

**Background:**

Central Vietnam is mountainous and suffers annual attacks by typhoons and monsoon rains. The broad expanses of agricultural lowlands enjoy the full benefit of this abundant supply of rainwater. However, they also experience many flash floods, which can cause extensive human and economic loss. The Government of Vietnam adopted a policy of developing flood hazard maps as a way of minimising damage in several central provinces. Because of the geographic and climatic characteristics (many short, steep rivers plunging from the mountain slopes to the coast, torrential rains, broad rural areas sparsely inhabited), non-structural measures such as hazard maps are cost-effective and easy to implement swiftly, as opposed to large-scale structural measures like dams and dikes, which are relatively more demanding of time and resources. Accordingly, a series of training courses on how to use flood hazard maps were organised for local communities.

**Implementation of Town-Watching with hand-drawn base maps:**

The targeted area was rural and sparsely inhabited, so printed detail maps for this area were not available. We needed to implement Town-Watching without the benefit of such maps. So, for the Town-Watching field survey that was conducted as part of the training course, each group was required to not only take photographs and make notes, but also to draw an outline map as they walked the streets and paths. Although this increased each group's workload, the concept of drawing a rough map while conducting a field survey helped to stimulate trainees' alertness for flooding vulnerabilities in the community.



Figure 3-1 Trainees interviewed a farmer to gather concrete information on a recent severe flood.



Figure 3-2 Trainees hand-drawn both geographic features (river flows, roads, land uses, etc.) and evacuation information (two-story buildings for shelter during floods, evacuation routes, etc.).



Figure 3-3 Hand-drawn community based flood hazard map developed from town-watching



Figure 3-4 Presentation of the results of group discussions

**Follow-up on training course:**

This training course was conducted as a "Training of Trainers" (TOT), primarily targeting local officials from flood-prone communes, districts and provinces. Those trainees were expected to become trainers upon returning to their local communities. Some flood hazard map training courses by such trainers, who attended these TOTs, were implemented (or due to be implemented) in other local areas.

**SUMMARY**

Town-Watching for Disaster Reduction is a simple and practical tool for efficiently implementing community based hazard mapping in various local communities around the world. The major merits of Town-Watching are that, after experiencing physical involvement in such activities as walking, observing, mapping by hand and discussing findings, people are better able to:

- 1) Develop a concrete image of disaster reduction activities,
- 2) Autonomously identify problems in their own communities,
- 3) Share opinions arrived at from various viewpoints,
- 4) Build confidence within the local community through face-to-face discussions, and
- 5) Reach a reasonable social consensus.

ADRC hopes to continue working toward disaster reduction through Town-Watching.

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REFERENCES:

"Report on the model project of the regional tsunami evacuation planning", Fire and Disaster Management Agency, Ministry of Internal Affairs and Communications, Government of Japan, 2003 / "Report on Binh Dinh and Quang Nam Flood Hazard Map Use Training Course for Province, District and Commune Level", Nguyen Thi Thu Que, UNDP/ Disaster Management Unit (UNDP Project VIE/97/002), 2004 / "Town Watching as a tool for citizen involvement in developing countries: Applications in Disaster Training", Yujiro Ogawa, Antonio L. Fernandez, Teruhiko Yoshimura, 2004 (to be submitted)

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# Town-Watching for Disaster Reduction

- Community Based Hazard Mapping: an effective tool for raising public awareness -

**BRIDGING THE RISK PERCEPTION GAP**

Despite best endeavors, the numbers of people affected and economic losses caused by natural disasters have been increasing over recent decades. Lack of proper recognition of risks is one of the major factors aggravating this situation. Our society is vulnerable to disasters due to, among other things, "risk perception gaps", i.e. a disparity between the actual risk and that recognised by people. Therefore, it is vital that we plug this gap in order to lessen the negative impact of disasters.



**LIMITATIONS OF HAZARD MAPS**

Many governments distribute hazard maps for the purpose of raising public awareness about risks. A "hazard map" provides graphic information on potential natural hazards (seismic intensity, flood inundation depth, landslide prone areas, etc.), and on evacuation matters (location of shelters, evacuation routes, potential risk areas, storage facilities for relief materials, etc.). However, mere dissemination of hazard maps by governments to local residents is usually inadequate as a means of raising awareness of actual disaster reduction activities at the community level. Because of the risk perception gap, people tend to pay scant attention to hazard maps, or fail to properly appreciate the information conveyed on such maps. By and large, people do not effectively use the hazard maps as a guide to taking appropriate actions to minimise damage from disasters.

**WHAT IS COMMUNITY BASED HAZARD MAPPING?**

Recently, "Community Based Hazard Mapping" has been used in some countries as a tool for improving disaster preparedness. This approach focuses on the process of developing hazard maps, not just their distribution. The premise is that by working through the process, communities will gain enhanced awareness of risks, thereby bridging the risk perception gap. Community Based Hazard Mapping has three key objectives:

- 1) To involve local residents in developing the hazard map for their community,
- 2) To reflect the opinions of local residents in policies made by their local government, and
- 3) To foster common understanding of risks among local residents, government officials and experts.

Figure 1 shows an overview of Community Based Hazard Mapping. First, local government integrates basic information (topography, roads, buildings, population, land-use, etc.) with information on past and future (potential) natural hazards on the local area map. Experts provide technical advice on assessing hazards. Using the integrated information, local government develops an evacuation plan and drafts a hazard map. The draft is disseminated as a printed map or via the Internet for local residents and all other stakeholders. Discussion between local government, residents and experts is the most important process in Community Based Hazard Mapping. Basically, local residents are the best source of actual on-site knowledge and information. Reflection of community input is indispensable to improvement of hazard maps. Meanwhile, discussion facilitates consensus building among stakeholders. By incorporating the results of such discussions into the draft map, a community based hazard map is established.



Figure 1 Concept of Community Based Hazard Mapping

## TOWN-WATCHING FOR DISASTER REDUCTION

"Town-Watching for Disaster Reduction" is a tool whereby all stakeholders in the community work together through the process of developing a hazard map. It takes only one day, and requires only a map, a camera, and some coloured markers. The flow chart of a Town-Watching programme is as follows:

0. Relevant lectures (mechanisms of natural hazards, historical events, causes of local vulnerabilities, countermeasures, etc.) are provided by experts, government officials, or local residents who have experienced previous severe disasters, so that all participants share the same background information on local conditions in relation to disasters. Visual presentations help participants to understand the situation more clearly. Objectives, schedules of activities, and expected results of the Town-Watching exercise are also explained. Participants are divided into small groups prior to the start of the field survey. A group comprises 5-10 members, with each assigned a specific role: group leader, navigator, photographer, note-taker, presenter at the final presentation, etc.

1. Each group (which includes a mix of local residents, experts and government officials) walks around the town to identify and study advantageous points (useful facilities, evacuation routes, etc.), disadvantageous points (too steep slope for evacuation, etc.), and other important aspects relevant to disaster reduction. They make notes and take photos. Observation should be conducted from the viewpoint of local evacuees experiencing severe disasters.

2. Each group then transfers its field observations and assembled information onto a large-scale map, using colour differentiation to facilitate visual understanding. Attaching photos to notes on the map can be helpful. Eventually, a community based hazard map is created.

3. Group members discuss problems that they have identified, and consider possible solutions for effective disaster reduction in the community. Mapping, sharing thoughts and talking with each other face-to-face around the large-scale map helps to stimulate and facilitate active discussion. Finally, the developed community based hazard maps and outcomes of the group discussion are arranged on a table and presented to all participants. This presentation session provides participants with opportunities to share in the views and ideas developed by other groups.



Figure 2 Flow-chart of Town-Watching for Disaster Reduction

## - GOOD PRACTICES -

Town-Watching is an adaptable tool. It can easily be applied to local conditions and needs. Here, we present two actual examples where ADRC has made a contribution.

### Case 1: TOWN-WATCHING FOR EARTHQUAKES AND TSUNAMIS IN JAPAN

#### Background:

Mie Prefecture, located in the south central part of Japan and facing the Pacific Ocean, has a history of frequent major earthquakes and tsunamis. Most notably, the 1944 Tonankai Earthquake killed 389 people and devastated thousands of houses in this area. Since 2002, cities and towns in Mie Prefecture, in collaboration with the Japanese Government's Fire and Disaster Management Agency, have been introducing Town-Watching for Disaster Reduction, for the purpose of creating community based hazard maps, and raising public awareness of earthquake and tsunami disasters. ARDC has provided some support for this activity.

#### Implementation of Town-Watching:

In local districts of Owase City in Mie Prefecture, Town-Watching was conducted in the form of a field survey combined with three workshops.

The first workshop was conducted for the purpose of developing a comprehensive basic understanding of the mechanisms of earthquakes and tsunamis, actual historical experience of disasters in those districts and the latest estimates of potential damage. Several government officials, researchers and survivors of the Tonankai Earthquake were invited to give lectures. Participants comprised a wide variety of stakeholders: local residents, officials of the Owase City municipal government and the Mie Prefecture municipal government, researchers, volunteer coordinators, etc.

A field survey was conducted, with the participants divided into two groups. Each group had an area map containing detailed information (individual residents' names and addresses, roads, stations, bus stops, etc.), maps showing previous and projected tsunami inundation depths, writing materials and an instant camera. They made notes and took photographs of the aspects that could be disadvantageous or advantageous to the community during the occurrence of a disaster. Interviews with other local residents were also conducted in order to obtain specific local information. Although several participants knew the target area very well, there were still a number of fresh insights gained as a result of observing from the viewpoint of disaster reduction.

The second workshop focused on mapping. Each group traced the information and observations (potential risk areas, previous tsunami inundation areas, evacuation shelters and routes, location of vulnerable people, etc.) obtained by the field survey onto a large-scale (1:1,000) base map. Photos and notes were also attached to the map. Once the two groups had finalised their maps, representatives of each group worked together to combine the two individual efforts into one large "master" map. In due course, the participants established their own community based hazard map.

In the third workshop, each group discussed vulnerabilities, possible countermeasures, priorities, degrees of difficulty and responsibility for implementing each proposed countermeasure, etc. Finally, representatives of each group presented their respective group's community based hazard map and recommendations for disaster reduction activities to members of the other group, in order to share the carefully considered results from the two different viewpoints. In closing, the coordinator summarised the problems, countermeasures and future action plans that had been illuminated by this Town-Watching exercise.

#### Follow-up on Town-Watching:

After the Town-Watching exercise, some communities installed metal plates on the streets, indicating tsunami water levels on the street. Others re-located shelters and installed solar battery-powered streetlights along evacuation routes. Hand-annotated maps were enhanced, digitalised and posted on Web sites for public access.

