

# Manual on Flood Preparedness Program

for Provincial and District Level Authorities  
in the Lower Mekong Basin Countries



produced under  
**Flood Management and Mitigation Program (FMMP)**  
**Mekong River Commission (MRC)**



**gtz**



**adpc**

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**Flood Preparedness Program**  
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produced under Component 4 of the Flood Management and Mitigation Program (FMMP)



# Abbreviations

ADPC	Asian Disaster Preparedness Center
CBDP	Community Based Disaster Preparedness
CBOs	Community Based Organizations
CCFSC	Central Committee for Flood and Storm Control
CFSC	Committees for Flood and Storm Control
CRC	Cambodian Red Cross
DARD	Department of Agriculture and Rural Development
DCDM	District Committee for Disaster Management
DCFSC	District Committee for Flood and Storm Control
DDMC	District Disaster Management Committee
DIPECHO	ECHO's Disaster Preparedness Programme
DM	Disaster Management
ECHO	European Commission Humanitarian Aid Department
EOC	Emergency Operations Centre
EWS	Early Warning System
FEMS	Flood Emergency Management Strengthening
FGD	Focus Group Discussion
FMMP	Flood Management and Mitigation Programme
FPP	Flood Preparedness Plan
GIS	Geographic Information Systems
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (GmbH)
HVCA	Hazard, Vulnerability and Capacity Assessment
INGOs	International Non-Governmental Organizations
MLSW	Ministry of Labour and Social Welfare
MoH	Ministry of Health
MOWRAM	Ministry of Water Resource and Management
MRC	Mekong River Commission
NCDM	National Committee for Disaster Management
NDMC	National Disaster Management Committee
NDMO	National Disaster Management Office
NGOs	Non-Governmental Organizations
NMCs	National Mekong Committees
PC	People's Committees
PCDM	Provincial Committee for Disaster Management
PCFSC	Provincial Committee for Flood and Storm Control
PDMC	Provincial Disaster Management Committee
PRA	Participatory, Rapid (or Rural) Appraisal (or Assessment)
RFMMC	Regional Flood Management and Mitigation Center
RGC	Royal Government of Cambodia
ToR	Terms of Reference
VPU	Village Protection Units



# Introduction

The Manual on Flood Preparedness for Provincial and District Level authorities in the Lower Mekong Delta Countries has been developed based on assessment of the needs of local disaster management authorities and practitioners to improve flood preparedness planning in Cambodia, Lao PDR and Vietnam. The manual would help these provincial and district level DM committees of the riparian countries to develop and implement the Flood Preparedness Program. In addition, this also serves a purpose as a training resource handbook for the national disaster management officials, practitioners and NGOs to conduct capacity building activities on flood preparedness.

This Manual was developed by the Asian Disaster Preparedness Center (ADPC) through its internal expertise and various training course curriculum, reference material on floods, as well as through collaborative projects with the Mekong River Commission Secretariat (MRCS), the National Mekong Committees (NMCs), the National Disaster Management Offices (NDMOs) and its provincial and district level committees/offices after a series of consultations, training programs at the national and provincial level, and also through the actual Flood Preparedness Program development process in provinces and districts in the Lower Mekong Delta countries, particularly Cambodia and Lao PDR. This Manual is also an outcome of the component 4 of the Flood Management and Mitigation Program (FMMP) of the Mekong River Commission (MRC). ADPC, in collaboration with MRC, has been implementing the following two projects to strengthen the capacities of the provincial and district level authorities.

- **Flood Emergency Management Strengthening (FEMS)**, Component 4 of the MRC's Flood Management and Mitigation Program since September 2004 with funding support from GTZ
- **Capacity Building for Planning and Implementation of Flood Preparedness Programs at Provincial and District Levels in the Lower Mekong Delta** since 2003 in three phases, Phase I: 2003-2004, Phase II: 2005-2006 and Phase III: 2007-2008, with funding support from ECHO under the DIPECHO action plan for South East Asia

During the implementation of the above projects, a training course curriculum was developed in 2003 to build the capacity of provincial and district level authorities in planning and implementing flood preparedness programs. The training curriculum was built upon the strengths and lessons learnt from various disaster management initiatives in the region and from other South Asian regions. Between September 2003 and July 2004, under the Phase I of the MRC-ADPC-ECHO project, a total of two national level trainings, one each in Cambodia (4 provinces) and Vietnam (2 provinces) were conducted using this training curriculum. In addition, two national seminars (one each in Thailand and Lao PDR) on flood preparedness planning were conducted, and the training curriculum was reviewed. During the Phase II of the MRC-ADPC-ECHO Project between 2005-2006, the training curriculum was adapted to the three countries specific conditions and languages, and a total of 3 provincial level trainings in Cambodia, Vietnam and Lao PDR were conducted, and one district level flood preparedness planning process in Kratie province was completed.

Under the MRC-ADPC-GTZ project, the training course curriculum used for training under the ECHO phase II training courses in the provinces was converted into a manual on Flood Preparedness for Provincial and District Level Authorities in the Mekong Delta Countries. The draft manual was used to develop 2 provincial and 4 district level Flood Preparedness programs in Cambodia under the MRC-ADPC-GTZ project between 2005 and 2006. All the provincial and district level FPP planning process workshops and trainings at the district and commune level in Prey Veng, Kandal and Kratie provinces used this draft manual as a reference handbook.

On 23 November 2006, the draft manual was further reviewed in a two-day regional write-shop organized in Thailand, with a total participation of 21 disaster management practitioners from Thailand, Cambodia, Lao PDR, Vietnam, Sri Lanka and Bangladesh.

This Manual provides the basic understanding and describes implementation arrangements required for flood preparedness planning through the 10 chapters as follows:

1. Flood Preparedness Planning
2. Preparation of a Provincial and District Profile
3. Hazard, Vulnerability and Capacity Assessment (HVCA)
4. Institutional Mechanisms for Flood Preparedness and organizations involved in flood risk management
5. Institutional Terms of Reference (ToR) for Flood Preparedness Planning
6. Flood Risk Reduction Measures to be taken before, during and after floods
7. Preparation and Maintenance of Resource Inventory
8. Assessment and Upgrading of Flood Preparedness Program
9. Mainstreaming Special Needs of Vulnerable Groups into flood planning
10. Integration of FPP with the National, Provincial and District Development Plans

It is expected that this Manual will be beneficial to the countries of the Lower Mekong Basin i.e., Cambodia, Lao PDR and Vietnam and can also be adapted to incorporate the needs and situation of other countries in the region, including Thailand.

Accordingly, as well as a translation of this Manual into the Khmer language, a version of this Manual has also been adapted to the specific conditions of Lao PDR, through a review undertaken with the help of the national and provincial partners during January-May 2007. Lao PDR's NDMO, in consultation with the LNMC, had further distributed copies of the Lao-specific Manual to Disaster Management offices at the national, provincial and district levels, UN agencies, NGOs and INGOs working in disaster management. It is expected that the Manual would serve as a training handbook for all the stakeholders in conducting the training on flood preparedness in the country.

Given the nature of flood preparedness planning as an evolving process, this Manual should be regarded as a working document, rather than a final version. The development of the Manual is an ongoing exercise and takes into consideration more recent situations and changes in context.

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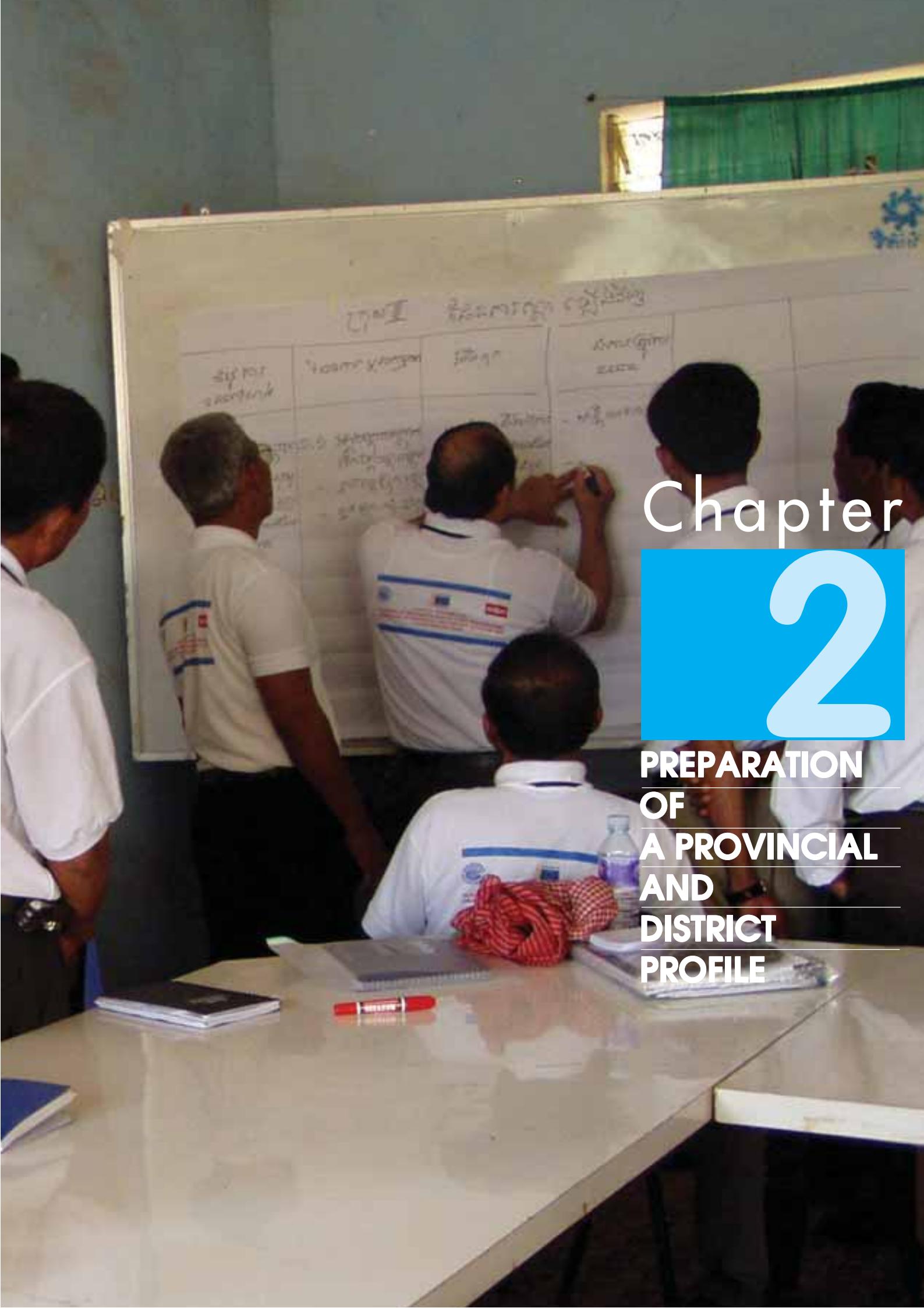
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A photograph showing several men in white shirts gathered around a large whiteboard, writing and discussing. The whiteboard has some handwritten text and diagrams. In the foreground, there's a table with notebooks, a red marker, and a water bottle.

# Chapter

# 2

## PREPARATION OF A PROVINCIAL AND DISTRICT PROFILE

# PREPARATION OF A PROVINCIAL AND DISTRICT PROFILE

## 2.1. Overview

This chapter describes background information required to prepare a provincial/district profile. It is mostly data-based, information-oriented and self-explanatory. The planners need such detail of their respective province/district before actually preparing the FPP.

The provincial/ district profile will help to quantify flood hazard and its possible effects on people and property ways. It would also set the context of flood preparedness planning in a particular location by mapping out features of the focused areas. It would assist to clearly recognize the linkages between socio-economic characteristics of a location and its community to flood hazards and its past and possible impact on peoples lives and resources.

In addition, this chapter briefly discusses why preparation of a provincial/ district profile is essential to flood preparedness planning.

## 2.2. Objectives

- Understand what basic information is required and what sources and types of information should be collected and examined in order to prepare provincial/ district profile.
- Present the information in useful and coherent ways for an effective FPP that outlines vulnerabilities and capacities of the province/district.
- Set context of FPP in a particular province/ district.

## 2.3. Main Concepts

- Information about the province/district, past and floods and the community are essential building blocks for an effective flood preparedness programme.
- While the required information and data may not be readily available on all elements necessary for the FPP, especially at the district level, the data gathering exercise is indispensable. Whatever useful profiling information is present in the FPP will form the basis for further actions in planning and implementation.
- To compile a comprehensive provincial/ district profile, every effort should be invested to browse through as many sources of information as possible. These many include census data, socio-economic studies, provincial and district records, and newspapers.
- Validation of the information collected is equally important and should be done through the department or agencies responsible for statistics and planning.

## 2.4. Main Components of a Provincial/ District Profile

The provincial/ district profile is a brief overview of the Province/District in terms of its population, geography, livelihood details, demography, and basic infrastructure. All the above elements are important to assess the needs and future priority actions in a flood preparedness programme. The general information required for provincial and district level plans is presented below:

- Coverage
  - a. Detailed location of the province/ district
  - b. Population
  - c. Number of districts, communes and villages
  - d. Provincial boundaries (provincial/district map, including Mekong River and other river systems)
  - e. High risk areas or disaster prone areas
- Geography
  - a. Landholding patterns
  - b. Cropping patterns
  - c. Annual rainfall patterns and data
- Livelihood Details
  - a. Predominant occupations and livelihoods
  - b. Income generating activities
- Demography
  - a. Population data, including age structure, dependents, singleparent families etc.
  - b. Literacy rate
  - c. Per capita income
- Basic infrastructure
  - a. Total road length and road types
  - b. Main canal systems
  - c. Number of hospitals (government and private) and health centres
  - d. Sources of drinking water
  - e. Educational institutions
  - f. Temples/ Religious Places
  - g. Bridges
  - h. Critical Installations (Military bases, police stations, bus terminals, airports, radio and TV stations), including service facilities
  - i. Emergency facilities (fire brigade, etc. hydrological meteorological stations, search-&-rescue posts, safe areas for cities,)

In identifying likely sources of information for a FPP, the emphasis should be on tapping into a range of sources; both quantitative and qualitative information should be sought

Most of the information would be available with the provincial and district level departments, such as for planning and statistics, rural development, water resources, and management.

## 2.5. Questions for Consideration

1. What general information is required to develop a provincial/or district profile?
2. From where can this information be obtained?
3. Which line departments are most likely to have background information required for a provincial/ district profile?

## 2.6. References

NIDM, India ( 2005) District Disaster Management Plan (DDMP) : Model Template





# Chapter

# 3

**HAZARD,  
VULNERABILITY  
AND CAPACITY  
ASSESSMENT  
(HVCA)**

# HAZARD, VULNERABILITY AND CAPACITY ASSESSMENT (HVCA)

### 3.1. Overview

Hazard, Vulnerability and Capacity Assessments (HVCA) are undertaken to formulate a Risk Assessment. It helps in creating a pool of flood data and analysis that will give a clear picture of:

- the potential damage and loss in a particular location
- the existing capacities to prepare for floods.

This chapter assists in understanding flood risk assessment and details out the steps involved in this exercise. Moreover, the chapter also outlines community-based methodologies to assess flood risks.

### 3.2. Objectives

- Understand risks involved in floods and what the key factors are to be considered in assessing these risks.
- Describe the basic components of hazard assessment, including their various forms of presentation such as maps.
- Explain vulnerability and capacity assessment, including various participatory methodologies to assess and analyze the physical/material, social/organizational and motivational/attitudinal aspects of vulnerability and capacity.
- Provide teaching on linking a flood hazard with its possible effects on people and property in a particular province/district.

### 3.3. Main Concepts

- Flood risk is the expected loss due to a given flood event. It is a function of:
  - The probability of a hazard of a particular magnitude occurring.
  - Vulnerability and capacity of communities living within the impact area.
  - Level of exposure of various elements located within that area.
- HVCA is an integral part of preparedness planning and forms the basis for developing and implementing FPPs.
- HVCA determines the nature and extent of risk by analyzing the probable impact of flood hazards on existing conditions of vulnerability that could pose a potential threat, or harm to people, property, livelihoods and the environment on which they depend (UNISDR, 2004).
- Risk assessment involves an assessment of the flood hazard (including the likelihood of one occurring, the frequency, duration, and intensity), exposure, vulnerability and capacity.
- Risk assessment should be participatory and can be a starting point for raising awareness of flood risk in the community.

### Community Based Flood Risk Assessment

A community flood risk assessment - or hazard, vulnerability and capacity assessment, HVCA of a particular community in a specific location, is a process whereby the at risk community living in the specified location, with assistance from external players of governmental and/or non-governmental agencies, collect and analyse the potential risks that can arise from a flood event. Based on this, plans can be made and appropriate activities implemented that will reduce flood risks from adversely affecting people's lives. The at risk communities include local residents, local authorities, and community based organisations living and working in that particular area.

Community flood risk assessment involves a participatory analysis of

- Past patterns of flood hazards
- Present, associated threats to the community (hazard assessment), combined with an understanding of how hazards become disasters (vulnerability assessment)
- Available resources an affected community uses to reduce risk (capacity assessment)
- How different people measure and perceive risk.

### Participatory Flood Risk Assessment Tools

Flood risk related information is collected using participatory tools or techniques often referred to as PRA Participatory, Rapid (or Rural) Appraisal (or Assessment). An assessment team may initially analyse the information collected, but the important part of the process is to share and verify this information with the community before moving to the next steps.

HVCA steps can be:

- Preparation for HVCA (both logistics and content)
- Collecting information, based upon identified questions and using suitable PRA tools
- Information analysis and recommended measures using the progression of vulnerability framework
- Planning for disaster preparedness and risk reduction (with local authorities, social organisations and the community)

PRA tools commonly used for such assessments are:

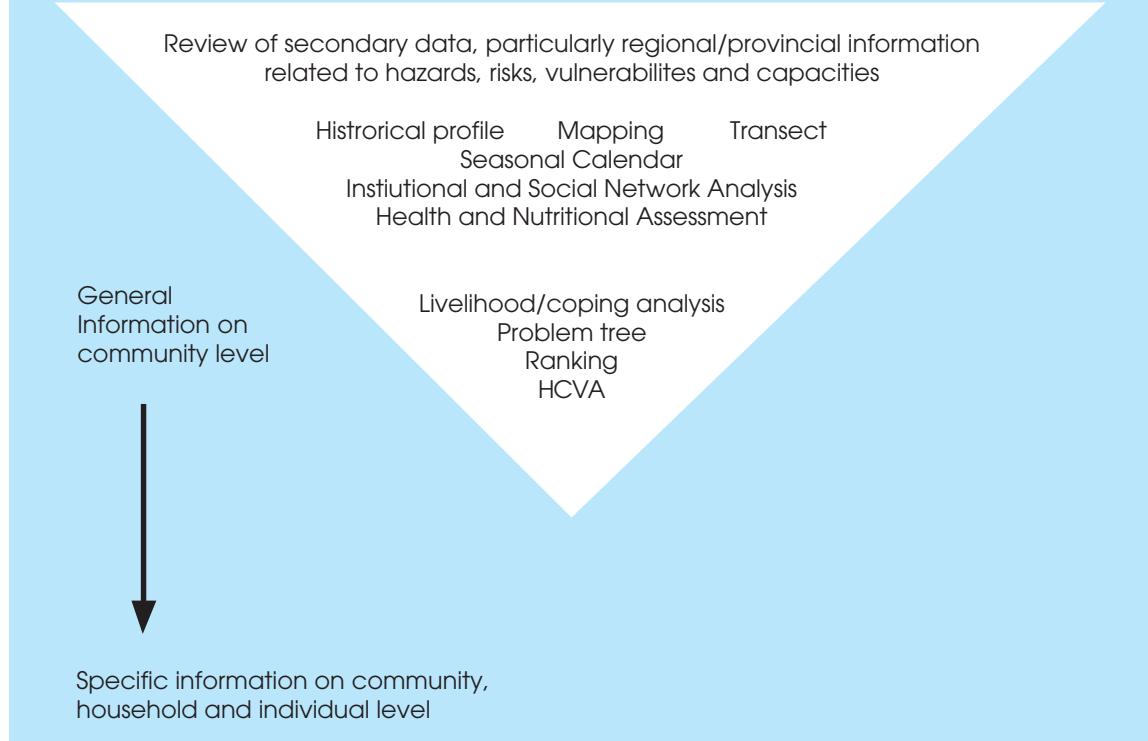
- Hazard mapping
- Historical profile
- Seasonal calendar
- Resource mapping
- Transect walk
- Institutional/ social network analysis
- Semi-structured interviews
- Focus group discussion (FGD)
- Problem tree
- Ranking
- Observation



**Figure 3.1:** Sequence of Participatory Risk Assessment Tools

Information needs should be identified first, then PRA tools that are most appropriate for collecting the data selected. Tools should be used in a sequence from easy to more complicated ones. A possible sequence of PRA tools might be:

### **SEQUENCE OF TOOLS IN TIME**



### **3.4. Key Components of HVCA**

HVCA forms the basis for flood preparedness planning. It defines the nature of the problem in terms of flood hazard and existing conditions that exacerbate its impact.

HVCA takes into account the flood hazard (as well as secondary hazards such as soil erosion) exposure and increased vulnerability of people and infrastructure to floods. It also maps out the existing capacity of institutions dealing with flood risk reduction and of communities living in flood prone areas.

HVCA can be undertaken as follows:

#### **3.4.1 Flood hazard assessment**

The assessment of flood hazard determines the nature of flooding based on meteorological and hydrological parameters and river basin conditions. The information can be used to determine relationships between meteorological and hydrological parameters, create flood models and outline the frequency and magnitude of floods.

Flood hazard assessment can be conducted in various ways according to the availability of data.

After gathering information about flood hazards, it is also desirable to present the information in useful, accessible and coherent ways. There are several potential methods of presentation, including maps, flood intelligence records and Geographic Information Sys-

tems (GIS). Maps are the standard format of presenting flood data and disseminating information in an easy-to-understand way. Areas subjected to flooding can be represented on a topographic base-map by shading or colouring. This would highlight inundation of various magnitudes of flooding in those areas. Different types of maps are mentioned below:

- Flood inundation map - shows the variation in flood depth over the floodplain. It provides a clear and concise picture of the depth and the extent of inundation.
- Flood duration map - is similar to inundation maps, but it also takes into account the duration of flooding. Such a map is particularly useful to evaluate potential flood damage, including agricultural (crop) damage.
- Flood probability map - combines the current trends with factors such as future development trend and climate change patterns to project possible flood scenarios for the future, capable of indicating both the potential inundation and duration of floods.
- Flood comparison map - illustrates the difference between two flood maps. There are two types of comparison maps highlighting:
  - Impact of an intervention.
  - Change in flooding over time.

The following data can be extracted from the assessment, to be included in the FPP;

- a. History of hazards (including the historical summary of flooding in the area)
- b. Causes and seasonality/duration of annual flood (July - October)
- c. Frequency and flood hydrograph (start, peak and recession time)
- d. Annual impacts of the yearly flood (including data from worst case floods and the data from floods of previous 3 years such as average length/period of inundation, total area of inundation, loss of productive land, total number of people/family affected, total economic loss would be helpful)
- e. Secondary hazards (such as river bank erosion, pollution, loss of livelihood, displacement/migration, social unrest and epidemics)
- f. Future scenario projections due to climate change (if available)
- g. Other hazards such as drought, fire hazard, and others.

### **3.4.2 Vulnerability<sup>1</sup> Assessment**

The vulnerability assessment identifies people and infrastructure most vulnerable to floods and potential damages within a geographical area that may be incurred.

In assessing vulnerability, it is crucial to recognize that there are a variety of factors contributing towards vulnerability, often in combination. Vulnerability can change over time - it can either increase or decrease according to the position or situation of the community or an individual, which may change over time. Vulnerability is not homogenous within any given area: it varies according to income, exposure and level of preparedness.

Some factors that may cause vulnerability to floods are:

- Unplanned development with poor drainage and sanitation
- Development of squatter communities on marginal land such as on embankments, riverbanks and within river channels
- Poor housing
- Poverty
- Inadequate flood preparedness
- Lack of awareness about the flood hazard
- Lack of early warning systems
- Climate change effects over a particular area
- Environmental and geographical vulnerabilities

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<sup>1</sup> Vulnerability assessments also identify the most vulnerable people of a community and subsequently are helpful in assisting them. Highlighting those people who are in need of urgent and special help may result in targeting and prioritizing resources for their benefit.



Vulnerability assessments also identifies the most vulnerable people of a community and subsequently is helpful in assisting them. Highlighting those people who are in need of urgent and special help may result in targeting and prioritizing resources for their benefit.

**Table 3.1:** Vulnerability Assessment

Based on the above, a vulnerability assessment table is presented below:

Flood Hazard	Elements at Risk	Unsafe Conditions	Dynamic Pressures	Root Causes
<p>Caused by (depending on the location of the community)</p> <ul style="list-style-type: none"> <li>● Typhoon (floods induced by storm surge)</li> <li>● Monsoon rain</li> <li>● High tide</li> </ul>	<ul style="list-style-type: none"> <li>● Houses and buildings</li> <li>● People</li> <li>● Livestock</li> <li>● Household assets</li> <li>● Agricultural land</li> <li>● Other infrastructure such as bridges, roads, levees, dykes, etc.</li> </ul>	<ul style="list-style-type: none"> <li>● Livelihood</li> <li>● House sited on low land, along creeks, canals, on rivers and seas</li> <li>● Housing materials that easily rot or get damaged</li> <li>● No food stocks or savings</li> <li>● No vaccination</li> <li>● Excluded from flood protection</li> <li>● No safe area/ safe haven</li> <li>● Unable to replace lost assets</li> <li>● Livelihoods liable to disruption</li> <li>● Houses and buildings that can cause water-logging and increase diseases</li> <li>● Poor existing health and malnutrition</li> <li>● No safe drinking water</li> <li>● Lack of coordination/ and unity in community</li> </ul>	<ul style="list-style-type: none"> <li>● Low income levels, unstable livelihoods</li> <li>● Lack of proper allocation of land and/or housing for the poor</li> <li>● Inadequate economic progress to provide alternative livelihoods</li> <li>● Low education hampering employment</li> <li>● Alternative income from anti-social or illegal activities</li> <li>● Threat of demolition to make way for development projects</li> <li>● Poor government support for urban poor</li> <li>● Political and social conflict</li> </ul>	<ul style="list-style-type: none"> <li>● Migration into or unplanned urbanization in areas prone to flooding</li> <li>● Lack of implementing land use plans or their implementation</li> <li>● Environmental degradation increasing flood risk</li> <li>● Surely there are more..</li> </ul>

The identification of root causes, dynamic pressure and unsafe conditions can lead to formulation of activities to counter these issues.

In the FPP document, a table can be prepared to present the data on:

- Number of vulnerable districts and communes and the corresponding population (break down into male, female, male headed household, female headed household as well as age break down of the population)
- Potential causes of vulnerability

- Elements at risks (road system and the length of road, canals/dykes/embankment in the area, number of schools and hospitals in the high risk zone, other critical infrastructures and total agricultural or other productive land area)

### 3.4.3. Capacity Assessment

Capacity assessment helps prepare human (skills, expertise), material and financial capacities available in that area as well as the required resources. It is important to list out the following resources and capacities in terms of what is available and what is required.

- a. Shelter facilities
  - Total number of safe areas and shelters
  - Locations of safe areas and shelters
  - Access routes
- b. Transportation facilities
  - Number of boats (public and private, types of boat)
  - Buses and public carriers
  - Trucks and other heavy equipment moving vehicles (for response and recovery purposes)
- c. Communication system
  - Telephone/fax machine
  - Wireless and satellite phones
  - Walkie-talkie
  - Mobile telephone services
  - Access to internet
- d. Flood protection facilities
  - Dykes and levees
  - Dams
  - Other structures
- e. Storage facilities
  - Location and capacity
  - Items stored (cooking rice, tent, fuel, medicines)
- f. Medical facilities
  - Number of hospitals and health centres (refer to Section 2.3)
  - Number of doctors/nurses/health workers
  - Number of ambulances
  - Availability of mobile medical team during floods
- g. Institutional and other facilities
  - Existence of DM institutions
  - Existence of community organizations
  - Existence of credit scheme
  - Development plans (with regular funding)
- h. Human resources
  - Numbers of Provincial and District Red Cross volunteers
  - Mass Organisations (women's union, youth union, etc.)
  - Trained search-and-rescue teams
  - Police and armed forces
  - Youth volunteers
  - Flood fighting teams (if applicable)
  - NGOs, CBOs and INGOs working in the locality



Vulnerability and capacity of people can be analyzed according to the criteria given in the following table:

**Table 3.2:** Vulnerability and Capacities

	<b>Vulnerabilities</b>	<b>Capacities</b>
Physical/ material	<ul style="list-style-type: none"> <li>● Proximity and exposure to flooding living on a floodplain, poor housing</li> <li>● Poverty few options, meagre financial savings , few assets</li> <li>● Resources limited technology, skills or employment</li> </ul>	<ul style="list-style-type: none"> <li>● Protected location</li> <li>● Money, assets, land, jobs, savings</li> <li>● Insurance</li> <li>● Access to credit</li> <li>● Good health</li> <li>● Skills and expertise</li> </ul>
Social/ organizational	<ul style="list-style-type: none"> <li>● Marginalization people excluded due to politics, religion, ethnicity, social customs and norms</li> <li>● Organization- limited community or legal structures</li> <li>● Discrimination lack of support, reduced access to resources and services</li> </ul>	<ul style="list-style-type: none"> <li>● Community support, leadership, institutions</li> <li>● Political structures, adequate management</li> <li>● Community harmony</li> <li>● Social network</li> <li>● Patronage</li> </ul>
Motivational/ attitudinal	<ul style="list-style-type: none"> <li>● Perception of risk deny the threat, unaware of the threat</li> <li>● Attitude no confidence in abilities, view as dependent upon others, lack of confidence in the existing systems and structures (in dealing with floods)</li> <li>● Power no influence within the community</li> </ul>	<ul style="list-style-type: none"> <li>● Having knowledge of/ aware of what prevailing disasters exist in the immediate environment and their impacts</li> <li>● Having confidence to cope with crisis</li> <li>● Ability to influence the environment</li> <li>● Having strong belief in existing system and consequently support the structure</li> </ul>

### 3.5 Questions for Consideration

1. Outline the main components of flood risk assessment.
2. Describe the different types of vulnerabilities and capacities.
3. What are some of the unsafe conditions that need to be assessed?
4. What are some of the most important losses that floods are likely to cause in the vicinity covered under the FPP?

### 3.6 References

1. ADPC (2004) : Flood Risk Management Training Course- Hand Out
2. Red Cross (1998): Vulnerability and Capacity Assessment, section 1: Why Vulnerability
3. ADPC (2006): Primer on Integrated Flood Risk Management in Asia



## Chapter

# 4

## INSTITUTIONAL MECHANISM FOR FLOOD PREPAREDNESS AND ORGANISATIONS INVOLVED IN FLOOD RISK MANAGEMENT

# INSTITUTIONAL MECHANISM FOR FLOOD PREPAREDNESS AND ORGANISATIONS INVOLVED IN FLOOD RISK MANAGEMENT

## 4.1. Overview

This chapter underlines the importance of having institutional mechanisms for flood preparedness planning and disaster management from national, sub-national to local levels. It also gives an overview of stakeholder analysis and the benefits of a participatory approach to flood preparedness planning and how best it can be managed in the formal structures of relevant agencies such as Provincial and District Committees for Disaster Management (PCDM/ DCDM) in Cambodia, Provincial and District Committees for Flood and Storm Control (PCFSC/ DCFSC) in Vietnam, and Provincial and District Disaster Management Committees (PDMC/ DDMC) in Lao PDR.

By outlining roles and responsibilities of each agency involved in flood preparedness, the chapter recommends strengthening this institutional mechanism for enhanced leadership, strengthened coordination among agencies and improved communication within formal structures and communities to efficiently develop and coherently implement an effective preparedness plan.

## 4.2. Objectives

- Understand the existing structures of provincial and district level Committees for disaster management such as the PCDM and DCDM in Cambodia, the PCFSC and DCFSC in Vietnam, and PDMC and DDMC in Lao PDR.
- Describe the roles and responsibilities of each member agency.
- Highlight the need for analyzing and involving stakeholders in flood preparedness planning and flood risk management.

## 4.3. Main Concepts

- Flood preparedness planning and flood risk management should be legally mandated within the larger institutional framework of disaster management that define the relationships and locations of the organisations and institutions assigned with disaster risk reduction responsibilities.
- Flood preparedness planning should be built upon stakeholder analysis and strengthened by involvement of maximum stakeholders from its outset to the execution of FPP.
- National disaster management institutions should be the main agencies responsible for coordinating disaster preparedness, mitigation and response functions in a country.
- The principal roles of provincial and district disaster management bodies should be to undertake disaster preparedness and response activities.
- ¥ Local Red Cross chapters and their volunteer networks are actively involved in various

disaster management activities at the provincial and district levels. For successful execution of disaster management functions, an effective coordination mechanism between different agencies need to be put in place at all levels.

- Institutional mechanism for flood preparedness planning and flood risk management should enable designation of clear roles to various agencies, with limited duplication of tasks, and be an effective arrangement for collaboration and coordination between:
  - | Agencies working at the local level
  - | Local and national systems/plans
  - | Local systems with linkages to others in adjoining areas.
- In multi-agency structures, such as provincial and district disaster management bodies in Cambodia and Viet Nam, members should dually represent their individual agencies as well as the disaster management body. They should be expected to reveal needs and perspectives of their agencies before the body and then take the requirements of the body and its decisions back to their individual agencies for consideration and action.
- A thorough and immediate review after each exercise, drill, or actual emergency, will point out areas that require improvement. The plan should be revised when shortcomings are identified, and should be reviewed at least annually.
- The institutional mechanism should promote building of legal relationships and introduce rules of partnership among various stakeholders and agencies for better flood preparedness planning and better co-ordinated disaster management. Institutional mechanism can also avert conflicts of interests between line departments and the provincial/ district management bodies. It is most likely that the presence of such institutional arrangements would ensure that there is always a viable mechanism available when, due to conflicting needs, transboundary issues may arise among districts or provinces of a country and sometimes even beyond the international boundaries. It should be kept in mind that while working collaboratively provides opportunities for better coordination, it may also increase risks of conflict arising.

Examples of institutional mechanisms for flood preparedness in Cambodia, Lao and Viet Nam are provided in the annexes, with the detailed roles of member line agencies responsible for disaster management at provincial and district levels (see Annexes I to III at the end of this chapter).

#### **4.4. Stakeholder Analysis and the Main Benefits of Stakeholder Involvement**

For flood preparedness planning, stakeholders can be individuals or agencies/organisations, both within and outside the local government authorities who

- Are in a position to influence the planning process
- Are/ will be affected by the plan
- Can lay claim to engagement in the planning work.

Undertaking a stakeholder analysis, before an actual planning process, can help identify the key players and clarify their roles and responsibilities, at the same time as ensuring the involvement of all stakeholders. It also helps in assessing the relative importance of the various agencies engaged in disaster risk reduction, thereby identifying the nature and scope of their influence in the planning process as well as classifying them as a potential ally or a resisting element.

This would help to clarify. Such analysis would also enable identification of possible challenges (tensions and contradictions) in a comprehensive planning process that need to be resolved in order to develop feasible and coherent FPPs.

It is particularly important to consider the position of any stakeholder whose stake is not clear, or whose stake might change rapidly.

It is crucial to recognize the communities likely to be affected by flood as one of the key stakeholder groups and they must be engaged and involved at all stages of the flood preparedness planning process.

## 4.5. Who are the Stakeholders in Flood Preparedness Planning?

The main responsibility for flood preparedness planning clearly rests with community groups and the local government, particularly the local disaster management authority, who are expected to respond in the event of a flood. The local disaster management authority is the lead agency responsible for the overall coordination of preparedness including facilitating discussion between partners to determine responsibilities. Once roles and responsibilities are clarified, the local disaster management authority should ensure that the activities delegated to different agencies are actually implemented within a specified time frame, encouraging transparency and accountability.

**Figure 4.1:** Undertaking Stakeholder Analysis

### How to do a Stakeholder Analysis?

Consider developing a Stakeholder Analysis Matrix similar to the one below:

Stakeholder	Stakeholder Interest (s) in the FPP	Level of Interest	Potential Strategies for Obtaining Support or Reducing Obstacles

1. Organise a group brainstorm to identify all the people, groups and institutions that will affect or be affected by FPP and list them in the column under Stakeholder.
2. Once you have a list of all potential stakeholders, review the list and identify the specific interests these stakeholders have in the FPP. Consider issues like: the FPP's benefit(s) to the stakeholder; the changes that the FPP might require the stakeholder to make; and the activities that might cause damage or conflict for the stakeholder. Record these under the column Stakeholder Interest(s) in the FPP.
3. Now review each stakeholder listed in column one. Ask the question: How important are the stakeholder's interests to the success of an FPP? Consider:
  - The role the key stakeholder must play for the FPP to be successful, and the likelihood that the stakeholder will play this role
  - The likelihood and impact of a stakeholder's negative response to the FPP Assign A for extremely important, B for fairly important, and C for not very important. Record these letters in the column entitled Level of Interest.
4. The final step is to consider the kinds of things that you could do to get stakeholder support and reduce resistance. Consider how you might approach each of the stakeholders. What kind of information will they need? How important is it to involve the stakeholder in the planning process? Are there other groups or individuals that might influence the stakeholder to support or resist your initiative? Record your strategies for obtaining support or reducing obstacles to your project in the last column in the matrix.

Adapted from <http://erc.msh.org/quality/ittools/itstkan.cfm>

The next step is to document the specific roles and responsibilities of various stakeholders at different levels (from national to provincial, district, commune and village) in the FPP so that they are able to monitor their own activities, ensure timely implementation, and when necessary, update the plan.

The table below provides an example of a list of stakeholders and the set of preparedness activities that each stakeholder could undertake:



**Table 4.1:** Stakeholders and their Preparedness Activities

Stakeholders	Main Preparedness Activities
National government: Line departments	<ul style="list-style-type: none"> <li>● Formulate preparedness related policies and issuance of government decrees</li> <li>● Flood forecasting and dissemination to local governments and humanitarian organisations</li> </ul>
Local government (provincial and district disaster management committees and their member line agencies)	<ul style="list-style-type: none"> <li>● Dissemination of warning, based on forecast</li> <li>● Preparing for search-and-rescue</li> <li>● Arrange logistics and transport to safe areas</li> <li>● Identify, organise and maintain flood safe areas</li> <li>● Ensure access to clean water sources at flood safe area and appropriate sanitation facilities</li> <li>● Prepare to provide temporary shelter, relief and basic medical services</li> <li>● Understand and use formats for rapid needs-assessment so that they can inform the national government and request additional relief if needed</li> <li>● Identify key sources/humanitarian organisations that will assist in relief and coordinate with them throughout the year and more frequently prior to the flood season</li> <li>● Clarify and document roles and responsibilities within the government, and those delegated to humanitarian organisations</li> <li>● Prepare a FPP in collaboration with humanitarian organisations, such as the Red Cross and NGOs, and implement it</li> <li>● Review flood preparedness plans following floods and revise for forthcoming floods as and when appropriate</li> </ul>
Community (should be organised into volunteer groups such as food and shelter group, evacuation, information, etc.)	<ul style="list-style-type: none"> <li>● Evacuation to safe areas upon receiving warning</li> <li>● Protecting household goods by storing on higher levels</li> <li>● Use personal boats for helping those in need</li> <li>● Contribute to stockpiles of food and fodder</li> <li>● Recruit and register young volunteers so that they are readily available and trained for emergency situations</li> <li>● Recruit and register swimmers</li> <li>● Recruit and register trained community members who can disseminate flood forecasting information to other members of the community</li> </ul>
National and international non-government agencies and regional organisations	<ul style="list-style-type: none"> <li>● Provide technical assistance in forecasting</li> <li>● Provide assistance for transport to safe areas</li> <li>● Facilitate organization of safe areas through provision of water/sanitation, temporary shelter, medical needs or food, as required or requested by government</li> <li>● Provide relief as required or requested by government</li> <li>● Facilitate preparedness planning</li> </ul>



#### **4.6. Questions for consideration**

1. Narrate five key benefits of establishing institutional mechanism for flood preparedness planning and risk management.
2. Why is it essential to undertake stakeholder analysis? Who are the main stakeholders involved in planning? When is it best for you to plan and with whom?
3. Describe the challenges before a local official who has to represent both his/ her agency and the provincial/ district disaster management body

## ANNEX I: INSTITUTIONAL ARRANGEMENTS FOR DISASTER RISK REDUCTION IN CAMBODIA

### 1.1 Disaster Management System at the National, Provincial and District Levels

In 1995, the Royal Government of Cambodia (RGC) established a National Committee for Disaster Management (NCDM). The Organization and Functioning of the NCDM was established and amended in 2004 by the King Majesty of the Kingdom of Cambodia, who signed the Royal Decree No SN/RKT/0804/234 (31 September 2004). The membership of which, is below:

#### National Committee for Disaster Management (NCDM) Royal Decree No. NS/RKT/0804/236

##### Membership

1. Prime Minister	President
2. High Ranking Official (Senior Minister)	First Vice-President
3. High Ranking Official (Senior Minister)	Second Vice-President
4. Minister of the Ministry of Interior	Vice-President
5. Minister of the Ministry of National Defense	Vice-President
6. Minister in charge of the Office of the Council of Ministers	Member
7. Minister of the Ministry of Economy and Finance	Member
8. Minister of the Ministry of Foreign Affairs and International Cooperation	Member
9. Minister of the Ministry of Environment	Member
10. Minister of the Ministry of Water Resources and Meteorology	Member
11. Minister of the Ministry of Agriculture, Forestry and Fisheries	Member
12. Minister of the Ministry of Commerce	Member
13. Minister of the Ministry of Health	Member
14. Minister of the Ministry of Rural Development	Member
15. Minister of the Ministry of Industry Mine and Energy	Member
16. Minister of the Ministry of Social Affair, Veterans and Youth Rehabilitation	Member
17. Minister of the Ministry of Public Works and Transport	Member
18. Minister of the Ministry of Education, Youth and Sports	Member
19. Minister of the Ministry of Women Affair	Member
20. Representative of the Commander In Chief of the Royal Cambodian Armed Forces	Member
21. Representative of the Chairman of the National Society of Cambodian Red Cross	Member
22. Secretary of State of the State Secretariat of Civil aviation	Member

##### Mission

To lead Disaster Management activities in the Kingdom of Cambodia.

##### Functions and Responsibilities

- To coordinate with the Ministries of the Royal Government, UN agencies, IOs, NGOs, International Communities, National Associations, and Local Donors in order to appeal for aid for Emergency Response and Rehabilitation.
- To make recommendations to the Royal Government and issue principles, main policies and warnings on Disaster Preparedness and Management regarding measures for Emergency Response and interventions for the evacuation of people to safe areas.

- To disseminate Disaster Management work to Communities and strengthen the line from the National level (Ministries / Institutions concerned) to the Provincial/ Municipal/ District/ Precinct(G1) level along with human resource development aiming to manage Disaster works firmly and effectively.
- To put forward a proposal to the Royal Government on reserves, funds, fuel, means of working, equipment and human resources for Disaster Prevention and intervention in Emergency Response and Rehabilitation before, during, and after disaster.

## **NCDM's General Secretariat**

### **The Roles and Responsibilities**

The General Secretariat acts as a headquarters for the National Committee for Disaster Management, and has the following duties:

- To ensure the continuity and functioning of the National Committee for Disaster Management administrative work.
- To conduct research into flood, drought, storm, wildfire, and epidemic prone areas and other hazards by developing Preparedness and Emergency Response plans.
- To instruct the Provincial, Municipal, District, and Precinct(G2) Committees for Disaster Management and relief communities about work and technical skills that are necessary for the collection of disaster data for damage and needs assessment and for the preparation of rehabilitation and reconstruction programmes for damaged infrastructure in co-ordination with institutions, UN agencies, IOs, and NGOs concerned.
- To formulate a technical skills training programme for officials who serve Disaster Management functions in provinces, municipalities, districts, precincts, and relief communities within the framework of training in and out of the country.
- To coordinate work with Ministries/Institutions concerned, local authorities, UN agencies, IOs, and NGOs in order to evacuate vulnerable people to safe areas, and to provide them with security, public education, Emergency Response and other programmes.
- To give opinions on the documents related to Disaster Management and the letters of consent. To sum up the report and submit it to the National Committee for Disaster Management.
- The General Secretariat of the National Committee for Disaster Management has 5 departments as mentioned in article below.

#### **1-Department of Administration and Finance**

##### **The responsibilities shall be:**

- To administer and circulate the National Committee for Disaster Management administrative documents
- To sum up the National Committee for Disaster Management work and other activities
- To govern the National Committee for Disaster Management civil servants
- To collect the needs, formulate a budget proposal, plan a programme of expense, track, and notify of its execution
- To coordinate the National Committee for Disaster Management budget line and expenses
- To administer immovable property, movable objects, stock of goods and its inventory

#### **2-Department of Information and Relations**

##### **The responsibilities shall be:**

- To follow weather information, and meteorology and hydrology situation
- To write and compile disaster news
- To issue information regarding various disasters occurring in and out of the country through bulletin and broadcasting systems

- To produce disaster posters and leaflets
- To prepare report on hydrology and meteorology situation in collaboration with skilled Ministries/Institutions, and broadcast the warning of the emergency, needs and measures
- To communicate with foreign countries and IOs regarding disaster work.

### **3-Department of Emergency Response and Rehabilitations**

**The responsibilities shall be:**

- To establish a command structure in emergency operations according to the National Policy for Disaster Management, upon receiving information on disaster predictions
- To prepare a prevention/ mitigation/ emergency relief plan, and labor rehabilitation programmes
- To coordinate the research into hazards, services, emergency relief, safety, security, evacuation, and shelters with Ministries/ Institutions concerned, UN agencies, IOs, and NGOs
- To conduct damage and needs assessment and lead the operation when an emergency occurs.

### **4-Department of Preparedness and Training**

**The responsibilities shall be:**

- To prepare equipment, resources materials, and supplies for emergency response
- To formulate plans and programmes for training human resources who serve Disaster Management functions at the National/ Local level
- To choose the candidates who participate in the training courses, in and out of the country
- To educate and disseminate Disaster Preparedness to the local communities and the affected people
- To publish pictorial documents related to Disaster Preparedness and Mitigation.

### **5-Department of Search and Rescue**

**The responsibilities shall be:**

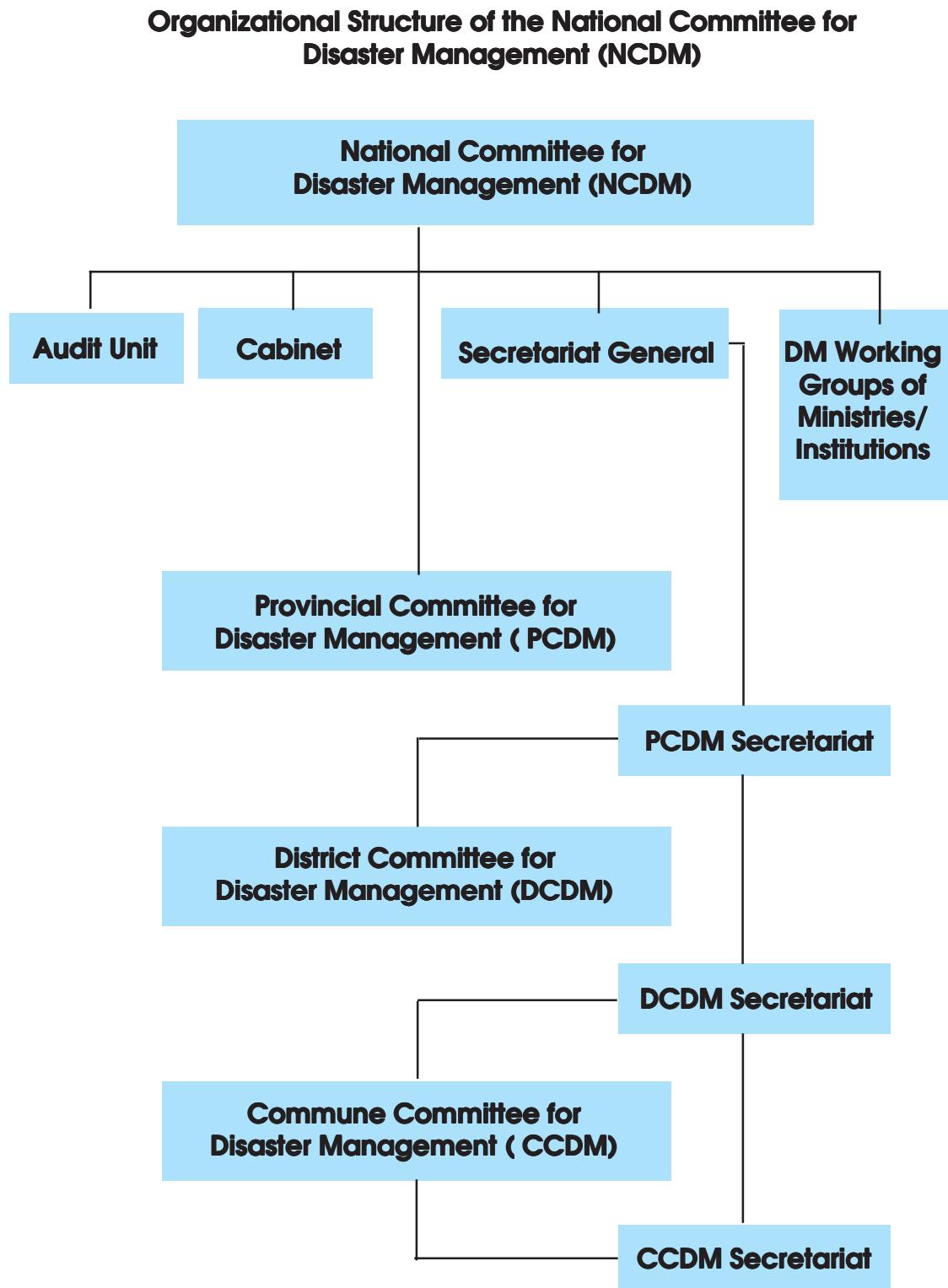
- To coordinate work with the Secretariat of State for Civil Aviation and Ministries/ Institutions concerned in order to conduct the activities in conformity with the organized legislative procedure
- To prepare a plan and submit it to the High-Command of the Royal Cambodian Armed Forces regarding the use of means and Search and Rescue (SAR) intervention forces
- To receive and dispatch information on aircraft/ ship accident and request principles, implementing regulations and instructions from the National Committee for Disaster Management related to the coordination of search and rescue
- To issue official announcements on the crash site, after the information is double-checked
- To prepare modality and conduct the SAR operation in collaboration with the neighboring country, according to agreements on Search and Rescue
- To collaborate with Emergency Coordination Center of State Secretariat of Civil Aviation and identify SAR mission.

#### **The 4 levels of disaster management in Cambodia**

- 1- National Committee for Disaster Management (NCDM)
- 2- Provincial Committee for Disaster Management (PCDM)
- 3- District Committee for Disaster Management (DCDM)
- 4- Commune Committee for Disaster Management (CCDM)



**Figure 4.2:** Organizational Structure of the NCDM



## ANNEX II: INSTITUTIONAL ARRANGEMENTS FOR DISASTER RISK REDUCTION IN VIETNAM

### 2.1 Organizational Structure of the Committees for Flood and Storm Control (CFSC) at the National, Provincial and District Levels

#### 2.1.1 National Level

The Central Committee for Flood and Storm Control (CCFSC) of Viet Nam undertakes activities that cover the complete spectrum of disaster management; from preparedness, response, and minimization of damages and losses, to recovery and rehabilitation from a disaster and mitigation of negative effects on the economy and environment. The state management agencies for flood and storm control are the Committees for Flood and Storm Control (extending from the national to local levels).

Under the administration of the Central Committee, CFSC at the provincial and district levels and sub-agencies are set up by their People's Committees. These committees are headed by the Chairmen of People's Committees (PC), with the Director of the Department of Agriculture and Rural Development (DARD) serving as Standing Deputy Head. Directors and Deputy Directors of relevant departments involved in local flood and storm control activities, compose the membership. The CFSC's Head Office is usually located in the DARD's provincial building. The fund for CFSC activities comes from a portion of DARD's budget allocated by the Provincial People's Committees.

#### 2.1.2 Provincial Level

The Department of Agriculture and Rural Development is the standing agency for flood and storm control at the provincial level:

- For provinces with dykes: the Office of Dyke Protection, Flood and Storm Control (under the provincial DARD) operates as the standing office of the CFSC and is responsible for state management functions over local flood and storm control and disaster mitigation.
- For other provinces: the Department of Irrigation, Flood and Storm Control (under the provincial DARD) operates as the standing office of the CFSC.

#### 2.1.3 District Level

At the district level (districts, towns and cities under provincial management): The district DARD is the standing office and advises the District CFSC in the implementation of state management functions regarding local flood and storm control and disaster mitigation.

#### 2.1.4 Commune Level

At the commune level, (communes, wards and towns); the Commune People's Committee assigns a full-time staff member to work on flood and storm control and disaster mitigation as a standing position.

Every year, the various activities under flood and storm control, disaster mitigation and damage recovery must be consolidated, arranged and assigned properly at all levels and sectors.

For each disaster preparedness activity, the focal point agencies must have disaster preparedness plans approved by the CCFSC. The professional or semi-professional authorities must be prepared to deal with structural emergencies and regulations, and responsibilities of each authority must be clearly defined.



## **2.2 Functions and tasks of the Committees for Flood and Storm Control at the Provincial and District Levels**

The provincial and district Committees for Flood and Storm Control (CFSC) assist People's Committees in state management functions relating to flood and storm control and disaster mitigation within their administrative areas. Such functions include: to plan and oversee the implementation of disaster preparedness operations, dyke maintenance, disaster response, protection of economic activities and residential areas and also in recovery and rehabilitation of the disaster-affected communities.

The detailed tasks of provincial and district CFSC are as follows:

- Plan and direct the implementation of early warning systems, disaster preparedness, response and recovery initiatives;
- Issue and enforce legal documents on forecasting, early warning, disaster response and recovery;
- Construct, upgrade, manage and protect disaster preparedness and mitigation facilities and infrastructure such as dykes, levees, etc.
- Collect and synthesize information on floods, typhoons and other disasters;
- Manage funds for disaster management and mitigation activities;
- Conduct studies and apply latest technological advances to early warning and forecasting systems, and in disaster mitigation, and conduct training for personnel working in these fields;
- Disseminate and transfer knowledge, experience and legislation in flood and storm control and disaster mitigation;
- Assess and monitor compliance to legal documents on early warning, flood and storm control, and damage recovery and handle complaints and critiques in these areas;
- Oversee the advancement of international relations.

## **2.3 Planning Process of the CFSC**

### **2.3.1 General Disaster Preparedness and Mitigation**

Long-term plans for disaster preparedness and mitigation, which are adapted for use in local application, should be developed to minimise possible losses caused by disasters. These plans should look comprehensively at both national and local levels and apply both modern technology and indigenous knowledge. The tasks involved in planning include:

- Organize and develop the information system of global, regional and local climate changes; process information for improved forecasting and early warning;
- Develop plans and standards for construction of flood mitigation structures and application of disaster preparedness measures.
- Prepare plans for budget allocation of: dyke constructions and their improvement and maintenance; dredging of river beds; protection and maintenance of forests, riversides and coastal areas;
- Offer proper allocation plan for residential areas, infrastructure and buildings in disaster-prone locations;
- Define appropriate methods for agriculture and fishery production that can be adapted to incorporate local disaster events, in this case flooding;
- Apply advanced science and technology in disaster preparedness and management practices;
- Disseminate and transfer knowledge, experience and legislation relating to flood and storm control and disaster mitigation;
- Monitor and evaluate periodically the implementation of disaster preparedness plans.

### **2.3.2 Annual Planning for Flood and Storm Control and Disaster Mitigation**

- Support flood preparedness initiatives by preventing activities that could possibly disrupt flood mitigation and other related work;
- Inspect and assess frequently the safety of flood mitigation structures. If there are any damages, timely repairs must be undertaken. If local authorities are unable to

deal with the damages, it must be reported to higher level and repaired before the rainy/typhoon season;

- Develop plans for flood and storm control and disaster mitigation for the entire area and for every focal point;
- Prepare and provide rescue facilities and equipment when flooding occurs;
- Ensure adequate storage of food, medicines and other necessities at selected locations in flood-prone areas;
- Organize and train emergency response and volunteer groups.

### **2.3.3 Early Warning and Decision Making for Urgent Response and Disaster Preparedness**

The Committees for Flood and Storm Control (CFSC) in provinces/cities (under the direct administration of central government) are entitled to make decisions with regard to disseminating local early warnings, alerts and undertaking response. For remote areas, as the needs arise, the District Committees for Flood and Storm Control can make decisions on early warning, alerts and disaster response, but have to report to the provincial committees.

The district and commune committees for flood and storm control can disseminate warning messages and undertake disaster response within the areas of their administration.

Specific tasks with regard to flood preparation will include:

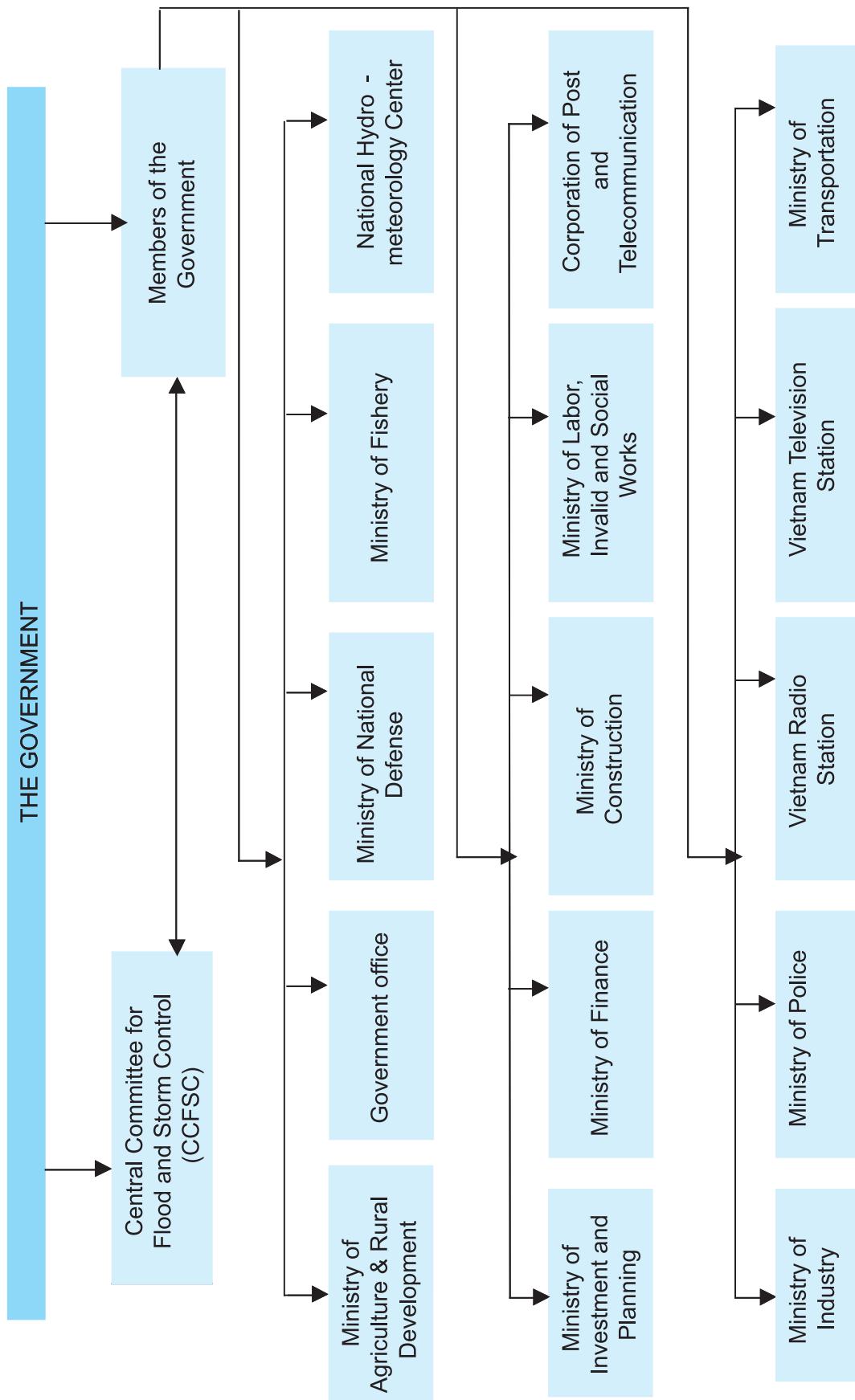
- Broadcasting flood/storm information; development and dissemination of warning messages; carry out urgent mobilization of resources and other measures;
- Ensure regular, timely and smooth communication and instruction;
- Deploy emergency response teams and resources to ensure a timely response to floods;
- Protect and reactivate disaster preparedness works that are threatened;
- Provide First Aid to the injured; evacuate people out of dangerous areas and protect the property of individuals and of the State;
- Ensure both social and economic security and safety in the affected areas;
- Guide local people in environmental care and disease/epidemic prevention in affected areas and in identified safe areas.

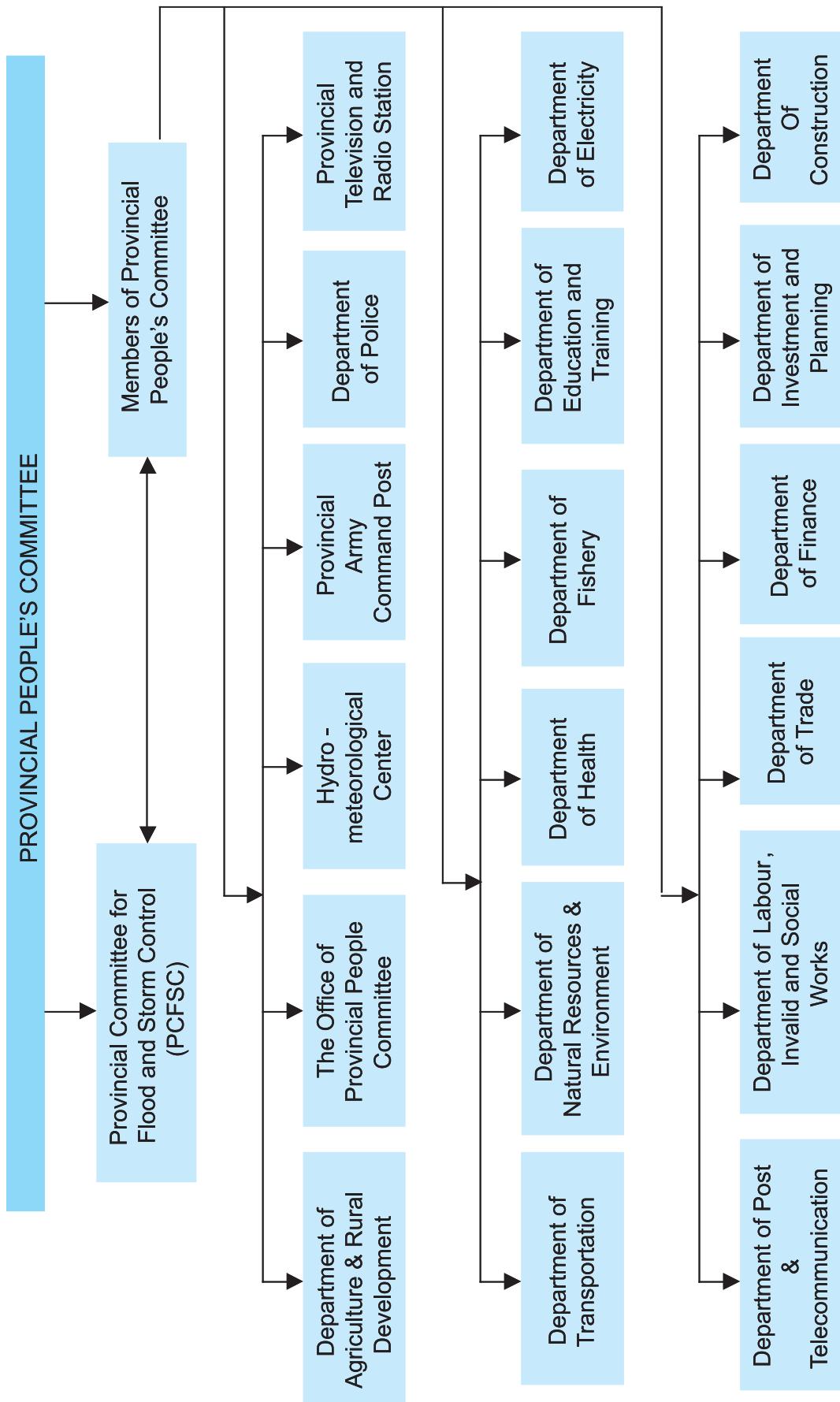
### **2.3.4 Recovery and Rehabilitation**

- Mobilize emergency response forces and resources to save people and property;
- Provide timely relief and support to local people, enabling a return to their normal lives as soon as possible in the affected areas;
- Implement necessary measures for recovery of the local economy;
- Organize environmental cleaning/protection and disease/epidemic prevention;
- Repair the damaged flood mitigation structures (dykes, levees, etc) and buildings/infrastructure;
- Conduct assessment on losses and damages.

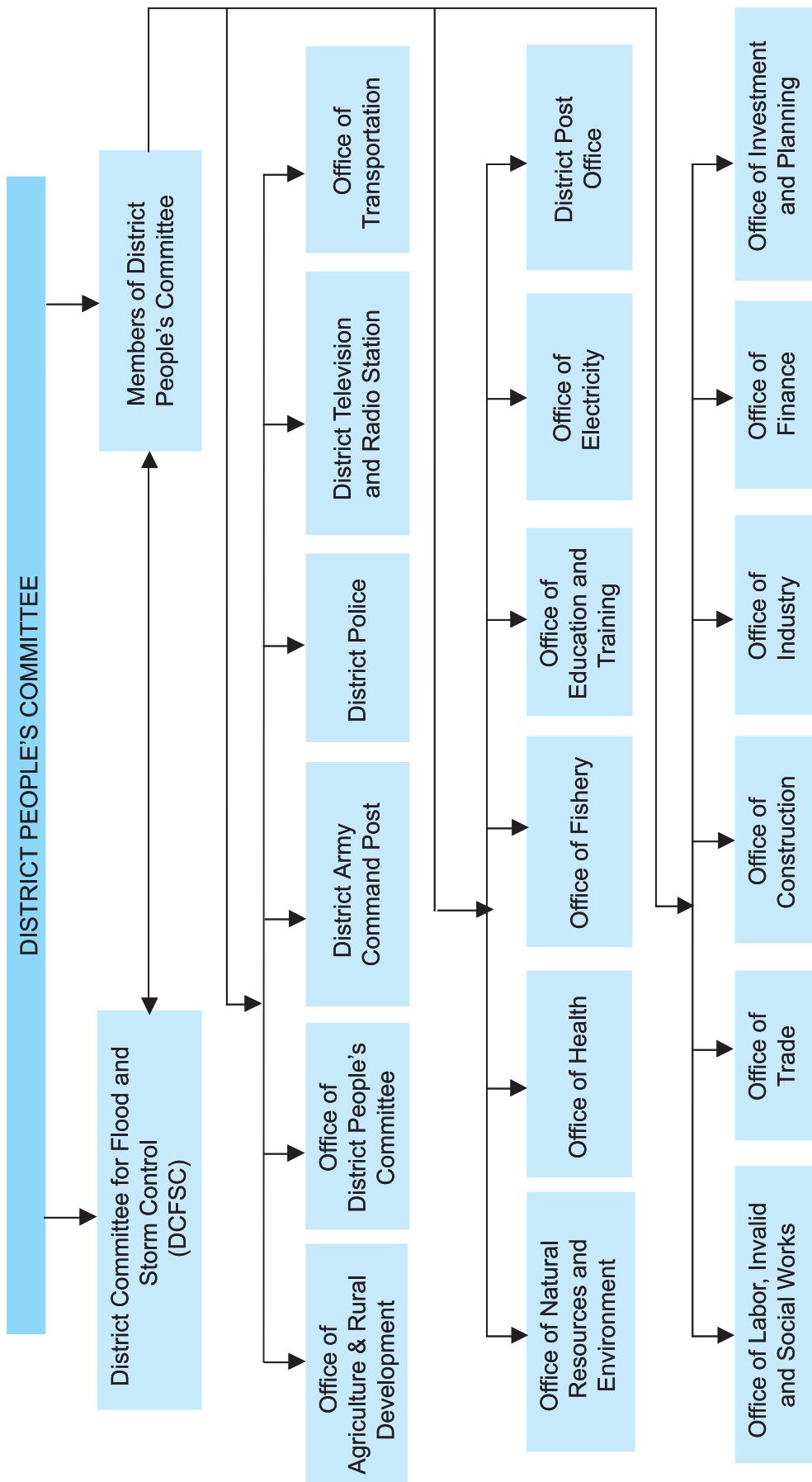


**Figure 4.3:** Organizational Structure at the National Level



**Figure 4.4:** Organizational Structure at the Provincial Level

**Figure 4.5:** Organizational Structure at the District Level



## ANNEX III: INSTITUTIONAL ARRANGEMENTS FOR DISASTER RISK REDUCTION IN LAO PDR

### 3.1 Disaster Management Systems at the National, Provincial and District Levels

#### 3.1.1 At National Level

The Government of Lao PDR recognises disaster risk management as a key development priority that encompasses hazard mitigation and vulnerability reduction through an effective preparedness strategy, aimed at reducing the effects of natural and man-made disasters, particularly in rural areas. The National Disaster Management Committee (NDMC) was set up in 1999 under the Ministry of Labour and Social Welfare to be the centre of all disaster management related activities in the country. The Prime Minister issued the decree (No. 158/PM dated 23 August 1999) with representatives from 13 important ministries and agencies as follows:

1. Ministry of Labour and Social Welfare	President
2. Ministry of Agriculture and Forestry	Vice President
3. Chief of Cabinet, Ministry of Foreign Affairs	Vice President
4. Chief Cabinet, Ministry of National Defense	Member
5. Chief Cabinet, Ministry of Interior	Member
6. Director of Budget Department , Ministry of Finance	Member
7. Director of Transport Department, Ministry of Communication, Transport , Post and Construction	Member
8. Director of Industry Department, Ministry of Industry and Handicrafts	Member
9. Director of Hygiene Department, Ministry of Health	Member
10. Director of Mass Media Department, Ministry of Information and Culture	Member
11. Chief of Cabinet , Ministry of Education	Member
12. President of Lao Red Cross	Member
13. Director of Social Welfare Department, MLSW	Member

The establishment of NDMC and thereafter, the Country Strategy Note on Disaster Management (No 1139/MLSW dated 18 April 2003) has helped Lao PDR to have more efficiency on DM and relief activities.

#### The roles and responsibilities of the NDMC are:

1. Responsibility for disaster preparedness and management as a centre for country coordination of DM activities.
2. Preparation of policy plans and their presentation to the government for consideration.
3. Responsibility for information and data collection on disasters, and preparation of mitigation plans.
4. Mobilisation of funding support, technical and material assistance from individuals, organizations, private and public sectors for internal or outside country DM activities.
5. Responsibility for public awareness and public education activities in order to strengthen preparedness and to reduce the harmful effects of disaster.
6. Responsibility for adopting Disaster Management Environmental Protection concepts into education curricula.
7. Responsibility for organization of rescue, relief activities and other projects for prevention, response, mitigation, by using government funds and assistance from governments, international/private organisations, and NGOs.
8. Recommend to Provincial Governors the establishment of Provincial Disaster Management Committees (PDMC) and District Disaster Management Committees (DDMC) and to help strengthen their capacity.



**The National Disaster Management Office (NDMO) is the secretariat of NDMC and its roles and responsibilities are:**

- To oversee the coordination and operation of disaster management activities with both national and international partners.
- To promote expert advice to the NDMC.
- To promote coordination with ministerial focal points and partners.
- To promote disaster mitigation and preparedness activities at the local level.
- To implement community awareness activities.
- To provide training, guidelines and plans to make disaster risk management more effective.
- To establish disaster management implementation teams at the national, provincial and district levels.

### **3.1.2 At the Provincial, District and Commune Levels**

#### ***Provincial Level***

The Provincial Governors were empowered to create the Provincial Disaster Management Committee (PDMC), District Disaster Management Committee (DDMC) and to help strengthen their capacity. The priorities of the provincial level disaster management committees are :

1. To develop effective strategies for the management of flood and drought risks.
2. To focus on capacity building of provincial government officers and personnel of associated agencies from the community level, and on community mobilisation, i.e. motivating and supporting people to organise and take appropriate actions to protect themselves, their property and their communities against hazards.

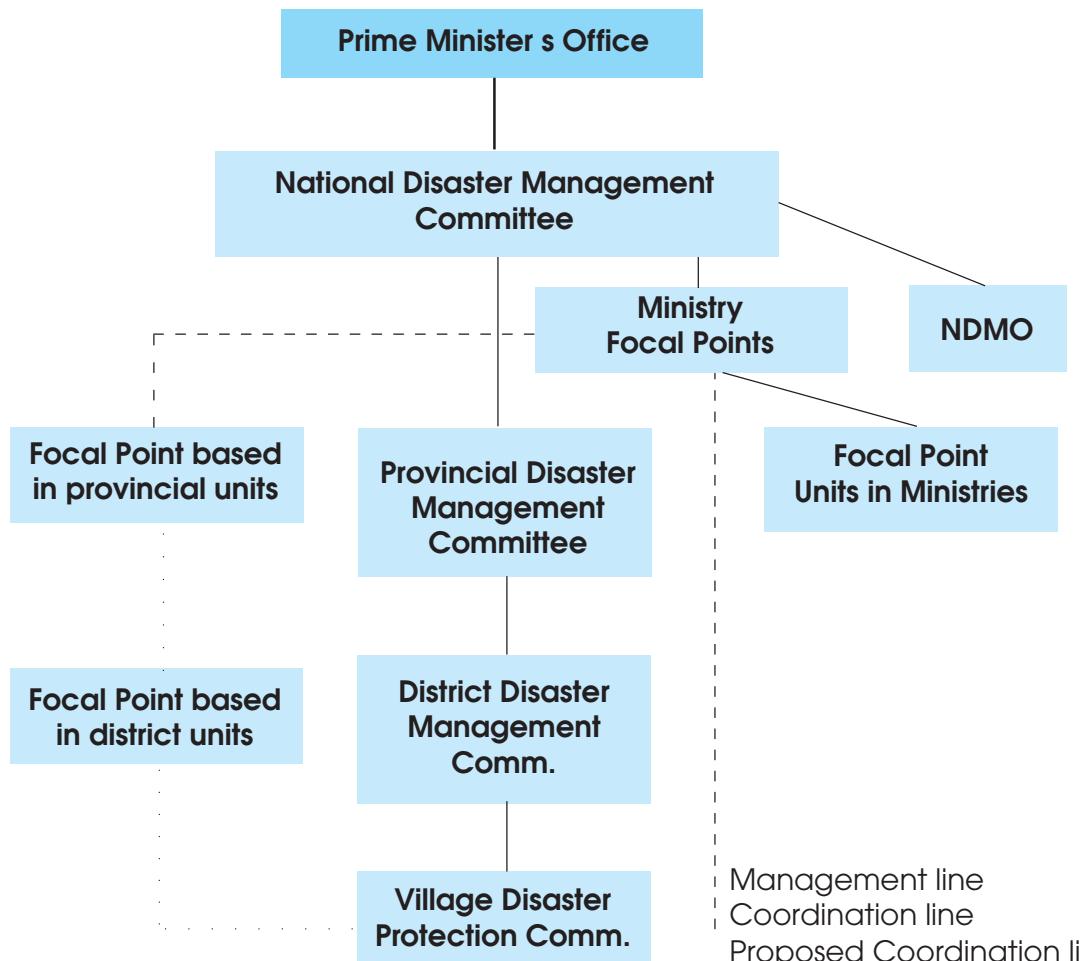
#### ***District and Local Levels***

At provincial, district and local levels, disaster management committees were established with representatives from the concerned government bodies and NGOs. Provincial Disaster Management Committees are chaired by Vice-Governors with membership comprising of the Directors of Provincial Departments of Social Welfare, Hydro-met Services, Agriculture and Forestry, Education, Health, Industry, Mass Media, Budget, Transportation, Army and Lao Red Cross. At the District levels, the DDMC is headed by the District Governor.

At the village level, Village Protection Units (VPU) have been established with links to local and district development committees.

The Disaster Management structure in Lao is summarised in the following flow chart below

**Figure 4.6:** Disaster Management Structure in Lao PDR



### 3.2 Provincial Planning Process for Disaster Management

The Provincial Disaster Plan preparation, outlined under the Country Strategy Paper on Disaster Management, is a similar process to that used in the development of the National Plan, as it uses a participatory approach and stakeholder consultation; thus ensuring ownership from the community.

The Provincial Disaster Management Committee (PDMC) is responsible for the Provincial Plan with three different phases as mentioned below:

#### 3.2.1 Phase 1 - Pre-disaster Period

##### a. Preparedness Measures

###### Risk Assessment

- Identifying, assessing and monitoring potential hazards, risks and vulnerabilities
- Describing potential effects on the community, property, services, economy and the environment
- Determining resource requirements
- Conducting regular vulnerability assessment.



### **Early Warning**

- Conducting public education programs
- Disseminating early warning to all potentially affected communities

### **Communication**

- Establishing effective links between the NDMO and the National Emergency Operating Centre (OEC)
- Establishing and testing provincial EOC
- Identifying all available communication back-up systems (government and private sector)
- Developing emergency communication back-up systems

## **b. Utilization of Available Resources**

### **Personnel**

- Identifying and recording all available human resources within the Provincial Government.
- Defining the roles and functions of PDMC member agencies and other NGOs.
- Identifying training needs.
- Conducting regular training programs.

### **Mobility**

- Identifying available emergency transportation.
- Identifying rescue and evacuation routes.
- Identifying and preparing of warehouse for national support resources.

### **Evacuation**

- Identifying and preparing evacuation points and areas.
- Stockpiling of critical relief supplies.
- Identifying relief distribution points and areas.
- Preparing lists of available local resources.

### **Materials and Equipment**

- Preparing resource inventories at provincial, district and local levels.

## **c. Training, Public Awareness and Education**

- Identifying disaster risk management training needs.
- Developing and maintaining an effective disaster risk management training program.
- Developing and implementing a public awareness program.
- Introducing disaster awareness training in schools.
- Developing and disseminating a range of disaster awareness information.

### **3.2.2 Phase 2- Emergency Response**

The response management requirements for the emergency phase involve the bringing together in an integrated organisational network the resources of the many agencies who can take appropriate and timely action for the following activities:

### **Command, control and coordination**

- Ensuring that the primary and support agencies are in stand-by mode or have been notified and are responding to the emergency.
- Ensuring that effective control has been established at the emergency scene.
- Activating the Provincial Emergency Operations Centre (EOC).
- Ensuring appropriate coordination of resources and services.
- Sending regular situation reports to the NDMO.
- Ensuring that consideration has been given to alerting the community on establishment of casualty management procedures.
- Considering the need for international assistance.

**Search-and-rescue**

- Conducting search-and-rescue operations as necessary.

**Evacuation and Relief**

- Activating evacuation points and areas and distributing relief supplies.
- Providing relief and medical supplies to disaster victims.
- Undertaking rehabilitation activities.

**Recovery**

- Identifying immediate community and individual needs.
- Developing recovery plans based on community needs and priorities.
- Implementing agreed recovery management arrangements as required.
- Preparing damage assessment reports.

**3.2.3 Phase 3- Post Disaster Phase**

Once the emergency situation has been brought under control the following post-disaster activities should be implemented:

- Providing relief and recovery services as necessary.
- Providing restoration and rehabilitation assistance to disaster victims.
- Conducting an inventory of resources.
- Preparing evaluation reports and implementing improvement strategies.

**Planning Review Process**

The Provincial Disaster Risk Management Committee is responsible for ensuring that the Provincial Plan is tested on a regular basis to ensure that it is workable and effective and that a thorough and accurate post-disaster review is conducted following activation of the plan.



A photograph showing a group of approximately ten men in a conference room. They are seated around a long table, facing towards the right side of the frame. The men are dressed in professional attire, mostly white shirts. The room has a simple interior with a white wall and two small floral arrangements hanging on the wall above the ceiling. The lighting is bright, typical of an indoor office environment.

Chapter

# 5

## INSTITUTIONAL TERMS OF REFERENCE (TOR) FOR FLOOD PREPAREDNESS PLANNING

# INSTITUTIONAL TERMS OF REFERENCE (ToR) FOR FLOOD PREPAREDNESS PLANNING

## 5.1 Overview

This chapter discusses the institutional Terms of Reference (ToR) for flood preparedness, and signifies their importance as integral to division of work among various bodies for quality assurance. To that end, the components of institutional ToR; including roles and responsibilities of a typical provincial/ district disaster management body, (both line departments and teams); have been outlined for the management of functions before, during and after a flood event.

## 5.2 Objectives

- Understand what different ToR exist for various teams and agencies involved in flood preparedness planning.
- Lay out the roles and responsibilities of each team/agency and how they should operate during different phases of flood management.

## 5.3 Main Concepts

- ToR serve as a basic tool to explain operations and responsibilities of leading and supporting agencies that are to be involved in flood preparedness and response.
- ToR detail the work processes that are to be conducted or followed for preparedness and response activities. They document the way activities are to be performed.
- ToR are of limited value if not documented properly. On the other hand, the best written ToRs will fail if they are not followed carefully.
- At the provincial level, the Provincial Committees for Disaster Management and their members should have specified and documented roles and responsibilities, documented with accompanying names of identified personnel who will be held accountable to carry out activities as specified in the ToR.

## 5.4 What are institutional Terms of Reference?

Institutional Terms of Reference are sets of instruction, tailored to a particular agency/organization/department/team, that lay out the coordinated actions to be taken by agencies during and after a disaster. The purpose of developing an institutional ToR is to ensure timely and effective assistance to the affected community in a coordinated manner, ensuring maximum protection of life, property and health.

## 5.5 Why institutional ToRs are Important?

Institutional ToR are the guiding principles behind the successful implementation of flood preparedness programs because they determine in advance which activities need to be



prioritised and how each agency should respond to a flood situation. The ToR clearly outline the roles and responsibilities of each line agency involved in flood preparedness and risk management in order to enable this successful implementation.

At the provincial level, provincial disaster management bodies have the mandate to prepare guidelines and directives for the districts to facilitate flood preparedness activities well in advance of the flood season. District disaster management bodies, once they receive the directives from the provincial authority, will in turn issue similar orders to the commune level (an action defined in the provincial directive) and the commune to the village.

## 5.6 Main Components of ToR

To best illustrate the main components of a ToR, an example from Cambodia is presented in the table below, taken from the Prey Veng Provincial Flood Preparedness Program 2006. It spells out the roles and responsibilities of the different members of the Provincial Committee on Disaster Management (PCDM) in Prey Veng province, regarding in flood preparedness activities:

**Table 5.1:** Roles and Responsibilities of the Provincial Disaster Management Teams

Search and Rescue Team	
Members	Roles and Responsibilities
1. Provincial Military Operation 2. Provincial Police 3. Provincial Military Police 4. Provincial Department of Health 5. Provincial Department of Women Affairs & Veteran 6. Provincial Department of Education, Youth and Sports 7. Provincial Department of Finance 8. Provincial Cambodia Red Cross Chapter 9. Provincial Authority of Electricity 10. Provincial Department of Culture and Fine Arts 11. Provincial Department of Information 12. Other NGOs	<b>Roles and Responsibilities</b> <ul style="list-style-type: none"> <li>Monitor situation and flood impact in order to prepare and respond effectively.</li> <li>To provide assistance to the most vulnerable people and victims.</li> <li>Identify the most vulnerable people who live in the high risk areas.</li> <li>Provide assistance to other teams and district search and rescue team as needed.</li> <li>Provide security to the victims living in safe areas and protect their property.</li> <li>Construct and manage temporary shelters on the safe areas.</li> <li>Share relevant information with other teams, line agencies and NGOs.</li> <li>Cooperate with other NGOs in facilitating the evacuation of the victims.</li> <li>Facilitate and protect transportation means for emergency relief.</li> <li>Identify tools and equipment for evaluation and search &amp; rescue activities.</li> <li>Share information, experiences and lessons learned with all PCDM members and attend discussion meeting under supervision of the PCDM.</li> <li>Undertake any other duties as defined in provincial Flood Preparedness Plan</li> </ul>
Health, Hygiene and Clean Water Team	
Members	Roles and Responsibilities
1. Provincial Department of Health 2. Provincial Department of Environment	<b>Roles and Responsibilities</b> <ul style="list-style-type: none"> <li>Provide health education, dissemination of information (on health care, hygiene, clean water) and prevent outbreak of water born diseases.</li> </ul>



<ol style="list-style-type: none"> <li>3. Provincial Department of Women Affairs and Veteran</li> <li>4. Provincial Department of Agriculture, Forestry and Fishery</li> <li>5. Provincial Department of Water Resources</li> <li>6. Provincial Department of Planning</li> <li>7. Provincial Department of Finance</li> <li>8. Provincial Department of Social Affairs</li> <li>9. Provincial Department of Rural Development</li> <li>10. Provincial Department of Industry, Mine and Energy</li> <li>11. Provincial CRC Chapter</li> <li>12. Other NGOs</li> </ol>	<ul style="list-style-type: none"> <li>● Conduct first aid training for Search and Rescue Teams and community volunteer groups.</li> <li>● Provide emergency medical assistance and treatments (e.g. snake bites, accidents, etc.).</li> <li>● Monitor health situation on hygiene, clean water, and potential causes of water-borne diseases, which can be caused by different hazards.</li> <li>● Assess and estimate the impacts and the needs on health care and diseases.</li> <li>● Prepare reports on situation for submission to PCDM and its members.</li> <li>● Coordinate and facilitate with concerned NGOs to provide health care to the victims.</li> <li>● Share information, experiences and lessons learned with all PCDM members and attend discussion meeting under supervision of the PCDM.</li> <li>● Undertake any other duties as defined in provincial Flood Preparedness Plan.</li> </ul>
<b>Information Management Team</b>	
<b>Members</b> <ol style="list-style-type: none"> <li>1. Provincial department of water resources</li> <li>2. Provincial department of agriculture, forestry and fisheries</li> <li>3. Provincial department of information</li> <li>4. Provincial department of post and telecommunication</li> <li>5. Provincial department of health</li> <li>6. Provincial department of public works and transport</li> <li>7. Provincial department of planning</li> <li>8. Provincial department of finance</li> <li>9. Provincial department of rural development</li> <li>10. Provincial department of education, youth and sports</li> <li>11. Provincial CRC Chapter</li> <li>12. Other NGOs</li> </ol>	<b>Roles and Responsibilities</b> <ul style="list-style-type: none"> <li>● Monitor situation and flood impact.</li> <li>● Disseminate/circulate flood forecasts and flood early warning information.</li> <li>● Conduct rapid damage and needs assessment during and after floods.</li> <li>● Maintain and update disaster data.</li> <li>● Coordinate and facilitate with relevant NGOs in assessing rapid damage and needs assessment.</li> <li>● Collect and compile information on most vulnerable groups and flood prone areas in the province.</li> <li>● Coordinate with other teams as necessary.</li> <li>● Participate in discussion meeting and share information, experiences with PCDM member departments and other organizations/stakeholders.</li> <li>● Conduct public awareness raising campaigns through existing media in the province.</li> <li>● Undertake any other duties as defined in the provincial Flood Preparedness Plan.</li> </ul>
<b>Response and Emergency Relief Team</b>	
<b>Members</b> <ol style="list-style-type: none"> <li>1. Provincial CRC Chapter</li> <li>2. Provincial Department of Social Affairs</li> <li>3. Provincial Department of Health</li> <li>4. Provincial Department of Women Affairs &amp; Veteran</li> <li>5. Provincial Department of Public Works and Transport</li> <li>6. Provincial Department of Finance</li> </ol>	<b>Roles and Responsibilities</b> <ul style="list-style-type: none"> <li>● Monitor information and reports on flood situation and impacts.</li> <li>● Collect information and reports from other teams to review options for distribution of emergency relief.</li> <li>● Conduct the needs assessment of victims in order to make decisions on provision of emergency relief.</li> <li>● Collect information and data on victims in each safe area and select beneficiaries for emergency</li> </ul>



7. Provincial Department of Commerce	relief distribution.
8. Provincial Department of Religions	<ul style="list-style-type: none"> <li>• Manage and maintain relief materials and equipment.</li> <li>• Provide transport and distribute relief materials to victims.</li> <li>• Communicate and appeal to humanitarian organizations and other NGOs for further support and donations.</li> <li>• Indicate victims locations to humanitarian agencies which are willing to provide additional emergency relief and facilitate this aid.</li> <li>• Monitor victims situation and needs.</li> <li>• Participate in discussion meeting and share information, and experiences with PCDM member departments and other organizations/stakeholders.</li> <li>• Undertake any other duties as defined in provincial Flood Preparedness Plan.</li> </ul>
9. Provincial Department of Education, Youth and Sports	
10. Provincial Treasury Unit	
11. Provincial Bank	
12. Other NGOs	

**Table 5.2:** ToR for Individual Department

Preparedness (Before)	Response (During)	Restoration and rehabilitation (After)
<b>Provincial Department of Agriculture, Forestry and Fisheries</b>		
<ol style="list-style-type: none"> <li>1. Provide suggestions and recommendations on changing/rescheduling of cropping patterns.</li> <li>2. Provide vaccination for animals.</li> <li>3. Conduct hydrological observation and report to Ministry of Agriculture.</li> </ol>	<ol style="list-style-type: none"> <li>1. Nominate staff for 24 hours flood monitoring.</li> <li>2. Provide vaccination for animals.</li> <li>3. Hydrological observation and report to relevant provincial departments.</li> </ol>	<ol style="list-style-type: none"> <li>1. Prepare report on damage and requirements, and submit to PCDM and MOWRAM.</li> <li>2. Encourage farmers to replant</li> <li>3. Create rice bank.</li> </ol>
<b>Provincial Department of Water Resources</b>		
<ol style="list-style-type: none"> <li>1. Monitor water level.</li> <li>2. Prepare equipment (pumping machines) to irrigate rice fields when water is scarce.</li> <li>3. Dig canals to transport water from reservoirs to dry areas for irrigation.</li> <li>4. Request the local authorities to share information on damaged irrigation systems.</li> <li>5. Prepare sand bags (to prevent incoming water) and pumping machines to intervene while water recedes.</li> </ol>	<ol style="list-style-type: none"> <li>1. Respond to specific water level and report to other line departments.</li> <li>2. Provide pumping machines to pump water from public places such as market.</li> <li>3. Cooperate with other line departments, NGOs and CRC.</li> <li>4. Check irrigation systems when water recedes.</li> </ol>	<ol style="list-style-type: none"> <li>1. Conduct assessment of damage and needs and report to provincial office and MOWRAM.</li> <li>2. Damage assessment of infrastructure and irrigation systems.</li> <li>3. Participate in meeting with PCDM and other relevant organizations.</li> <li>4. Determine priority sectors for rehabilitation.</li> <li>5. Restore and repair damaged irrigation systems.</li> <li>6. Construct newly approved irrigation systems and prepare plan for the next year.</li> </ol>



<b>Provincial Department of Health</b>		
<ol style="list-style-type: none"> <li>1. Establish and train a mobile team in district operation center and health center to provide health treatment to the victims.</li> <li>2. Monitor the general health situation, e.g., monitor outbreak of diseases.</li> <li>3. Prepare first aid kits, medicines, water test kits, chloramines and anti snake venom serum.</li> <li>4. Prepare boats, motor boats and speed boats for emergency interventions.</li> <li>5. Communicate with relevant organizations and partner NGOs for participation and support.</li> <li>6. Attend PCDM meeting.</li> <li>7. Disseminate health education to the general public.</li> <li>8. Conduct training for medical staff and health personnel.</li> </ol>	<ol style="list-style-type: none"> <li>1. Send the mobile team to safe areas.</li> <li>2. Assess general situation on health issues.</li> <li>3. Prepare for intervention if there is a possible disease outbreak.</li> <li>4. Report to Ministry of Health.</li> <li>5. Undertake at least one field trip.</li> </ol>	<ol style="list-style-type: none"> <li>1. Conduct impact assessment on health, disease, and water and sanitation.</li> <li>2. Intervene immediately when there is a disease outbreak.</li> <li>3. Prepare reports and proposals and submit to NGOs, United Nations Agencies and MoH for additional aids.</li> <li>4. Prepare plan for the following year.</li> <li>5. Conduct assessment on impacts and achievements.</li> </ol>
<b>Provincial Department of Social Affairs</b>		
<ol style="list-style-type: none"> <li>1. Assist the most vulnerable people.</li> <li>2. Undertake public awareness raising.</li> <li>3. Provide vocational training to underprivileged groups (disabled).</li> <li>4. Assist poor families headed by widows and those with disabilities.</li> <li>5. Collect data on victims.</li> </ol>	<ol style="list-style-type: none"> <li>1. Collect and share data with PCDM, NGOs and other line departments.</li> <li>2. Prepare proposals for financial support for the department activities.</li> <li>3. Encourage staffs to participate with other organizations.</li> <li>4. Share its human resources with PCDM</li> </ol>	<ol style="list-style-type: none"> <li>1. Monitor and follow up the status of the most vulnerable people.</li> <li>2. Summarize all losses (life, properties) of the most vulnerable people.</li> <li>3. Allocate budget for the most vulnerable people.</li> </ol>
<b>Provincial Department of Planning</b>		
<ol style="list-style-type: none"> <li>1. Assign staffs to join Search and rescue team of the PCDM.</li> <li>2. Mobilize the resources (food, medicine, transportation).</li> </ol>	<ol style="list-style-type: none"> <li>1. Prepare materials and equipment for emergency response.</li> <li>2. Responsible team to distributes fuel to the affected areas.</li> </ol>	<ol style="list-style-type: none"> <li>1. Coordinate with Department of Agriculture, Forestry and Fishery for distribution of rice seed and fuel.</li> <li>2. Participate in post-flood meeting with PCDM.</li> </ol>



**Provincial Department of Education, Youth and Sport**

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| <ol style="list-style-type: none"> <li>1. Use flood information like early warning to temporarily close the schools.</li> <li>2. Report to PCDM about potential damage to the schools (by floods).</li> <li>3. Teachers and students are informed of their responsibilities to take care of materials and move documents to safe places (e.g., temples) during flooding.</li> <li>4. Prepare transportation to evacuate students and teachers (from schools) to safe areas.</li> <li>5. Inform flood vulnerable schools of flood information through icom/ radio.</li> </ol> | <ol style="list-style-type: none"> <li>1. Mobilize human resources for intervention during floods.</li> <li>2. Inform, through radios and other communication tools, the schools situated in high risk areas on flood information (flood level).</li> <li>3. Collect information on flooded schools.</li> </ol> | <ol style="list-style-type: none"> <li>1. Collect information on damaged schools.</li> <li>2. Provide assistance to teachers who are victimized by floods (lack of food, shelter, etc.)</li> <li>3. Collect information on adverse impacts of flood disaster on health of teachers and students (psychosocial care).</li> </ol> |
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**Provincial Department of Woman Affairs & Veterans**

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| <ol style="list-style-type: none"> <li>1. Cooperate closely with other line departments.</li> <li>2. Disseminate information on change of crop patterns.</li> <li>3. Participate in activities such as PCDM meetings, dissemination of information, and emergency relief distribution.</li> </ol> | <ol style="list-style-type: none"> <li>1. Send staffs to educate the public (especially women) about health care, hygiene and clean water.</li> <li>2. Participate in evacuation of victims to safe areas.</li> </ol> | <ol style="list-style-type: none"> <li>1. Cooperate with other line departments to educate people.</li> <li>2. Disseminate information on crop re-scheduling.</li> </ol> |
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**Provincial Department of Land Management, Urban Planning and Construction**

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| <ol style="list-style-type: none"> <li>1. Encourage the district office to disseminate information on flood preparedness.</li> <li>2. Allocate budget for PCDM.</li> <li>3. Cooperate with local authority to prepare safe areas.</li> <li>4. Protect critical infrastructure such as roads and dams.</li> <li>5. Safe area identification (new and existing).</li> </ol> | <ol style="list-style-type: none"> <li>1. Prevent people from going to the flooded areas and monitor the actual flood situation.</li> <li>2. Sand bagging.</li> <li>3. Assist in evacuation of people to safe areas.</li> </ol> | <ol style="list-style-type: none"> <li>1. Provide transportation for people to return home after floods.</li> <li>2. District office shall work closely with DCDM.</li> <li>3. Participate in PCDM post-flood meetings.</li> </ol> |
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<b>Provincial Department of Religion</b>		
<ol style="list-style-type: none"> <li>1. Educate the monks on how to make use of the sanitation facilities.</li> <li>2. Educate the monks on how to avoid racism and extremism (with regards to religion) behaviour, etc.</li> <li>3. Participate in PCDM's planning and fund raising activities.</li> <li>4. Prepare temple and pagoda grounds to be used as safe areas.</li> </ol>	<ol style="list-style-type: none"> <li>1. Collect information on all affected/ damaged pagodas and temples.</li> <li>2. Encourage the monks to distribute or provide basic assistance (e.g. food, water to some victims).</li> <li>3. Encourage monks and temple committee to take care of safe areas.</li> </ol>	<ol style="list-style-type: none"> <li>1. Encourage monks and temple committee to take care of safe areas (cleaning).</li> <li>2. Replanting in temple areas.</li> <li>3. Repair temples which are affected by flood disaster.</li> <li>4. Provide education and dissemination of information to local public on disaster preparedness and mitigation.</li> </ol>
<b>Provincial Red Cross</b>		
<ol style="list-style-type: none"> <li>1. Implement community based disaster preparedness (CBDP) programmes.</li> <li>2. Provide training on Red Cross movement, community 1st aid and on disaster management.</li> <li>3. Conduct annual meeting among stakeholders (Commune, District and Provincial Red Cross) on flood preparedness measures.</li> <li>4. Collect flood information and determine the impacts at various threshold levels.</li> <li>5. Provide public education on healthcare, hygiene and water &amp; sanitation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Collect flood information, flood impacts and conduct need assessment.</li> <li>2. Coordinate with provincial line departments and NGOs.</li> <li>3. Provide emergency relief (such as food, clean water, oil and clothes).</li> <li>4. Collect real time flood information, including impacts, and water levels at specific duration through EWS project.</li> <li>5. Provide public education on healthcare/ hygiene/ water &amp; sanitation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rehabilitation of affected infrastructure (small scale).</li> <li>2. Provide food for work.</li> </ol>
<b>Provincial Military Division</b>		
<ol style="list-style-type: none"> <li>1. Protect road from getting flooded (i.e. sand bagging and enforcement of dams).</li> <li>2. Provide training to soldiers and determine the roles and responsibilities of soldiers who are stationed in flood-prone areas.</li> <li>3. Participate in PCDM annual meetings.</li> <li>4. Participate in regular meetings with DCMD to provide suggestion/ recommendation.</li> <li>5. Participate with PCDM in developing the plans.</li> </ol>	<ol style="list-style-type: none"> <li>1. Search and rescue.</li> <li>2. Evacuate victims to safer areas.</li> <li>3. Provide security services to other departments who are working in the affected areas.</li> <li>4. Assist other line departments.</li> <li>5. Damage and need assessment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Cooperate and coordinate with other provincial line departments.</li> <li>2. Repair damaged roads and dams as necessary.</li> <li>3. Survey all damages and impacts and collect and compile data.</li> </ol>



6. Prepare necessary equipments, labor, transportation means and other materials for emergency interventions.

#### **Provincial Military Police Division**

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| <ol style="list-style-type: none"> <li>1. Participate in PCDM annual meetings.</li> <li>2. Prepare team for emergency interventions.</li> <li>3. Protect schools and critical infrastructure from flood.</li> <li>4. Install sand bags and monitor flood prone areas.</li> <li>5. Evacuation of victims and providing other assistances as and when necessary.</li> <li>6. Provide Security in temporary shelters.</li> </ol> | <ol style="list-style-type: none"> <li>1. Install sand bags.</li> <li>2. Getting the team ready for moving victims or animals to safe areas.</li> <li>3. Evacuation of victims.</li> <li>4. Distribution of emergency supplies and resources.</li> <li>5. Use available equipment and tools to save (search &amp; rescue) people and animals.</li> </ol> | <ol style="list-style-type: none"> <li>1. Maintain security.</li> <li>2. Damage and needs assessment and report to PCDM.</li> <li>3. Restore and rehabilitate damaged infrastructure.</li> <li>4. Store flood water for agricultural activities.</li> </ol> |
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#### **Provincial Police Division**

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| <ol style="list-style-type: none"> <li>1. Disseminate information on mitigation measures to local residents such as:           <ol style="list-style-type: none"> <li>a. Warning prohibiting the overload of goods in boats etc.</li> <li>b. Instructions for the use of life jacket.</li> <li>c. Provide warning/ instructions to travellers.</li> </ol> </li> </ol> | <ol style="list-style-type: none"> <li>1. Assist people in affected areas.</li> <li>2. Collect damage data, including death toll and injured.</li> <li>3. Install sand bags and protection of dam.</li> <li>4. Evacuation of victims and their property, including animals, to safe areas.</li> <li>5. Educate people on health &amp; sanitation.</li> <li>6. Provide security in the safe areas.</li> <li>7. Assist in distribution of emergency relief.</li> </ol> | <ol style="list-style-type: none"> <li>1. Provide security in the safe areas.</li> <li>2. Cooperate with PCDM.</li> <li>3. Collect damage information and the needs for recovery.</li> </ol> |
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#### **Provincial Department of Culture and Fine Arts**

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| <ol style="list-style-type: none"> <li>1. Preparation of safe areas with instructions from PCDM.</li> <li>2. Assist PCDM in evacuation of victims to safe places.</li> <li>3. Control and protect the flood prone areas (e.g. historical/cultural sites).</li> <li>4. Prohibit illegal digging in safe areas (historical/ cultural sites) for antiques.</li> </ol> | <ol style="list-style-type: none"> <li>1. Transport victims to safe place.</li> <li>2. Assist in installation of sand bags and protection of dams and roads.</li> </ol> | <ol style="list-style-type: none"> <li>1. Collect data on victims living in the safe areas.</li> <li>2. Protect the registered historical areas.</li> </ol> |
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<b>Provincial Department of Finance</b>		
1. Participate in meeting with PCDM. 2. Share ideas on disaster preparedness. 3. Actively participate in fund raising activities.	1. Participate in search & rescue activities in collaboration with other provincial line departments and NGOs. 2. Distribute emergency relief. 3. Prepare and install sand bags. 4. Participate in fund raising activities. 5. Mobilize human resources within the department for search & rescue operations.	1. Participate in data collection of damages. 2. Actively participate in recovery and rehabilitation activities.
<b>Provincial Department of Public Work and Transport</b>		
1. Protect roads and bridges. 2. Prepare trucks/vehicles to transport soil/sand for preparation of sand bags. 3. Zonation of protected areas. 4. Set up flood preparedness strategy at least one month earlier.	1. Distribute emergency relief. 2. Provide transportation to health personnel, to the safe areas. 3. Repair roads and bridges.	1. Set up plan to rehabilitate the damaged infrastructure including pathways, bridges and national roads.
<b>Provincial Department of Rural Development</b>		
1. Provide training on planning regarding emergency relief at the community level. 2. Construct toilets and wells in safe areas. 3. Conduct first aid training course for villagers. 4. Conduct training courses for community on health care and hygiene.	1. Participate with PCDM. 2. Collect flood and damage information and report to relevant stakeholders. 3. Provide transportation service & fuels. 4. Prepare proposals and submit to donors. 5. Provide food to peoples.	1. Restore and repair wells. 2. Conduct first aid training courses for villagers. 3. Conduct training courses for community on health care &hygiene. 4. Restore and repair all damaged infrastructure including pathways/ roads, bridges & water gates.
<b>Provincial Department of Commerce</b>		
1. Monitor availability of rice stock and fuel stock. 2. Provide assistance to Provincial Governor for food and fuel management.	1. Keep a record and manage the use of external rice and fuel stock from private rice mills and gas stations. 2. Provide assistance and suggestions to Provincial Governor on goods (food and fuel) distribution.	



### Provincial Information Department

- |   |   |   |
|---|---|---|
| <ol style="list-style-type: none"> <li>1. Information management.</li> <li>2. Circulate information to public through public media systems such as radio and television.</li> </ol> | <ol style="list-style-type: none"> <li>1. Information management.</li> <li>2. Circulate information to public through public media systems such as radio and television.</li> </ol> | <ol style="list-style-type: none"> <li>1. Information management.</li> <li>2. Circulate information to public through public media systems such as radio and television.</li> </ol> |
|---|---|---|

### Provincial Environmental Department

- |   |  |  |
|---|--|--|
| <ol style="list-style-type: none"> <li>1. Disseminate information to public on water pollution management and waste management.</li> <li>2. Cooperate with local authority and NGOs in order to establish new landfill.</li> <li>3. Transfer waste to remote area, far from residential areas.</li> </ol> | <ol style="list-style-type: none"> <li>1. Public awareness raising on waste disposal and management.</li> <li>2. Encourage private company to transport wastes to landfill.</li> </ol> | <ol style="list-style-type: none"> <li>1. Public awareness raising on waste disposal and management.</li> <li>2. Advise local authority and NGOs on waste management.</li> <li>3. Monitor waste management application at household level and provide recommendation.</li> </ol> |
|---|--|--|

Source: Prey Veng Provincial Flood Preparedness Program 2006

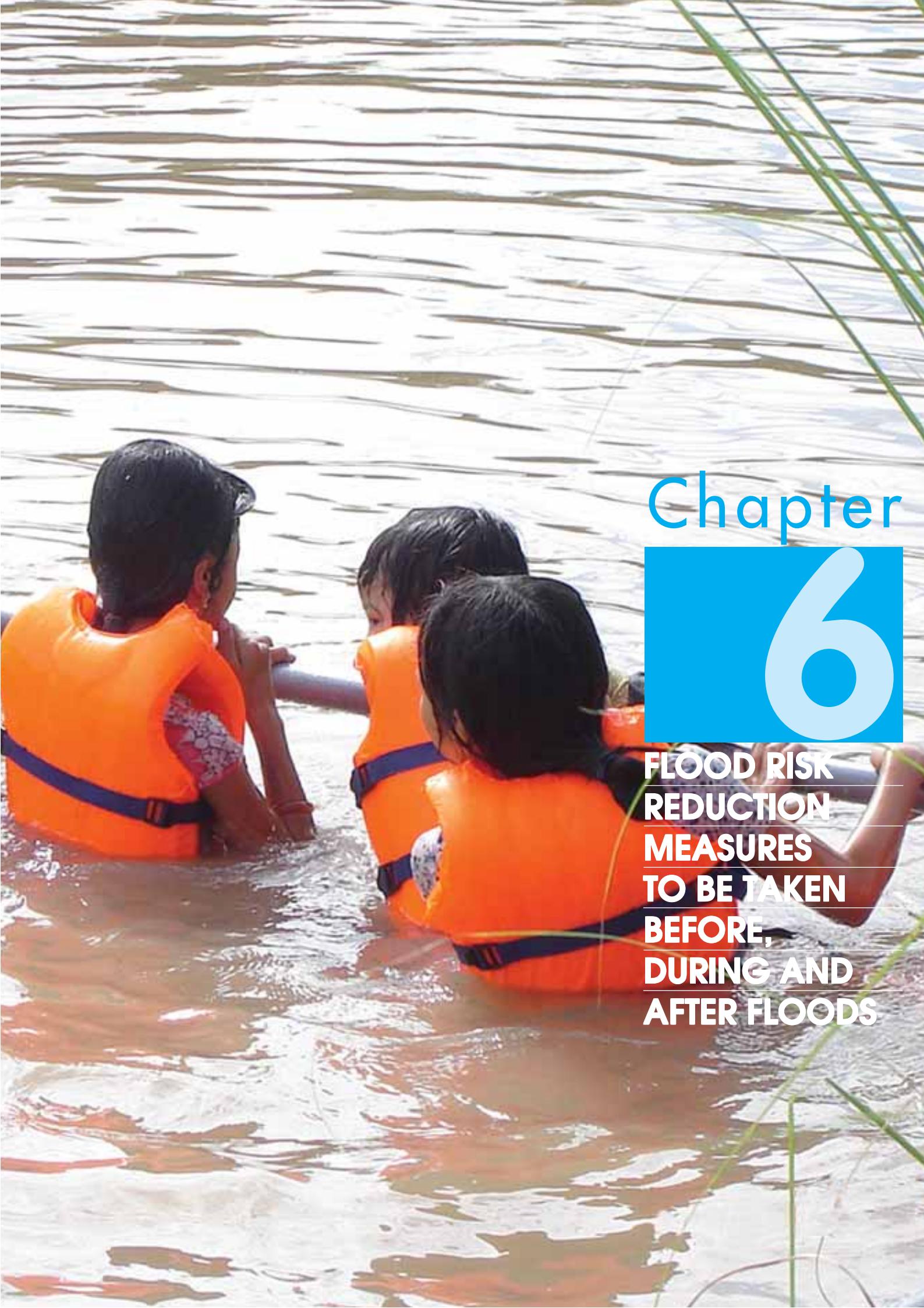
## 5.7 Questions for consideration

1. What are institutional ToR and why are they so important?
2. What are the main challenges that a provincial disaster management team has in assigning roles and responsibilities to the different teams and departments in preparation for a flood?
3. What do you perceive as being the main challenges during the emergency response phase of a flood, in ensuring that roles and responsibilities are fulfilled and ToR adhered to?
4. Which disaster management body should devise institutional ToR for flood risk reduction?

## 5.8 References

- NIDM, India ( 2005): District Disaster Management Plan (DDMP): Model Template
- DMB, Bangladesh (1999): Standing Orders on Disasters
- PCDM, Cambodia (2007) Provincial Plans for Prey Veng and Kandal Province



A photograph showing three children wearing bright orange life jackets standing in floodwaters. They are holding onto a metal railing, possibly on a bridge or boat. The water is brown and turbulent. The background shows more floodwaters and some greenery.

# Chapter

# 6

**FLOOD RISK  
REDUCTION  
MEASURES  
TO BE TAKEN  
BEFORE,  
DURING AND  
AFTER FLOODS**

# FLOOD RISK REDUCTION MEASURES TO BE TAKEN BEFORE, DURING AND AFTER FLOODS

## 6.1 Overview

This chapter deals with technical guidelines on various measures to be taken to minimize the adverse impacts of floods before, during and after they happen. These include flood management actions such as flood preparedness measures, response operations, recovery and rehabilitation, and mitigation measures. It would facilitate the understanding of planners working in the region, and set the thematic scope of flood risk reduction program to be developed/updated/revised, in terms of what kind of preparedness measures to be considered, response to be organised, recovery and rehabilitation visualized, and mitigation measures proposed.

## 6.2 Objectives

- Understand various flood preparedness measures to ensure better response and consider how to organise these at the provincial and district levels.
- Define flood emergency response mechanisms with regard to the roles and responsibilities of the provincial and district authorities.

## 6.3 Main Concepts

- Flood Preparedness describes a wide range of activities identified and planned well in advance of floods, in order to reduce potential impacts on the community, economy and other resources. These include general disaster preparedness activities such as raising awareness, early warning, preparation for evacuation and shelter, flood reduction methods and implementation of an emergency response plan, etc. Preparedness activities determine specific actions and delegate roles and responsibilities to various government departments, disaster management organizations and volunteer groups as elaborated in Chapters 4 and 5 of this Manual. All in all, the preparedness phase enables planners to identify the various needs required to respond to and cope with the floods.
- Flood Response refers to emergency activities undertaken during the flood situations to minimize negative impacts of floods. Flood Response contains two major components: emergency operations and logistics management. The effectiveness of flood response is based on how clearly the roles and responsibilities are outlined in the FPP and understood by the key players who will perform the action during emergency.
- Flood recovery and rehabilitation aims to restore normality and help people return to their original (pre-flood) social and economic engagements.
- Flood Mitigation measures are usually undertaken with long term perspective to reduce the overall risks of floods. They can be and should be integral parts of all flood risk reduction activities, from preparedness to response to rehabilitation measures. These can be both structural and non-structural. The structural measures refer to construction and management of dykes, dams, reservoirs, irrigation system, raised house plat-

forms, flood proof house designs, etc. The non-structural measures consist of capacity building and training of stakeholders, planning, public awareness raising, and changing/rescheduling of crop calendar, etc.

**Table 6.1:** Important Flood Preparedness Concepts

Flood Preparedness	Flood Response
The ability to predict, respond to and cope with the effect of floods.	Emergency operations to minimize the negative impact of flood on the community.
Recovery and Rehabilitation	Flood Mitigation
Activities designed to bring communities and other resources back to normalcy.	Long term measures undertaken to reduce the overall risks of floods.



## PART 1: FLOOD PREPAREDNESS MEASURES

### i. Public Awareness Raising

Public awareness raising is the process through which people living in flood-prone areas are sensitized regarding specific dangers of flooding. It includes educating, informing and warning the community about floods and helping them to better prepare for responding to flood emergency situations, with less dependence on outside assistance or external intervention. Through appropriate actions, this increased resilience can help prevent loss of human life and property. The objectives of public awareness raising on floods are to:

- Increase public knowledge on floods, their nature and possible consequences and impacts.
- Improve public knowledge on practical preparedness measures at the household level that the communities can implement on their own.
- Inform the public about flood early warning systems and various means of communication to receive warning signals and flood information.
- Disseminate information on flood preparedness programs of provincial and district disaster management authorities including the FPPs and mobilize support for coordinated flood response activities.

**Methods of Public Awareness Raising** following are some of the vehicles that can be used for conducting awareness raising campaigns:

- News media - Radio, TV, newspapers, video spot, photo package, audio tape or cassette.
- Print media - Leaflet, brochure, booklet, poster, billboard.
- Community activities - Meeting, community discussion.
- Community oriented programs such as street plays, distribution of pamphlets, door-to-door campaigns and school programs.

Voluntary organisations that work in a particular area or work closely with the communities have good links with and understanding of the community. Therefore, increased awareness among these voluntary organisations on the flood risk reduction, with respect to recent developments in the field, is a definite step towards increasing the awareness of the community as a whole.

**Key issues in Flood Awareness Raising Programs** flood awareness raising programs should be designed in a way so that they are specific to the flood risks in a particular area. In order to achieve that, the following questions should be addressed in designing and implementing the programs:



- Who is the target audience (general public or a specific target group)?
- What is the message to be disseminated (general awareness of floods or any other specific messages such as health, shelter)?
- What kind of communication method to use for disseminating the message (news media, print media, community activities)?
- When to conduct the campaign (before or during the flood season, how often)?
- Who will conduct the campaign (provincial/district authorities in collaboration with their member line departments or NGOs, or a collaboration among the above mentioned agencies)?

Since most awareness campaigns and programs are designed for a wide audience, they must ensure that easily understood messages (either written or graphic) are disseminated. It should be remembered that not everyone may have access to television, computer, cinema, radio, etc. and not everyone can read. Hence, a combination of methods should be adopted to meet the needs of all individuals.

**Key roles and responsibilities in flood awareness raising:** At the provincial and district levels, all stakeholders such as community leaders, NGOs, local media, teachers, disaster management practitioners and the community must be involved in designing and implementation of flood risk awareness activities. The provincial and district disaster management authorities should coordinate with relevant line agencies namely Department of Culture, Information and Education. It serves the two-fold purpose of promoting greater participation of line departments not normally active in flood risk reduction functions and, at the same time, enhancing the pool of resources for flood preparation. As coordinating agencies, the local disaster management authorities can play the following roles:

- Develop flood awareness raising strategy of the province or district involving relevant departments and agencies.
- Consult with voluntary groups, NGOs (both local and international), and discuss the provincial and district flood awareness raising strategy to have better linkages (to the existing programs of NGOs) and geographical coverage, and also leveraging the resources from on-going projects of the non-government sector.
- Constitute special teams and committees and train them to design and implement flood awareness campaigns.
- Undertake pilot interventions, such as launching of flood preparedness weeks, organizing thematic art/essay competitions on flood disasters in schools, and conducting public rallies and meetings.

The provincial or district disaster management agency alone cannot ensure mass awareness on flood disaster. Therefore, coordinated efforts should be made to have joint meetings with responsible line agencies, civil society organizations/NGOs (both local and international) including the Red Cross chapters and volunteer groups based in the focused areas and mass organisations (such as women's groups, farmer and youth associations). It would efficiently warrant coordination and upscaling to cover a wide geographical area. Partnerships should also be forged with commercial organizations in the area such as the insurance companies, financial institutions such as banks, and private enterprises for a greater resource base.

## ***ii. Establishment of a System for Dissemination of Flood Forecasts and Early Warnings***

Flood forecasts and warning are information essential for the timely execution of the flood preparedness program (FPP), especially in carrying out time sensitive activities like relocation of people to safer areas and the deployment of resources for flood response activities. Hence, establishment of a system to facilitate the movement of vital information during a crisis should be a priority of flood preparedness.

Flood Early Warning System (EWS) can facilitate the dissemination of vital information in a



flood event, including when and where the flood will occur, so that the decisions to take protective action are made on time and in accordance with the level of risk the warning conveys. A simple and effective EWS is made of four main components, as follows:

1. Flood hazard detection and forecasting
2. Formulation of warning messages
3. Dissemination of warning messages
4. Community response.

It is equally important to ensure that the flood forecasts relayed originate from a reliable and authorized source, for validation purposes. The warning information, generated from the forecasts, should be dispatched to the relevant local disaster management agencies, which can then make decisions and initiate actions identified in the FPP.

The National Hydro Meteorological Centers and their associated agencies in the Mekong River Basin countries are primarily responsible for collecting, formulating and disseminating flood forecast data and warning in accordance with the guidelines and regulations instituted by respective countries. In addition, the Mekong River Commission (MRC) through its Regional Flood Management and Mitigation Centre (RFMMC) also obtains real-time data from member countries (through the national hydro-met centers) and other sources to generate flood forecasts. Some of the relevant website addresses relating to flood forecasting and warning in the Lower Mekong Basin are given in the box below:

#### **Important Websites for Accessing Flood Forecast Information**

- <http://ffw.mrcmekong.org/>(Mekong River Commission)
- <http://www.hydrologycambodia.50megs.com/>(Hydro-Met, Cambodia)
- <http://www.nchmf.gov.vn> (Hydro-Met, Vietnam)
- <http://www.tmd.go.th> (Hydro-Met, Vietnam)
- <http://www.hko.gov.hk/contente.htm> (Hong Kong Observatory)
- <http://www.cma.gov.cn> (China)
- <https://www.fnmoc.navy.mil/PUBLIC> (US Navy)
- <http://www.bom.gov.au> (Australia)

**Roles and Responsibilities in Flood Early Warning System (EWS):** The national hydro-met centres in the lower Mekong basin countries have the primary role of collecting, formulating and disseminating flood forecast data through their networks (departments under the same ministry) in the provinces, districts and villages. Likewise, regional networks such as the MRC's Regional Flood Management and Mitigation Centre and international agencies like the Hong Kong Observatory, US Navy, and others also analyse flood data using satellite based information and issue flood warning at times of emergency.

Some of the expected roles and responsibilities for EWS at different levels are described below:

**Table 6.2:** Examples of Roles and Responsibilities for Early Warning

Responsible Party	Roles and Responsibilities
<b>Community</b>	<ul style="list-style-type: none"> <li>● Be aware of the prevailing hazards in the area and related risks and impacts they are exposed to.</li> <li>● Be able to take specific actions on their own once the warning is received.</li> </ul>
<b>Local Authority (Provincial or District Disaster Management Authorities)</b>	<ul style="list-style-type: none"> <li>● Be sufficiently familiar with prevailing hazards and risks to which they are exposed.</li> <li>● Be able to interpret technical and advisory information received.</li> <li>● Give instructions to local communities.</li> <li>● Coordinate local level response actions.</li> </ul>



<b>National Government ( National disaster management body and Hydro-met centers)</b>	<ul style="list-style-type: none"> <li>• Be responsible for preparing and issuing warnings in a timely and effective manner.</li> <li>• Ensure the warnings and related guidelines for protective actions are directed at the most vulnerable populations.</li> <li>• Provide support to local authorities to utilize information and develop operation capabilities.</li> </ul>
<b>Regional Institutions (MRC and others)</b>	<ul style="list-style-type: none"> <li>• Provide specialised knowledge, advice or benefit of experience in support of national efforts for countries sharing a common geographical environment.</li> <li>• Provide linkage to macro-scale international capabilities to the particular needs of individual country.</li> </ul>
<b>International Agencies</b>	<ul style="list-style-type: none"> <li>• Promote exchange of data and knowledge among themselves and between disaster management agencies working at different levels.</li> <li>• Provide support to national authorities or agencies responsible for early warning.</li> </ul>

**Public Awareness about Flood Warning:** It is vital that people living in flood-prone areas have a clear picture and sufficient knowledge of the risks they face and are actively involved in the development and implementation of an early warning system. For the community to be in a state of preparedness, the following actions can be undertaken to raise their awareness regarding flood warning:

- Installation of flood markers (as stand-alone structures or on telephone poles or buildings that are visible from a distance).
- Periodic articles in local newspaper on the existing warning system and steps to be taken in case of a flood.
- Provision of flood action guidelines in the form of notices, posters, brochures and booklets to schools and libraries or posting them in public places.
- Periodic meetings for the community (a mechanism that can also be employed to review the existing systems and how to improve them).
- Periodic drills.

**Flood Referencing** is an activity that can be carried out at the community level, to forecast flooding by community members. It is most useful for communities living along canals, tributaries, or small rivers, connected to major flood-prone rivers, but not covered under the national forecasting network. It involves the following activities:

- Installation of water level marker (or level gauge) along the river or tributaries next to the village/commune;
- Establishment of billboards placed at strategic points such as the market place, junctions of main streets (where many people can view them);
- Training of selected focal persons within the community on and maintenance of the equipment being installed;
- Establishment of a proper communication system to receive flood information (forecasts and warnings) from the national level and for sending real time information from the local level to enable the national hydro-met centers to produce flood forecast for the locality.

The flood referencing system at the community level can be developed as part of the provincial flood forecasting system.

### *iii. Evacuation Planning and Temporary Shelter Management*

Evacuation planning, a highly prioritised activity of FPP, should be done in advance by the relevant local level government agencies and NGOs, together with the community volunteer groups. In order to facilitate evacuation planning, the FPP must clearly identify vulner-



able areas, by using flood risk mapping. Important issues to be addressed for evacuation planning are:

- **Safe Area Development and Maintenance:** The first step is to identify all the potential (new, as well as existing) safe areas in the commune, far in advance. Once that is accomplished, the responsible line agencies together with volunteer groups have to prepare and arrange temporary shelter or tents. If duration of inundation is long, affected people need to have access to basic facilities, including tube wells, latrines, shelter for livestock, emergency food storage, etc.; a factor that needs to be taken into account during safe area preparation. In preparing and maintaining the safe areas, the following aspects need to be ensured:
  1. Selection of suitably raised sites for new safe areas (the ground should be higher than the level of the worst historical flood, and close to main roads for easy access) or raising the ground level of an existing safe area.
  2. Installation of clean water and sanitation facilities.
  3. Making arrangements for contingency supply of fuelwood and basic utensils (pots, pans, etc.) for cooking.
  4. Stocking supplies of medicines for water-borne or vector-borne diseases such as diarrhoea and malaria, as well as suitable medical supplies for cattle, poultry and other livestock.
  5. Stocking of food supplies (for both individual families and community) and fodder supplies (for livestock).
  6. Providing fishing equipment and other supplies for sustaining livelihoods.
  7. Providing seeds and equipment for homestead garden on safe area (depending on how long the inundation is expected to last).
  8. Formation of community-organised committees for safe area maintenance.
  9. In cases where schools and other such community structures are used for evacuation, appropriate measures should be taken to allow modification for use as safe shelter.

It is expected that with effective safe area and temporary shelter planning, people will know in advance of a flood event where they have to go. They would also be familiar with which routes they have to follow to reach their destination.

- **Preparation of Evacuation Routes and Transportation Means:** Identification of more than one alternative evacuation route to a safe area or safe shelters is very important to minimise lead time during evacuation. It not only helps the local community, but also helps various response teams that often come from outside to streamline rescue operations and relief distribution. The following considerations have to be kept in mind while planning evacuation routes to safe areas:

1. Identifying nearest evacuation point or safe area (pagoda or school located on elevated ground).
2. Identifying safest and shortest possible route to safe area and alternate route in case of unforeseen route blockages, avoiding possible high current or water logged areas of unknown depth.
3. Installing signs or markings along the route for easy recognition.
4. Informing the public of the location of safe areas and their access routes.
5. Preparing boats and other means of transport. It is crucial to periodically check the working conditions of such equipment.

As and when appropriate, it is advisable to relocate the most vulnerable households closer to safe areas in advance.

#### *iv. Search and Rescue Planning*

Pre-flood Search-and-Rescue planning, and acquisition of proper search and rescue equipment, enables relevant agencies and volunteer groups to effectively respond to any life threatening emergency during floods.



In most cases, army and military forces carry out life saving training (first aid, water rescue, etc.) for their personnel at regular intervals. During floods, drowning occurs in areas where there is no presence of army or military posts. In Vietnam, there are Rescue Posts managed by the local Red Cross Volunteers and other youth groups in the community. In areas which lack military or army presence, the volunteers and youth groups can prove to be vital resources if trained properly, especially in first aid. Such training should be imparted with a view to building their capacity to the level of Trainer, so that they may then conduct further trainings at the commune and village levels.

### v. Water, Sanitation and Health Care Planning

One of the challenges that emergency response practitioners face during floods, is access to clean water and sanitation facilities. Rapid assessment must be made during the planning stage, to determine the capacity of existing facilities and the need for improvement for a suitable water supply system. The water supply and public works department must work closely with national and international agencies to ensure the availability of clean water for drinking, cooking, washing, as well as for animals.

Consuming or coming into contact with contaminated water is a health risk brought upon by floods. Contamination of water can occur due to various causes. The fresh water supply often gets contaminated during flooding from overflowing sewage systems, and agricultural and industrial by-products. In addition, there is likelihood of downstream seepage contamination to existing fresh water bodies. Although skin contact with flood water does not in itself pose a serious health risk, there is risk of becoming ill from eating or drinking anything contaminated by flood water. Proper care must be given to pumping out contaminated water, as it may cause infection, requiring immediate medical attention.

#### **Roles of PCDM and DCDM for providing Clean Water, Sanitation and Hygiene during Floods**

- To encourage relevant organizations/agencies, i.e. Provincial and District Health Department and Health Centers to provide service through mobile teams, to victims who are living in safe areas.
- Provincial Health, Hygiene and Sanitation teams should assist district health care team in public awareness raising of local people on basic health care and sanitation.
- Health, Hygiene and Sanitation teams from provincial and district levels should conduct basic assessment on health impacts and disease infection in flood areas.
- District Health, Hygiene and Sanitation teams should regularly report about general health, sanitation and clean water conditions in flooded areas to Provincial Health Department, Ministry of Health, (MoH) and relevant organizations.
- Provincial Health, Hygiene and Sanitation teams and the Provincial Department of Health request the MoH for additional assistance as and when necessary.
- DCDM works with local authorities to investigate health and disease infection/epidemic situations relates to sanitation and clean water in their territories.

Therefore, key considerations in planning for clean water supply are:

1. Ensuring the supply of drinking water in relief camps, and safe areas as well as to the people staying in their own houses during the emergency phase.
2. Restoration of water supply systems such as tube wells, boreholes and other deep water supply systems during the recovery phase.

Sanitation and hygiene is another important aspect in flood management. The provincial and district authorities, with the help of local volunteer groups, must ensure better sanitation facilities at the relief camps in safe areas and safe shelters and provide proper latrines, water flush systems, and disinfectants to keep the areas clean.

Outbreaks of contagious diseases after floods are unusual, but the possibility should not be ignored, given the damaged sanitation facilities or overcrowding among displaced persons at the shelters or safe areas. Suitable emergency medicine should be kept ready at the



health centers and specific recommendations for vaccinations should be made on a case-by-case basis, or as determined by local and provincial health departments.

In addition to physical health, plans for providing psychological care and support to affected population (especially young children) should be considered.

### ***vi. Livelihood Planning***

To minimize the disruptive effect of the flood on the income generation activities of the community, prior arrangements should be made to ensure alternative livelihood options during flooding, as well as to facilitate rapid recovery of economic functions after the floods (resuming of pre-flood occupation). This is of utmost importance especially in cases where flood inundation periods are long and living with floods options are preferred to evacuation.

The key agencies to lead this process are the grassroots/ community based or mass organizations (such as farmers groups or fishermen s associations), that have been working in the area and are familiar with the locals and their living conditions. Participatory methods are essential from the beginning of the process to make sure the recipients of any planned arrangements have an input to issues that affect their lives.

In association with the local authorities and the community, the grassroots organizations can map out and undertake the various activities described below:

- Crop land reclamation, specifically on higher grounds.
- Establishment of rice and grain banks.
- Acquisition of fishing nets (families living in stilt houses can fish during inundations).
- Provision of handicraft-production trainings for women and physically impaired members of the community for alternative income generation during floods.
- Establishment of agricultural funds within the community.
- Preparation of homestead gardens.
- Initiating dialogue with nearby towns/communes/villages for the establishment of market access in their areas to sell products.
- Formation of community economic recovery groups and development of rapid community livelihood recovery plans.
- Preparation of crop calendar based on the historical events as well as the new forecasts.

Relevant government institutions can play a significant advisory role in planning and implementation of these activities. For instance, the Department of Agriculture can help provide guidance in the preparation of crop calendars together with the Department of Water Resources Management, and the Department of Women s Affairs and the Department of Social Welfare can provide skill improvement trainings for local people.

### ***vii. Drills and Mock Exercises***

Drills and mock exercises efficiently serve the purpose of raising community awareness and building preparedness capacity at the local level. Artificial scenarios similar to real situations are created, and exercises and mock drills are carried out to show techniques by which people can best prepare themselves against these disasters. These exercises develop special skills of the community, such as:

- Emergency evacuation;
- Recognition, understanding, and responding to appropriate and readily available warnings at the local level during emergencies;
- Improved knowledge of safe areas/evacuation centres and the available routes;
- Development of volunteerism.

Drills and mock exercises of specific emergency management teams are practised at public events for public viewing, greater public motivation, and awareness.





## PART 2: FLOOD RESPONSE OPERATIONS

The effectiveness of flood response is based on the following key components:

- a. **Effective Coordination:** Extensive coordination among all agencies taking part in emergency response activities dictate the success of any emergency response operations, guaranteeing minimum overlap of roles and responsibilities and maximum effective utilization of available resources. A focal agency should be deployed as the principal coordinating body.
- b. **Effective Logistics Management:** It is critical in any disaster situation to quickly identify the resources needed, i.e., the response team, equipment and commodities, as well as mobilize and transport them to the right place at the right time. Two major elements to make it happen are:
  - **Time assessment and deployment list:** A prioritised list of the most critical resource requirements developed in advance of an event.
  - **Movement coordination:** Acquiring transportation services and coordinating the transportation flow of resources in and around the flooded area using the prioritised list; continuously reporting on the movement of all transported resources into, within and out of the flood area; monitoring the flood's effect on transportation systems and resolving routes or destination issues.
- c. **Level of Responsiveness of the Community:** The more aware the community is of the risks they face with regards to flooding and the actions to be taken, the more effective and significant the impact of the emergency response will be.

Flood response should be implemented along clearly demarcated roles and responsibilities outlined in the FPP and understood by the key players who will perform the recommended actions during an emergency.

Emergency management requires coordination and cooperation between the national, provincial, district and commune level actors. Information plays a key role in deciding the scale of response and deployment of resources. Often, a flood response system fails due to lack of understanding between various stakeholders and lack of coordination between the main response agencies such as the Military and Police, Information Management department, and the local disaster management authorities.

The most important thing to recognize under the response phase is that the provision of assistance (financial, materials) must be stopped at some point in time to prevent dependency of the public on external support. The questions to ask are:

- Which response activities should continue?

- Who should coordinate the activities of NGOs that continue to work in this period?
- What type of milestones should be sought to address with continuing work?
- How can the transition from short-term programmes to long-term recovery and rehabilitation be facilitated?

Key activities of flood emergency response are described below:

### *i. Flood Monitoring*

During flood response, a state of panic and chaos may prevail. This can be addressed by creating an efficient flood monitoring system at local levels. Flood monitoring enables up-to-the-minute flood information for the disaster management practitioners at the local level, equipping them with the tools for efficient execution of real time emergency operations. Time sensitive activities such as generation of flood warnings, evacuation of vulnerable populations to safe areas, and deployment of search and rescue teams, rely upon up-to-date information, including the latest water level at a particular point in the river.

Flood hazard monitoring during emergency is usually carried out by the same agency responsible for production of flood forecasts and warnings. In the case of Lower Mekong Basin countries, the local level hydro-meteorological departments will be the lead agencies. However, continuous watch is required during the crisis period - which could be beyond the capacity of the department. Under the circumstance, local flood watch committees or groups can also be formed for 24 hour flood watch in the villages, with an appropriate method of information dissemination to warn the public.

### *ii. Forecasting and Early Warning Dissemination*

As mentioned in the preparedness measures section of this chapter, flood warning messages should be appropriate and easily understood by the community and the officials who will perform response activities. They are formulated from the real time situation (information provided through flood monitoring, flood referencing, etc.).

The role of the local disaster management authority is to coordinate with the Response Team, as well as with the agencies responsible for issuance of warnings (hydro-meteorological department), communication of flood situation (Information department, TV, and print media) and ensure that people are receiving warning messages on a regular basis and know how to act on them. At the village or lower levels, volunteer groups can help disseminate the information through such devices as loudspeakers.

### *iii. Evacuation Operations*

A good FPP with pre-identified evacuation sites, safe routes and shelter is useful to relocate affected people out of the flood inundation areas to safe areas. Maps are of great use in this activity.

Time is a crucial factor during evacuation of people to safe areas. Local authorities are the best-placed to set appropriate timing for evacuation based on the early warning and latest flood situation (flood monitoring can provide relevant information). If the decision to evacuate is not taken on time, loss of lives, injury and properties/assets can be high.

If mass evacuation is required, the operation is usually performed by trained personnel from such agencies as the National Red Cross Society, local Military, and Police forces in collaboration with

#### **EVACUATION APPEAL**

- If advised to evacuate, do so immediately.
- Evacuation is much simpler and safer before flood waters become too deep for ordinary vehicles to drive through.
- Listen to a battery-operated radio for evacuation instructions.
- Follow recommended evacuation routes - shortcuts may be blocked.
- Leave early enough to avoid being marooned by flooded roads.

FEMA, 1993



the local disaster management authorities. Individual families, once aware of the imminent danger, can also arrange for their own evacuation, provided they know where to go (safe shelters, relatives houses). Priority and special care should be given to evacuating those people who have to depend upon others for mobility due to physical, economic or social/cultural reasons such as elderly, handicapped, pregnant women, poor, the children and ethnic minority groups.

#### ***iv. Safe Area and Temporary Shelter Management***

In order to offer safe areas to the flood affected people in their situation of insecurity, prior identification of high ground areas, which are safe for temporary refuge during the flood, is regarded as one of the most important activities in Part 1 of this chapter. When the flood is at its peak, with vulnerable communities relocated to safer areas, management of these areas becomes imperative.

The first step is to ensure the essential materials are available. The local disaster management authorities, together with NGOs and voluntary groups, should mobilize the acquisition and transportation of tents, tarpaulins, and mobile houses to safe areas. It is also important to establish minimum standards and basic facilities such as food, drinking water, and sanitation facilities at the safe areas. Water purification systems should also be considered and installed at the temporary shelter sites.

Security is an important concern for the evacuated people; women particularly are vulnerable to sexual harassment. The local disaster management authorities must provide security measures with the help of the police, military or commune police to warrant security and safety in the safe areas. Child care is another important issue at the temporary shelter as many drowning cases are reported from families evacuated to safe areas. Establishment of temporary kindergartens at the shelter, with assistance from women groups and NGOs, is one of the best options to guarantee safety of young children. In the Mekong Delta of Vietnam, emergency kindergartens are run by the Women's Union in association with Department of Education, Committee for Population, Family and Children and the Flood and Storm Committees at the provincial level.

#### ***v. Search-and-Rescue Operations***

In undertaking the search-and-rescue operations, it is important that the Search-and-Rescue Team should be guided by a single command structure. The Team should give priority to locations of highest vulnerability where rescue posts should be established. In the Mekong Delta of Vietnam, rescue posts are set up at the confluence of canals and rivers and at places where water traffic is the heaviest.

The Team needs to make sure that the Search-and-Rescue equipment such as boats, ropes, floating tubes, and life jackets are at hand at all times. The local disaster management authorities should ensure that the list of the resources (resource inventory) is up-to-date and the equipment is in working condition. For details of such equipment, refer to Chapter 7 of this Manual on resource inventory.

#### ***vi. Healthcare and Medical Operations***

In many areas, the deployment of first aid teams sometimes precedes that of the Search-and-Rescue Teams, in attending to injured people and animals. The Search-and-Rescue Team should have medical personnel with them, who are able to perform first aid.

During floods, drowning is the main cause of death and some of the first aid principles for drowning are explained in the box First Aid for Drowning . Every safe shelter should have a first aid kit, prescription medicines, and medical facilities to cater for specific medical needs during emergencies. As previously mentioned in Chapter 5 of this Manual, a special team

focusing on health and sanitation issues can be formed at the local level. The team can consist of representatives from local health departments/ clinics and Red Cross chapters.

The health team should, in addition to providing basic medical care, also look after the water and sanitation aspects, preventing any water borne disease outbreaks in the flooded areas. Their tasks consist of provision of clean water supply facilities at the safe shelters, educating public on the benefits of using clean water, and encouraging other government line departments to establish and maintain good health and sanitation practices in whatever way they can. At the same time, the health team should explore the possibilities of offering psycho-social care to the flood affected population, to help deal with mental traumas and stress.

## First Aid for Drowning FIRST AID HANDBOOK

- First try to reach the person with a pole or extended hand. If you can't reach him or her, use a rope.
- If the person is further than you can reach and you decided to enter the water, approach the person carefully and from behind. Talk to the person, trying to calm him or her as you slowly move closer. Get the person to talk. Ask if everything is all right and tell him or her to do as you instruct.
- Grab a piece of clothing or cup one hand under the person's chin and pull the person on his or her back to shore.
- Tell the person to extend his or her arms away from you. Continue talking to the person to reassure him or her.
- Start rescue breathing right away if the person has stopped breathing
- After a near-drowning incident, does the person have a fever, cough or muscle pain?
- All victims should see the health care provider because lung problems are common following a near-drowning episode.
- Get the victims out of the water if you can do so safely & Do Cardiopulmonary Resuscitation (CPR).
- If the person is not breathing, but has a pulse, the start mouth-to-mouth breathing.
- If victim is breathing and has a pulse, put him or her on the recovery position. This position keeps the airway clear and allows swallowed water or vomit to drain.
- Take cold, wet clothes off the victim and cover him or her with something warm to prevent hypothermia.

### ***vii. Rapid Assessment of Damage and Needs***

In flood emergency response, each local government agency that is assigned specific tasks under the FPP, is authorized to make any possible remedial measures to address the immediate needs of the affected community. As the flood situation becomes critical, a rapid assessment of the latest situation is needed to confirm the immediate needs, which are frequently updated as the situation develops. The local disaster management authorities should ensure that necessary formats and guidelines are provided to the rapid assessment and information teams to ensure accurate recording and reporting of damages and immediate needs.

During the response phase, lack of co-ordination, cooperation and information exchange among the line agencies, response teams, and voluntary groups can lead to uncertainty and ambiguity. Consequently, some communities receive too much aid, while others are overlooked. At the same time, incorrect or incomplete information on damages incurred can result in not being able to undertake effective repairs to critical infrastructure. Damage and needs assessment can solve these problems by making reliable damage information and accurate needs/requirements of the flood affected areas available.

The assessment should be undertaken by both government and non-government agencies at the community level, under the leadership of local disaster management committees or their nominated agencies, with a focus on promoting participatory assessment. A rapid assessment should result in quick distribution of relief materials and setting of help-priorities. It supports maximum utilization of available resources at the local level.

### ***viii. Relief Coordination and Management***

Once flooding occurs, relief supplies for the immediate needs of the affected community arrive at the location, mobilized by the government disaster management agencies, as well



as NGOs, Red Cross, and the other voluntary groups. Distribution usually occurs through the existing network of above mentioned agencies. However, there have been cases where the relief does not adequately reach the affected people, neither in sufficient time, nor sufficient quantity, due to lack of coordination among the key stakeholders. Therefore, coordinating and managing relief operations during disasters is pivotal to the success of the recovery processes.

The local disaster management authorities should take the lead role in relief coordination and involve all the stakeholders in accordance with needs assessment and beneficiary selection processes. Coordination meetings with all the stakeholders, including leaders of the relief distribution teams, should take place at least once a day to review progress of relief distribution and identify future needs. The national authorities need to be brought in to ensure political support. There also has to be a clearly defined timescale for phasing out of the response phase (continuation of relief distribution), in order to commence with the rehabilitation phase.

The developed resource inventory serves as an important document for overseeing the relief coordination and distribution, because it contains information on storage facilities, their capacities, and available materials within the area. In order to avoid allegations of malpractice in relief distribution, a proper recording system should be in place.

One aspect of relief coordination and management that requires extreme caution and discretion is dealing with the media. When the impact of flooding overwhelms the ability of the local authorities and communities, signals should be sent out to the external players. This can be done through various media: from official government channels, to announcing the appeals on national television. In any case, care should be taken not to sensationalise the situation; only actual facts should be stated, with a specific call for help. Only then the external aid agencies can understand the need and offer the exact resources required.



## PART 3: FLOOD RECOVERY AND REHABILITATION MEASURES

The flood recovery and rehabilitation phase aims to restore normality and help people to get back to their routine social and economic engagements.

It is important that all the stakeholders including relevant agencies and ministries concerned with the formulation and direction of recovery programs fully understand the nature of recovery. Most aspects of recovery apply to restoration, reconstruction and long-term community rehabilitation. The recovery process is therefore complex and extensive; it can generate a multiplicity of problems, some of which will necessitate changes to original plans as the recovery process proceeds. The need to implement flood recovery programs often has direct implications for national, provincial and district development plans. Where possible, therefore, it is desirable to reconcile appropriate aspects of recovery with development planning.

At the province and district levels, most recovery programs, especially those concerned with major reconstruction, tend to be costly. During the early phase of the recovery process it is important to establish what finances are available to carry out these programs. Similarly, an assessment of existing and required resources (equipment, materials, skilled personnel) needs to be made. These aspects are particularly important for determining the size and form of the total recovery program. Post disaster assessment of damage and loss is the key to recovery and rehabilitation measures and should be carried out scientifically, covering all the important sectors relating to social, economic, environmental and physical aspects.

Community participation in all aspects of recovery planning and implementation is important. Its benefits are many, as follows:

- Allows for accurate identification of problems, opportunities and the most effective ways to address the situation, since it will be based on people's own definition of their needs and real priorities.
- Ensures that activities are coordinated in a coherent way and are in line with community development goals and activities, preventing conflicts and reducing the cost of implementation.
- Educates communities on available resources and capacities.
- Builds support and ownership of the FPP, thus increasing the possibility for sustainability of interventions and promotes commitment.

The most commonly used recovery support system in a country is to provide financial sup-



port, aid, and volunteers to rebuild the lives of survivors and to revive their livelihoods. An alternative form of support can be grants and loans, distribution of construction materials and land, and distribution of seeds and essential farming equipment.

### i. Post Disaster Damage Assessment

Damage assessment helps in identifying specific recovery programs. An assessment system equipped with proper guidelines and techniques should be in place at the provincial and district levels to enable the assessment team to provide basic data for formulation of the recovery and rehabilitation programs.

The key questions before conducting the assessment are information-related and relate to how to evaluate the information. Some of these are:

- What data is needed to generate information?
- Where is the data going to come from?
- When will the data be available?
- Is the data source reliable?
- In what form is the information needed?
- Is the information relevant to the goals?
- Is the information accurate, clear and timely?

The institutional arrangement to conduct the assessment is very important, because the assessment requires involvement of relevant government departments in the province and district. As described in the Chapter 5 of this Manual, the identification of a damage assessment team is essential and necessary training on use of the damage assessment techniques and standard formats must be provided. Key elements of post-flood damage assessment are summarised below:

- **Standardisation of formats, assessment codes and procedures** for assessing and reporting damage for consistent representation. It is critical to achieve a holistic impact in all the sectors, and all standardized formats, codes and procedures should be shared at all administrative levels.
- **Establishment of focal points** in each line department.
- Establishment of a baseline inventory of resources in each department and updating them annually.
- **Databases of disasters and impacts** for easy analysis of damages; to inform decision-makers.
- **Training of key personnel** in use of the standardised formats.
- Timeframe for conducting the damage assessment and for presenting the findings. It is important to quickly complete the assessment process, so as to enable national and provincial authorities to initiate recovery programs and restoration of critical infrastructure as soon as possible.
- **Household level** assessment should also be conducted.
- **Focus on both short-term and long-term impacts** should be given.
- **Secondary and indirect losses** such as effects on agricultural production and agricultural economy should also be analysed, in order to determine how these impact upon social well-being.
- **Multi-sectoral linkages and impacts** should also be considered to assess overall developmental linkages.

It is important to identify officials, preferably with experience from past disasters, and assign responsibility to collect damage information. Such focal points should be given training on damage assessment techniques. The role of these focal points are as follows:

1. Use the acquired methodology for assessing damage.
2. Train other personnel within the department on its usage.
3. Modify and adapt the methodology to the needs of the department, as appropriate.
4. Create and maintain inventories of departmental assets and past damage data.



The role of local disaster management authorities to facilitate damage assessment activities helps to identify communities' needs for recovery after flooding, i.e. housing, health care, education, social, economic, etc. These disaster management bodies also develop plans for recovery, based on effective mobilisation of external resources.

**Table 6.3:** Elements of Damage Assessment

Examples of data sets required for assessment	Structures
Location Structural properties Financial values Nature of damage Magnitude of flood	Buildings Roads Bridges Critical infrastructure, utilities Flood control structures

Floods are likely to affect people - their houses, property, belongings; their livelihoods - (agricultural/aquaculture production, businesses, other); infrastructure; social services (hospitals/health care centres, schools, electricity and water supply) and transportation.

## *ii. Environmental Cleaning*

With the intention of preventing any outbreak of diseases or any further injury caused by debris, the cleaning-up process has to be undertaken immediately after the flooding recedes. Clean-up after a flood requires much time, patience and skill.

While the individual family takes care of cleaning of their own houses, cleaning at the public places can be carried out by well organized groups (of military, police, Red Cross, volunteer), under the supervision of local disaster management authorities. Care should be taken to use the appropriate equipment such as long poles to remove fallen electricity lines, boots to walk in water, etc.

For the cleaning team, it is important to look at all the potential hazards anticipated during the clean-up process to avoid any injuries. They include:

- Electrocution or fire outbreak due to submerged and fallen wires;
- Poisonous animals and insects;
- Contact with contaminated water;
- Contact with hazardous chemical materials;
- Accidents on flooded roads and inundated areas.

Wells and water bodies might be contaminated by flood water and they should be pumped out, disinfected with bleach, allowed to recharge naturally, and tested before drinking or cooking. If there is any health concern, the local public health department should be contacted, and the public should be provided with the contact details of relevant departments.

While cleaning up, it is important to remain alert for possible secondary hazards, or inadvertently create one. Debris disposal need to be carefully planned so that it will not become a secondary hazard, particularly if potential bio-hazard materials are involved. Similarly, if the debris is to be incinerated, careful consideration is required to choose the right location (e.g. not in the vicinity of congested residential areas, forests, or any factories). At the same time, investigation should be made to minimise air pollution resulting from the smoke. Venomous animals that might accompany the flood waters need to be cautiously looked for, and removed if possible.



### *iii. Restoration of Basic Infrastructure*

Reconstruction offers a great chance to reduce vulnerability at no or little extra- costs. This phase is a particular challenge to local authorities, as the reconstruction period, which leads to a higher and sustainable safety level, needs planning time in the face of urgent needs of the affected people.

Immediately after flooding, any damages to the important infrastructure should be repaired as soon as possible. The basic infrastructures that need immediate attention include:

- Electricity generation facilities and their networks,
- Water distribution facilities as well as sewage system, drains, dams, levees and other protective water structures,
- Education facilities such as schools,
- Health facilities such as hospitals and clinics
- Religious facilities such as temples and pagodas,
- Communications facilities,
- Transportation facilities such as roads and bridges,
- Damaged houses.

Once the basic needs are met, long term development goals and plans for reconstruction have to be considered. The recovery period should also be viewed as an opportunity to explore further improvement and to incorporate enhanced resilience of all rebuilt assets. It is important that the reconstruction process uses locally available materials as far as possible along with local labour and resources, which contribute to the restoration of the economy. The availability of resources, existing socio-economic conditions, political agenda, and the development scenario of a nation are underlying factors in determining whether the recovery process is going to be state-, or survivor-driven. It would further be a facilitating or supplementing factor to reduce vulnerability during the restoration process.



## PART 4: FLOOD MITIGATION MEASURES

The term flood mitigation refers to long-term measures that can be followed to reduce the impact of flood hazards. These measures can be structural and non-structural. The structural measures refer to construction and management of dykes, dams, reservoirs, irrigation system, raised settlements, housing design, etc. The non-structural measures include training, planning, awareness raising, changing of agricultural production patterns, flood resistant cropping, etc. Identification of the key mitigation activities in the FPP is a prerequisite to help relevant line agencies to initiate proper action. Some of these activities are described below.

### *i. Flood Protection*

Flood protection is the provision of major long-term structural measures that physically prevent some or all flood water from entering a designated area. Flood protection does not necessarily mean complete protection from floods, but can mean the provision of controlled flooding and drainage. The objective of flood protection is to ensure that normal or improved social and economic activity can continue within the designated area during and after a flood event. In Vietnam, Cambodia and Lao PDR, flood protection measures involve strengthening embankments, construction and reinforcement of dykes and construction of by-pass channels to improve the flow of water in drainage channels. An essential component of flood protection measure is continuity of operation and maintenance of the facilities constructed. Flood protection requires sustained maintenance procedures and funds, and continuous assessment of the performance of facilities.

Flood protection measures are mainly carried out by the water resources and public works departments under regular developmental activities. In order to incorporate the flood risk factor, the local disaster management authorities should take on the key role in identifying the priority flood protection sites and activities. The FPP document should identify and detail the locations of such vulnerable sites where flood protection measures are necessary.

### *ii. Flood Proofing*

Flood proofing is one of most common mitigation measures and refers to the provision of long-term, non-structural or minor structural measures to minimize the effects of floods. It can be defined as minor or major adjustments, or modifications to existing structures and con-



tents, that are designed or adapted to reduce flood damages.

Flood proofing measures can be applied to public structures such as schools, hospitals and health care centres, pagodas and temples, as well as to individual houses as they are often used as temporary shelter during floods.

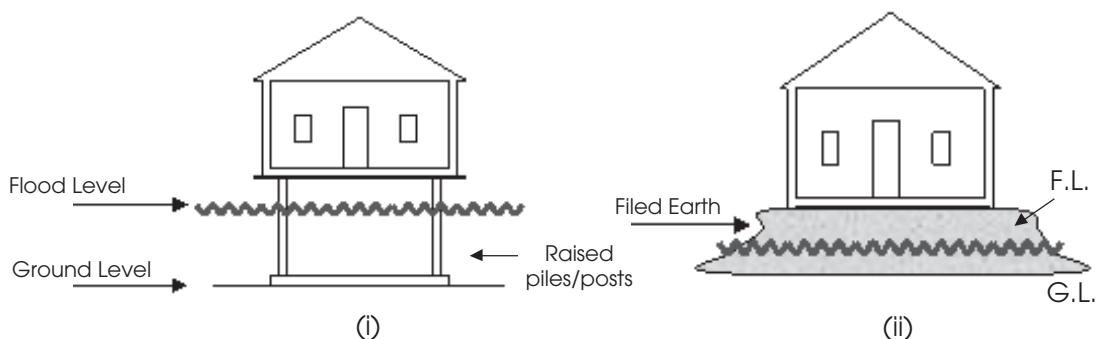
Flood proofing helps avoid the loss of human life and reduces disruption to normal activities during and after a flood, and provides people with the security and motivation necessary to make and sustain improvements in their economic and social welfare, and achieve prosperity in flood-prone environment. Flood proofing measures can be undertaken by individual property owners without waiting for government action.

**Flood Proofing Methods:** Flood proofing can be categorized into three main methods: permanent, contingent and emergency.

- Permanent measures provide long-lasting protection against flooding, for which they are designed and do not depend upon any flood forecast or action to put them into effect.
- Contingent measures are not effective unless, upon the receipt of a warning or forecast, action needs to be taken to make the measures operational.
- Emergency measures are either improvised during an actual flood or carried out according to prior emergency plans of action.

#### Flood Proofing of Buildings or Individual Units

At the community level, cost remains an important factor in determining the type of flood proofing to be implemented in individual units. There are several approaches to flood proofing of buildings or individual units, which are summarised as follows.



**Figure 6.1:** House elevated over (i) piles or posts and (ii) on earth filling.

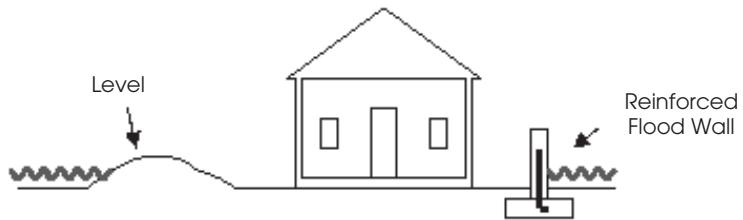
1. Elevating the building, so that floodwaters do not reach any damageable parts of it.

The building or individual unit can be elevated on land fill, posts or piles or on extended walls. The height of elevation must be sufficient to ensure the building remains above flood level. This allows floodwater to flow under a building, causing little or no damage. Special atten-



**Figure 6.2:** Raised Homestead

tion has to be given to the design of the foundations to avoid settlement or tilting of the building.



**Figure 6.3:** Constructing barriers between the building and floodwaters.

## 2. Constructing barriers between the building and floodwater

Some of the damages from flooding may be minimised by appropriate measures to prevent flood water from entering properties. Barriers (levee or reinforced flood wall) can be built around the building, or on the side of the building exposed to possible floods, in order to prevent flood water damage to the structure. Barriers can be made of earth, concrete, masonry or steel. Care must be taken to ensure they are watertight.

In this method, all areas below the flood protection level are made water-tight. Walls are coated with a waterproofing compound or plastic sheeting and openings, such as doors, windows, sewer lines and vents, are closed - temporarily, with sandbags or removable closures or shutters to secure the building against the entry of flood waters. Such a protection method should be accompanied by adequate drainage to carry the water away from the building.

## 3. Dry Flood Proofing or Sealing

This method consists of making the building walls and floor water-tight so that water does not enter and the method can be used only in areas of shallow flooding to completely seal a building against water, i.e., in areas where flood levels do not exceed one metre, and flood velocity is minimal.

Sandbagging also represents temporary protection which can be utilised to close an opening or to protect a vulnerable part of the structure.

## 4. Protection of other facilities:

- **Temporary removal of goods:** In some areas, temporary removal of goods, equipment and supplies in the case of emergency can result in substantial reduction of damages.
- **Watertight storage facilities:** Storage tanks in flood-prone areas fitted with water-tight caps can prevent goods and equipment from flood damage.
- **Proper anchorage:** During floods, some materials and buoyant structures (e.g., lumber) can be carried away by flood water, resulting not only in their loss but also in possible destruction and debris accumulation downstream. Anchoring such structures could reduce damage.
- **Fire protection:** One of the main causes of property loss is due to fire caused by electrical short-circuit, as a result of contact with water. Proper fuse protection for individual building can reduce the likelihood of fire. This also provides protection against electrocution.
- **Utilities service:** Utility systems like water supply and water distribution systems should be checked for leakages and repaired regularly to prevent contamination by seepage of flood water.

### *iii. Zonation of Flood Plains*

In flood mitigation scenario, land management issues focus on (1) regulating development activities on flood plain and (2) ensuring the safety of present occupants living on flood



plains from severe flood damages. Land use management tries to match up the existing or future land-use activity (farming, construction, etc.).

Development activities, if not undertaken with due care, can and do interfere with natural drainages, flood retention systems such as wetlands and swamps and decrease the infiltration of rain water into ground due to urbanisation. Particularly in regions undergoing rapid urbanization, policies related to watershed management, integrating the management and protection of natural resources, are very important. Regulating development works, or public infrastructure (such as roads), on a flood plain through specified regulations is essential.

The flood plain zoning, where degree of flood hazards within the catchment area are carefully matched with appropriate land-use measures, could be one of the most important non-structural measures. Flood hazard and flood risks maps, which provide information on the past history of flooding and likely or potential extent of future flooding in combination with other related information are of big help in flood zonation.

In many cases, offering incentives and trade-offs can be effective. Planning of future urban development can be controlled through either disincentives or incentives for the developers. The developers, who are prepared to include certain features in their works that would reduce peak flows, can be given certain pre-determined discounts on land taxes. Land tax programs can be adopted where those already own a plot of land or those planning to buy land in flood prone areas have to pay higher taxes. This is meant to discourage people from living in flood prone areas and thereby exposing themselves to flood risks. The land use legislation permits the establishment of standards for the use, development and protection of land in such a way that it minimizes the risk to population and prevents the natural resources from being destroyed during the flooding. Regarding relocation of the communities already settled in flood prone areas, they could be offered plots of lands in safer areas with appropriate livelihoods and/or good transportation connectivity to their farms or other means of business.

However, these measures can only be successfully put in place with the proper establishment of land use planning rules and regulations and their effective implementation on the ground. Proper law enforcement can significantly help restrict unlawful activities such as illegal reclamation of lands on the river, which can drastically change the river path and pose greater threats to downstream community. The involvement of stakeholders is vital in deciding the kind of land use management measures that should be adopted, since they are the ultimate beneficiaries and can be useful allies in implementing these regulations. The right blend of law enforcement, education and incentive scheme are, therefore, needed.

#### ***iv. Capacity Building and Enhancing the Indigenous Knowledge and Practices***

Regarding capacity building of stakeholders in flood mitigation, a careful analysis is needed of the variety of stakeholders, their respective interests, needs, gaps in skills, knowledge and capacities. The cost of education and capacity building programs need to be recognized as a maintenance cost of effective flood management, and be treated as such with respect to budget allocation.

Regarding developing the capacity of the stakeholders, three levels should be considered: institutional, community and individual.

Institutional capacity building concerns introducing a fundamental change in the ways the institutions are accustomed to function, from putting procedures first to being custom-focused and putting people first. In this process, strengthening existing institutions in participatory planning and management would need to be linked to capacity building on strategic planning and management, which not only enhance the working and learning through implementation of policies but also allow scarce resources to focus on priority areas of capacity building. Techniques that can be adopted include formal training, learning through imple-

mentation (developing skills more organically, as part of the process) and/or organizational reforms.

Community capacity building focuses on making the catchment community aware of flood risks, as well as understand, plan and undertake, on their own, flood risk reduction activities to mitigate the flood hazard. This can be achieved through a variety of measures including community level training and workshops, organizing public awareness campaigns and promoting cross-learning between communities, and arrange exchange visits to other communities that have successfully initiated or implemented innovative programs. The community capacity building programs should be designed to enhance the existing indigenous knowledge and practices, rather than introducing whole new technical capacities.

Individual capacity building focuses on creating opportunities for those individuals already playing a key role in Government departments, RBOs, CBOs, NGOs and enables them to develop their understanding, knowledge base and leadership skills. This can be achieved through formal training programs, study tours, and attachments/internships in other similar organisations. The capacity building of individuals should be treated as a collective form of skill enhancement toward organizational development. Members of the community who have some kind of social influence and leadership qualities could be chosen as ambassadors of information.

### **v. Public Awareness Raising**

As already explained in the Part 1 of this chapter, public awareness raising is a continuous process that needs sustained resources. In the flood mitigation perspective, awareness raising is undertaken with the ultimate goal of accomplishing changes of attitude and behaviour of the flood vulnerable communities towards flood risk reduction, resulting in higher community involvement and commitment. Awareness raising can be achieved through different means: dissemination of public awareness materials (print materials), community meetings, websites, TV and radio programs, commemoration of well-remembered flood events and supporting programs.

When raising the awareness on flood risks, it is important to bring together stakeholders from both downstream and upstream regions. For example, in the situation of slash and burn cultivation, the farmers upstream can be made aware of the devastating impact of such actions on the downstream community, and with the assistance of the government and other concern agencies, alternative livelihoods arrangement for them can be made.

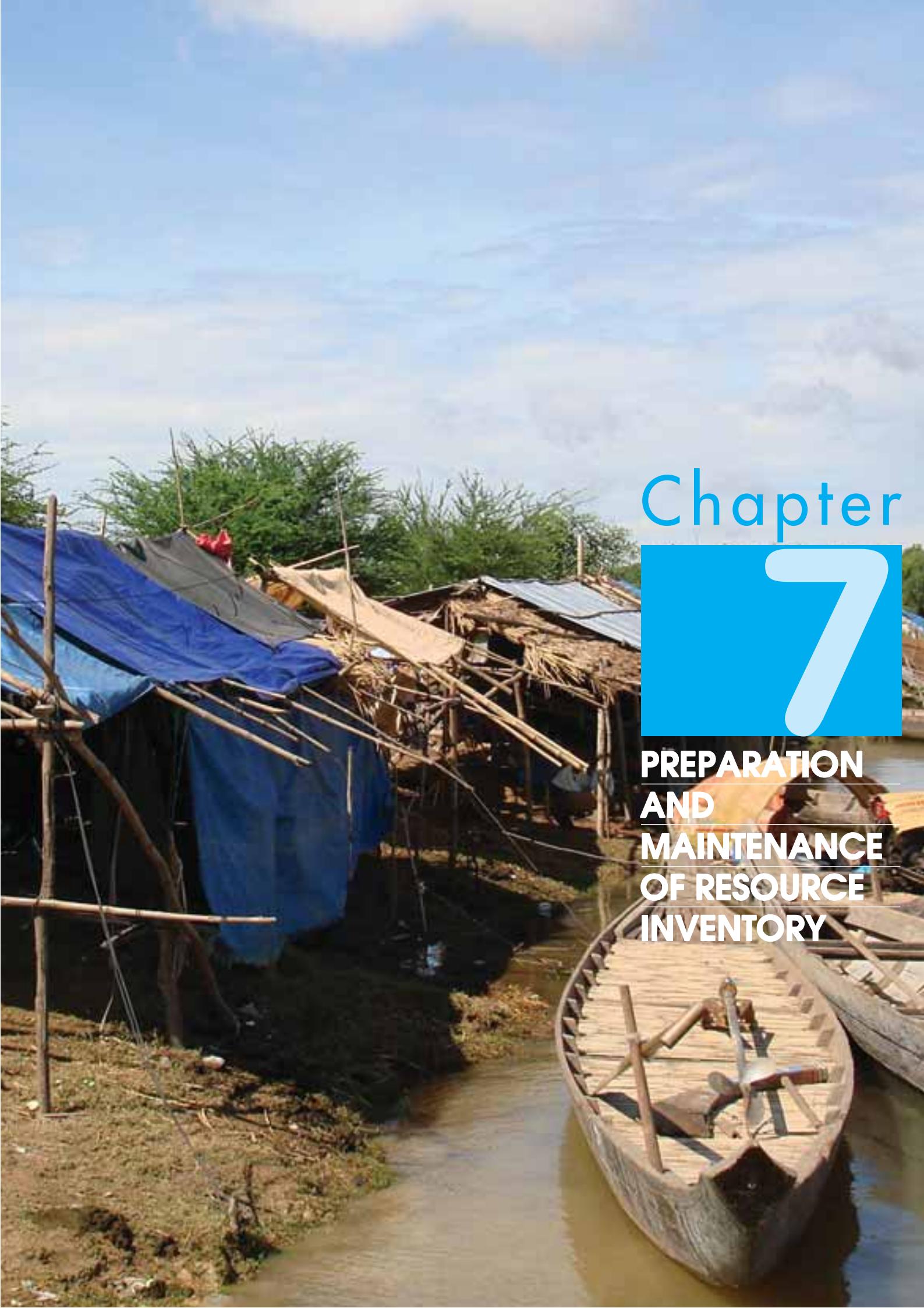
### **6.4: Issues for Consideration**

1. Why is a distinction between preparedness, response, recovery and rehabilitation, and mitigation measures integral to preparation of the FPP?
2. Elaborate the significance of flood preparedness measures, and how these can be valuable in saving human and material resources in case of floods.
3. Identify the key questions of a rapid damage assessment.
4. What should be suggested to provincial and district DM authorities to raise funds for mitigation measures?
5. Compare a scenario of two communities in terms of the presence/ absence of local early warning systems.

### **6.5: References**

- Social Aspects and Stakeholder Involvement in Integrated Flood Management, WMO, 2006
- Agriculture and Resource Management Council of Australia and New Zealand. 2000. Floodplain Management in Australia: Best Practice Principles & Guidelines, SCRAM Report 73.
- United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), 2003. Guidelines on Participatory Planning and Management for Flood Mitigation and Preparedness, Water Resources Series No.82



A photograph showing a river scene. In the foreground, a traditional wooden boat with a large anchor is moored. Further down the river, there are several simple, temporary structures made of bamboo and tarpaulin, likely used as temporary housing or storage. The background shows lush green trees under a clear blue sky.

# Chapter

# 7

## **PREPARATION AND MAINTENANCE OF RESOURCE INVENTORY**

# PREPARATION AND MAINTENANCE OF RESOURCE INVENTORY

## 7.1. Overview

This chapter describes resource analysis and how it contributes to identification of required resources, as well as locally available resources. Identification also entails evaluation of these resources for effective utilisation in case of flooding.

One major benefit of conducting resource inventories is to enable the planners to clearly examine whether the existing resources - material, human and financial - are sufficient to deal with a potential disaster caused by flooding. If the resources are insufficient, contingency arrangements can also be identified. All this resource analysis and evaluation is documented in the form of a resource inventory, to form part of the FPP.

## 7.2. Objectives

- Identify types, availability and location of resources available locally for effective flood response.
- Identify resources required from outside, in addition to the locally available resources.
- Develop a resource inventory.

## 7.3. Main Concepts

- Resource inventory identifies and prioritizes resources, determining effective usage of existing resources in the area, as well as the anticipated need for external assistance in the time of emergency.
- Resource inventory should give priority to identification of locally available resources that can be readily utilised or mobilised, and omit those resources that might be available, but are damaged or non-functional.
- Update of resource inventory needs to be carried out regularly, prior to the occurrence of flooding, to update the status of the resources. This is particularly vital in developing detail inventories of such systems as the communication facilities, storage facilities, transportation facilities, medical facilities, safe shelters and its associated facilities, etc., to ensure effective flood response.
- Existing disaster management agencies (both government and non-government) and the presence of local volunteer groups are also considered valuable resources.

## 7.4. Inventory of Resources for Flood Preparedness Planning

A resource inventory developed for flood preparedness planning identifies the availability of the following resources:

- Human resources - e.g. volunteers, firemen, medical professionals, skilled search and rescue workers.
- Material resources - e.g. transportation resources, communication resources, shelter and related resources, storage system, and medical system.

- Financial resources - e.g. emergency response funds held by local authorities for rapid dispersal at the time of a flood, and contribution from private sources.

The resource inventory serves as a basic document in determining whether the existing resources are sufficient to deal with a potential disaster caused by a flood, and identifies what external resources might be required. It should be maintained and updated on regular basis, reflecting the exact position and location of the resources.

The resource inventory of a particular region reflects the resources available within its sub-areas. For instance, a provincial resource inventory is the compilation of the resource inventories from all the districts; a district resource inventory is the combination of the resource inventories of all the communes within that district; and so on.

In preparing the resource inventory, the roles of Provincial and District Disaster Management authorities are pivotal in facilitating coordination amongst stakeholders (line agencies and other organizations) to maintain and update the inventory.

## 7.5. Resource Analysis

Examples of various resources exist at different levels: household, village, commune, district, provincial, national and international, are listed below.

### ***Resources at household, village and commune levels:***

- Human resources - Red Cross Volunteers, emergency response groups in the village, Women's Union members, commune committees, local disaster management authorities/agencies, village level medical teams or first aid teams.
- Material resources:
  - Transportation - proximity to major roads, number of roads above the estimated flood level, motorcycles, boats, cars, carts, and routes to safe areas.
  - Communication - radio equipment, TV, phone, fax, and loudspeaker.
  - Shelter and related resources - number, location and capacities of safe areas - both existing and potential areas such as schools, pagoda or temple grounds, tents, and basic facilities at safe areas.
  - Storage system - number of warehouses or other existing alternative storage areas, including their capacities.
  - Medical system - number and location of clinics or any other healthcare facilities in the surrounding areas.
  - Others - number of elevated bore holes, elevated latrines, number of flood marks, village flood early warning centres, and number and location of search-and-rescue posts.
- Financial resources - number of financial institutions in the area, existence of local emergency fund, potential financial donors/contributors in the case of emergency.

### ***Resources at the district level:***

- Human Resources - Committees/ agencies responsible for disaster management at district level (e.g. District Committees for Disaster Management - DCDM, district Red Cross committees, water resource management and meteorological agencies), mass organisations (e.g. Women's Union, volunteer groups, youth groups, farmer groups), medical personnel, local volunteer network responsible for distribution of warning in emergencies, and NGOs.
- Material Resources:
  - Transportation - raised roads, public bus/ train services, good road networks, access to safe areas, boats and water networks, cars, motorcycles, carts
  - Communication - public information networks (e.g. Red Cross volunteer networks, Women's Union's network), radio stations, TV stations, fax machines, phones, signboards and floodmarks
  - Shelter and related resources - number and location of safe shelters (existing and



- potential) and their capacities, basic facilities at the safe areas
- Storage system - location and number of available warehouses or other existing alternative storage areas.
- Medical system - number and location of hospital and health services
- Others - utility services such as water (reservoirs, water distribution systems) and electricity generation plants, drainage system, dykes, levees.
- Financial Resources - number of financial institutions such as banks in the area, existence of local emergency fund, and potential financial donors/contributors in the case of emergency.

**Resources at the provincial level:**

- Human Resources - Committees responsible for disaster management (e.g. Provincial Committees for Disaster Management - PCDM), local and international NGOs working in the area, provincial Red Cross chapter and its volunteers, mass organisations (e.g. Provincial Women's Union, provincial farmer and youth unions, volunteer groups), provincial emergency management organisations, local volunteer networks responsible for distribution of warnings.
- Material Resources
  - Transportation - raised roads, public bus/ train services, good road networks, access to safe areas, boats and water networks, cars, motorcycles, carts
  - Communication - public information networks (e.g. Red Cross volunteer networks, Woman Union's network), radio stations, TV stations, fax machines, phones, signboards and flood marks
  - Shelter and related resources - number and location of safe shelters (existing and potential) and their capacities, basic facilities at the safe areas
  - Storage system - location and number of available warehouses or other existing alternative storage areas.
  - Medical system - number and location of hospital and health services
  - Others - utility services such as water (reservoirs, water distribution systems) and electricity generation plants, drainage system, dykes, levees.
- Financial Resources - number of financial institutions such as banks in the area, existence of local emergency fund, potential financial donors/contributors in the case of emergency.

**Resources at the National level:**

National resources should be easily accessible by target communities when a flood occurs and the impact is beyond the coping capacity of the community. National resources can be further subdivided into government and non-government resources.

Government resources are:

- Human Resources - National or Central Disaster Management Council/Committee/ Agency, Ministries responsible for national defence, hydro-meteorological services, legal services, agricultural and water resource management agencies, educational institutions, transportation, post and telecommunications agencies, media office or centre, social welfare organizations and civil aviation and airline authorities.
- Material Resources - transportation resources, communication resources, shelter and related resources, storage system, medical system and others.
- Financial Resources - National level financial institutions, and national emergency funds.

Non-government resources are assets owned and operated by civil society such as:

- Human Resources - Amateur radio operators, private/commercial organizations, faith-based groups, wholesales and relief food suppliers, private medical practitioners, public groups such as Red Cross and Red Crescent Society at the national level, welfare organisations, and volunteers - especially youth activists.
- Material Resources - transportation resources, communication resources, shelter and related resources, storage system, medical system and others.
- Financial Resources - private financial institutions, funds available through the programs

implemented by the disaster risk reduction and development focused agencies. There also are international resources, which are external means that a country can get access to for disaster risk reduction purposes. The use of international resources by a country may depend on the following factors:

- Existing bilateral assistance agreements with donor organizations/agencies/countries.
- The political implications, from a recipient country's viewpoint, in accepting the external assistance.
- Sustainability of international resources in a particular disaster situation (from the point of view of the donors).

### 7.6. Questions for consideration

1. What main resources exist at national, provincial and district levels that can be utilised to prepare for and respond to a flood?
2. Why should particular attention be paid to resources that are available at the household, village and commune levels?
3. What are the main categories by which resources at any level may be evaluated?



A photograph showing a group of approximately ten men of Asian descent standing in a line outdoors. They are all wearing white short-sleeved shirts and dark trousers. Many have blue lanyards around their necks. The man in the foreground is looking down at a white notebook, writing with a pen. The man behind him is also looking down at his notebook. The background is filled with dense green trees under a clear sky.

# Chapter

# 8

## **ASSESSMENT AND UPGRADING OF FLOOD PREPAREDNESS PLANNING**

# ASSESSMENT AND UPGRADING OF FLOOD PREPAREDNESS PLANNING

## 8.1 Overview

The assessment process is considered here as a form of monitoring the progress made on FPP implementation, with regards to activities and processes, as well as outputs and outcomes. Upgrading involves adjustment of periodic information changes in the FPP contents. The importance of participatory assessment for review is stressed for benchmarking, quality assurance, and accountability.

## 8.2 Objectives

- Understand the importance of regular assessment of a FPP.
- Develop a checklist for assuring the quality of a FPP.
- Conduct regular monitoring and evaluation of a FPP.
- Detect significant deviations between activities described in a FPP and the actual implementation, and determine corrective actions.
- Revise a FPP regularly, based on lessons learned.

## 8.3 Main Concepts

1. Assessment and upgrading are critical components in the process of FPP implementation to achieve its objectives and mission.
2. Assessment process enhances the understanding of how the FPP works in practice and helps to identify the problems, mistakes, strengths, weaknesses and lessons learnt during the progress of its implementation.
3. Assessment and upgrading process enhances the collaborative actions among the primary owners of the plans, i.e. local and national disaster management authorities, and the beneficiaries, i.e. the community, by seeking the community's inputs and feedback.
4. Assessment of a FPP is a continuous process and makes the primary owners of FPP accountable in carrying out required activities.
5. Upgrading of the FPP could be done on an annual basis.

## 8.4 What is FPP Assessment?

The purpose of assessment is to improve FPP implementation, inform planners and decision makers of the progress made to facilitate mobilization of financial and other necessary resources, and to create a culture of continuous improvement and accountability. Its systematic process, with emphasis on participatory verification of planned objectives against actual impact of FPP by all stakeholders, provides the evaluators with an opportunity to reflect on how FPP can best deliver, and then use that information to further improve the implementation process.

## 8.5 What is FPP Upgrading?

During the process of FPP upgrading, the plan is first reviewed, and then updated or revised, particularly if any divergence from the activities or processes identified in the plan is detected through the assessment; remedial actions will be included in the upgraded FPP for future implementation. It is advisable to that FPP be upgraded at regular intervals (to be determined by the authorities responsible for overseeing its implementation). Upgrading of FPP also allows periodic re-adjustment of the quantitative information base of the plan such as the District/ Provincial Profile, Resource Inventory, HVCA results, as well as operative and administrative data.

### Key Points for Assessment

Assessment should be made with regards to:

1. Inputs: To assess the effectiveness and appropriateness of human, material and financial resources identified and deployed in flood preparedness planning.
2. Activities and processes: To assess the means of performance of various tasks (identified in FPP).
3. Outputs: To assess the immediate results achieved by FPP implementation.
4. Impact (or outcomes): To assess the significant or lasting changes in people's lives, brought about by FPP implementation.

## 8.6 Assessment and Upgrading of Flood Preparedness Planning

An assessment and upgrading system should be formulated and described clearly in the FPP, which would:

- Provide stakeholders with the information needed to guide them towards the achievement of the goal and objectives of the FPP.
- Provide early warning for problematic activities, assess the impacts of the activities delivered so far and processes that need corrective actions.
- Ensure effective project operations.
- Assess progress required for accountability.

An effective assessment and upgrading system for a provincial or district FPP should contain the following features:

- Main stakeholders and their specific roles.
- User friendly assessment tools, coupled with efficient and timely data collection and management systems.
- Indicators for measuring the impacts.
- Participatory mechanism for the development of corrective actions.

## 8.7 Questions to be Considered for FPP Assessment and Upgrading

1. Has a timetable been made to carry out the FPP assessment and upgrading?
2. Have the relevant departments working with PCDM and DCDP been assigned their specific responsibilities for assessment?
3. Are the goal and objectives realistic, or should they be changed?
4. Will the goal be achieved according to the timelines specified in the FPP? If not, then why, and how?
5. In case of delays, should the deadlines for completion be changed, or is there any way of speeding up the implementation process?
6. Are the assigned resources adequate to achieve the goal? If not, how much more is needed?
7. What indicators can be used to measure the impacts of FPP implementation?
8. What can be learned from assessment and upgrading process in order to improve future planning activities as well as the future assessment and upgrading efforts?

## 8.8 Assessment and Upgrading Steps to be Followed

- Design and develop a plan for FPP assessment and upgrading outlining in detail the responsible agencies, step-by-step activities to be carried out, budget, time frame and expected results.
- Ensure that all relevant government departments, that are members of the local disaster management committees, allocate sufficient time and resources for assessment and upgrading.
- Establish assessment reporting methods and reporting requirements.
- Conduct participatory regular reviews, based on assessment reports. Involve NGOs and the community in FPP assessment.
- Reach consensus on actions required to improve performance and implement them.
- Review lessons learned for flood preparedness policy making and planning in the future.

## 8.9 Main Stakeholders and Their Roles in Assessment and Upgrading

Assessment in flood preparedness planning should be a participatory process. Only then can the stakeholders learn from problems and also from each other, in order to make the implementation of the FPP more effective. The following table provides an example of the list of main stakeholders of FPP at the provincial and the district levels and the detailed description of their expected roles in assessment and upgrading functions.

**Table 8.1:** Main Stakeholders and their Roles

No.	Stakeholder	Role in Assessment and Upgrading
1.	PCDM/DCDM Secretariat	<ul style="list-style-type: none"> <li>● Designing and establishing an assessment system.</li> <li>● Formulating assessment tools and timelines for activities.</li> <li>● Reviewing and approving activities.</li> <li>● Overseeing financial flows to ensure effective financial management.</li> <li>● Receiving information from the implementing partners (grassroots organizations).</li> <li>● Ensuring quality reporting to external agencies (e.g. donors) and other stakeholders.</li> <li>● Conducting periodic evaluation of the plan implementation.</li> <li>● Making final decisions on corrective action, in consultation with other stakeholders through review meetings and other means.</li> </ul>
2.	Member line departments of local disaster management authorities	<ul style="list-style-type: none"> <li>● Undertaking implementation of relevant activities.</li> <li>● Providing inputs or feedback on the impacts of activities.</li> <li>● Taking part in periodic reviews and evaluation.</li> </ul>
3.	Grassroots/ local organizations	<ul style="list-style-type: none"> <li>● Participating in the designing phase of the plan.</li> <li>● Implementation partner of the plan.</li> <li>● Facilitating participatory assessment and upgrading process.</li> <li>● Information collection on the progress of the plan implementation.</li> </ul>
4.	Consultants/technical advisors	<ul style="list-style-type: none"> <li>● Assisting local disaster management authorities in designing the assessment system and overseeing its operations.</li> <li>● Together with all the stakeholders, performing periodic evaluation of the activities.</li> </ul>

5.	Local people	<ul style="list-style-type: none"> <li>● Provision of feedback on the implementation process and its impact through structured focus group discussions, review meetings and participatory assessments.</li> </ul>
6.	National disaster management authorities	<ul style="list-style-type: none"> <li>● Designing and establishing an overall assessment and upgrading system at the national level in tune with the national development plan, ensuring that flood preparedness is incorporated into the plan.</li> <li>● Allocation of resources for FPP implementation.</li> <li>● Keeping track of FPP implementation progress at the local levels.</li> <li>● Taking part in periodic review and evaluation.</li> <li>● Assisting the local disaster management authorities in undertaking corrective actions by mobilizing necessary resources.</li> </ul>

A special task force, team or committee could be instituted to undertake assessment and upgrading, consisting of representatives from local disaster management authorities, their member departments and community leaders.

## 8.10 Efficient and Timely Information Collection and Management

Reliable, precise and well-timed information is crucial in the FPP assessment and upgrading process. The following elements should be considered to ensure efficient and timely information collection and management.

1. Determine what information needs to be collected (impact, milestones, progress of daily operational activities, lessons learned from the previous years, etc.)
2. Check if any other group/organizations already have the necessary information.
3. Be clear about how accurate the information needs to be.
4. Determine the methods of data collection (e.g. individual or group based methods, stakeholder analysis, questionnaire, participatory assessments). Make sure they are technically and financially feasible for the data collecting parties.
5. Determine the target groups/individuals for impact assessment.
6. Determine the frequency of data collection.
7. Consider how to distribute the task of data collection and analysis among different implementing agencies/partners to limit errors.
8. Ensure clarity of language.
9. Determine the method of dissemination for collected data (e.g. reports, review meetings and workshops, public announcement) for sharing with other stakeholders.
10. Seek input and feedback from other stakeholders once the information is disseminated.

## 8.11 Reviewing and Updating of FPP

To undertake a review of the FPP, a discussion exercise can be organised by the local disaster management authorities at pre-determined intervals in the form of a bi-annual or annual review meeting. It usually involves representatives from all the line agencies, NGOs as well as external evaluators. Possible changes include:

- The FPP implementation arrangements, as a result of after-flood experiences or exercises, which have exposed weaknesses in previously planned activities.
- The flood control or mitigation works.
- Improvements in flood forecasting capabilities.
- Profile of the area and HVCA results.



It must be recognized that changes incorporated into the FPP will affect the ability of agencies to respond to the demands of the FPP. The FPP should be updated according to the review outcome.

The changes, which also come in the form of corrective actions, are formulated and implemented based on the feedback, input, and outcome of data collection and stakeholder consultation processes. These actions should reflect the originally planned activities and should be designed with the purpose of steering the implementation towards following, as closely as possible, the original plan, at the same time allowing certain flexibility in order to deal with the dynamic situation surrounding a flood disaster.

In the review sessions, the following questions should be addressed:

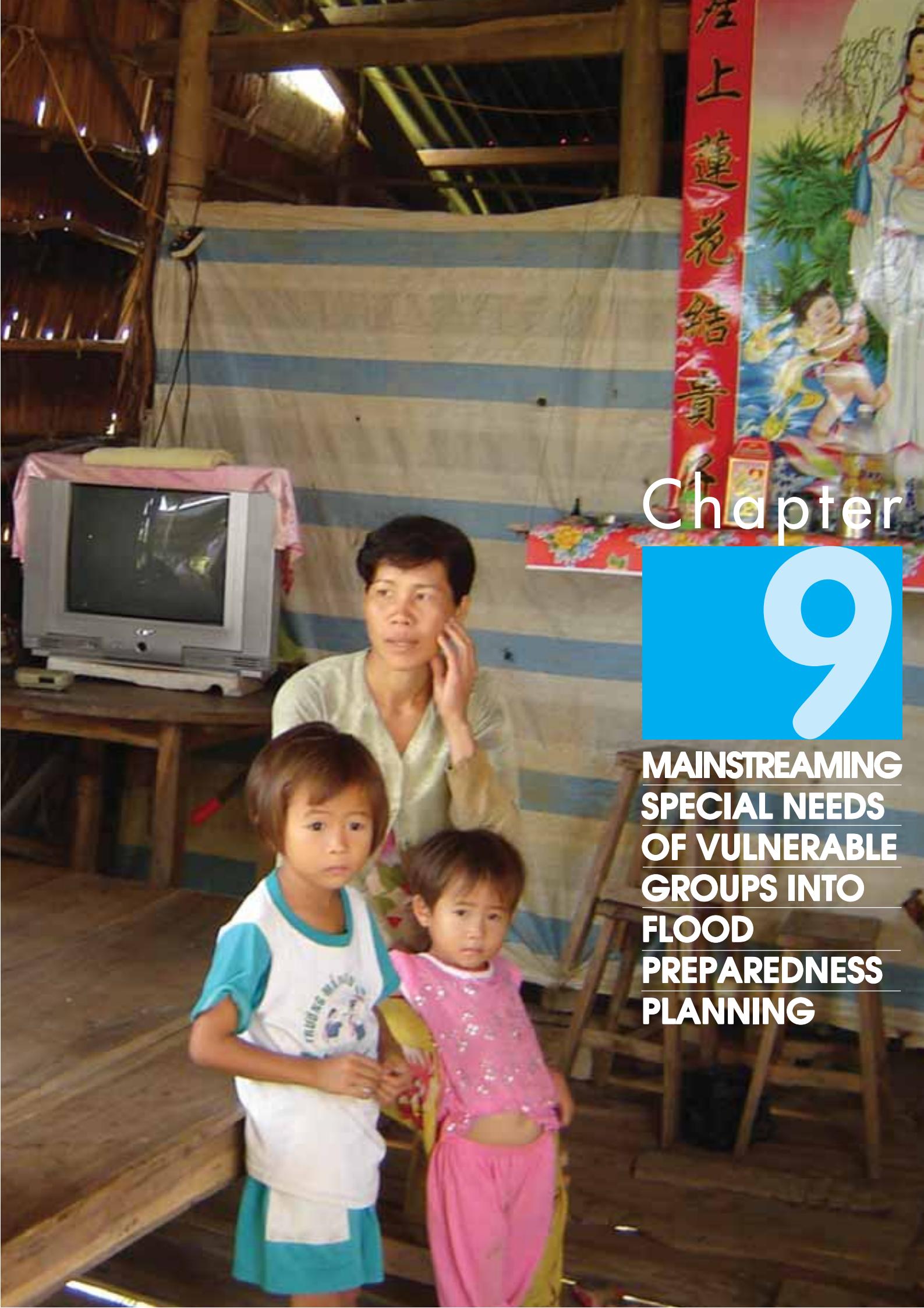
- How much preparatory activity has been undertaken since the last planning exercise (after the floods)?
- Have the activities been completed according to the pre-determined schedule?
- What preparatory activities still need to be undertaken before the next flood season?
- What is the conclusion of the latest assessment process?
- What is the degree of divergence between actual impacts and intended outcomes?
- What corrective actions have been identified?
- How can they be integrated into the plan to ensure the accomplishment of the objectives?
- Is there a need for additional resources (to carry out corrective action)?
- If so, where can they be found? Who will be responsible for overseeing the implementation of corrective action?
- What changes are required to update the plan to ensure more effective implementation for the upcoming flood season?
- What lessons have been learned from the last flood season?
- What changes/improvement actions are called for (based on lessons learned) to ensure a more effective planning for flood emergency and response?
- What actions for improvement have been identified?
- How can they be integrated into the FPP to ensure the accomplishment of the objectives?
- Is there a need for additional resources (to carry out the improvement actions)?
- If so, where can they be found? Who will be responsible for overseeing the implementation of these actions?
- What changes are required to update the FPP to ensure more effective implementation for the next year floods?

## 8.12 Questions for Consideration

1. Why is assessment and upgrading important for the FPP?
2. Who are the main stakeholders involved?
3. Outline some of the important questions that should be addressed in assessment reviews.

## 8.13 References

- Emergency Management Australia (1999): Guide 4: Flood Preparedness - Emergency Manual Series Part III
- ADPC
- VNRC, Manual on Disaster Preparedness

A photograph showing a woman and two young children standing in a flooded wooden house. The woman is in the background, looking towards the camera with her hand near her face. In front of her, two young children stand side-by-side. To the left, a television set sits on a wooden stand. A red vertical banner with white Chinese characters hangs on the wall. A colorful painting of a figure is visible on the right. The floor is covered in floodwater.

# Chapter

# 9

## **MAINSTREAMING SPECIAL NEEDS OF VULNERABLE GROUPS INTO FLOOD PREPAREDNESS PLANNING**

# MAINSTREAMING SPECIAL NEEDS OF VULNERABLE GROUPS INTO FLOOD PREPAREDNESS PLANNING

## 9.1 Overview

This chapter draws our attention to consider the special needs of the most vulnerable groups in a community - women, children, elderly, disabled, ethnic minorities and the poor. These are the members of the community who are generally likely to be the worst-hit in case of disasters because of their deprived access to resources such as social networks, influence, transportation, information, skills (including literacy) and employment, personal mobility, secure housing, control over decision-making, control over land and other economic resources and dependence upon others. The proponents of social inclusion would maintain that preparedness planning can provide considerable leverage in not only responding to flood situations, but may also uplift the status of these vulnerable groups.

## 9.2 Objectives

- Understand why considering special needs of vulnerable groups are important in flood preparedness planning.
- Underline social realities of a community, along with the present focus of preparedness planning on physical aspects.
- Explain special needs of different vulnerable groups and socially inclusive planning.
- Locate means to integrate special needs of vulnerable groups into a FPP.
- Emphasize that to achieve gender-sensitivity in disaster management, gender should be mainstreamed into all aspects, from policies and strategies to flood preparedness plans.
- Highlight that mainstreaming special needs into preparedness planning is more of development value than just morality.

## 9.3 Main Concepts

- Community is always segmented. It is empirically proven that when a flood occurs there are certain groups that may be at higher risk than others, because of their social/economic status and physical, age or psychological characteristics. These include women, children, elderly people, disabled, ethnic minorities and the poor.
- However, the vulnerable groups are not homogenous. There can be further divisions and combinations within these groups that would intensify their weaknesses. For example, there can be such elderly people who are also poor or physically impaired or women, or a combination of all.
- To mainstream their special needs is to consider their specific vulnerabilities and involve them in preparedness planning.
- The causes for vulnerability may vary from medical, cultural, cognitive, racial, physical, or a combination of these.
- Planners would have to determine and prioritize who among the vulnerable groups needs our special attention and care.
- Due to their biological features and socio-economic status, men and women are af-

fected differently by disasters, both during and after the event. Women can be more vulnerable, due to less physical strength. They also have to perform household responsibilities and are supposed to uphold religious and other cultural traditions. In addition, their household work also includes care of children and the elderly. Even when in jobs, a majority of them join the agriculture sector, take up self-employment or the informal economy, with little security and few benefits. These sectors are generally the most affected by flooding, and with no insured compensation, leave women unemployed. The root cause of women's vulnerability is their social status and lesser share in the power balance. They have to spend more time in the house, their mobility is restricted, their contribution to the economy is devalued and their status in the household and in society may be much lower than that of men. These vulnerabilities should be assessed; so that appropriate measures can be identified.

- Gender analysis is crucial to understand gender relations, gender roles, and how they are related to disaster management and development processes, so that more effective strategies can be identified for the benefits of women and men, girls and boys.
- Children are more vulnerable to health hazards and environmental exposure than adults. Their dietary needs are special and they have to generally depend upon their families for material, emotional, and logistical support for mobility. These are exacerbated with poverty, and is exposed quite vividly in flood situations.
- Older people might be limited by mobility constraints, physical weaknesses, social isolation or workloads at damaged/destroyed homes caused by flooding.
- Disabled people are most vulnerable because of mobility problems or suspension of special care, especially as hygiene and health needs.
- Ethnic minority groups with indigenous social and cultural rituals (language, religion etc.) living in remote locations may be isolated from the wider society. This can hinder their access to power, resources and participation in decision-making processes. Their cultural and religious needs should be thoroughly assessed and accommodated in the FPPs.
- The poor people, despite being the biggest casualty in disasters, are often neglected during flood preparedness planning, and thus cannot access resources in emergency situations.

#### 9.4 Identification of the Vulnerable Groups in Flood Situations

The vulnerable groups are more at risk from flooding because they are bound by their condition, which is:

- Physical locations (e.g. stay at home housewives busy at home might be the last to evacuate).
- Less ability to cope with the illness, injury or premature death (e.g. persons who cannot afford treatment from a doctor or medicine, infants are at much greater risk of death from diarrhoea and acute respiratory infections than older groups).
- Weak physique (e.g. children and elderly in care and the physically impaired, who are in constant need of care and cannot move).
- Physical environment (e.g. living in a settlement lacking structural flood protection measures, facilities for clean water, sanitation and drainage).
- Remote habitats (e.g. ethnic minorities living in remote areas where relief operation teams cannot be reached immediately).
- Lack of specific skills (e.g. people with learning difficulties and illiterates might not be able to read warning signs. People who do not have proper educational training may have difficulties finding jobs in the time of crisis).
- Lack of access to resources (e.g. status quo of various groups in the community can dictate their access to various resources from relief materials to financial loans to decision making process. These groups can include asylum seekers and refugees, travellers (tourists), homeless people, women, children, the poor and ethnic minorities).

As one would observe, gender is a cross-cutting theme among all the vulnerable groups. Studies show that women's experiences, particularly as mothers and in their traditional roles in the home and family, make them more acutely aware than men of the needs of other



Vulnerable groups can be further identified by the factors/ concepts given in the table below<sup>1</sup>:

**Table 9.1:** Nature of Vulnerable Groups

Factors/ Concept	Increases social vulnerability (+)	Decreases social vulnerability (-)
Socioeconomic status (income, political power, prestige)	Low income and status	Wealth and high status
Gender	Female	Male
Age	Elderly/ Children	Youth or middle aged
Geographic location	Un protected location (flood plain, close to waterbodies)	Protected location (either man-made or natural protection)
Population growth	Rapid population growth	Population growth in proportion to economic growth

people, and thus more able and likely to take into account in their work the needs and rights of women, children, the elderly, the disabled, minorities and the disadvantaged.

Generally, women tend to be more realistic and practical in their work, more able to initiate and accept changes in methods and targets, and more willing to work collectively. It is also commonly seen and can be empirically established that in a disaster assessment, men emphasise economic problems, whereas women are more concerned with the practical and emotional needs of the family, such as food, water, the safety of children, elderly and young daughters, health problems caused by unhygienic conditions, the needs of pregnant women, care in childbirth/lactating women, house reconstruction, and anxiety about the future.

In that sense, gender analysis can be an efficient tool to assess social realities and the power relations in a particular society, and it is inherently inclined towards promoting needs of the vulnerable groups and the marginalized.

## 9.5 Preparedness Measures to Address Special Needs

Preparedness must facilitate<sup>2</sup>:

- Identification of vulnerable groups and people at the community level. Segregated data of vulnerable group members should be collected and maintained prior to flood occurrence. Generally such data is not available, but can be collected at community level, normally without difficulty.
- Consultation with members of vulnerable groups in flood preparedness planning. With the help of the vulnerable group members, their specific needs can be identified and integrated within the FPP.

1 Adopted from Sorensen, Barbara Vogt (2006), *Populations With Special Needs*, OAK RIDGE NATIONAL LABORATORY, Prepared for, U.S. Department of Homeland Security, Chemical Stockpile Emergency Preparedness Program.

URL - [http://www.emc.ornl.gov/EMCWeb/EMC/PDF/Population\\_Special\\_Needs.pdf](http://www.emc.ornl.gov/EMCWeb/EMC/PDF/Population_Special_Needs.pdf)

2 For detailed discussion and indepth analysis, refer to see: Sullivan, Helen T. & Markku Hkkinen T. *Disaster Preparedness for Vulnerable Populations: Determining Effective Strategies for Communicating Risk, Warning, and Response*.

URL: [geography.rutgers.edu/events/magrann\\_conference/2006/\\_papers/sullivan.pdf](http://geography.rutgers.edu/events/magrann_conference/2006/_papers/sullivan.pdf)

- c. Credible early warning and information systems at the community level. The guiding principle is to have easy-to-understand methods for people from all backgrounds.
- d. Practical training measures, enhance awareness, and support life saving actions. Designing and delivering appropriate capacity building measures for the communities living in high risk areas are pre-requisite to ensuring their safety. The activities should focus on raising the awareness of the communities, specifically on the nature of flood risk that they face, and how to respond individually, as well as collectively, in the community.
- e. Awareness of escape routes and safety zones. All members of the community should be aware of all alternative escape routes to safe areas. It must be promoted prior to the occurrence of floods through use of accessible / accessibly designed materials, incorporating features such as audio and visual information. For instance, descriptions of visual information such as maps. The presence of visual, tactical, and auditory cues in the physical environment must augment information contained in preparedness materials.
- f. Easily accessible alerts and announcements. Well-coordinated, clear and timely community alert systems should be in place. Facilities such as sirens and loudspeakers, installed in public places, can be effective in reaching the greater mass.
- g. Setting up of safe shelter far in advance of annual flood season.
- h. Volunteer management plans. Youth volunteers can easily reach and help the vulnerable group members. They can provide support in evacuation, relief distribution, and caring for the sick or the needy.

**Making disaster management gender-sensitive requires:**

- Clear understanding of the underlying concepts
- Context-specific social and gender analysis
- Turning gender concepts into policy guidelines
- Continuous commitment to enforce the policies
- Systems and procedures to turn policy into practice
- Clear goals and agreement on minimum standards

From Gender Dimensions in Disaster Management (p92)

## 9.6 Means to Address Special Needs of Vulnerable Groups

Exceptional attention should be paid in addressing the needs of the vulnerable groups, since their requirements might be sensitive to their specific social background, culture and religion. The following actions are recommended:

- Staff at district, provincial and central levels (both government agencies and NGOs) should be aware of the necessity to include the special needs of vulnerable groups when developing a FPP, and consider them in all activities at all stages (planning, implementation and monitoring)
- Conducting flood risk assessment to understand the threats, levels of risk, the necessary levels of preparedness, required emergency management and rehabilitation measures for each group. Ensure that information collection and analysis is disaggregated, and that gender sensitive and power dynamics, division of labour, and power balance are adequately captured.
- Identification of coping mechanisms of men and women, as well as joint activities.
- Ensuring that specific differential vulnerabilities arising from factors such as poverty, access to resources, classes, and ethnicity are considered.
- Assessment of availability and access to resources and facilities (such as health and education, from gender and poverty perspectives).
- Ensuring the involvement of officials and professionals from development sectors, admin-



- istration, infrastructure and service-related organizations in the area when conducting the assessment.
- o Development of strategies through close and regular consultations with the key government bodies working in the area (such as the police, the health services, the armed forces and the government administrative agencies).
  - o Integration of outcomes of the assessment in all components of the flood preparedness plan.
  - o Promoting the requirement for gender sensitivity in the overall disaster management strategies and plans of both government and non-government agencies.

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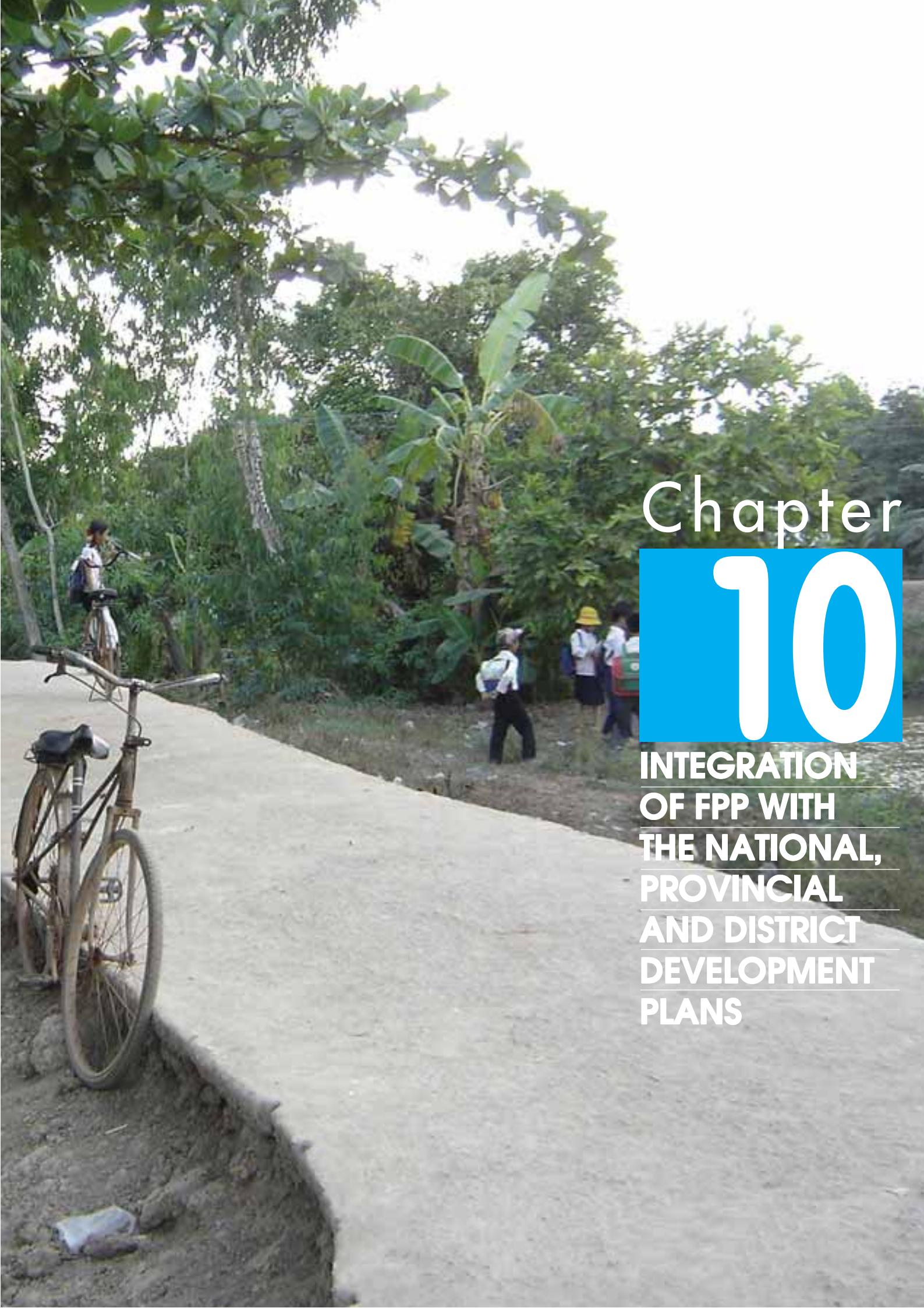
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# Chapter **10**

**INTEGRATION  
OF FPP WITH  
THE NATIONAL,  
PROVINCIAL  
AND DISTRICT  
DEVELOPMENT  
PLANS**

# INTEGRATION OF FPP WITH THE NATIONAL, PROVINCIAL AND DISTRICT DEVELOPMENT PLANS

## 10.1 Overview

FPP inherently links disaster management and development issues by way of its multi-sectoral collaboration and the financial support it seeks from the development budgets. Whenever flooding occurs, it will negatively affect sectors of development, particularly agriculture, housing and infrastructure, health, education and women development. Thus, in order to more effectively implement and coordinate a provincial/ district FPP at the multi-sectoral level, it is imperative to be linked internally, with the overall disaster risk reduction plan, and externally, with development plans at both local and national levels.

This chapter would help flood preparedness planners to understand the linkages between FPP, disaster risk reduction plans, and the development plans, and how these can be integrated. To that end, the main challenges of this integration process are also highlighted; so that the planners are well-aware and can overcome them.

## 10.2 Objectives

- Highlight the importance of integrating FPP into local and national disaster risk reduction plans.
- Understand links between flood preparedness and development.
- Understand main challenges of FPP integration into various plans.
- Realize how better coordination among different agencies of a province/district contributes to linking FPP with other plans.

## 10.3 Main Concepts

- Various plans exist at all levels of a country from national, provincial, district to commune. Depending on the scope, scale and timeframe of each plan, their purposes and planning cycles differ. It is important that local planners have a good understanding of development and disaster risk reduction plans at different levels, their purposes, and their planning cycles and determine what linkages can be created between a FPP and the provincial or district development plans.
- The importance of integrating the disaster risk reduction into a regular planning cycle (of development), not only at the provincial and district levels but also at the national level should be realized by the stakeholders. The prospect of additional funding resources through these linkages should be highlighted, to ensure sustainability of the implementation of a FPP.
- Integration of the FPP with local disaster reduction and development plans requires flood preparedness planners to be knowledgeable about development planning procedures, timing and funding mechanisms in their respective locations.
- Integration also calls for better coordination systems, in order that FPP is duly backed by disaster management and development authorities and sufficiently funded.
- The integration process would prove cost-effective, as disaster management and de-

velopment bodies can implement shared projects. The process minimizes activity overlaps, encourages formulation of complementary programs, and enhances synergies between the two sectors.

- If the contingency for floods and disasters is neglected at provincial/ district level, the development plans will result in incapacity to foresee human and financial resources required during emergencies. It is most likely that such lack of awareness would cost heavily, and would fail development plans and their financial estimates. The integration, therefore, becomes an educational process for the planners in both sectors, thereby eliminating the vicious cycle of disasters negatively affecting the development, and development (especially the post disaster recovery, hastily planned development) exacerbating the impacts of disaster.

**Table 10.1:** Examples of various plans at the provincial and district levels

No.	Plan	Purpose of the plans
1.	Provincial/district disaster risk reduction plan	<ul style="list-style-type: none"> <li>• To mobilize resources and to identify specific actions to prepare for, respond to and recover from any disasters the province/district might face.</li> </ul>
2.	Provincial/district development plan	<ul style="list-style-type: none"> <li>• To identify areas of development and potential resources to undertake the tasks at the provincial and district levels.</li> </ul>
3.	Provincial/district departmental plans	<ul style="list-style-type: none"> <li>• To allocate resources for routine operations as well as for new endeavours.</li> </ul>
4.	Other special plans at the provincial and district levels	<ul style="list-style-type: none"> <li>• To ensure the newly developed activities get undertaken with sufficient resources (human, materials, financial).</li> </ul>

#### 10.4 Main Challenges of Integration

The merging of the FPP with overall disaster risk reduction and development plans is not a well-integrated process in most developing countries. The existence of institutional inconsistencies among different line departments poses a significant challenge; a multi-sectoral environment has to be created in the absence of coordinated arrangements. The following are the main challenges that planners and disaster management practitioners can face in their bid to integrate different plans and see the FPP efficiently implemented.

- i. Knowledge of development planning procedures and its tracking: It is required that flood preparedness planners and disaster management practitioners are well-aware of the development planning procedures in their locale and are able to track it. This would entail considering:
  - How the development planning system works in the respective province or district;
  - What are timelines set for development planning and requests for proposals of development-related activities (from local planning bodies) to be included in the plan;
  - Who oversees it and what is the level of authority in development planning;
  - Do different line departments have separate development plans to be pooled in a consolidated plan, or does the province/ district have its own planning department that requests the line departments to submit plans/proposals?

Knowledge of these procedures would enable flood preparedness planners to have a better idea of when to pursue integration efforts, and correspondingly design preparedness planning to coincide with the development planning cycle.



- ii. Awareness of formal funding mechanisms: It is imperative that planners and disaster management practitioners are aware of the mechanism that is employed to allocate funds for plans at their respective setting. This would give leverage to flood preparedness planners to timely submit the FPP for integration and resource allocation.
- iii. Multi-sectoral coordination:
  - Provide and document a single coordinating framework. This would ensure consistency, coordination, communication and clear specification of responsibility within different sectors.
  - Designate a focal person for integration.
  - Propose projects/ concepts/ working agendas to facilitate cross-sectoral participation and implementation. This can bring together many sectors, line departments and stakeholders to work in coordination and help design workable joint mechanisms and programs. Special care should be given to cross-sectoral/multi-scale coordination.
  - Ensure community participation in flood preparedness planning. With special sensitivity to the vulnerable groups, this would help in articulating community needs, creating ownership, and build demands upon authorities to work in a coordinated manner.
  - Support decentralized responsibilities within structures, to ensure policies are converted into practices, and flexibility in approach to accommodate future changes.

## 10.5 References

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#### Mekong River Commission (MRC)

MRC is an intergovernmental organization established in 1995 to promote and co-ordinate sustainable management and development of water and related resources for the countries' mutual benefit and the people's well-being by implementing strategic programmes and activities and providing scientific information and policy advice. MRC member countries are Cambodia, Lao PDR, Thailand and Viet Nam. MRC is promoting a programme of regional cooperation for sustainable water resources development at basin scale in areas of basin planning, water utilization, environment, flood management & mitigation, fisheries, agriculture, irrigation and forestry, hydropower, navigation and capacity building. For more information, please visit [www.mrcmekong.org](http://www.mrcmekong.org).



#### Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH

The Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH is an international cooperation enterprise for sustainable development with worldwide operations. It provides viable, forward-looking solutions for political economic, ecological and social development in a globalised world. GTZ promotes complex reforms and change processes, often working under difficult conditions. Its corporate objective is to improve people's living conditions on a sustainable basis. For more information, see the website: [www.gtz.de](http://www.gtz.de).

EUROPEAN COMMISSION



#### European Commission Humanitarian Aid department (ECHO)

ECHO was founded in 1992 to oversee and coordinate emergency assistance and relief to the victims of natural disasters or armed conflict outside the European Union. The aid is intended to go directly to those in distress, irrespective of race, religion or political convictions. Through ECHO funding some 18 million people are helped each year in more than 60 countries through 200 partners. The Humanitarian Aid Office spends more than £500 million a year on financing humanitarian projects. ECHO created its Disaster Preparedness Program (DIPECHO) in 1996 to 'ensure preparedness for risks of natural disasters and use of suitable rapid early warning and intervention system'. DIPECHO targets vulnerable communities living in the main disaster-prone regions of the world and aims to improve the ways in which ECHO financed activities are matched to priority needs, more consistent with existing disaster prevention and response system. For more information, please visit [www.europa.eu.int](http://www.europa.eu.int).



#### Asian Disaster Preparedness Center (ADPC)

ADPC is an independent, non-profit, inter-governmental foundation based in Thailand. Established in 1986, ADPC is a leading regional resource center dedicated to create safer communities and sustainable development through disaster risk reduction. ADPC's programs demonstrate a wide diversity in application, address all types of disasters, and covers all aspects of the disaster management spectrum—from prevention and mitigation through preparedness and response, to damage and needs assessment, rehabilitation and reconstruction endeavors. ADPC's activities are implemented by five teams: Climate Risk Management (CRM), Disaster Management Systems (DMS), Early Warning Systems (EWS), Public Health in Emergencies (PHE), and Urban Disaster Risk Management (UDRM). For more information, please visit [www.adpc.net](http://www.adpc.net).