Annex 1

Duties and Responsibilities of Team Leaders Before, During, and After Flash Floods

Team	Pre-disaster	During disaster	Post-disaster
Early Warning/ Communication & Information	Establish a system of receiving reliable information on flood forecasts, including contact details of all agencies that can be useful in flood management. Establish communication systems for early warning system.	Disseminate flood alert and warning to responsible department, and call for deployment.	Disseminate information to concerned agencies.
	Develop a local information dissemination system. A control room can be instrumental for receiving information from external agencies and disseminating information to local people.	Deploy team members in the flood area to collect accurate information.	Provide information about the disaster to the coordinator for sharing with relevant stakeholders.
	Establish early warning systems using indigenous knowledge and with support from hydrological and metrological services.	Ensure communication between CFFRMC coordinator and team members.	Collect information about damage.
	Identify flash flood prone areas and prepare and mark possible evacuation routes.	Mark safest escape routes by hanging coloured signs on trees (to facilitate quick and safe relocation).	Incorporate lessons learned and make adjustments.
	Develop community profile including identification of vulnerable groups/property and include this information in early warning/preparedness plans.	Provide information to relevant teams about vulnerable groups.	Ensure provision of services to vulnerable groups.
	Identify critical infrastructure and safe places for use during flash floods. Advise people to keep their land records, school records, and other valuable papers in a safe place.	Provide information about alternate facilities for use during flash floods.	Ensure proper utilisation of facilities.
	Develop system for documenting the response by different teams.	Set-up a control room to collect and disseminate all information.	Consolidate information about the response, including number of casualties/injured and their profiles.
	Develop systems for disaster needs assessment.	Carry out disaster needs assessment and share the findings with the coordinator and relevant teams.	Assess community needs and inform the coordinator so that s/he can liaise with local government institutions for continued relief operations during and after the flood.

Team	Pre-disaster	During disaster	Post-disaster
	Develop and share social flood hazard maps with the CFFRMC and the community.	Make strategic decisions based on available information, e.g., when to evacuate, where to go, how to relocate.	Incorporate lessons learned and make adjustments.
	Encourage development of emergency kits by the community for families and livestock.	Supply emergency kits to the affected community members.	Incorporate lessons learned and make adjustments.
	Develop a crop calendar with the help of local experts and, if needed, external experts.		
First Aid and Health Hygiene	Develop response mechanisms for flash floods.	Call team for deployment. Timely provision of first aid and transportation to nearest facilities for advance treatment.	Established triage area to handle casualties.
	Ensure that the first aid boxes are kept up-to-date.		Shift injured to hospital for advanced treatment. Organise routine health care checkups for people living in camps. Give trauma counselling to affected community members.
	Develop systems for maintaining information about usage of first aid and emergency kits, including replenishment of items used or out-of-date.		
	Develop health capacity and capability profile of health facilities at cluster level.		
	Raise awareness of health hygiene in times of flash floods among community members.		
	Work with shelter management team to identify health and hygiene needs during a flash flood.		
	Organise regular meetings of the team.		
	Identify the vaccines needed to prevent infectious diseases among people and livestock.		Vaccinate the community and livestock for infectious diseases.
Evacuation and Rescue	Develop mobilisation procedures and standard operating procedures for deployment of the team.	Mobilise team and volunteers immediately on receipt of flood alert or early warning.	Manage search and re-unification activities.

Team	Pre-disaster	During disaster	Post-disaster
	Build linkages with early warning and first aid teams for flash flood evacuation and preparedness.	Evacuate affected people to a safe place. If possible, arrange to evacuate cattle and wealth along with the people. Work with first aid team to provide first aid to rescued people.	Maintain a record of search and rescue activities.
		Carry out search and rescue activities at the time of the disaster.	
	Build linkages with professional search and rescue teams for support in case of a disaster beyond the capacity of the community.	Call the professional search and rescue team for help, if needed.	Debrief team and incorporate lessons learned.
Shelter Management and Logistics	Develop systems and mechanisms for mobilisation of the team, including standard operating procedures.	Mobilise team in timely manner and carry out search and rescue activities to save lives.	Ensure safe return of community members or select an alternative place.
	Plan for registration of community members at camp.	In case of camp establishment, provide shelter registration of community members	Provide health and hygiene facilities and work with first aid team to vaccinate community members.
	Identify shelter areas in advance of flash flood and develop a plan of action.	Allocate necessary room to victims, with special emphasis on the needs of vulnerable groups such as the elderly, women, children, and people with special needs.	Address any protection issues that may arise.
	Develop a list of facilities needed in case of a flash flood.		
	Identify the social needs of the community which need to be addressed during a disaster.	Provide for social needs such as religious places, meeting halls, safe places for children.	
	Identify shelter for livestock.	Maintain discipline.	Return to community.
	Plan to establish camps.	Maintain security. Provide necessary services such as water, health, etc. Coordinate with Relief and Rehabilitation team to provide relief.	Enable return and rehabilitation of the community.
	Establish and maintain stockpile with accountability to the community.	Issue shelter (tents, blankets).	Return stockpile to the team.
	Develop logistics system for distributing relief, including profile of transport and other resources.	Activate logistics for relief.	Coordinate with relief agencies for storage and transportation of relief.

Team	Pre-disaster	During disaster	Post-disaster
	Plan for provision of relief in case of a disaster.	Provide relief to affected people in camps.	Coordinate rehabilitation of victims.
Relief and Rehabilitation	Work closely to identify vulnerable areas and relief operation centre.	Ensure the availability of a rescue boat for relief goods, transportation, and rescue.	Ensure relief until full recovery of affected people.
	Ensure stock of necessary relief goods, proper security, and monitoring.	Ensure the proper documentation of relief goods.	Coordinate damage needs assessment for long-term rehabilitation of the people.
		Establish effective operation of control room and emergency operation centre.	
	Ensure tree plantation beside new and old roads.	Identify needs of individuals and families for relief and support. Ensure fair distribution of relief to affected people.	Monitor wellbeing of those who have not relocated. If necessary, assist them to cope with the flood by providing them with consumable/ non-food items.
		Mend earthen cooking stoves as needed.	Support 'return home' activities.
		Establish emergency operation centre to coordinate the operation.	
		Storage and transportation of relief at shelter houses.	At community level, clean up the abandoned flood shelter and make it usable.
		Reassess needs of households and prepare a participatory plan for recovery and restoration.	Work closely with relevant stakeholders to highlight the needs of the community.
	Incorporate lessons learned in future planning.		Maintain records of successes and failures regarding the relief operation.

Annex 2a

Training Module on Understanding, Valuing, and Identifying Local Knowledge on Disaster Management

Purpose

The failure of many disaster management (DM) projects and activities, as illustrated recently by the impacts of relief aid during and following the 2004 Asian tsunami, is partly attributed to a lack of understanding of local contexts and needs. Local knowledge is often overlooked in development projects and disaster management activities. As an outsider working in the field of disaster management, what are your roles and responsibilities towards local knowledge? How do you want to work and how can you capitalise on the communities' own resources? Conversely, one should also ask: What are the roles and responsibilities of the local community towards their own knowledge, in general, and in the context of disaster management, in particular?

The main purpose of this training is to improve the participants' understanding of local knowledge and its linkages with disaster management so that it can be taken into account and improve disaster management projects and activities. The characteristics of local knowledge systems and the linkages between local knowledge and disaster management are explored. Participants will learn to use a tool to identify and document local knowledge on disaster preparedness. Ultimately, this training provides an entry point to change attitudes towards local knowledge in order to promote better communication, tolerance, and reflexivity between communities and the different stakeholders working in disaster management. This training is also an entry point to move from the conventional top-down approach to disaster management towards a socially inclusive approach. The estimated time for conducting this training is 2 hours 30 mins.

Learning Objectives

By the end of this module participants will be able to:

1. Understand the concept of local knowledge and be aware of its position in a wider knowledge system.
2. Establish the linkages between local knowledge and disaster management to understand the importance of recognising, valuing, and accounting for local knowledge in disaster management activities.
3. Use a tool to identify and document local knowledge on disaster preparedness, not to conserve local knowledge, but to learn from it to create new concepts, methods, or strategies for improved disaster management.
4. Describe the challenges of using local knowledge in the context of disaster management, which requires understanding the broader vulnerability context.

Trainer's note:

The learning objectives should be presented on a flipchart/overhead at the beginning of the module.

Training Content

The training is organised into four sessions:

Session 1: Concept of Local Knowledge
Session 2: Linkages between Local Knowledge and Disaster Management
Session 3: Documentation of Local Knowledge on Disaster Preparedness
Session 4: Key Challenges to the Use of Local Knowledge for Disaster Management

Handouts

Handout 1: What is Local Knowledge? (Annex 2b)
Handout 2: How can Local Knowledge Impact on Disaster Management Activities and Vice-versa? (Annex 2c)
Handout 3: The Four Pillars of Local Knowledge on Disaster Preparedness (Annex 2d)
Handout 4: Examples of Key Questions Local Knowledge on Flood Preparedness (Annex 2e)

Session 1: Concept of Local Knowledge

Context:	Despite a growing recognition of the existence of local knowledge related to disaster management, in practice, many implementing organisations do not have a clear idea of what local knowledge related to disaster management really means. Before deciding to incorporate local knowledge into disaster preparedness/disaster management activities, it is very important to understand what local knowledge is.
Objective:	To understand the concept of local knowledge and be aware of its position in a wider knowledge system.
Key questions:	What is local knowledge? Where is it? Who has it? How and when is it created, transmitted and/or lost?
Time:	30 minutes

Step 1.1 (10 mins)

- Distribute Handout 1 and ask all participants to write down what they understand by 'local knowledge' using three key words.

- Divide participants into small groups and ask each group to discuss the following questions and to write the main points (key words) on a flipchart in five columns headed: What? Where? Who? How? and When?
  1. **What** are the different types of local knowledge relevant to the implementation of disaster management activities?
  2. **Where** is local knowledge located?
  3. **Who** has local knowledge within the community?
  4. **How and when** is local knowledge being produced, transmitted, or lost?

- Ask each group to come up with its own definition of local knowledge.

Step 1.2 (10 mins)

- Ask the participants to reassemble in the plenary group and present their group's findings.

Step 1.3 (10 mins)

After the presentations, the trainer discusses the differences in peoples' perceptions, summarises the information generated to establish key characteristics of local knowledge, refines the definitions to create one operational definition, and enlarges the participants' understanding using the points below.

Trainer's note:

Make sure the participants are clear on the following points:

- **What is local knowledge?** What people know is influenced by what people do (practices) and by what people believe in (beliefs, worldviews, values). Indigenous knowledge is part of local knowledge. Local knowledge should be understood as complex adaptive responses to internal and external changes. Their are various types of local knowledge: technical, historical, environmental, sociocultural local knowledge, etc.

- **Where is local knowledge located?** Urban/rural, buildings and other constructions, tools, landscape, cultural ceremonies and practices, taboos, songs, proverbs, books, beliefs, etc.

- **Who has local knowledge?** Different groups of people know different things (e.g., ethnic groups, clans, different gender groups, age groups, wealth groups). This type of knowledge is related to existing differences concerning access to or control over production resources; access to education, training, and information in general; labour divisions between women and men, farmers, and herders, etc.; control over the benefits of production (FAO 2005).

- **How and when is local knowledge created, transmitted, transformed?** Depending on the type of knowledge, transmission will occur in different ways (e.g., the transmission of shared or specialised knowledge (versus common knowledge) takes place through specific cultural and traditional information-exchange mechanisms (FAO 2005).

Session 2: Linkages between Local Knowledge and Disaster Management

Context:	The residents, whether they are living in the suburbs of Kathmandu or in a remote village of Pakistan, are often the first victims and respondents to natural hazards. In the Himalayas, local knowledge is all the more important because many communities are isolated. Despite this, local knowledge is often overlooked in development projects, including disaster management activities.
Objective:	Based on concrete examples, to identify the linkages between local knowledge in disaster management activities and understand the importance of recognising, valuing, and accounting for local knowledge in disaster management activities (group work).
Key questions:	Why accounting for local knowledge is important in disaster management/disaster preparedness? What can be learned from local knowledge that can be useful for implementing organisations working on disaster management/preparedness? What are the linkages between local knowledge and disaster management/preparedness?
Time:	60 minutes

Step 2.1 (30mins):
The trainer should:

- Divide participants into small groups and ask them to discuss and share their experience about the role of local knowledge in disaster preparedness activities. They should fill out Handout 2 by: (1) providing examples from specific local practices, beliefs, institutional arrangements that are characteristic of their culture or of the community in which they are working; (2) identifying for each example to what extent local knowledge acts as a potential resource or as a barrier to disaster management activities. The same exercise should be done in regards to scientific knowledge.

Step 2.2 (15mins):

- Each group to present their findings in 5mins.

Step 2.3 (15mins)

- After the presentations, the trainer discusses the differences in peoples' perceptions, summarises the information generated to demonstrate that is important to understand and account for local knowledge, practices, and beliefs. Not all local knowledge is relevant and sustainable in the context of disaster management activities, but it always needs to be taken into account.

- Next steps: Identifying/proposing ways to determine how to find out what values, beliefs, and practices are important in a community. How to support local knowledge, innovations, and practices into community-based disaster preparedness planning? How can disaster management activities contribute to turning these changes (and challenges) into opportunities? Suggest strategies for the effective integration of local knowledge into disaster management activities. How to combine local knowledge and conventional knowledge (the same exercise could be done with conventional knowledge)?

Session 3: Documentation of Local Knowledge on Disaster Preparedness

Context:	Despite the growing recognition of the existence of local knowledge related to disaster management, in practice many implementing organisations do not have a clear idea of how to identify and document local knowledge on disaster management/disaster preparedness.
Objective:	Use a tool to identify and document local knowledge on disaster preparedness, not in order to conserve local knowledge, but to learn from it to create new concepts, methods, or strategies for improved disaster management.
Key question:	How to document local knowledge on disaster preparedness?
Time:	30 minutes

Step 3.1. Presentation of the framework (15 mins)

The trainer should:

- Clarify the following points: Why document? What to document? How to document? When to document? Where to document? Who to interview?
- Distribute Handout 3 (Local Knowledge Framework).
- Present the framework. The framework shows where to identify local knowledge and how to document/map local knowledge.
- Distribute Handout 4 (Examples of Key Questions).

Trainer's note:

- Why document? Documentation is not to conserve local knowledge, but to learn from it to create new concepts, methods, or strategies for improved disaster management and to strengthen relevant and sustainable local coping mechanisms.
- What to document? From a local knowledge perspective it is more interesting to examine recurrent shocks that gradually increase the vulnerability of communities. Exceptional disasters require external means, beyond normal coping strategies.
- How to document? Three key words: (1) positionality: the way we perceive things and the way we are perceived partly depends on things like our level of education, our age, whether we are parents or not; (2) reflexivity: we cannot avoid pre-conceptions and assumptions, but need to be aware of those sociocultural filters (biases, emotions, perceptions, etc.) as much as possible, and be able to communicate them together with the results of our activities; (3) responsibilities.

Step 3.2. Best practices in flood preparedness in Pakistan and Nepal

- Present a slideshow of photographs illustrating best practices related to flood preparedness to illustrate the four pillars of the framework: (1) observation, (2) anticipation, (3) adaptation, (4) communication.
- Ask the audience questions like: What does this photograph say about local knowledge on disaster preparedness? How could these practices be integrated into disaster preparedness activities?

Step 3.3: Discussion

- Ask each group to critique/discuss the framework and adapt it to their own needs/context.

Session 4: Key Challenges to the Use of Local Knowledge for Disaster Management

Context:	The nature and status of local knowledge is changing, and depending on the context local knowledge will not always be a panacea. The loss of local knowledge and coping strategies is being reported widely throughout the world. The erosion of local knowledge and coping strategies due to a combination of rapid changes has contributed a great deal to the controversy surrounding the use of local knowledge and practices in disaster management as well as in other fields. Change is happening faster than ever before challenging peoples' capacity to adapt. Multiple stresses in a context of rapid change render some local knowledge and practices inappropriate or inaccessible. Overall, many factors are responsible for the erosion of local coping strategies, including demographic, sociocultural, political, economic, environmental, and other financial and technological factors.
Key questions:	How is the relevance and sustainability of local knowledge being challenged? How much can we trust local knowledge for disaster management activities? What are the limitations to building on local knowledge? How can we overcome those limitations?
Time:	30 mins

Step 4.1 (30mins):

- Divide participants into small groups and ask each group to discuss the following questions:
  1. What are some of the key challenges to the use of local knowledge in disaster management activities? Try to investigate both external and internal challenges.
  2. How to support the integration of local knowledge and practices into community-based disaster preparedness planning? How can disaster management activities contribute to turn those changes (and challenges) into opportunities? Suggest strategies for the effective integration of local knowledge into disaster management activities.

Trainer's note:

Make sure the participants understand that the broader context (including the vulnerability context) must be taken into account when trying to understand existing local knowledge adaptation and development and, in turn, adaptation and changes.

External challenges: Communities are now facing rapid changes due to global factors and trends (e.g., climate change, globalisation, privatisation). What are the impacts of these changes on local knowledge and on people's responses to natural hazards? For example, some of the impacts of a cash economy on peoples' response to natural hazards include changes to the maintenance of irrigation channels (e.g., in Pakistan), impacts on gender roles (division of labour), and relationships, changes in family structure (which used to be a major source of knowledge and information).

Internal challenges: The use of local knowledge might also face challenges within the community. What are the challenges to the use of local knowledge coming from within the community itself that need to be taken into account in disaster management activities?

Handout 1: What is Local Knowledge?

Key words

(1) _____

(2) _____

(3) _____

Key characteristics

What?[1]	Where?[2]	Who?[3]	How?[4]	When?[5]

Definition_____

_____

_____

_____

[1] **What** are the different types of local knowledge relevant to the implementation of DM activities? [2] **Where** is local knowledge located? [3] **Who** has local knowledge within the community? [4] **How** is it being produced, transmitted, disseminated, or lost? How does this knowledge change and why? [5] **When** is local knowledge being produced, transmitted, disseminated or lost? When does this knowledge change?

Handout 2: How Can Local Knowledge Impact on Disaster Management Activities and Vice-versa?

	Enabling factors	Hindering factors	Mitigation
Local knowledge	*Examples of local knowledge, practices, beliefs acting as potential resources for disaster management activities.* • Beliefs, ceremonies that help communities to assess their resources for coping with natural hazards and in coping mentally with the uncertainties of recurrent natural hazards • Taboos which prevent community members from going to risk-prone areas • Knowledge of risk-prone areas, knowledge of nature and history of natural hazards in the locality	*Examples of local knowledge, practices, and beliefs acting as potential barriers to disaster management activities.* • Beliefs or supersttions that prevent people from preparing for natural hazards, which do not promote the sustainable management of natural resources • Local power relations, local elites	*How to strengthen the enabling factors and reduce the hindering factors.* • Need to understand the local contexts
Scientific knowledge	*Examples of conventional knowledge, practices, beliefs that can potentially support local coping strategies.* • Development through construction of embankments, new materials, etc. • Early warning systems, more data, time lag in data transmission, weather forecasts	*Examples of conventional knowledge, practices, beliefs that can potentially hinder local coping strategies.* • Belief that depriving communities of their rights over and access to forest resources will help conserve forest resources and, therefore, decrease natural hazards related to deforestation. Because the community loses their sense of ownership of the forest resources, they become alienated from the forest and search for new livelihoods including cash jobs outside of the village. • Belief that the economic empowerment of communities is the most important way to decrease the impacts of natural hazards • Belief that development, more data and new technology, and mega-engineering projects will solve all problems • Belief that conventional knowledge is superior to local knowledge • Belief that people don't do much to be prepared for natural hazards because they are fatalistic	*How to strengthen the enabling factors and reduce the hindering factors.* • Need to understand local coping strategies in the wider context • Combine local knowledge with conventional knowledge • Use formal and informal education to promote disaster risk reduction

Annex 2d

Handout 3: The Four Pillars of Local Knowledge on Disaster Preparedness

Local knowledge on disaster preparedness is based on the following abilities

(1) Observation

People's experience of the local surroundings

History of natural hazards
Examples: knowledge on the location, time, duration, frequency, intensity, predictability of previous hazards

Nature of natural hazards
Examples: knowledge on the onset, origin, velocity of water flow, knowledge of different types of rain

Evolution of social and physical vulnerabilities to natural hazards
Example: life stories explaining the impoverishment processes of households following recurrent natural hazards and other stresses

(2) Anticipation

People's identification and monitoring of environmental indicators

Early warning signals
Examples: interpretational knowledge of changes in animal behaviours, vegetation patterns, knowledge of local weather forecast

Time thresholds
Examples: knowledge of when it is time to buy and store food in advance, leave the house, move the cattle, and remove important belongings

Escape route and safe places for humans and cattle
Examples: knowledge of the safest and fastest routes

Key actors and skills
Examples: knowledge of who knows what, who does what and when, who stays behind, who goes first

(3) Adaptation

People's access to assets and their ability to learn, self-organize, re-organize, innovate etc.

Human assets
Examples: specific skills such as traditional carpenters and masons

Sociocultural assets
Examples: knowledge of different social groups depending on occupational, physical ability, ethnicity, gender, caste, class, & age characteristics

Institutional assets
Examples: knowledge generated by local institutions and crossscale linkages

Financial assets
Examples: micro-finance arrangements such as credits and savings

Natural assets
Examples: natural resource management strategies such as intercropping and agroforestry that conserve biodiversity and protect soil erosion and can contribute to reducing the impacts of natural hazards

Physical assets
Examples: infrastructural safety arrangements such as boats, housing, embankments

(4) Communication

People's ability to transfer knowledge among themselves and between generations

Oral & written communication
Examples: local songs, poems, proverbs which help the younger generation and outsiders to learn about previous hazards, stories of previous hazards encoded in the name of specific places

Early warning systems
Examples: use of visual signals such as mirrors, fire or audio signals such as drums; having dreams of natural hazards in advance

Other practices
Examples: taboos which prevent people from going to certain hazard-prone areas; ceremonies, local art which helps the community to understand, remember past natural hazards, and relieve the anxiety related to the threat of future hazards

Annex 2e

Handout 4: Examples of Key Questions on Local Knowledge on Flood Preparedness

Source: Dekens 2007a, b

Observation and Experience of Floods

History of floods

1. What do people know about the history of floods in their locality, e.g., when and where did the last flood occur?
2. What was the water level of the last exceptional flood?
3. How many people died?
4. What damage was caused by the flood?
5. How do people understand and interpret the situation or the landscape from their knowledge and/or previous experience of floods?

Nature of floods

6. What do people know about the nature of floods in their locality, e.g., onset, origin, velocity, and types of rain?
7. To what extent does local knowledge vary, or not, according to different types of floods (normal versus abnormal floods; flash floods versus riverine floods)?

Vulnerability assessment

8. What do people understand of their own vulnerability (e.g., in pre-disaster situations) and of the factors that influence it?
9. Are they now living in a more vulnerable dwelling than before? Why? What happened?
10. Do people have different priorities now than before and how do these influence their vulnerability to natural hazards?
11. To what extent are people able to identify problems and to what extent are they able to solve them on their own initiative?
12. How does disaster change, increase, or create new vulnerable groups, i.e., emerging vulnerability or vulnerable groups?

Socioeconomic and other contextual factors

13. How do social relationships (age, gender, class, caste, physical ability, and ethnicity) influence local knowledge of, and practices in, flood preparedness?
14. How do caste arrangements influence people's ability to adapt to floods?
15. How do floods affect different economic and social groups such as women, children, and elders?
16. Who benefits from floods? Is it only the wealthiest households (i.e., those who have land in different places) who benefit from flooding, or do the poorest also manage to receive benefits?
17. Can you describe how people gain new land or lose old land?
18. How do individual and collective historical, cultural, and religious backgrounds influence people's perceptions of natural hazards and responses to natural hazards?
19. Did rich people become poor because they were living in a flood-prone area or were they able to maintain their status? Did the sociocultural milieu provide richer people with access to goods and services denied to poorer people?

Multiple stress factors

20. What other natural hazards and stress factors does the community face and how might they influence local knowledge on disaster preparedness?

Anticipating Floods

Early warning signals

1. How can local people anticipate or identify environmental warning signs of a flood?
2. What do people observe, hear, and sense before a flood occurs?
3. Do people have traditional or local weather forecast systems?
4. How do people know that it is time to leave their homes?

Time thresholds and emergency measures

5. How do communities and households prepare for the rainy season?
6. Do they store additional food, firewood, and medicine?
7. When and how do people know that it is time to leave their houses and move to higher ground, to remove important belongings, and to store food and firewood?
8. Where do people go?
9. What do they take with them?

Escape routes and safe places for humans and cattle

10. Where do people run and who runs away — is it the women and children, is it the people without property?
11. How do local people identify safe places for humans and cattle?
12. Why are people building houses in vulnerable places? Is it because of a lack of knowledge and/or a lack of options? What obstacles are people facing in trying to build their houses in safe places?

Critical actors and skills

13. Who does what within the community?
14. Who knows what?
15. Who has the relevant knowledge about floods?
16. Who has specific skills that can directly or indirectly contribute to improved disaster preparedness? How can these skills be nurtured?
17. How can these skills be passed on from one generation to another?
18. To what extent do the lower caste or casteless people have knowledge about disaster preparedness that high caste people do not have, and vice-versa; and to what extent is this knowledge shared?

Technical Adaptation Strategies

House construction and location

1. Why do people build their houses in vulnerable places?
2. Is it because of lack of knowledge or lack of options? What are the main obstacles people face in building their houses in safe places?

Food storage

3. How do people store food, especially for the rainy season?
4. Do they have specific food storage techniques?
5. When do they start storing food? Where? What kind of food? For how many days or months can they rely on these food stores?

Terraces and retaining walls

6. What are people doing at the community level to control the stream?

Traditional earthquake-resistant houses

7. What can be learned from traditional housing structures?
8. What elements make traditional buildings more earthquake resistant than new ones? What elements reduce the sustainability of such buildings (e.g., very labour intensive)?
9. How can traditional structures be made more sustainable?
10. Which households are building traditional houses and which ones are not? Why are those households not building traditional houses anymore?
11. How do external forces, including natural resource policies, impact on local knowledge and practices? How are current (forest and land) policies influencing local practices? How can changes in the policies support or prevent people from adopting earthquake-safe practices?

Multipurpose platforms

12. What do people use to keep themselves and their small livestock above the water and to store important belongings during floods?
13. Who knows how to build these platforms?
14. What materials are required and how much do they cost?

Stream control, drinking water, and transportation

15. What are people doing at the community level to control the stream?
16. Are they building embankments as a community?
17. How do people get drinking water during floods? What are they doing in advance to secure access to drinking water?
18. How did people manage to move outside the village during previous floods?

Non-structural Adaptation Strategies

Spatial and social mobility

1. What do people's social networks look like? What networks are people embedded in (e.g., family, social, professional, political) and how can villagers best use these networks for disaster preparedness?
2. What are their relationships with their relatives and neighbours?
3. Where are their relatives located?
4. How do communities and households try to spread the impacts of floods among their assets (e.g., physical, economic, social assets)?
5. Do they have different livelihood activities?
6. Do they also rely on cash-earning activities?

Food security

7. Are people growing food that is specifically kept for emergency purposes?
8. Do they have specific food storage or drying techniques?

Natural resource management

9. Do land ownership disputes arise from the loss of land due to floods? What are the local adjustment strategies? Are they equitable?
10. Do people have landholdings in different locations?

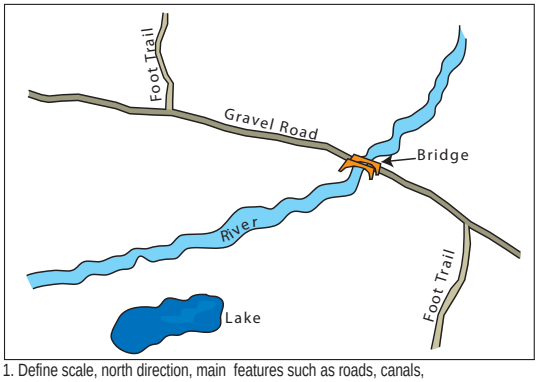
Other attitudes and strategies

11. What are people's attitudes towards natural hazards?
12. What are the indicators that people have learned from previous hazard events?
13. How do communities and households try to spread the impacts of natural hazards among their resources (physical, economic, social)?
14. Do they have different livelihood activities? Do they also rely on cash-income activities?
15. What background and mindset do people have regarding business?
16. Do they have micro-finance arrangements and entrepreneurial attitudes or backgrounds?
17. How does the context, e.g., historical, sociocultural (age, gender, class, caste, physical ability, and ethnicity), and religious background influence local knowledge about, and practices in, disaster preparedness? How does the local belief system influence, promote, or hinder local knowledge and practices on disaster preparedness?

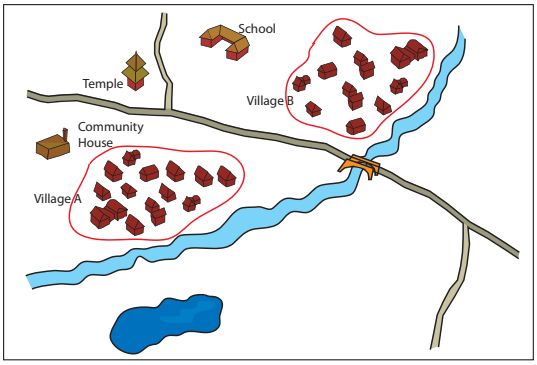
Communicating About Floods

1. How is knowledge on natural hazards transmitted among community members (between different social groups – men versus women, leaders versus followers) and between generations (i.e., between elders and young people)?
2. What are the local stories about previous flood events?
3. Who knows these stories in the community: both elders and young people?
4. Do people in the village know local songs, proverbs, and poems about past natural hazards?
5. What are the strategies that help people to reduce the stress related to future natural hazards?
6. To what extent do local ceremonies and beliefs help people to reduce their anxiety and/or increase their anxiety about future hazards?

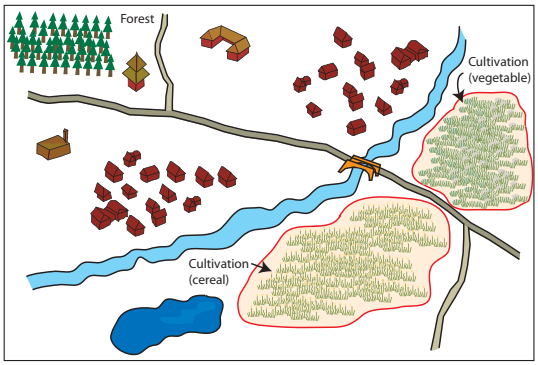
Steps in Preparing a Social Flood Hazard Map[1]



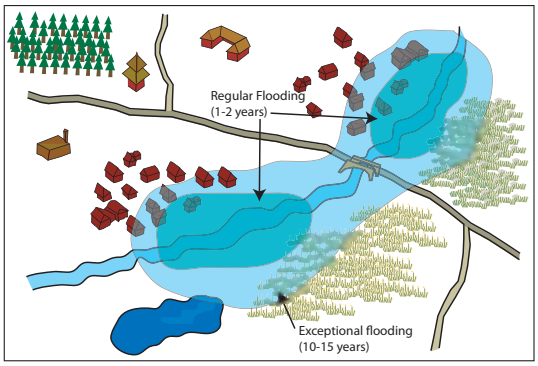
1. Define scale, north direction, main features such as roads, canals, rivers, lakes. Indicate their names if available.



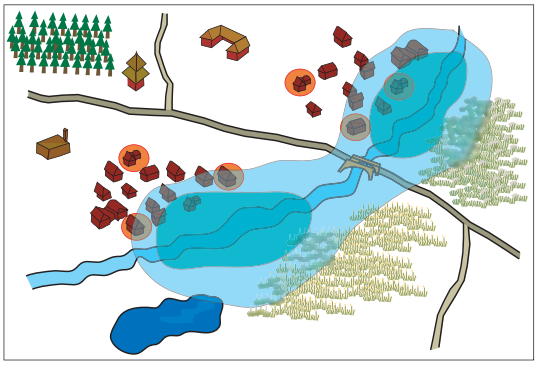
2. Insert houses and infrastructure. Select appropriate legends.



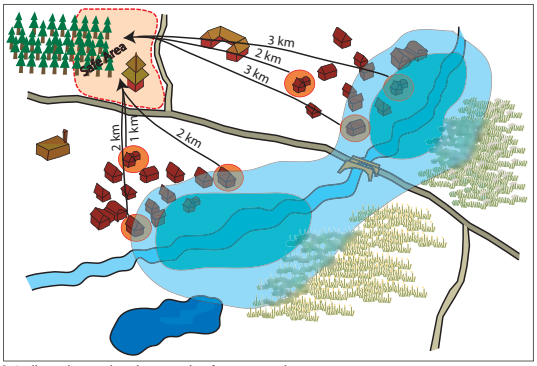
3. Insert resources such as: natural resources (crops, water, forests, plants, animals), materials (transport, business, powerhouse, quarries etc), communications (towers, lines, etc.).



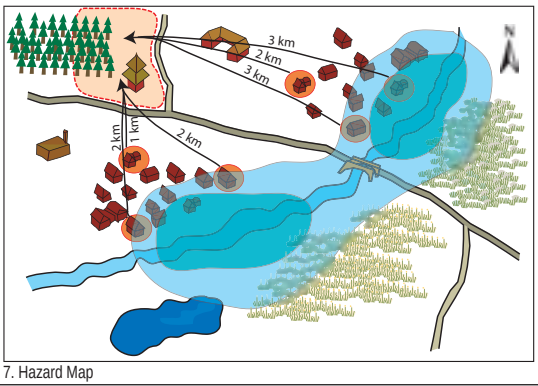
4. Identify vulnerable areas.



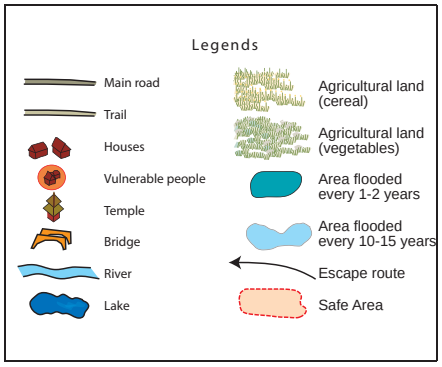
5. Identify vulnerable people (elderly, illeterate, pregnent woman, poorest people, etc.).



6. Indicate internal and external safe areas and escape routes.



7. Hazard Map



[1] This annex was prepared based on the experiences of the Asian Disaster Preparedness Center (ADPC), Bangkok.

Annex 4

Methods of Purifying Water

Method 1

Adapted from Prashad (2005)

Water from contaminated sources can be treated at home by using commercially available halogen-releasing tablets. Freshly released halogen kills unwanted bacteria and other microbiological elements present in the water. These water purifying tablets are available in market at affordable costs.

Directions for use of halogen tabs:

- Put 1.5 to 3.0 litres of water in a non-metal (earthenware/glass/melamine) container with lid.
- Dissolve one halogen tab (15 mg Halazone USP) tablet in the water, stir, and replace the lid.
- Allow at least half an hour for the action of halogen.

Water is now ready to use. It will remain germ free as long as the container lid is kept closed.

Method 2

Adapted from Prashad (2005)

In areas highly affected by flash floods, there is often no alternative to using the floodwater itself or water contaminated by floodwaters. Floodwater often contains suspended foreign discrete/colloid matter that cannot be removed by using bleaching powder or liquid chlorine alone. Efforts must be made to collect clean water that is free from suspended foreign matter (sieves may be used) and then to disinfect it by using a suitable disinfectant. In this regard water purifying powder, usually a mix of bleaching powder and a coagulating agent, is quite handy. When properly mixed with floodwater in a bucket this powder helps the suspended material to coagulate and form heavy floccules, which settle on standing for some time. The chlorine in the powder reacts with pathogens in the water and disinfects it. The settled sludge on the bottom of the bucket can be discarded after removing the supernatant water from the bucket, which can safely be used for drinking purposes. This is easy to make, carry, and apply, and is cheap. Therefore, it is a very popular tool for public health engineers and voluntary organisations during emergency situations.

The Procedure

The Purifier Powder is made from ingredients like alum, bleaching powder, and lime. All these ingredients are available in local markets. The following steps should be followed:

Step 1: (For one hundred packets.) Weigh 3 kg of alum, 1.5 kg of lime, and 200g of bleaching powder (ensure that the latter has 33% strength). Keep the three packets/pots separately. The alum should be as dry as possible. Try to use the best quality lime. The container for bleaching powder should be resistant to sunlight.

Step 2: Grind alum into a powder; spread it on a dry sheet of plastic and dry well. Keep powdered dry alum in a plastic container. The lumps of lime should be ground well into fine powder and stored in a separate dry container. Keep the container airtight to avoid the risk of melting.

Step 3: Mix required quantities of lime and bleaching powder well; keep the mixture in a plastic bucket. Do not mix with alum at this stage.

Step 4: Prepare 200 plastic sachets of size 5 inch x 4 inch (12.7 cm x 10.16 cm). In the absence of properly sized sachets, take 100 polythene packets that are generally used for germinating potted plants. Write mixing instructions legibly on a page and make 100 photocopies.

The following instructions should be written:

- Take one bucket/pitcher of water (10-12 litres).
- Take ½ teaspoonful of powder from bigger packet (of alum) and pour into the bucket/pitcher.
- Take ½ teaspoonful of white powder from smaller packet (mixture of lime and bleaching powder), pour into the bucket/pitcher, and mix well with the water. Stir the water vigorously for ½ minute and allow it to settle. Visible flocs will form and settle at the bottom in about 45 minutes to one hour.

- Put a four-folded piece of cotton cloth on the mouth of a second (cleaned) pitcher. Decant the supernatant slowly through the cloth-filter into the second pitcher. Water in the second pitcher should be free from contaminants. Keep the pitcher covered at all times. This water is to be used for drinking purpose only. Please note that the water will smell of chlorine.

One sachet/packet should weigh about 47g and can treat about 180 to 200 litres of floodwater depending on turbidity, alocal knowledgealinity, etc. After preparation, the water purifier packets should be used as quickly as possible. However, they can safely be used within 2-3 months without much reduction in potency. The packets may be stocked in strategic places such as in flood shelters/camps. Once prepared, packets may be distributed among community members. One average-size household of 6 persons will require one packet per week. For easier distribution, there should be one designated day per week in the locality. The CFFRMC should maintain a roster for smooth distribution of water purifying packets and maintain a register for all inputs and outputs as well as storage and distribution of packets.

In every household, special care must be taken to keep water purifying chemicals out of reach of children. If accidentally ingested, the victim should be taken immediately to the nearest hospital.

Cost information: The cost of about 100 of these water purifying packets should not be more than US $4. One community worker, ideally a science school student of a higher class, representing the community would be able to pack at least 150 units per day. Producing 1000 packets should not take more than two days involving a total of 6 person-days.

Equipment: The following equipment should be kept handy to facilitate preparation of the water purifying packets: (a) one stone grinder, (b) one weighing scale with appropriate weights, (c) three pans, (d) three spatulas, and (e) plenty of dry and empty polythene packets.

Method 3: Solar Water Disinfection

Sommer et al. (1997)
The Solar Water Disinfection (SODIS) process is a simple technology used to improve the microbiological quality of drinking water (Sommer et al., 1997). SODIS uses solar radiation to destroy pathogenic microorganisms which cause waterborne diseases. SODIS is ideal for treating small quantities of water. Contaminated water is put into transparent plastic bottles and exposed to full sunlight for six hours.

Sunlight treats the contaminated water through two synergetic mechanisms: **Radiation** in the spectrum of **UV-A** (wavelength 320-400nm) and **increased water temperature**. If the water temperatures rise above 50°C, the disinfection process is three times faster.

Oral Rehydration Salts (ORS)

What is it? Oral rehydration salts (ORS) are a low-cost rehydration drink useful for fighting diarrhoea.

Method of preparation: Take one litre of boiled and cooled water. Add (i) two teaspoons of molasses/sugar/honey, (ii) ¼ teaspoon of salt, (iii) ¼ teaspoon of bicarbonate of soda (if unavailable, use moresalt instead). Stir the mixture well. The drink is ready.

Alternative method: Take one litre of boiled and cooled water; add four finger scoops of sugar/molasses and a three-finger pinch of salt. Stir well. The drink is ready.

Do not boil or heat up the pot: Keep the mixture cool. The mixture can be used up to six hours after its preparation.

Use of ORS*:* Give the dehydrated person (or the patient suffering from diarrhoea) sips of the drink every five minutes, day and night, until the patient begins to urinate normally. An adult needs three or more litres per day, whereas a child requires one to two litres per day. Even if the patient is vomiting, keep giving ORS drink. If the patient is unable to sip or drink, take her/him to the nearest hospital/healthcare camp.

Note: A prepared mixture can be bought from local stores (ten sachets cost around US $1). **Check the date of expiry before purchasing these sachets*.*** The method of preparation is written on the sachet, please read that carefully.

Annex 5

Methods of Dealing with Animal Bites

Adapted from Prashad (2005)

Snake Bites

First aid tips on bites of poisonous snakes:

- Stay quiet: people who have been bitten on the foot should not walk even one step if it can be avoided. Carry them on a stretcher.
- Wash the wound area with warm and soapy water.
- Tie a cloth around the limb just above the bite. Do not tie it very tight and loosen it for a moment every half an hour to allow flow of blood. Remove jewellery and tight fitting clothes. Avoid ice packs, cold packs and feron spray to wound area.
- Do not remove the venom by mouth suction; instead, if available, use suction kit for its removal.
- Get medical help.

Scorpion Bites

- If it is for the first bite for an adult, give aspirin and, if possible, put ice on the sting.
- If the sting is for the second time in an adult or in a child under five, get medical help fast.

Annex 6

DOs and DON'Ts for Emergency Response

DOs	DON'Ts
Base donations on the requests of what is needed or not needed.	Don't make assumptions about needs.
Think carefully about your capacity to respond effectively to the needs of the disaster affected people. Respond according to a request for assistance and as per the initial needs assessment.	Don't base response on media hype.
Provide a timely response if you are going to respond.	Don't be late in responding. These activities must be undertaken within the first few days of the emergency.
Record and document your response activities. You are accountable for all your decisions and actions.	Don't use emergencies as organisational advertisements and promotion for your actions. For example, don't set up artificial activities for publicity purposes.
Perform proper assessments and research that lead to projects that meet the needs of people and are within your organisational capacity.	Don't implement response activities based on donor financial incentives. Donors should not compete with each other to meet the most visible needs in a country.
Construct platforms and media for communication and dialogues.	Don't exclude the affected people in planning responses as well as recovery activities.
Consider the impact of your activities on the environment.	Don't destroy the environment.
Consider existing relationships and power structures in the community.	Don't cause tension in the community by ignoring social structures.
Ensure that the activities meet the needs of the people, not the needs of the donor.	Don't encourage project implementation without stringent assessment.
Attend NGO and organisational meetings, register with lead agency upon request, share information, where possible collaborate, cooperate and form partnerships.	Don't ignore requests from the national government or the lead agency for the disaster area.
Respect all cultural practices and consider how they affect your project, for example, evacuation centre design, housing style, etc.	Don't ignore cultural norms, for example, appropriate dress, religious customs, and traditional lifestyles.
Consider the wellbeing of response personnel including sleep, mental health, food, water.	Don't overwork response personnel.
Go prepared to carry out specific tasks; for example, take the correct equipment and skilled personnel.	Don't forget to provide relief assistance to the disaster-affected people, which is your main aim.

Source: ADPC/UNDP 2005