# Hazard, Vulnerability and Capacity Assessment

## Community Based Disaster Preparedness

Danish Red Cross

EUROPEAN COMMISSION
Humanitarian Aid

# Contents

## Session 1:

# Participatory Risk Assessment (PRA)

## 1. What is PRA?

The term PRA is an acronym for Participatory Rural Appraisal and refers to methods and tools of data and information gathering first used in the context of sustainable development during the early 1970's.

During this time, development practitioners used various participatory methods and approaches (including PRA) because of their dissatisfaction with the quality of results obtained from the use of traditional data gathering methods which was primarily done thru the use of questionnaire surveys.

The difference between PRA and conventional methods of data gathering is that in PRA, gathering of data and information about a community and its people is done through the active participation by the community members themselves.

More importantly, the use of PRA has been found to be a very effective process where the community is made aware of and learns about the larger and broader issues that affect their individual, family and community development.

In the context of the CBDP program, PRA can appropriately be taken to mean - Participatory Risk Assessment - because the community gathers data and information so that it is able to better understand, plan for and mitigate the identified disaster risks.

More specifically, under Participatory Risk Assessment, data and information on the following is collected:

- The nature and extent of the hazards and threats faced by the community
- The existence and degree of vulnerability of the elements at risk
- The existing coping capacities of households and resources available in the community

## 2. Why use PRA Methods?

There are two very important reasons why we should use PRA tools and methods in the CBDP program. The first is because the proper use of PRA methods allows for the significant participation community stakeholders and leads towards getting a more accurate measurement of the sentiments, concerns and needs of the people in the community.

This is very important because, as we discussed in earlier sessions, one of the most critical, if not the most important, factor for a CBDP program to succeed in the long-term is the participation by all sectors of the community.

PRA methods, therefore, help to ensure a more sustained CBDP effort by the community.

The second reason is that when community stakeholders go through the process of using PRA tools and methodologies, their awareness and knowledge on disaster management-related matters is already being significantly increased.

As community members gather data and information, they absorb this information and begin to get a better understanding of the situation and conditions in the community. Hence, the use of PRA tools and methodologies are not merely participatory data gathering tools but are also very effective learning tools for community members.

After data gathered through PRA tools are consolidated and presented to the community, its members are in a better position to understand the situation, identify problems and needs of the community and the potential courses of action that can respond to the identified needs.

This form of education and awareness is seen to lead to better understanding and comprehension on the part of participants because they go through a step by step learning process instead of just being provided the information or being lectured on disaster reduction.


## 3. When and How do we use PRA?

As discussed and explained in the previous session on the CBDP program, data and information gathering on a community is to commence immediately, and is not a one time activity but is conducted continuously over the long-term.

As to exactly when each of the PRA tools or methods should be done, will depend on the situation or condition in the community and the nature of the data and information that is being sought. In addition, we must also consider the learning process of the community as well as time constraints.

The following data gathering tools, including most of the more appropriate PRA methods and tools, can be used and, at times, modified to suit the community's data gathering objectives.

### 1. Review of secondary data

What:   Gathering and collection of existing data and information to get an overview of the situation and conditions in a community.

These include data and information from existing published and unpublished sources, maps, aerial photos, government census statistics and reports, research studies, data from government agencies, legislation and government policies, reports of organizations with programs in the community, scientific/technical research about hazards and threats, etc…

Why:   To get an overview of the situation and context; to save time and not repeat gathering information that is already there; to learn from experiences in other areas

Who:     Team; community members can validate information

How:     Visit government, IO & NGO offices, universities, libraries, research centers, collect newspaper clippings, maps, etc…

## 2. Direct Observation

What:    Systematically observing objects, people in the community and their relationships, communal events, community participation processes, socio-cultural practices, and recording these observations to get a better picture of the dynamics in a community.

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

Who:     Everybody

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

## 3. Semi-structured Interviews

What:    Semi-structured interviews are the conduct of discussions in an informal and conversational way using a flexible guide of questions. There are different types of semi-structured interviews with each type having its own specific purpose:

Individual interview: to obtain representative, personal information, views and perceptions. In the course of using this instrument differences and conflicts within community could be revealed.

Key-informant interview: to obtain special knowledge about a particular topic (e.g., you interview a nurse if you want to know more about epidemics, a farmer about cropping practices, a village leader about procedures and policies, etc…).

Group interview: to obtain community level information, to have access to a large body of knowledge, community perception of problems, opportunities and reaction to plans although this is not very useful for discussing very sensitive issues.

Focus group discussion: to discuss specific topics in detail with a small group of persons who are knowledgeable or who are interested in the topic, problem or project. People can also be grouped according to gender, age, owners of resources to get specific group perspectives.

Why:     To get information (general and specific); to analyze problems, vulnerabilities, capacities and perceptions; to discuss plans, etc.

Who:     Team of 2 - 4 people responsible for conducting and collating information from key informants, random sampling of villagers, specific groups or sectors categorized according to livelihood sources (farmers, fishermen, traders, etc…), gender (male and female), age group (children, youth, adults)

How:

- (1) Prepare key issues in advance. Answer the question: What information do we need to know?
- (2) Select one person to lead the interview
- (3) Ask questions in an open-ended way (what, why, who, when, how, how do you mean, anything else?)
- (4) Ask for concrete information and examples
- (5) Try to involve different people (if present)
- (6) Pay attention to group dynamics
- (7) Ask new (lines of) questions, arising from answers given
- (8) Make notes in a discreet way so as not to disturb the flow of the discussion

## 4.      Historical Profile (Timeline)

| Flood | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Year | 1996 | 1998 | 1999 | 2000 | 2001 | 2002 |
| Water Level | 23,02m | 17,86m | 20,95m | 22,64m | 22,91m | 20,99m |
| Impact | Rice 20 Ha | No | No | Rice 15 Ha | Rice 10 Ha | No |
| Disaster Management by Community | No | No | No | | | |
| Disaster Management by NGOs or Institute | | | | SGUK Health for Women CRC | NCDM CRC | NCDM CRC |
| Communication, Development that community have ever done | | | | | | |
| Development that NGOs, Humanitarian People supported | | | | | | School |

What:   Gathering information about what happened in the past in order to understand the present situation

Why:

1. To get insight into past hazards about changes in the nature, intensity and behavior of these hazards
2. Understand present situation in community (causal link between hazards   and vulnerabilities)
3. To make people aware of changes

Who:   Community leaders, members of community specially the elders

How:

1. Plan a group discussion and ensure that key-informants (e.g. elders, leaders, teachers, etc…) are present. Invite as many people as possible, especially the young ones, for them to hear the history of their community
2. Ask people if they can recall major events in the community, such as:

- Major hazards and their effects
- Changes in land use (crops, forest cover, etc.)
- Changes in land tenure
- Changes in food security and nutrition
- Changes in administration and organization
- Major political events

3. The facilitator can write the stories down on a blackboard or large white paper in chronological order

Variations:

<u>Life histories</u> - Another method is to ask individual informants to give a detailed account of their life or, regarding a specific issue, from a historical perspective

<u>History tracing</u> - ask individuals or group to begin with current experiences and to go back in time. The purpose is to find reasons or causes which contributed to the occurrence of a certain experience.

## 5. Mapping



What: Making a spatial overview of the area's main features and landmarks; areas that are affected by hazards; households and community facilities vulnerable to particular hazards; location of resources which can be mobilized for preparedness, mitigation and emergency response.

Why: Maps facilitate communication & stimulate discussions on important issues in the community. Maps can be drawn for many themes or topics:

- Spatial arrangement of houses, fields, roads, rivers, and other land uses
- Hazard map
- Vulnerability maps (of elements at risk)
- Resource map showing local capacities (safe areas, etc.)
- Mobility map

Who: Community leaders and members, head of local government agencies

How: (1) Decide what kind of map should be drawn
(2) Find men and women who know the area and are willing to share their experiences
(3) Choose a suitable place (ground, floor or paper) and medium (e.g. sticks, stones, seeds, pencils) for the map
(4) Help the people get started but let them draw the map by themselves

## 6.    Transect Walk

| Location | តំបន់ទំនាបមធ្យម | តំបន់ទំនាបទាប | តំបន់ប្រភពទឹក |
|---|---|---|---|
| Type of soil | កន្លែង និង ខ្សាច់ | កន្លែង | ឆ្មាប់ |
| Hazard | | | |
| Vulnerability | | | |
| Capacity | | | |

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

Why:
- (1) Visualizes interactions between physical environment and human activities over space and time.
- (2) Identifies danger zones, evacuation sites, local resources used during emergency periods, land use zones, etc.
- (3) Seeks problems and opportunities

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

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

## 7.  Seasonal Calendar

**Sample Seasonal Calendar**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Hazard Assessment** | | | | | | | | | | | | |
| Flood | | | | | | | ⬆ | ⬆ | ⬆ | | | |
| Drought | | ☀ | ☀ | ☀ | | | | | | | | |
| Storm | | | | ≈ | ≈ | ≈ | | | | | | |
| Pest damage | | | | | | | | | | ● | ⦿ | ⦿⦿ |
| Erosion Bank | | | | | | | ◺ | ◺ | ◺ | | | |
| **Vulnerability Assessment** | | | | | | | | | | | | |
| *Deliria* | | | | | | | | | | | | |
| *Malaria* | | | | | | | | | | | | |
| Diseases | | | | | | ⚡ | ⚡ | ⚡ | | | | |
| Hanger (lack of Food) | | | | | | | | | ⬍ | ⬍ | ⬍ | |
| Harvesting Time | | | | | | | ▬ | | ▬ | ▬ | | |
| **Capacity Assessment** | | | | | | | | | | | | |
| Availability of Men for free time | | | ⬆ | ⬆ | ⬆ | | | | | | | |
| Availability of women for free time | | | | | & | && | & | | | | | |
| Social Festival | | | | | | | | | | ☺ | ☺ | ☺ |
| Busy Agricultural period | | | | | | | ; | ;;;; | ;; | | | |
| Fishing | | | | | | | | | ξξ | ξξξξ | ξξξ | ξξ |
| When they both available. | | | | | | | < | < | < | | | |
| Most Incoming | | | ⦿ | | | | | ⦿⦿ | ⦿⦿⦿ | ⦿⦿ | | |

**What:** Making a calendar showing when the community is exposed to hazards, different socio-cultural events of men, women and children, economic activities throughout the annual cycle

**Why:**
(1) Identify periods of stress, hazards, diseases, hunger, debt, vulnerability, etc.
(2) Identify what people do in these periods, how they diversify sources of livelihood, when do they have savings, when do

they have time for community activities, what are their coping strategies

(3) Identify gender specific division of work, in times of disasters and in normal times

Who: Team and community members - have separate sessions for men and women, and for groups having different sources of livelihood

How:

(1) Use 'blackboard' or large white paper. Mark off the months of the year on the horizontal axis. Ask people to list sources of livelihood, events, conditions, etc., and arrange these along the vertical axis.

(2) Ask people to enumerate all the work they do (e.g. ploughing, planting, weeding, etc.) for each source of livelihood or income by marking months and duration, adding gender and age

(3) Facilitate analysis by linking the different aspects of the calendar - how do disasters affect sources of livelihood? When is workload heaviest? Ask for seasonal food intake; period of food shortage, out-migration, etc.

(4) You can continue the discussion on coping strategies, change in gender roles and responsibilities during times of disasters, or other issues you think are relevant

### 8. Resource Mapping



What: Making a map showing access and control over local resources and showing gender differences in access to and control over these resources

Why:
- (1) Identify available local capacities and resources people rely on in times of disasters
- (2) Identify which resources are easily affected by disasters
- (3) Identify resources accessible and owned by community, households or individuals
- (4) Highlight gender differences (and balances) in individual, household and community capacities and resources

Who: Team and selected individual households belonging to different income groups (with consideration to gender balance)

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

### 9. Stakeholder

What: Making a diagram that shows key organizations, groups and individuals in a community, nature of relationship and level of importance

Why:

(1) Identify organizations (local & outside) - their role, importance and perceptions that people have about them

(2) Identify individuals, groups & organizations that play a role in disaster response and can support the community

Who: Community leaders and members, members of different organizations present in the community

How:

(1) Become familiar in advance with the names of the organizations

(2) Ask people to determine criteria for the importance of an organization and to rank them according to these criteria

(3) Ask people to what extent organizations are linked to each other; note the kind of relationship

(4) Draw circles to represent each organization or group; size of circle indicates importance

(5) Continue focus group discussion on history of organizations; activities undertaken in community; how well do they function?; how good is coordination?; which organizations, groups, individuals are important in times of disasters, and community level decision-making mechanisms?, etc.



**Stakeholder**
**Village:  Prek Ta Am**

SGUK — Government — CRC — Authority, village Commune — Police — Health for Women and Childhood — Prek Ta Am — RCVs — Community Team use water — LESO Volunteer — SILA Program — Feedback — ADHOC — PAD or Spean Health — LEXSO
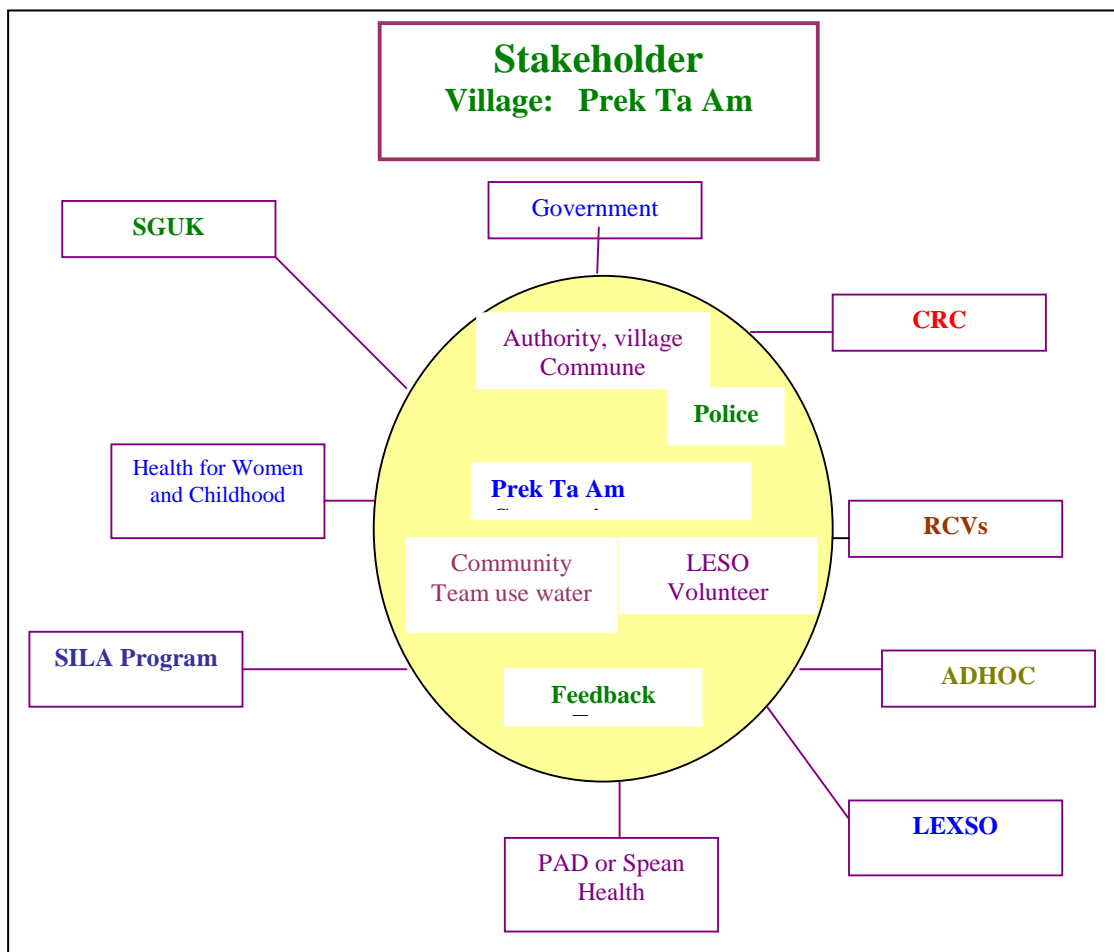
| No | Organization Name | Program | NGOs' Representative |
|----|-------------------|---------|----------------------|
|    |                   |         |                      |

| | | | |
|---|---|---|---|
| 1 | Cambodian Red Cross | - *Dissemination on Red Cross Movement ( 7 fundamental principle, IHL, Fundraising.*<br>- *Provided water tank and emergency relief to the people victims.*<br>- *Implement the CBDP or CBDM*<br>- *Provide the CBDP training course to RCVs and CCDMCs.*<br>- *Implement prevention, mitigation and Risk reduction measures though the Small Scale infrastructure in Community at risk.*<br>- *Provided the first aid activities to the villager.* | |
| 2 | LEXSO | - *Established Village Volunteer Team to disseminate the HIV, Malaria and Dengue fewer* | |
| 3 | SGUK | - *Choice the targets and provide the Crops, Rice Seeds, animals feeding and pumping machine.* | |
| 4 | Health Organization for Women and Childhood | - *Credit Program* | |
| 5 | Spean Health Organization PFD | - *Work with Health Department to chose the team leader, disseminate of Women and Childhood Health* | |
| 6 | SILA | -*To choice the team to prepare the Village Action Plan* | |
| 7 | ADHOC | - *To work for dissemination on Human Rights and Govern Law* | |

## 10. Livelihood Analysis



What: Combination of individual household interviews and making diagrams presenting different income and/or food sources

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

Who: Team can split up in smaller teams to conduct individual

household interviews simultaneously

How: (1) Review hazard map, seasonal calendar, and resource map, and determine criteria to select households belonging to different socio-economic groups (sample should not be at random)

(2) Decide how many and which households in particular you will interview

(3) Conduct the interview (1 hour); introduce yourself and reason for interview

(4) Start with getting to know household members, composition, age, gender, followed by questions about livelihood and coping strategies

(5) Draw block or pie diagrams to facilitate discussion on livelihood sources

(6) Continue discussion on how the household copes in times of stress (material / social / motivational)

## 11. **Problem Tree**
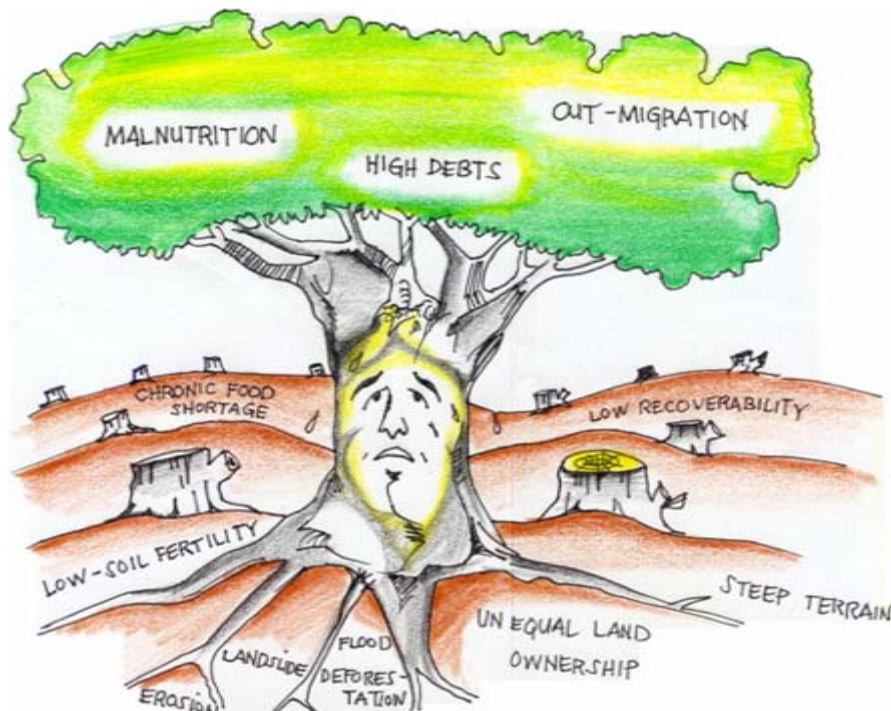


What: Flow diagram showing relations between problems, effectsandrot causes

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

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

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

How:

(1) From other tools and interviews - various concerns and problems are identified

(2) Give all people small pieces of card and ask them to write one major problem on each card, and to put these on the wall (people can draw problems if they can't read or write)

(3) Ask two or three volunteers to group the problems according to similarity or interrelationship

(4) Now the making of the 'problem tree' can start: the trunk represents the problems; the roots are the causes; and the leaves are the effects

(5) Ask why issues on the cards are problems. Ask 'but why?' after each explanation to arrive at the root causes

(6) To arrive at the effects, ask for the consequences of each problem

## 12. Ranking and Scoring.

| s/criteria | Flood | Drought | Pest damage | Storm |
|---|---|---|---|---|
| **Life of human** | | | | |
| Death of people | | | | |
| Sickness/injure | | | | |
| **Life of livestock** | | | | |
| Death of livestock | | | | |
| Sickness/injure | | | | |
| **Property** | | | | |
| Damage household property | | | | |
| **Livelihood** | | | | |
| Lost of economic activities/ opportunity | | | | |
| | | | | |
| **Critical facilities** | | | | |
| Damage to school, health center, road, water facilities, | | | | |
| **Total score** | | | | |

What: A tool for exploring people's perceptions, for eliciting their criteria for measuring and prioritizing disaster risks and for understanding their choices in prioritizing disaster risks to be addressed and the risk reduction measures to be adopted

This tool can be applied for various purposes, such as disaster risk, specific problems, interventions, etc... It is important to adopt a method that can be easily understood by community members. The use of leafs, sticks, seeds, for voting or ground

surface in lieu of a flipchart, for example, may help facilitate this process

Why: Identify people's perception of risk and the priority of the community according to the criteria they have set

When: Part of the situational analysis and project planning

Who: Key persons in community (e.g. elder people, teachers, health workers, monks); local authorities; people in community - children, women and men

How: (1) Meet with key persons or people in community
(2) Present specific objectives of the process
(3) Write the related problems on the board or the flipchart
(4) Agree on criteria on that will form basis for choosing or deciding
(5) Invite participants to sort or rank the existing problems according to the agreed criteria
(5) Assign symbols (size of stones, length of sticks, etc.) to identify priorities.
(6) Summarize the outputs.

**Sample of Sorting and Ranking**

| Problems or Hazard | High | Medium | Low |
|---|---|---|---|
| Lake of clean water during flood | | ✓ | |
| Boats for evacuation | ✓ | | |
| Safe camping on safe area | | ✓ | |
| Medical supply during flood | | | ✓ |
| Public Health care on the safe area | | ✓ | |

# Hazard, Vulnerability, Capacity Assessment

## 1. What is HVCA?

The Hazard, Vulnerability, and Capacity Assessment, or HVCA, refers to the use of PRA methods and tools in gathering information about past patterns of hazards, present threats and vulnerabilities at the community level and of the available resources a community uses or can use to cope with the adverse effects of a disaster event.

It is important to bear in mind that the conduct of HVCA is not the desired end goal. Rather, an HVCA is conducted because of the need to obtain a disaster risk profile of the community and based on this, formulate and implement a disaster preparedness and mitigation plan for the community.

## 2. Components of HVCA

HVCA involves the following components:
Hazard Assessment - community stakeholders identify and analyze the nature and behavior of hazards or threats that are likely to hit the community. Through hazard assessment, the likelihood or probability of the occurrence and the magnitude, frequency, scope and duration of various hazards is determined.

Vulnerability Assessment - community stakeholders identify the "elements at risk" (i.e., people, structures, livelihoods, etc…) per hazard type and analyze the reasons why these elements are at risk.

Capacity Assessment – community stakeholders identify the resources they rely on in times of crisis to reduce the damaging effects of hazards and to secure the sustainability of their livelihood

## 3. Steps in Conducting HVCA

1. Provide an orientation on the purpose of HVCA and its contents to community stakeholders
2. Explain the content and process of hazard assessment.
3. Explain the content and process of vulnerability assessment.
4. Explain the content and process of capacity assessment.
5. Analyze all the data and information gathered

In general, the more relevant PRA tools and techniques and their suggested uses in CBDP are as follows:

| AREA OF INQUIRY | POSSIBLE DATA GATHERING TOOLS |
| --- | --- |
| Hazards | Mapping<br>Historical Profile<br>Key Informant Interview<br>Transect Walk<br>Seasonal Calendar |

| Vulnerability Assessment | Hazard Map (of elements at risk)<br>Transect Walk<br>Seasonal Calendar<br>Venn Diagram<br>Wealth ranking<br>Livelihood Analysis<br>Problem Tree<br>Semi-structured Interviews |
|---|---|
| Capacities Assessment | All tools for vulnerability assessment, plus<br>Gendered resource mapping<br>Gendered group interviews and Focus Group Discussions |
| Community Risk Assessment | Ranking and Scoring |

## Points to consider in conducting HVCA

- The tools listed for gathering required information are merely suggestions or recommendations. We are free to use whatever tool or method we think is most appropriate for the community. We just have to remember that the methods and tools for participatory data gathering and analysis have to be matched with specific information needs.
- Community information needs will also to determine the proper sequence and combination of tools to use. Usually, it is helpful to obtain a general picture of the community (i.e., community profile) first, before more details are gathered to focus on hazards, threats, vulnerabilities, resources and capacities.
- Very often, you will notice that there will gathering of the same data and information using different methods and tools. This is okay and you should not consider this as a waste of time and effort. Use this overlap of information generated as a way of cross-checking and validating the information you obtain.
- It is important to point out that the same PRA tool or method can be used in various ways. For example, the Seasonal Calendar can be used to gather information on the cycle of when hazards occur, it can also be used to gain understanding of the livelihood cycle of people, or it can be used in combination of all of the above.
- As you gain experience in using the tools, you will also gain the confidence of modifying or adjusting them in order to obtain additional or specific sector or group (e.g. livelihood, resource, gender, etc…) information. Your decision to use or modify a tool is dictated by your need for information, the type and quantity of that information.
- Remember that the quality of our plans and projects will only be as good as the quality of the data gathering effort. In other words, the community cannot come up with a good analysis of the situation and conditions in the community if the data and information gathered on the hazards, vulnerabilities and capacities are incomplete and/or inaccurate.
- To facilitate discussion and analysis of community needs, problems, issues and concerns relating to disaster risk reduction, we must be able to effectively summarize the data and information and present it before the community in such a way that it can be easily understood.

# Hazard Assessment

## 1. What is Hazard Assessment?

Disasters result from the impact of a hazard on a vulnerable group of people or in a community. From the previous sessions, we know that before we can plan for reducing the adverse effects of a disaster we must first understand and assess the hazards that can and usually occurs in a community.

The purpose of a hazard assessment is to specify the nature and behavior of the potential hazards and threats that the people in the community face. Hazard assessment is concerned with the properties of the hazards or threats. The hazard's features need to be considered for selecting effective prevention and mitigation measures.

## 2. How do we do Hazard Assessment?

We have discussed the data gathering methods and tools that can be used to gather information about the hazards that affect the community in the previous session. To repeat, some of the more common tools used are the following:

**Secondary data -** subject to community validation, existing studies, researches and maps can already initiate and form the basis of the data collection process

**Hazard map** – helps community members to get a bigger and more complete picture of the community they live in and in locating the existing and probable areas that can be covered by a hazard's impact

**Key Informant Interview** – some members of the community, especially the elders and long time residents will logically have a better recall of the community's history of hazards and disasters

**Transect Walk –** can help in adding more detail to the hazard mapping process and helps validate information gathered thru other methods.

**Historical profile or time line -** can make community members understand how hazards have changed over time; which hazards have happened in the past; or the start of particular hazard occurrence.

**Seasonal calendar –** helps to visualize the time, frequency and duration of common hazards

The data and information gathered from using some or all these tools should be summarized and presented in such a way that it can be easily understood by the stakeholders in a community. There are a variety of ways in which this can be done. One of the ways hazard data and information can be summarized is through the use of a Hazard Assessment Matrix, which is illustrated as follows:

## Example of a Hazard Assessment Matrix

| Hazard type | Flood |
|---|---|
| Force | Water, typhoon, high tide,<br>**Monsoon rains.** |
| Warning signs | News on TV, radio and in the newspapers<br>When it rains more than two hours<br>**Rhythm of high tide** |
| Fore-warning | **2 hours till 2 days** |
| Speed of onset | **Relatively fast** |
| Frequency | Every high tide<br>When typhoons pass (about 6 times a year)<br>During rainy season<br>**Every time it rains** |
| When | From June till October |
| Duration | 2 days to 3 months |

**Hazard Type**: Refers to the type of hazard that can affect the community.

**Force**: Wind; water (rain, flood, overflow, run-off, flash flood, tidal wave, storm surge, epidemic); land (slides, deposits by river, lahars, mudflow); fire (forest fire, settlement fire); seismic (earthquake, tsunami); conflicts (civil war, insurgency

**Warning signs**: Scientific and indigenous indicators that a hazard is likely to happen. These can be announcements through the radio, the number of hours of continuous rain, etc.

**Forewarning**: Refers to the time between warning and impact.

**Speed of onset**: Refers to the rapidity of arrival and impact. We can distinguish between hazards that occur without almost any warning (earthquake) and hazards that can be predicted three to four days in advance (typhoon) to very slow-onset hazards (drought and famine).rapidity of arrival and impact.

**Frequency**: Does hazard occur seasonally, annually, once every 10 years, etc.

**When**: Does hazard occur at a particular time of the year (wet or dry season; in November to December?)

**Duration**: For how long is the impact of the hazard usually felt (earthquake and aftershocks; days, weeks, months that area is flooded)

While the Hazard Assessment Matrix shown above summarizes the hazard information that was gathered, this obviously does not and cannot contain all the data and information gathered in the process of using the PRA tools. Whenever more information is required or requested for a more detailed discussion, we should always go back to the results obtained in the use of specific PRA methods and tools and present that information.

## Points to Consider while doing a Hazard Assessment

- Some hazards can cause secondary hazards as well, like earthquakes cause landslides; drought might cause epidemics and pest infestation; floods might carry pollution and cause epidemics; etc...

- Hazard assessment is based on past hazard patterns, but we should not forget to look at possible disaster threats that are new for the community and are likely to happen. There are an increasing number of threats due to changes in natural, economic, social and political trends. Threats unnoticed before, simply because nothing was exposed to them, can easily turn into major problems that no one had predicted (civil and ethnic conflicts, avian flu, AIDS, etc…).

- We should also consider changes in nature and behavior of common hazards especially those that may occur as a result of climate change. Some hazards, like floods, seem to intensify.

- As part of the hazard assessment we should consult secondary (e.g., scientific) data and indigenous knowledge to better understand features and effects of specific disasters. Scientific data, however, should first be translated into practical information for community members to understand.

- Be aware of local threats: the number of small scale, localized hazards which do not hit the headlines or appear in any statistics, is increasing. Collectively, these can present a more serious problem than any catastrophic event. For example, in densely populated shanty towns fires, floods, landslides, and epidemics are increasingly common events.

## Session 4:

# Vulnerability Assessment

## 1. What is Vulnerability Assessment?

Vulnerability Assessment is the process of estimating the susceptibility of the "elements at risk" (i.e., people, household and community facilities and services, livelihood and economic activities, the natural environment) to a given hazard and analyzing the causes and root causes which place these elements at risk.

The assessment takes into account the physical, geographical, economic, social, political and psychological factors, which cause some people to be particularly exposed to the dangers of a given hazard while others are relatively protected.

In previous sessions, we have already provided the framework for which vulnerabilities can be better studied and discussed. This involves classifying vulnerabilities according to the conditions which bring about these vulnerabilities.
To repeat, vulnerabilities can be grouped into the following:

Physical and Material Vulnerability

- Disaster-prone location of community, houses, farmlands, infrastructure, basic services, etc.
- Insecure and risky sources of livelihood
- Lack of access and control over means of production (land, farm inputs,
- animals, capital, etc.)
- Dependence on money lenders etc.
- Inadequate economic fall-back mechanisms
- Occurrence of acute or chronic food shortage
- Lack of adequate skills and educational background
- Lack of basic services: education, health, safe drinking water, shelter, sanitation, roads, electricity, communication, etc.
- Exposure to violence (domestic, community conflicts, or war)
- High mortality rates, malnutrition, occurrence of diseases, insufficient caring capacity
- Overexploited natural resources

Social / Organizational Vulnerability

- Weak family or kinship structures
- Lack of leadership, initiative, organizational structures to solve problems or conflicts
- Ineffective decision-making, people/groups are left out, etc.
- Unequal participation in community affairs
- Rumors, divisions & conflicts: ethnicity, social class, religion, politics etc.
- Injustice / unjust practices, lack of access to political processes

- Absence or weak community organizations (formal and informal; governmental and indigenous
- No or neglected relationship with government & administrative structures
- Isolated from outside world

Motivational / Attitudinal

- Negative attitude towards change
- Passivity, fatalism, hopelessness, dep
- Lack of initiative, no 'fighting spirit"
- Lack of unity, cooperation, solidarity
- Negative beliefs / ideologies
- Unawareness about hazards and consequences
- Dependence on external support / dole-out mentality

A more detailed and focused assessment, should this be desired, can be obtained by further classifying the above mentioned three basic categories of vulnerabilities. Physical or material vulnerability, for example, can further be classified into:

Economic vulnerability – unemployment, lack of financing for farmers, lack of other livelihood opportunities and markets for non-traditional products and services. Determining type of livelihoods easily affected by disasters is a key issue to be considered in determining the magnitude of economic vulnerability.

Environmental vulnerability – single cropping (as in when farmers produce only one crop), dependence on the use of agrochemicals and pesticides to increase agricultural production, unsustainable use of forestry and fishery resources and improper waste and garbage disposal

Social vulnerability can also be further classified into:

Political vulnerability – limited capacity for management, negotiation, consultation and participation by various social sectors (women, men, children, ethnic groups, etc…) in addition to the absence of national, municipal and community development plans.

Institutional vulnerability – often local governments don't have the capacity to enforce laws that protect natural resources and the environment.

Organizational vulnerability – lack of leadership; political, ethnic, gender and racial intolerance; and the absence of true and effective organizational structures in civil society

## 2. **How do we do Assess Vulnerability?**

To collect the vulnerability information required by the framework presented above, the community can use any or all of the following PRA data gathering methods and tools:

**Mapping** – can be made to locate the "elements at risk", thereby helping community members in visualizing these. This can also be

combined with hazard maps to give a more detailed overview of the community.

**Transect walk** – can help to get a better understanding of the community map and affords opportunity to ask more detailed questions on physical / material vulnerability

**Seasonal calendar** – can help give insight on when and what types of vulnerability (e.g., stress, diseases, hunger, debt, etc...) occur during a particular time or period of the year.

**Livelihood analysis** – can give a picture of the varying effects of particular hazards and disasters on the different sources of livelihood of households and groups in the community

**Semi-structured Interviews** – Focus group discussions and group interviews can reveal the views and attitudes of community members towards the occurrence of disasters, disaster management and vulnerability

**Venn diagram** – can help show the state of leadership and coordination among community stakeholders (i.e., organizations, local officials, government agencies, etc…) and provide a good starting point for community discussion on roles and responsibilities

**Community drama** – can help people to express what happens during disasters and why. It may also give the community the opportunity to express the priority vulnerabilities that need to be addressed.

**Problem Tree and Ranking** – can more clearly show the linkages and causal relationship of vulnerabilities and hazards and gives the community opportunity to express what they feel are the priority vulnerabilities that should be addressed.

After information on vulnerability and the "elements at risk" has been gathered, this will need to be collated and presented to the community and to the people that will facilitate and lead in the planning of community disaster risk reduction measures. This vulnerability information can be summarized and presented by using matrixes and tables such as the following:

## HAZARD VULNERABILITY IDENTIFICATION MATRIX

| HAZARD | ELEMENTS AT RISK | WHY ELEMENT IS AT RISK |
|---|---|---|
| Flooding | | |
| Drought | | |
| Typhoon | | |
| Others | | |

The vulnerability matrix shown above can be appropriately used to emphasize and lead a community discussion on the causes of vulnerability. This obviously does not, and cannot, contain all the data and information gathered in the process of using the PRA tools.

Whenever more information is required or requested for a more detailed discussion, we should always go back to the results obtained in the use of specific PRA methods and tools and present that information.

There are a number of other presentation formats you can use. If identification and detailed discussion of elements at risk is the desired focus, for example, using the following format may be more appropriate:

**Hazard** : Flood

| Areas most likely affected | Population at risk | Lifelines, Services at risk | Sources of livelihood most likely affected | Infrastructure most likely affected | Structures most likely affected |
|---|---|---|---|---|---|
| **Coastal areas** | 30 families living along the coast and 10 families living along the river | Sea and river routes, etc… | Fishing, river trading, etc… | Community bridge over the river, wharf, etc… | Houses, etc… |
| **Agricultural areas** | | | | | |

Columns may be added to this table to include other types of political, economic, social, organizational, etc… vulnerabilities, if this is desired. Vulnerabilities data can also be presented together with the information to be collected to assess capacities, in which case the Vulnerabilities and Capacities Matrix below can also be used.

**SAMPLE**
# Capacities and Vulnerabilities Analysis Matrix

| | Vulnerabilities | Capacities |
|---|---|---|
| **PHYSICAL / MATERIAL**<br>What productive resources, skills and hazards exist? | <ul><li>Hazard-prone location of community, houses, farmlands, infrastructure, basic services, etc.</li><li>Insecure sources of livelihood</li><li>Risky sources of livelihood</li><li>Lack of access and control over production means (land, farm inputs, animals, capital, etc.)</li><li>Dependent on moneylenders, usurers, etc.</li><li>Inadequate economic fall-back mechanisms</li><li>Occurrence of acute or chronic food shortage</li><li>Lack of adequate skills and educational background</li><li>Lack of basic services: education, health, safe drinking water, shelter, sanitation, roads, electricity, communication, etc.</li><li>High mortality rates, malnutrition, occurrence of diseases, insufficient caring capacity</li><li>Overexploited natural resources</li></ul> | <ul><li>Resources such as tools, seeds for crops, livestock, draught animals, cash, jewelry, other items which can be sold,</li><li>Food stocks</li><li>Skills and abilities</li><li>Access to and control over resources (food and clean water), social services (health, education) and facilities (sports, etc.).</li></ul> |
| **SOCIAL / ORGANIZATIONAL**<br>What are the relations and organization among people? | <ul><li>Weak family/ kinship structures</li><li>Lack of leadership, initiative, organizational structures to solve problems or conflicts</li><li>Ineffective decision-making, people/groups are left out, etc.</li><li>Unequal participation in community affairs</li><li>Rumours, divisions, conflicts: ethnic, class, religion, caste, ideology, etc.</li><li>Injustice practices, lack of access to political processes</li><li>Absence or weak community organizations (formal or informal, governmental, indigenous)</li><li>No or neglected relationship with government, administrative structures</li><li>Isolated from outside world</li></ul> | <ul><li>Communities that are close-knit and have social networks for support</li><li>Communities with good leadership and with caring local and national institutions</li><li>People who share the physical resources they have in times of need</li></ul> |
| **MOTIVATIONAL / ATTITUDINAL**<br>How does the community view its ability to create change? | <ul><li>Negative attitude towards change</li><li>Passivity, fatalism, hopelessness, dependent</li><li>Lack of initiative, no 'fighting spirit"</li><li>Lack of unity, cooperation, solidarity</li><li>Negative beliefs/ideologies</li><li>Unawareness about hazards and consequences</li><li>Dependence on external support/dole-out mentality</li></ul> | <ul><li>Coping in adverse situations</li><li>Active ways of solving problems, methods for handling stress and defence mechanisms</li><li>Positive attitude</li><li>Sense of humour even during crises</li><li>Proactive attitude</li></ul> |

# Points to Consider in doing a Vulnerability Assessment

- Some elements of the vulnerability assessment (as well as in the assessment of capacities), specifically the motivational and attitudinal factors, are very hard to assess because they cannot be quantified and, if attempted, will tend to be very subjective. Hence, some organizations will choose to ignore this.

- The general experience in doing vulnerability (and capacity) assessments is that this has a tendency to generate a large amount of data and information. Do not get bogged down with all these information. Get only as much data and information as is needed. And, how much data is needed? Always remember and go back to your data gathering objectives or why you are gathering the information instead of focusing too much on the using the tools.

- Vulnerability data and information can be generated, summarized and presented in a number of ways. You may even choose to design your own table or format of presentation consisting of tables, charts, diagrams, matrixes, etc… The type of format that you should use depends on what data and information do you want to emphasize or want the community to focus on, and how this data is going to be used by the community.

# Capacity Assessment

## 1. What is Capacity Assessment?

In the context of CBDP, **Capacities** is taken to mean the resources and degree of strength, which exist or are present in individuals, households and communities, which enable them to cope with, withstand, prepare for, prevent, mitigate, or quickly recover from a disaster.

Capacity assessment is the process of finding out how people cope in times of crisis to reduce the damaging effects of hazards. Through capacity assessment, the community's coping strategies and the resources that are available, for disaster preparedness, mitigation and prevention are identified.

By "coping mechanisms" we mean the way individuals and households manage their existing resources during times of crisis or the occurrence of disaster events. Coping includes the manner of problem solving and methods for handling stress in times of crisis. For example, people in some communities would rather eat less than be forced to sell livestock or tools because this would undermine their livelihood in the long-term.

From previous sessions, you learned that the framework used for assessing capacity is the same one used for vulnerability assessment. In other words, capacities, just like vulnerability, can be classified into the very same categories that vulnerabilities were classified into in the previous section.

> Physical / Material Capacities - People with economic and material resources can survive better. These may come in the form of cash, land, tools, food, jobs, or access to credit. The appropriateness and abundance of people's resources make a difference as to whether they can handle or control any kind of threat (resilience) and whether they can lead a satisfying and dignified life. For example, people with access to food and clean water have better health to withstand disease; those with the means can afford materials and skills to make their homes strong against cyclones.

> Social / Organizational - People have social resources that help them cope with, resist and handle the threats they may face. For example, communities that are close-knit and have social networks for support are stronger. Communities where good leadership, caring local and national institutions are in place, and where people share the physical resources they have in times of need are more likely to survive. These communities may be economically poor but can be socially strong.

> Attitudinal / Motivational - People and communities that are aware of their abilities and have confidence in themselves are better able to cope with a crisis. When they have a sense of control over events and the power to change their condition, they are less vulnerable to threats.

As in the assessment of vulnerabilities in the previous section, these three basic categories of capacities may further be classified into relevant categories. It is suggested though that the same classifications be used for both vulnerabilities and capacities.

## 2. How do we do Capacity Assessment?

To gather this information we can use any or all of the data gathering methods and tools used in a vulnerability assessment process, especially the following:

> **Mapping** – can show all resources in the community that can be used to prevent and reduce risk of disaster. Resource map can be combined with hazard and vulnerability maps to get a more comprehensive overview of the community.

> **Historical profiles and time lines** –reveals how people have historically coped with adverse events and can initiate discussions on what are the more effective and practical coping strategies

> **Seasonal calendar** - visual presentation of economic activities, coping strategies, availability of money, time, and other resources etc… can help determine when and what capacities need to be increased.

> **Gendered resource mapping (and gendered benefit analysis)** – shows differences in access to and control over resources between men and women in households and in the community.

> **Livelihood analysis** – helps in understanding how people reacted to the adverse impact caused by a disaster, the different coping strategies people use and can also provide insight into how the community, as a whole, can cope with occurrences of disaster events.

> **Institutional and social network analysis** – helps identify the social networks and organizations that assist, or can assist, individuals and families overcome the adverse effects of disaster events.

> **Semi-structured Interviews** – Focus group discussions and group interviews can reveal the views and attitudes towards the adequacy or inadequacy of their and the community's coping mechanisms.

When information on existing levels of households and community capacity has been gathered it too has to be summarized and presented to community members and stakeholders. The basic essential information we need from a capacity assessment, are the following:

- Understanding of people's previous experiences with hazards and the coping strategies which they have developed

- Analyzing which resources are available and used by the community to reduce disaster risk and who has access to and control over these resources

The simplest way to summarize and present this would be through a table similar to the one shown below. Should there be a need for more details to support a more thorough discussion, however, you should go back and present the results obtained in the use of specific PRA tools.

| HAZARD | COPING MECHANISMS | RESOURCES AVAILABLE / USED |
|---|---|---|
| Flooding | | |
| Drought | | |
| Typhoon | | |
| Others | | |

For providing a general picture of community capacities the table above should be adequate. When you would like the focus of a community or planning committee discussion to be on the level of existing resources, the format below can help in directing the discussion towards this end.

## LOCAL RESOURCES MATRIX

| SECTOR | HUMAN RESOURCES | MATERIAL RESOURCES |
|---|---|---|
| Environment | | |
| Economic | | |
| Infrastructure | | |
| Institutional | | |
| Health | | |
| Others | | |

Additional rows and columns may be added to include other sectors and other categories of resources (e.g., organizational, institutional, etc…).

As with vulnerability assessment, there are countless ways of summarizing and presenting data and information gathered. Results of capacity assessment may be combined with the vulnerability assessment as shown in the VCA Matrix shown in the previous section.

**3. Points to consider when doing a Capacities Assessment**
- As pointed out in previous session, some elements of the capacities assessment (as in the vulnerability assessment), specifically the motivational and attitudinal factors, are very hard to assess because they cannot be quantified and, if attempted, will tend to be very subjective. Hence, some organizations choose to ignore this.
- The general experience in doing capacity (and vulnerability) assessments is that this has a tendency to generate a large amount of data and information. Do not get bogged down with all these information. Get only as much data and information as is needed. And, how much data is needed? Always remember and go back to your data gathering objectives or why you are gathering the information instead of focusing too much on the using the tools.
- Capacities data and information can be generated, summarized and presented in a number of ways. You may even choose to design your own table or format of presentation consisting of tables, charts, diagrams, matrixes, etc… In the end, the type of information that should be highlighted and how this should be presented depends on why the community needs the data and how this is going to be used.