

session also serves to disseminate hazard awareness to most of the community.

### What are the steps in hazards mapping?

**RISK AND RESOURCE MAPS** could be simple hand drawn sketch maps. These could be sufficient basis for a focused discussion on how to lower the vulnerability to the local hazards. But in order to provide maps that could also aid municipal planners, the ICDPM can come out with drawn maps to scale by using GPS and compass, and plotted their findings on GIS (Geographic Information System) maps prepared from official topographic maps. However, these maps are *not* mapped with the level of accuracy of cadastral surveys.

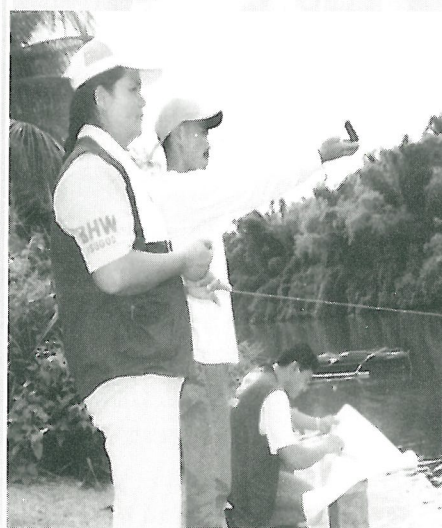
### How to recognize and identify hazardous areas

**IN ORDER TO IDENTIFY** hazard areas in the community ocular survey (hazard mapping) is conducted by a team; ICDPP staff together with the LGU development planning coordinator, a land expert representative from the Department of Environment and Natural Resources (DENR), Barangay Disaster Action Team (BDAT Volunteers) and elder members of the community who have thorough knowledge about the topography of the barangay and disaster occurrences in the past that can be assessed as basis for vulnerability. With the use of scaled base map, compass and Global Positions System (GPS) the team could plot the exact location of hazard areas and local resources. The data gathered during the survey is being consolidated and presented during a community assembly for validation and to be submitted to the ICDPP technical staff at the National Headquarters for digitization. During digitization of maps possible corrections regarding exact coordinates and compass bearing for what is mapped are thoroughly made. After completion, the fully digitized maps are submitted back to the community used as reference in the formulation of barangay disaster action plan (BDAP). The plan contains priority problems perceived by the community and list of alternatives to treat them.

**The mapping process starts when the target barangay is identified:**

First, the community jointly compiles a hand drawn "spot map" – this may be adequate in some planning, but if GIS resources are available, the next steps are:

- Official topographic maps are digitised (the details of the paper maps transferred to a computer) to establish a base map with existing rivers, roads, contour lines etc.
- A large-scale print of the base map is used in the field by the PNRC and BDAT.
- The maps and associated notes are returned to the mapping office at the DMS where the hand-plotted features are digitised and a series of printouts sent for



proof reading with the community (step may be repeated),

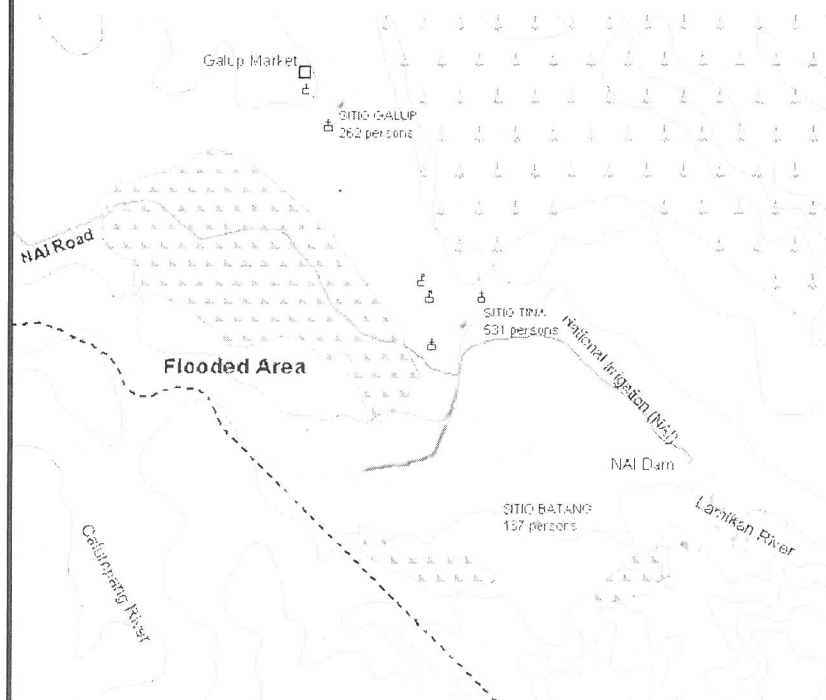
- After corrections, the mapping office makes final printouts for use in the community and for the municipal planning office.

At the PNRC, an in-house GIS capacity is established to maintain know-how that can also serve the general disaster management services. It is hoped that this would gradually encompass many other functions in the national headquarter.

### How are the maps used?

**WITH THE DIGITIZED MAP** the community together with the BDAT could assess what hazard they are at risk from and suggest possible mitigation measures.

#### EXAMPLE OF A HAZARD MAP



**IN ORDER FOR** the community to identify the appropriate mitigation projects, Participatory Rural Appraisal (PRA), an assessment tool, is conducted and facilitated by the trained BDAT. Local resources needed for the construction of the mitigation project could be identified during the facilitation of PRA.

**BDAT, community leaders** and some influential people in the

community will lobby the said disaster action plan to the LGU for funding support. To insure statutory assistance from the government the BDAP is integrated into the development plans of the LGU; Barangay, Municipal and Province. To carry out this process BDAP will submit a resolution to the barangay council for the integration of the BDAP into their annual investment plan. When it is already integrated, the BDAT and the barangay council will submit a joint resolution to the municipal government requesting for the integration of the BDAP into their municipal development plan and the same procedure made for the province.

**ON THE PART OF THE LGU**, the digitized maps are used as reference in their land use planning. With the exact location of risk areas depicted in the map, LGU planners could analyze proper land use and other future developments in the community. It is very essential for the LGU to consider hazard maps before implementing development projects in the community to avoid waste of effort, time and money. What is considered an appropriate site for constructing physical projects based on strategic location may turn out a hazard if the digitized map is considered.





## Formulation of Local Disaster Action Plans

### *Why the need for Local Disaster Action Plans?*

**IT HAS BEEN OBSERVED** that disaster management practice in the Philippines has been reactive and focused on responding to emergency situation. As an alternative to this approach, the Community-Based Disaster Management promotes an active and preventive strategy by harnessing the people's potential in responding to disasters. One way of doing this is by formulating a local disaster action plan by the people themselves. But since the people are not used to doing this type of activity, there is the need for external facilitators such as the PNRC staff in formulating the plan. The conduct of local planning for disaster management would help in achieving the following objectives:

- Understanding of the disaster situation in the community, including the hazards, vulnerable groups, the people's capacities and resources for disaster management.
- Identification and prioritization of community problems and issues that have to be addressed
- Formulation and implementation of strategies through non-structural and structural measures that can prevent, mitigate, prepare, and respond to disaster events.
- Development of the people's and organization's potential in the various aspect of community endeavors, specially disaster management.



**AS DISCUSSED** in the previous chapters, the BDAT and the community residents are to be mobilized in the conduct of community appraisal. The outcome of their data gathering and analysis shall become the basis for the formulation of the action plan.

**THERE ARE TWO** levels of planning in which the ICDPM is involved. The first is at the community level and the second at the municipal level. This section is concerned first with the first.

### *What are the challenges in coming out with community mitigation projects?*

**ONE OF THE** components of the ICDPM is the implementation of the community mitigation projects. They serve to reduce the impact of natural hazards as well as in training the people in planning and project implementation.

**THROUGH THE** hazards mapping and analysis, the ICDPM staff at the Chapter facilitates a discussion to identify and prioritise the problems of the community projects. Based on the experiences from the ICDPP, this process can face a series of challenges:

- People could not agree on the project due to differences in their perception of the problem, or due to conflict of interests.
- There are great differences in the perception of "disaster mitigation projects", and problems in recognising the borderline or overlap with general infrastructure projects.
- Similarly, it is difficult to judge when improved footpath systems or hanging bridges should be considered general infrastructure development, or be considered important routes for evacuation or for relief team access.
- It is often a challenge for ICDPM staff to help assess, in each specific case, if there would be other more "relevant" mitigation measures that could do more to reducing vulnerability in relation to natural hazards than those first proposed by the community. Careful analyses and discussions with the community are required to identify the best long term preparedness tools.

**THE TABLE** below shows a wide spread in types of measures of the disaster mitigation projects implemented in four pilot provinces. Those in the mountain area, Benguet, had many foot trail systems installed compared to the other mainly coastal areas where seawalls were built. Primary health care related measures (water supply, toilets, health clinic etc.) have been implemented in all areas, and make up 40% of all projects. Infrastructure-improvements (hanging bridges, foot trails etc.) cover 29% of the projects, and flood/river control measures (seawall, erosion dikes etc.) make up 20%, evacuation/multipurpose centres 6%, and environment rehabilitation (reforestation etc.) 4%.