazardous areas by investing or creating a favorable environment for investments in less vulnerable areas.
- **Insurance** - is one economic measure that can play a major role in mitigating disaster losses. Insurance can have spin-off effects reflected in increased job opportunities, increased purchases and order for local suppliers, and other economic boosts to the area affected by disaster.
- **Environmental Management** - activities such as reforestation and rangeland management in watersheds can prevent or mitigate impacts of natural hazards.
- **Public Information and Education** - effective hazard management requires an informed public especially those at risk. Information such as types of hazards, its impacts, measures available to reduce impacts, and action that can be taken will be helpful for those communities at risk.

## Approaches to Disaster Prevention and Mitigation

- **Top-Bottom Approach** involves only the large centralized government agencies, focusing on large scale and high technology solutions. Such approach puts emphasis on physical rather than social changes to build up resources. Demands and needs of the affected communities are usually overlooked.
- **Community-based approach** addresses the underlying causes of vulnerability and the socio-economic impact of disasters to the community at risk. Decision-making is shared with the people and community-based organizations.



**note to the facilitator:** *For the participants to have a better grasp of the concepts, it is recommended that you give some examples or situations for each strategy to further illustrate.*



## Workshop: Prev, Mit or Prep?



time requirement:

30 mins



materials:

metacards with disaster prevention, mitigation or preparedness measures written on each card, one set of blank metacards for each workshop group (number of pieces would depend on prepared measures), matrix in kraft paper (modify depending on no. of workshop groups and prepared measures)



process:

1. Divide the participants into desired number of workshop groups. Distribute a set of blank metacards for each group.
2. For each measure that is read, the group will identify if it is disaster prevention, mitigation or preparedness. The members of the group will have to confer with each other to come up with a unified answer. Answers of each group will be written on the provided metacards. The participants are given 45 seconds for each number.
3. Measures and group answers will be posted in the matrix. Measures will be posted under "questions" column and group 1 answers will be posted in "grp1" column, and so forth.
4. The answers of the participants shall be reviewed by the big group. Correct answers shall be written under the "PNRC FRAMEWORK" column.
5. The group with the most number of correct answers wins.

sample matrix

QUESTION	GROUP 1	GROUP 2	GROUP 3	PNRC FRAMEWORK



## SYNTHESIS



**note to the facilitator:** You may synthesize by discussing the PNRC Framework on Disaster Prevention, Mitigation and Preparedness

### Topic 2: Hazards and Risk Assessment



#### general objectives:

1. For the participants to be able to identify the different hazards and their effects on their communities.
2. For the participants to be able to map-out the hazards existing in their communities.
3. For the participants to be able to assess the level of risk per specific hazard of their communities.



#### Hazards and Risks Assessment

Though already discussed beforehand (See *Nature and Characteristics of Hazards affecting the Philippines*), it would be best to review the following terms again before proceeding:

**Hazards** - Phenomena that pose a threat to people, structures, or economic assets and which may cause a disaster. They could be either naturally occurring or man-made.

**Risks** - Risk is defined as the probability of meeting danger or suffering harm or loss. In relation to disaster, risk has been more specifically described as the probability that a disaster will occur, in relative terms such as high risk, average or moderate risk and low risk to indicate the degree of probability.

## Activity 1: Geographic Hazard Mapping

**G**eographic hazard mapping is essentially an activity that gauges how participants coming from the same areas see their common hazard situation. Do they think alike? Are their beliefs the same? Are their assumptions correct?

This activity gives participants the opportunity to see what the hazard situation is in other neighboring areas. More importantly, hazard mapping allows them to see the relationships between their community's geographic location and environmental situation and the hazards that regularly occur there.



**note to the facilitator:** You can use any one of the three activities presented below for hazard mapping. To determine which among the three is the most appropriate, consider the following factors:

- *How long a time is allotted for the activity?*
- *What skill and capacity levels do the participants have? For example, do all know how to read and write? Are they more comfortable with drawing?*
- *What materials are available?*

### Option 1: Decal Attachment

The simplest activity of the three, it is also the shortest. Consequently, it requires the least degree of facilitator guidance.



**materials needed:**

spot maps, color-coded hazard decals, masking tape or pins.



#### process:

1. Group the participants according to areas and provide prepared spot-maps to each group. If none are available, or if the maps are too small, ask each group to draw their own spot-maps.
2. Provide the groups with color-coded hazard decals. Better yet, if time allows, ask them to make their own hazard decals. Just make sure that everyone agrees on what symbol will be used to represent each hazard. Uniformity of hazard decal colors is also important.
3. Instruct the participants to place their hazard decals on those points on the map affected by each particular hazard.
4. Each group will then be asked to report.
5. Give a short synthesis of the workshop. (See Synthesis for all Hazard Mapping Activities)

### Option 2: Map-Drawing

**T**his second option involves more work than the first one. Here, the participants will be asked to draw spot-maps of their communities including the hazards that occur there. An additional requirement, one absent from option 1, is the identification of major lifelines in the community affected by each hazard.

#### materials needed:

Craft paper, markers of various colors, transparent plastic sheets, masking tape or pins.



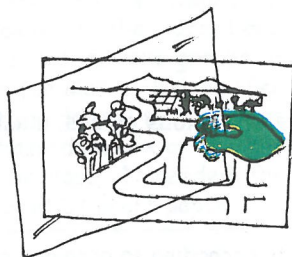
**note to the facilitator:** To save on workshop time, pre-cut the craft papers and plastic sheets. Also, make sure that the craft paper and plastic sheets are cut the same size and that number of plastic sheets provided per group are equal to the number of hazards identified by that group.



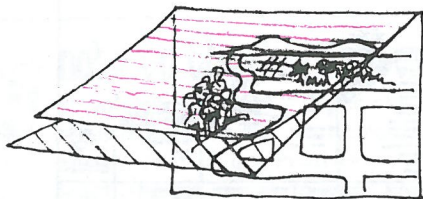


### process:

1. Group the participants according to area and ask each group to draw spot-maps of their communities.
2. Ask the groups to identify and highlight on their maps the major lifelines (roads, rivers, communication lines, electric grids, etc.) found in their community. Ask them to also list down the hazards that occur in their communities.
3. Provide several plastic sheets per group. And ask them to trace the geographic boundaries of their spot-maps onto the plastic sheets. (See fig. 1)



4. Provide several colored markers per group. Inform them that these colored markers are to be used only on the plastic sheets. If possible, the number of colors must be equal to the number of identified hazards.
5. Ask the groups to agree on what colors to assign per hazard; e.g., blue for floods, red for fire, brown for drought, etc and instruct them to color shade the areas on the plastic sheets (using 1 sheet per hazard) accordingly. They must shade the plastic sheets in such a way that, when all are placed over the spot-map, the different sheets fit. (See fig. 2 )



6. Ask the groups to report their outputs.
7. Give a short synthesis of the workshop. (See Synthesis for all Hazard Mapping Activities)

### Option 3: Transect mapping

Of the three options, transect mapping is by far the most complicated. Needless to say, it requires the greatest amount of preparatory time, workshop time and facilitator guidance. In addition to drawing spot-maps, the groups are also required to draw transect maps.



#### materials needed:

craft paper, markers of various colors, masking tape or pins.



#### process:

1. Group the participants according to area and ask the groups to draw spot-maps of their communities. Ask them to note where in the map the population centers, community lifelines and natural resources are located.
2. In their spot-maps they are to identify two geographic points (point A and point B). In choosing the two points, they are to make sure that a line drawn from one point to the other will bisect most, if not all, of the following:
  - Areas on the map frequently affected by hazards
  - Areas on the map where population density is high
  - Areas on the map where basic resources and lifelines are located

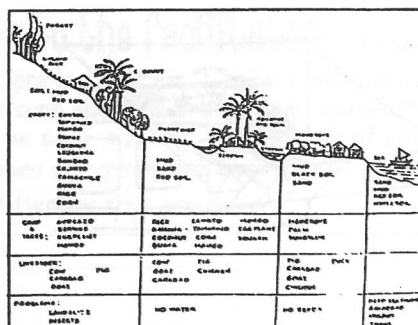


Fig. 3

3. Next, ask them to draw a topographic cross-section of the map starting from point A and ending in point B. (See fig. 3) Make sure that this includes the area's basic geographic and demographic characteristics.
4. Using one color per hazard, they are to shade those portions in the cross-section map affected by hazards.
5. Ask the groups to report their outputs.
6. Give a short synthesis of the workshop. (See Synthesis for all Hazard Mapping Activities)



**note to the facilitator:** This transect-mapping activity can be integrated with Activity 2 (Matrix Making) of the Hazard and Risk Assessment topic. To do this, ask the groups to immediately do the procedures for Matrix Making (See Activity 2: Step 3) after they are done with step number 4. They can place the hazard matrix at the bottom part of their cross-section maps. If needed, they can place it on a separate sheet of craft paper.



## **Analysis/Synthesis for the Geographic Hazard Mapping Activities:**

**B**efore going into your synthesis geographically arrange the different spot-maps so that a "big picture" of their community is presented. Ask for their comments regarding this overall map. Note the hazards present and the areas affected by them.



**note to the facilitator:** Remember to validate all points, especially the contentious ones, with the participants. This is to ensure that all are relatively in agreement, at least when it comes to what hazards affect their community and which areas and lifelines there are affected.



Present a broad assessment of the lifelines affected. Trace the flow of these different lifelines. Some points to mention are:

- How lifelines cut across geographic boundaries and administrative jurisdictions.
- Though communities often view hazards on a local basis, the effects of these are wide-ranging.

## Activity 2: Hazards Matrix Making

**H**azards matrix making is the continuation of geographic hazard mapping, with a few requirements added. In this activity the participants are to present a more systematic hazard picture of their areas. Specifically, they are to assess their hazard situation on a "per-hazard" basis.



### materials needed:

Craft paper, markers, Hazard Matrix sample, masking tape or pins.



### process:



**note to the facilitator:** If you have decided to integrate this activity with Option 3 (Transect Mapping) of the Geographic Hazard Mapping activity then you can skip this part and proceed directly to Activity 3: Risk Assessment. But if you had chosen to do either Option 1 or 2 of Activity 1, then you still have to go through this part.

1. Gather the results of the preceding workshop (either Decal Attachment or Map Drawing).

2. Ask each group to fill out a hazard matrix for their community. They can pattern their hazard matrices from the example given below:

Areas most likely affected	Populations at risk	Lifelines at risk	Sources of livelihood most likely affected	Infrastructures most likely affected	Structures most likely affected
Hazard A (ex. Flood) Onset:					
Coastal areas	25 families along the coast and 15 families along river X.	Sea and River routes, etc.	Fishing River trading, etc.	The Wharf Bridges near the coast	Houses, etc.
Hazard B Onset:					
Hazard C Onset:					
Hazard D Onset:					
So on and so forth...					

3. Ask the groups to present their outputs.

4. Give a short synthesis of the workshop.



### Analysis/Synthesis for the Hazard Matrix Making Activity:

Again, arrange the maps geographically so that the "overall" community picture is presented. Allow ample time for everyone to review the entire picture.

Ask for comments regarding the group presentations. Note all data presented — especially those pertaining to areas, populations, infrastructures, economic activities and lifelines at risk — and highlight all contentious and unique points.

It would be worthwhile to mention that the three activities contained in the Hazards and Risks Assessment topic are interrelated and must go together; also, that the results of these activities can have major implications on the remaining workshops of the course.

With hazard mapping and hazard matrix making, it becomes possible to identify, with reasonable accuracy, those settlements, communities and assets that are especially vulnerable to disaster-caused damage or destruction.

### Activity 3: Risk Assessment

**A**fter the participants have painted a larger picture, so to speak, of their respective communities' hazards situation the next step will be to analyze these different hazards. Specifically, they will now measure the level of risk associated with each hazard.



**note to the facilitator:** Like in Activity 1, Activity 3 also has some options available and you, the facilitator, will again be the one to determine which option is best. Factors to consider when choosing an option are:

- How long a time is allotted for the workshop?
- What is the skills level of the participants? This is important since some mathematical problem solving is involved in Risk Assessment.



Risk assessment consists of identifying the hazards likely to occur, determining their probability of occurrence, estimating potential impact of the hazard to in the communities at risk, determining measures that can reduce the risk and taking action to reduce the threat.

### Option 1: Risk assessment by group

This is the more complicated of the two available options. This requires both a higher participant skill level and a greater workshop time allotment. Plus, more facilitator guidance is demanded for this activity than for option two.



#### materials needed:

workshop results from the first two activities, craft paper, markers, calculators, masking tape, or pins, Risk Assessment Matrix sample.



#### process:

1. Maintain the groupings from the previous workshops and have the groups review all their previous workshop outputs: spot-, and transect-maps and their hazard matrices. Ask them to note the different hazards that they identified — their nature, effects and where they usually occur.
2. Present this Risk Assessment Matrix and ask them to fill out the first two columns.

Hazard	Location	Risk		
		HIGH	MODERATE	LOW
Hazard A	Sitio Masantol		✓	
Hazard B				
Hazard C				
So on and so forth...				

4. Give a short synthesis of the workshop. (See Analysis/Synthesis for the Risk Assessment Activity)

## Option 2: Risk assessment by Plenary

This option is appropriate when time is scarce and when participant skills, at least when it comes to math, is relatively low. This option is faster to do — reporting per group is done away with — and requires lesser facilitator guidance than the first one. Also, data validation is instantaneous.

Another benefit is that the initial output here is already the general risk assessment of the community; unlike in option 1 where the initial output is a "per area" risk assessment.



### materials needed:

workshop results from the two previous activities, craft paper, markers, masking tape or pins, Risk Assessment Matrix sample.



### process:

1. Convene the different groups in a plenary and have them review all previous workshop outputs: spot- and transect-maps and their hazard matrices. Ask them to note the different hazards that they identified — their nature, effects and where they usually occur.
2. Present this Risk Assessment Matrix and have them fill-out the first two columns.

Hazard	Frequency	Risk			General Risk Statement
		HIGH	MODERATE	LOW	



**note to the facilitator:** For step no. 2, you can either make the participants fill up the first two columns themselves or you can just ask them to supply the answers while you write them down in the matrix.

3. After the first two columns have been filled-up ask the participants what they think the risk levels are per hazard. In approximating risk levels assessing the following factors (plus many others) can help:
  - a. Frequency of occurrence per hazard.
  - b. Geographic location of affected area. (For example, floods in communities near marshlands can be worse than floods in flatland communities)
  - c. Environmental situation of affected area. (Communities at the foot of denuded hills are in more danger of flash floods than those bordered by well-forested hills)
  - d. Response structures and systems in place.
4. Fill in the Risk columns accordingly. When you are done ask the group to review the matrix.
5. Give a short synthesis of the workshop. (See Analysis/Synthesis for the Risk Assessment Activity)

### **Analysis/Synthesis for the Risk Assessment Activity:**

First, the participants first have to do two things:

Formulate a general risk statement per area; and,

Identify which hazards they will plan interventions for in the future. They can do this by listing down hazards by order of priority — starting from those with the most risk to those with the least.

General risk statements are based on the assessed risk level of an area. An example would be this:

*"The risk of flooding in Sitio Masantol of Bgy. Mangga is exceptionally high because the area is almost all marshland. This situation is exacerbated further by the fact that the surrounding hills are very much denuded. Though there are some dikes present, they are in such bad condition that any sustained pressure from flood waters will likely erode them."*

The second task is even simpler. First, the participants should list down the different hazards occurring in their community by order of risk. Then, based on that, they are to decide which hazards they will focus on during their planning workshops. (See Session 5: Planning for Disaster Management)



Risk has two dimensions, frequency and magnitude/intensity. Evaluation of risk is done by relating a natural or man-made hazard to the primary characteristics (e.g. population distribution and developmental aspects) and vulnerability of the area concerned. This process particularly identifies high-risk areas and is the basis for producing risk maps. For example, risk mapping of a bushfire-prone area would indicate the likelihood of fires occurring and the degree to which those fires would affect communities within the area.

There are three essential components in the determination of risk, each of which should be separately quantified:

- a. Hazard occurrence probability:** the likelihood of experiencing any natural or technological hazard at a location or in a region. Quantifying this involves assessing not only the probability of, for example, an earthquake occurring, but also the probability of occurrence of an earthquake of a range of magnitude. An earthquake of magnitude 8.5 will be rarer than an earthquake of magnitude 6.0
- b. Elements at risk:** identifying and making an inventory of people or buildings or other elements that would be affected by the hazard if it occurred, and where required, estimating their economic value. These make up a wide range of things that make up or society — people's lives and health, economic activities, equipment, houses, roads, services, infrastructure, crops and livestock, etc.
- c. Vulnerability** of the elements at risk: how damaged the buildings or people or other elements would be if they were to experience some levels of hazard. It is the relationship between the severity of the hazard and the degrees of damage caused. Each element will be affected differently by hazards of different severity. The more severe the hazard is, the more damage will be inflicted on the element.

## 2) Synthesis for Topic 2: Hazards and Risks Assessment



**note to the facilitator:** There is a natural order in the three activities of the Hazards and Risks Assessment topic. The first two activities required the participants to look at the general hazard situation of their respective communities. The third wishes to determine how ready, or how unready, an area is for the effects of a particular hazard. This is the initial step for planning interventions in the future.

Due to the geographic location of the Philippines, natural hazards such as typhoons and earthquakes are prevalent. However, though intensities may vary, some hazards — typhoons, for instance — are seasonal. Thus they are very easy to forecast. It is therefore possible to formulate and implement mitigation and preparedness measures in anticipation of the typhoon season. In fact, to some extent, planning is possible for almost all kinds of hazards.

Hazards result from vulnerable conditions being exposed to a potential hazard. Therefore, the first step in taking mitigation measures is to assess the hazard. Hazard assessment aims to come to grips with:

- the nature, severity and frequency of the hazard;
- the area likely to be affected; and,
- the time and duration of impact.

Hazard assessment concerns itself with the properties of the hazard itself (i.e. cyclone, flood, drought, earthquake, volcanic eruption, etc.) and its direct effect. Hazard assessment begins with data collection. This includes physical assessments and hazard maps, scientific data, local lore and historical records, socio-economic or agricultural surveys. These can be updated by gathering new

This data is then analyzed. One effective way of presenting hazard assessment is through hazard mapping. Next, data and maps are analyzed to arrive at the hazard assessment. Finally, an attempt should be made to express the probability (risk) of the event occurring over time.

In the simplest possible terms, hazard and risk assessment attempts to specify that there is a certain probability of an event of a given proportion occurring in a certain area. It cannot predict with certainty when this event will happen or what its effects may be. Their results, however, will be major inputs to future disaster planning activities.

### Topic 3: Capacity and Vulnerability Analysis



#### general objectives:

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

1. to explain and define basic concepts in CVA
2. to identify capacities and vulnerabilities
3. to acquire skills in identifying and applying CVA
4. to come up with a CVA





## Introduction

### Interactive Input

**A**ll natural crisis events such as floods or earthquakes do not become disasters: Sometimes, they cause no major damage to life or property because they occur where no one lives or because people have taken measures to prevent or reduce their damaging effects. Even when these events do cause damage, not everyone in a disaster area suffers equally. Why is it some people suffer more from disasters than other people? The answer is that some people have less capacities and are more vulnerable than others.

**CAPACITY** is a community's actual or potential ability to withstand disasters through the presence of material and human resources that aid in the prevention and effective response to disasters. This includes the resources and skills people possess, can develop, mobilize or have access to which allow them to have more control over shaping their future. It is the ability of the community to deal with hazards and their attendant impact.

### Classification of Capacities

Capacities can be classified as physical, social and economic capacities:

#### Physical Capacities

The victims might be able to access materials needed to re-establish the physical structure of the community. There is ready supply of shelter materials after a disaster, supplies that are accessible to the victims.

#### Socio-Cultural Capacities

While the material requirements are available, there is also a need for an organized labor force in the area to reconstruct the community. These labor force should possess necessary skills.

### 3. Organizational/Institutional Capacities

In most disasters, people suffer their greatest losses in the physical and material realm. However, when everything physical is destroyed, people still have their family and community organizations. They have leaders and systems for making decisions.

### 4. Economic Capacities

This refers to the ability of the business sector to recover and re-establish the economic community.

### 5. Attitudinal/Motivational Capacities

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

- d When people are willing to cooperate and share resources, they have the capacity to cope with disasters.*

## Operationalizing Capacities

### Workshop: Identifying Resources Within the Community



#### materials:

craft paper, marker pens, matrix in craft paper



#### process:

1. Divide the participants according to their geographic location/communities they belong to
2. Ask the participants to identify the resources within their respective community

### Matrix on Resource Inventory

No. of Families	Food	Water	Transportation	Communication	Manpower		
					Volunteers	Medical Staff	Rescue Team



**note to the facilitator:** *You may compare the available resources in each area and relate it to the area's capacity.*

In analyzing a community's resources and capacity, looking at the presence of organizations and potential partners would also help.

### Workshop: Partnership Analysis



#### materials:

craft paper, marker pens, matrix in craft paper



#### process:

1. Divide the participants according to the previous grouping.
2. Ask each group to come up with a list of potential partners in their respective areas

### Matrix on Partnership Analysis

Sector	Institution/Organization	List of Contact Person	Contact Number/Address	Expertise



**note to the facilitator:** *It would also help to emphasize the importance of the family as a basic coping mechanism.*



**VULNERABILITY** is the extent to which a community, structure, service or geographic area is likely to be damaged or disrupted by the impact of a particular hazard, on account of their nature, construction, and proximity to hazardous terrain or disaster-prone area. There are five types of vulnerability: 1) physical/material vulnerability; 2) socio-cultural vulnerability, 3) organizational/institutional vulnerability, 4) economic vulnerability, and 5) attitudinal/motivational vulnerability.



**note to the facilitator:** *Before getting into the discussion, review the discussion on Hazard and Risk Assessment.*



## TYPES OF VULNERABILITY

**1. Physical/material vulnerability** - this pertains to the man-made environment of infrastructure, and the natural environment of agriculture, forestry and aquaculture. It is not limited to the geographical location of population, buildings and crops. This also pertains to the physical capacity of buildings to cope with the battering of forces. The following are factors that determine the magnitude of physical vulnerability:

- Geographical pattern of severity of hazard(s)
- Number, density, spatial distribution, and special characterization of population groups exposed to the effects of various hazards.
- Effects of local conditions such as the physiography and topography of the locality i.e., terrain, etc.
- Materials used in the construction of shelters
- Drainage and sewerage system.
- Household density

**2. Socio-Cultural Vulnerability** - vulnerability elements or factors which come from demographic concerns such as population density and level of awareness. The following are key issues to be considered in assessing social vulnerability:

- Special categories of vulnerable groups of people i.e., single parents, women, pregnant mothers, mentally and physically challenged, children and babies, elderly.
- Population density which has a strong correlation with casualties. It is necessary to assess areas of hazards in relation to where people work and live.
- Common perception and beliefs of the community about hazards, its impact and corresponding mitigation measures

**Organizational/Institutional Vulnerability**- vulnerability factors which come from organizational or institutional concerns such as

- Local institutions (government or private organizations) that cater to assisting/responding to the pre-disaster and disaster needs of the community.
- Laws and policies of organizations that are related disaster response.
- Relationships and coordination among organizations before, during and after disaster.
- Consistency in organizational dynamics which determines how they respond to disasters.

**Economic Vulnerability**- pertains to how people make their living and where they get their livelihood. Determining which type of livelihood is easily affected by disasters (e.g., fishing, tricycle driving, etc.) is a key issue to be considered in determining the magnitude of economic vulnerability.

**Attitudinal/Motivational Vulnerability**- this refers to the individual's perception of risk and her/his ability to mitigate and cope with disasters. This also addresses the people's sense of priorities. Those who perceive disasters as uncontrollable events are harder hit than those who believe that disasters can be mitigated or avoided.

**Vulnerability Analysis** is an analytical tool by which disaster-potential areas that may be difficult to recognize because of the unusual combinations of, for example, population density, literacy or building construction areas, are identified. It also allows the 'always inadequate' resources for disaster management to be applied to potential disaster areas.

**Capacities and Vulnerabilities Analysis (CVA)** should be the basis for devising good disaster management policies. This analysis provides the core information for planning and implementation of a disaster plan. Vulnerability analysis aims to:

- identify the nature, extent and risk of threat
- determine the existence and degree of vulnerabilities
- identify the capabilities and resources available
- identify the gaps and actual needs
- identify capacities, resources and partners
- identify resources to be mobilized

## Workshop: Capacities and Vulnerabilities Analysis



### materials:

craft paper, marker pens, matrix in kraft paper, hazard map and risk assessment outputs



### process:

1. Using the hazard map and the risk assessment outputs, ask the participants to identify three (3) priority hazards and assess the vulnerability of (a particular area)
2. After identifying the vulnerabilities, the participants shall analyze the capacities and vulnerabilities of (a particular area) and identify the gap between the capacities and vulnerabilities.
3. After identifying the gaps, ask the participants to formulate some recommendations based on the CVA.





**note to the facilitator:** *There are two options for this workshop:*

Option 1: grouping according to vulnerability

Option 2: grouping according to hazard

## SYNTHESIS

following guide questions may help the community in accomplishing the Capacity and Vulnerabilities Assessment Matrix,

	VULNERABILITIES	CAPACITIES
Physical/Material	<ul style="list-style-type: none"> <li>What are the ways the community may be physically vulnerable (e.g., land, climate, environment, people's health, infrastructure, food, housing, physical technologies)?</li> <li>What adjustments can be made to strengthen existing structures?</li> <li>Are building codes adequate? Are codes enforced?</li> </ul>	<ul style="list-style-type: none"> <li>What are the existing material resources?</li> <li>Are training programmes available to teach builders about disaster resistant construction?</li> </ul>
Socio-Cultural	<ul style="list-style-type: none"> <li>What measures are being taken to develop community awareness and capacities to reduce disaster impact?</li> <li>What social structures in the community are vulnerable?</li> <li>How can social activities be improved?</li> <li>How can conflicts/division within the society (racial, class, religious, ethnic) be reduced?</li> </ul>	<ul style="list-style-type: none"> <li>How is the community involved in planning and preparing for protection against disasters?</li> <li>What support is available to communities to upgrade training and disaster-related education?</li> <li>What social structures in the community exist?</li> <li>How are social activities organized?</li> </ul>
Organizational/Institutional	<ul style="list-style-type: none"> <li>What formal and informal systems are vulnerable?</li> <li>How can decision-making be improved?</li> <li>How can leadership be improved?</li> </ul>	<ul style="list-style-type: none"> <li>What management and institutional measures are in place to assure long-term risk reduction?</li> <li>What efforts are underway to educate, train, and develop professional expertise to support institutionalization of disaster mitigation?</li> <li>What is the role of the community in the planning process?</li> <li>Describe the current systems for coordination at the local level including coordination between and among GOs and between GOs and NGOs.</li> <li>Describe coordination from the central to the local level</li> <li>What kinds of training are provided for GO and NGO personnel in the field?</li> </ul>

	VULNERABILITIES	CAPACITIES
Economic	<ul style="list-style-type: none"> <li>How can economic activities be improved?</li> <li>What measures are being taken to diversify economic activities to reduce vulnerability?</li> <li>What are the vulnerable livelihood in the area?</li> </ul>	<ul style="list-style-type: none"> <li>How are economic activities organized?</li> <li>What resources are in place to reduce future economic losses?</li> <li>What measures are being taken to diversify economic activities to reduce vulnerability?</li> <li>What measures are in place to assure transport and economic linkages?</li> <li>What measures are in place to assure a stable labor market?</li> </ul>
Attitudinal/Motivational	<ul style="list-style-type: none"> <li>How does the community view itself and its ability to deal with the physical, social and political environment?</li> <li>Do the people feel they have the ability to shape lives?</li> <li>Do people feel victimized?</li> </ul>	<ul style="list-style-type: none"> <li>Do people share a sense of purpose, a feeling of empowerment, an awareness that they are agents of change for improving the community?</li> <li>Are the people open to change?</li> </ul>



**note to the facilitator:** *You may try to surface common outputs and later ask the participants to agree on what to do with the needs and gaps.*

### **People live in conditions of vulnerability because of the following:**

- Ignorance of vulnerabilities or limited perceptions of risk
- Limited interests, authority and will to change it
- Poor, ineffectual leadership to improve conditions
- Few options or none at all

However, vulnerability of a community can be lessened by identifying capacities that can strengthen the coping mechanisms of the community against disasters.

## SOME HELPFUL COMPUTATIONS



**note to the facilitator:** Re-fer to Annexes 3-6 for a sample of the matrices mentioned below.

### for hazard assessment

1. Identify all possible hazards that would likely occur/affect your area.
2. With the matrix provided, rate these hazards according to frequency, strength and its over-all rank with these guided scales:

Frequency	Certain - 3	May Occur - 2	Not Likely - 1
Strength	Very - 3	Moderate - 2	Not Very - 1
Over-all Rank	High - 3	Moderate - 2	Low - 1

3. Get the rating per hazard by computing their value as shown below:

$$\text{Rating = } \frac{\text{Frequency} + \text{Strength} + \text{Over-all Rank}}{3}$$

(Hazard)

4. With the result of the rating, rank the hazards from the highest to the lowest point where the hazard with the highest point ranks 1, second - 2, etc.

### or vulnerability assessment

As shown in your hazard assessment, identify the top five (this may depend on the option of the facilitator) and arrange them according to rank at the hazard column.



2. Answer the questions reflected on the succeeding column based on the following scale:

High - 3                      Medium - 2                      Low - 1

3. Get the degree of vulnerability by adding the sum of the five (5) columns and divide it by 5. Rank them from highest to lowest

$$V \text{ (of Hazard)} = \frac{V1 + V2 + V3 + V4 + V5}{5}$$

### For capacity assessment

1. As shown in the hazard assessment and in your vulnerability assessment, you have identified the top five hazards that would likely affect your area. List them down in the hazard column found in this matrix.
2. Assess the level of capacity by answering the questions found in the succeeding column with the following scale.

Poor - 3                      Modest - 2                      Good - 1

3. Get the level of capacity per hazard by adding the sum of the columns then divide it by 10.

$$C \text{ (per Hazard)} = \frac{C1 + C2 + C3 + C4 + C5 + C6 + C7 + C8 + C9 + C10}{10}$$

With the result of the hazard, vulnerability and capacity assessment, compute the areas' level of risk based on this formula:

$$\text{Risk (R)} = \frac{\text{Hazard} + \text{Vulnerability} + \text{Capacity}}{3}$$

Rank them from highest to lowest.



#### note to the facilitator:

The hazard with the highest point is the hazard that would likely hit your area and cause disaster.

