

**MINISTRY OF AGRICULTURE
AND RURAL DEVELOPMENT**

**UNITED NATIONS
DEVELOPMENT PROGRAMME**

**TRAINING MATERIAL
DISASTER RISK REDUCTION AND
CLIMATE CHANGE ADAPTATION**

Ha Noi, July 2012

DECISION

PROMULGATION OF TRAINING DOCUMENT FOR TRAINERS IN COMMUNITY-BASED DISASTER RISK MANAGEMENT

GENERAL DIRECTORATE OF WATER RESOURCES

Pursuant to Decision No. 03/2010/QĐ-TTg dated 25/01/2010 signed by the Prime Minister providing for the Functions, Duties, Mandates and Structure of the Directorate of Water Resources, Ministry of Agriculture and Rural Development;

Pursuant to Decision No. 1002/QĐ-TTg dated 13/7/2009 signed by the Prime Minister approving the Project of Community Awareness Raising and Community-Based Disaster Risk Management;

Considering the Proposal No. 138/GNTT dated 23/6/2011 signed by the Director of the Disaster Management Center on the proposal to develop technical material on disaster risk management and climate change;

As per the request of the Director of the Department of Dyke Management, Flood and Storm Control.

DECIDES:

Article 1. Promulgating the training materials (this Decision enclosed) for trainers in community-based disaster risk management, which will be used in the Project for Community Awareness Raising and Community-Based Disaster Risk Management.

Article 2. The Decision takes effect after the date of signing.

Article 3. Head of Directorate Office, the Director of Director of the Department of Dyke Management, Flood and Storm Control and leaders of related organizations are responsible for executing this Decision.

DIRECTOR GENERAL

(Signed and sealed)

Dao Xuan Hoc

FOREWORD

Due to its location in the tropical monsoon area of South East Asia and also to its geography and topography, Viet Nam is one of the most hazard-prone areas in the Asia-Pacific Region, susceptible to almost every type of hazard - among which hydro-meteorological hazards are the most common. Of these, typhoons and floods are the most frequent and devastating. It is estimated that the country is hit by 6.5 typhoons and tropical storms per year; between 1990 and 2010, there were 74 flood events. Severe droughts, saline water intrusion, landslides and forest fires also impact the country.

As most of the population is living in low-lying river basins and coastal areas, more than 70 percent are estimated to be exposed to risks from multiple natural hazards. Historically, weather related disasters have occurred across the country, causing significant numbers of deaths and injuries and substantial damage to property, the economy and the environment. From 1990-2011, Viet Nam suffered average annual losses in human life of 441 people. According to the Germanwatch climate risk index of most countries of the world, which includes GDP losses and deaths as a result of climatic extremes, such as typhoons, heavy rainfall, and drought, Viet Nam suffers average annual GDP (PPP) losses of USD1.9 billion (or 1.3 percent of GDP). Such recurrent disasters have been an impediment to safety, wellbeing and national development.

In addition, climate change is changing and increasing Viet Nam's disaster risk profile for the worse and is likely to increase risks to development and safety.

Under the project: "Strengthening institutional capacity for disaster risk management in Viet Nam, including climate change related disaster" funded by the United Nations Development Programme (UNDP) through the Ministry for Agriculture and Rural Development (MARD) this Training Material on disaster risk reduction (DRR) and climate change adaptation (CCA) has been developed to support Government officials at national and sub-national levels to improve their understanding of these critical issues and to contribute to community resilience, safety and long-term sustainable development.

This Training Material has been prepared by the Center for Training and International Cooperation (CTIC) of the Viet Nam Academy of Water Resources; the Hanoi University of Water Resources; the Department of Hydrometeorology and Climate Change (of the Ministry of Natural Resources and Environment) with assistance from Mr. Philip Buckle (RMIT, University, Australia), Dr. Roger Few (University of East Anglia, UK) and Mr. Terry Cannon (Institute of Development Studies, UK).

This Training Material has been compiled using the latest knowledge on DRR, CCA and community based disaster risk management and is based on training needs assessment undertaken of the provincial Committee for Flood and Storm Control membership in three 'pilot provinces' of Cao Bang, Binh Thuan and Can Tho (in November 2009). This assessment included further consultation with representatives from 10 provinces exposed to different hazard risks (in January 2010) and reviews of the work of Red Cross Societies and of non-government organizations (in December 2010).

In developing this Training Material, technical experts from UNDP have provided substantial support in peer reviewing the technical content, which has also been reviewed by the relevant agencies of the Ministry of Agriculture and Rural Development (MARD).

The Training Material is endorsed by the Central Committee for Flood and Storm Control as the official reference material for use in Viet Nam by the Government agencies working in DRR and CCA.

The Material is aimed primarily at Government staff involved with DRR and CCA at both national and sub-national levels (provincial/district) and aims to provide a comprehensive resource for information about hazards, disaster risk management, DRR, climate change mitigation and CCA from basic to specialized levels.

The Material may be used by lecturers, trainers and trainees who are involved with DRR and CCA from both the Government and non-government communities (I/and V/NGOs), the Red Cross Societies and Viet Nam Women's Union as well as other mass organisations and the private sector. Based on this Training Material, training facilitators may develop suitable training programs and content for specific subjects for different target groups at the national level and in provinces and districts. In addition, trained trainers can support the implementation of activities within the framework of community based disaster risk management, DRR and CCA in Viet Nam.

The Training Material consists of nine chapters as follows:

Chapter 1. An introduction to hazards, disaster risk and climate change

In this chapter the main terms and concepts related to hazards, risks, disasters and vulnerability are introduced and the linkages between these explained. The chapter also presents the concept of climate change.

Chapter 2. Institutional arrangements for disaster risk management and climate change

This chapter aims to give participants a basic understanding of the agreements, strategies and institutional frameworks that exist for disaster risk management (DRM) and CCA at international and regional levels and in Viet Nam.

Chapter 3. Climate change in Viet Nam

The impacts of climate change on Viet Nam and CCA is explained in detail.

Chapter 4. Disaster risk reduction

This chapter introduces an approach to reducing the impacts of hazards on people, property, the economy and the environment and how to increase capacity to manage risks. The chapter includes information on building disaster resilience into development processes, by taking steps to minimize the impacts of future hazards.

Chapter 5. Disaster risk management

This chapter focuses on how to apply the principles of DRR (through a comprehensive approach to DRM). Disaster risk reduction comprises a range of interventions undertaken before, during and after a disaster to prevent or minimize loss of life and property, damage to the natural environment, minimize human suffering and hasten recovery. It includes measures designed to improve the capacity of the different groups and agencies involved and to reduce underlying vulnerability.

Chapter 6. Disaster risk assessment

In this chapter the purpose and methods of a risk assessment are explained and information provided information needs, collection and analysis. In particular, the principles of a participatory approach and the use of appropriate assessment tools are described.

Chapter 7. Disaster information management and damage and needs assessment

This chapter explains the importance of timely and accurate information management, and how to collect data. Government approved reporting templates for the assessment of damage and humanitarian needs before and after a disaster are provided.

Chapter 8. Community based disaster risk management

In this chapter the basic concepts of CBDRM and advocacy are provided. The chapter provides detailed guidance on developing DRM at the commune level.

Chapter 9. Climate change adaptation and integration with disaster risk reduction

This chapter explains CCA and gives examples of different types of adaptation activity. The concepts of anticipatory, autonomous and planned adaptation are explained and what is meant by adaptive capacity. The chapter emphasizes the importance of convergence and the linkages between CCA and DRR as well as the challenges and opportunities for the integration of CCA and DRR with development.

The authors would like to express their sincere thanks to Professor Dr. Dao Xuan Hoc, head of the SCDM Project Steering Committee who provided direction throughout the implementation process.

Special thanks to Dr. Nguyen Huu Phuc, National Project Director and Director of the Disaster Management Centre, MARD, who has facilitated the completion of this Training Material and has contributed much expertise.

Gratitude for the considerable support of UNDP is expressed to Dr. Ian Wilderspin (Technical Specialist, Disaster Risk Management) who oversaw the final editing of the Training Material and to Mr. Miguel Coulier (International facilitator, UNDP-UNV).

Dr. Bui Cong Quang, Mr. Bui Quang Huy, Mr. Nguyen Thanh Tung and Mr. Vu Thanh Liem of the SCDM Project Management Unit contributed much to this Material.

The team would also like express their appreciation for the cooperation of staff of the Disaster Management and the Department of Dyke Management and Flood Control who contributed valuable comments to this Training Material.

The authors look forward to receiving comments for further improvement of this Training Material.

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LIST OF ACRONYMS

AADMER	ASEAN Agreement on Disaster Management and Emergency Response
ACDM	ASEAN Committee on Disaster Management
ADPC	Asian Disaster Preparedness Center Centre
AHA	ASEAN Coordinating Centre for Humanitarian Assistance
AMCDRR	Asian Ministerial Conference on Disaster Risk Reduction
ASEAN	Association of South-East Asian Nations
AUSAID	Australia Agency for International Development
CBDRM	Community-based disaster risk management
CBDRM TWG	Community-based disaster risk management Technical Working Group
CCA	Climate change adaptation
C/CFSC	Central/Committee for Flood and Storm Control
CCWG	Climate Change Working Group
CDM	Clean Development Mechanism
COP	Conference of Parties
CSO	Civil Society Organisations
DANA	Damage and Needs Assessment
DDMFSC	Department of Dyke Management and Flood and Storm Control
DFID	UK Department for International Development
DIPECHO	Disaster Preparedness Programme of the European Commission
DMC	Disaster Management Center
DMHCC	Department of Meteorology, Hydrology and Climate Change
DMWG	Disaster Management Working Group
DRR	disaster risk reduction
DRM	disaster risk management
ECHO	European Commission's Humanitarian Aid Office
ENSO	El Nino-Southern Oscillation phenomenon
GFDRR	Global Facility for Disaster Reduction and Recovery
GHG	greenhouse gas
GIS	Geographic Information System
GoV	Government of Viet Nam
GSO	General Statistics Office
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HFA	Hyogo Framework for Action
HVCA	Hazard, Vulnerability and Capacity Assessment
IAWG	Inter-Agency Working Group
IEC	information, education, and communication
IFRC	International Federation of Red Cross and Red Crescent Societies
IMHEN	MoNRE Institute of Meteorology, Hydrology and Environment
INGO	international non-governmental organization
IPCC	Intergovernmental Panel on Climate Change
ISG	MARD International Support Group
JANI	Joint Advocacy Network Initiative
JAT	Joint Assessment Teams

JICA	Japan International Cooperation Agency
M&E	Monitoring and Evaluation
MARD	Ministry of Agriculture and Rural Development
MoC	Ministry of Construction
MoF	Ministry of Finance
MoFA	Ministry of Foreign Affairs
MoIT	Ministry of Industry and Trade
MoLISA	Ministry of Labour, Invalids and Social Affairs
MoNRE	Ministry of Natural Resources and the Environment
MoT	Ministry of Transportation
MoU	Memorandum of Understanding
MPI	Ministry of Planning and Investment
MRC	Mekong River Commission
NCCC	National Committee for Climate Change
NCCS	National Climate Change Strategy
NCHMF	National Centre for Hydro-Meteorological Forecasting
NDMP	Natural Disaster Mitigation Partnership
NDRMP	Natural Disaster Risk Management Project
NTP-RCC	National Target Programme to Respond to Climate Change
OCCA	MARD Standing Office of the Steering Committee for Climate Change Mitigation and Adaptation
PACCOM	Peoples' Aid Coordination Committee
PPC	Provincial People's Committee
PRA	Participatory Rural Appraisal
SEDS/P	Socio Economic Development Strategy/Plan
SIDA	Swedish International Development Agency
SLR	sea level rise
UN	United Nations
UNDP	United Nations Development Programme
UN DRMT	United Nations Disaster Risk Management Team
UNFCCC	United Nations Framework Convention on Climate Change
UNISDR	United Nations International Strategy for Disaster Reduction
UN-REDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
USAID	United States Agency for International Development
VAT	Village Action Team
VDRMC	Village Disaster Risk Management Committee
VINASARCOM	Vietnam National Search and Rescue Committee
VNGO&CC	Viet Nam Non-Governmental Organizations and Climate Change
VNRC	Viet Nam Red Cross Society
VWU	Viet Nam Women's Union
WASH	Water, Sanitation and Hygiene
WB	World Bank
WMO	World Meteorological Organisation
WRD	MARD Water Resources Directorate

GLOSSARY OF TERMS

No.	Term	English	Vietnamese
1	Adaptation <i>Thích ứng</i>	The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.	Sự điều chỉnh hệ thống tự nhiên, cấu trúc xã hội, thể chế và các hoạt động của con người nhằm ứng phó với các điều kiện khí hậu hiện tại hoặc tiềm tàng để hạn chế tác hại và tận dụng các cơ hội của nó.
2	Capacity <i>Khả năng</i>	The combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals.	Tổng hợp các nguồn lực, điểm mạnh và đặc tính sẵn có trong cộng đồng, tổ chức, xã hội có thể được sử dụng nhằm đạt được các mục tiêu chung.
3	Capacity development <i>Phát triển năng lực</i>	The process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions	Quá trình trong đó cá nhân, tổ chức và xã hội thúc đẩy và phát triển năng lực của mình một cách có hệ thống theo thời gian nhằm đạt được các mục tiêu kinh tế và xã hội, bao gồm việc củng cố kiến thức, kỹ năng, hệ thống và thể chế.
4	Climate change <i>Biến đổi khí hậu</i>	A change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use. ⁱ In short, climate change is "A change in the climate that persists for decades or longer, arising from either natural causes or human activity."	Biến đổi khí hậu là sự biến đổi trạng thái của khí hậu so với trung bình và/hoặc dao động của khí hậu duy trì trong một khoảng thời gian dài, thường là vài thập kỷ hoặc dài hơn. Biến đổi khí hậu có thể là do các quá trình tự nhiên bên trong hoặc các tác động bên ngoài, hoặc do hoạt động của con người làm thay đổi thành phần của khí quyển hay trong khai thác sử dụng đất. ⁱⁱ Nói một cách ngắn gọn, "Biến đổi khí hậu là sự thay đổi của khí hậu diễn ra trong 1 khoảng thời gian dài, do nguyên nhân tự nhiên hoặc hoạt động của con người gây ra".

5	Disaster Thảm họa	A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.	Sự gián đoạn nghiêm trọng các hoạt động của cộng đồng dân cư hoặc xã hội, gây ra những tổn thất và mất mát về tính mạng, tài sản, kinh tế và môi trường mà cộng đồng và xã hội đó không có đủ khả năng chống đỡ.
6	Disaster risk Rủi ro thảm họa	The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period.	Những tổn thất tiềm ẩn về tính mạng, tình trạng sức khỏe, các hoạt động sinh kế, tài sản và các dịch vụ ¹ do thảm họa gây ra cho một cộng đồng hoặc một xã hội cụ thể trong một khoảng thời gian nhất định.
7	Disaster risk management Quản lý rủi ro thảm họa	The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.	Quá trình mang tính hệ thống trong việc sử dụng các hướng dẫn hành chính, các tổ chức, năng lực và các kỹ năng điều hành nhằm thực hiện các chiến lược, chính sách và khả năng đối phó đã được nâng cao để giảm thiểu các tác động bất lợi của hiểm họa và khả năng xảy ra thảm họa.
8	Disaster risk reduction Giảm thiểu rủi ro thảm họa	The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.	Quan điểm và biện pháp giảm thiểu các rủi ro thảm họa thông qua những nỗ lực mang tính hệ thống để phân tích và quản lý các nguyên nhân của thảm họa bao gồm việc giảm mức độ nguy hiểm trước hiểm họa, giảm tình trạng dễ bị tổn thương của con người và tài sản, quản lý hiệu quả đất và môi trường, và cải thiện khả năng phòng ngừa các sự kiện bất lợi.

9	El Niño <i>El Niño</i>	A complex interaction of the tropical Pacific Ocean and the global atmosphere that results in irregularly occurring episodes of changed ocean and weather patterns in many parts of the world, often with significant impacts over many months, such as altered marine habitats, rainfall changes, floods, droughts, and changes in storm patterns.	Một loạt các tương tác qua lại tại vùng biển nhiệt đới Thái Bình Dương và khí quyển toàn cầu dẫn đến các hình thái thay đổi bất thường của đại dương và diễn biến thời tiết tại nhiều khu vực trên thế giới, thường dẫn đến những tác động đáng kể và lâu dài trong nhiều tháng, ví dụ như thay đổi quần thể sinh vật biển, thay đổi về lượng mưa, lũ lụt, hạn hán, và những thay đổi về hình thái bão.
10	Emergency management <i>Quản lý tình trạng khẩn cấp</i>	The organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular preparedness, response and initial recovery steps.	Việc tổ chức và quản lý các nguồn lực và trách nhiệm để giải quyết tất cả các mặt liên quan tới tình trạng khẩn cấp, đặc biệt là các bước phòng ngừa, ứng phó và phục hồi ban đầu.
11	Emergency services <i>Các cơ quan ứng phó khẩn cấp</i>	The set of specialized agencies that have specific responsibilities and objectives in serving and protecting people and property in emergency situations.	Tập hợp các cơ quan chuyên môn có trách nhiệm và mục đích cụ thể đối với việc phục vụ và bảo vệ người dân và tài sản trong trường hợp khẩn cấp.
12	Environmental degradation <i>Thoái hóa môi trường</i>	The reduction of the capacity of the environment to meet social and ecological objectives and needs.	Sự suy giảm chất lượng môi trường trong việc đáp ứng các mục tiêu, nhu cầu xã hội và sinh thái.
13	Environmental Impact Assessment <i>Đánh giá tác động môi trường</i>	Process by which the environmental consequences of a proposed project or programme are evaluated, undertaken as an integral part of planning and decision-making processes with a view to limiting or reducing the adverse impacts of the project or programme.	Quá trình đánh giá những hậu quả của một đề xuất dự án hoặc chương trình đến môi trường, là một phần của qui trình lập kế hoạch và đưa ra quyết định nhằm hạn chế hay giảm bớt những ảnh hưởng bất lợi của dự án hoặc chương trình đó.

14	Exposure <i>Mức độ nguy hiểm (trước hiểm họa)</i>	People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses.	Con người, tài sản, các hệ thống hoặc các yếu tố khác có mặt tại các khu vực hiểm họa do đó dễ chịu những thiệt hại có thể xảy ra.
15	Forecast <i>Dự báo</i>	Definite statement or statistical estimate of the likely occurrence of a future event or conditions for a specific area.	Nhận định chắc chắn hoặc ước tính thống kê về khả năng xảy ra của một sự kiện hoặc các trạng thái trong tương lai cho một khu vực cụ thể.
16	Geological hazard <i>Hiểm họa địa chất</i>	Geological process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.	Quá trình hoặc hiện tượng địa chất có thể gây chết người, thương tích hoặc những tác động khác tới sức khỏe, gây thiệt hại về tài sản, sinh kế, các dịch vụ, làm gián đoạn các hoạt động kinh tế - xã hội, hoặc gây thiệt hại về môi trường.
17	Greenhouse gases <i>Khí nhà kính</i>	Gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds.	Các loại khí trong khí quyển, cả tự nhiên và nhân tạo, hấp thụ và tỏa ra bức xạ nhiệt hồng ngoại do bề mặt trái đất, bản thân khí quyển và các đám mây phát ra.
18	Hazard <i>Hiểm họa</i>	A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.	Sự kiện, vật chất, hoạt động của con người hay điều kiện nguy hiểm có thể gây các tổn thất về tính mạng, thương tích, ảnh hưởng khác đến sức khỏe, thiệt hại tài sản, sinh kế và dịch vụ, gây gián đoạn các hoạt động kinh tế - xã hội hoặc tàn phá môi trường.
19	Hydrometeorological hazard <i>Hiểm họa khí tượng thủy văn</i>	Process or phenomenon of atmospheric, hydrological or oceanographic nature that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.	Quá trình hoặc hiện tượng liên quan tới trạng thái tự nhiên của khí quyển, thủy văn hoặc hải dương có thể gây chết người, thương tích hoặc các tác động khác tới sức khỏe, gây thiệt hại về tài sản, sinh kế và các dịch vụ, làm gián đoạn các hoạt động kinh tế - xã hội, hoặc gây thiệt hại về môi trường.

20	Land-use planning <i>Quy hoạch sử dụng đất</i>	<p>The process undertaken by public authorities to identify, evaluate and decide on different options for the use of land, including consideration of long term economic, social and environmental objectives and the implications for different communities and interest groups, and the subsequent formulation and promulgation of plans that describe the permitted or acceptable uses.</p>	<p>Quá trình cán bộ chính quyền địa phương xác định, đánh giá và quyết định các phương án sử dụng đất đai, có cân nhắc đến các mục tiêu kinh tế, xã hội và môi trường dài hạn, cũng như tính đến các tác động của những phương án này đến cộng đồng các nhóm lợi ích khác nhau, và đến các kế hoạch sẽ được xây dựng và triển khai sau đó đối với từng phương án sử dụng đất được cấp phép hoặc được chấp nhận áp dụng</p>
21	Mitigation <i>Giảm nhẹ</i>	<p>The lessening or limitation of the adverse impacts of hazards and related disasters.</p>	<p>Giảm thiểu hoặc hạn chế các tác động có hại của hiểm họa và thảm họa liên quan.</p>
22	National platform for disaster risk reduction <i>Diễn đàn quốc gia về giảm thiểu rủi ro thảm họa</i>	<p>A generic term for national mechanisms for coordination and policy guidance on disaster risk reduction that are multi-sectoral and inter disciplinary in nature, with public, private and civil society participation involving all concerned entities within a country.</p>	<p>Một cụm từ chung chỉ các cơ chế quốc gia dành cho việc điều phối và hướng dẫn chính sách giảm thiểu rủi ro thảm họa mang tính đa ngành và liên ngành với sự tham gia của công chúng, khối tư nhân và tổ chức xã hội dân sự kéo theo sự tham gia của tất cả các chủ thể có liên quan trong một quốc gia.</p>
23	Natural hazard <i>Hiểm họa tự nhiên</i>	<p>Natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.</p>	<p>Quá trình hay hiện tượng tự nhiên có thể gây chết người, thương tích hoặc các tác động khác tới sức khỏe, gây thiệt hại về tài sản, sinh kế và các dịch vụ, làm gián đoạn các hoạt động kinh tế - xã hội, hoặc gây thiệt hại về môi trường.</p>
24	Non-structural measures <i>Biện pháp phi công trình</i>	<p>Any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, public awareness raising, training and education.</p>	<p>Bất kỳ biện pháp nào không liên quan đến xây dựng mà chỉ sử dụng kiến thức, cách thực hành hoặc thỏa thuận nhằm giảm thiểu rủi ro và tác động, cụ thể bằng các chính sách, luật pháp, nâng cao nhận thức cộng đồng, tập huấn và giáo dục.</p>

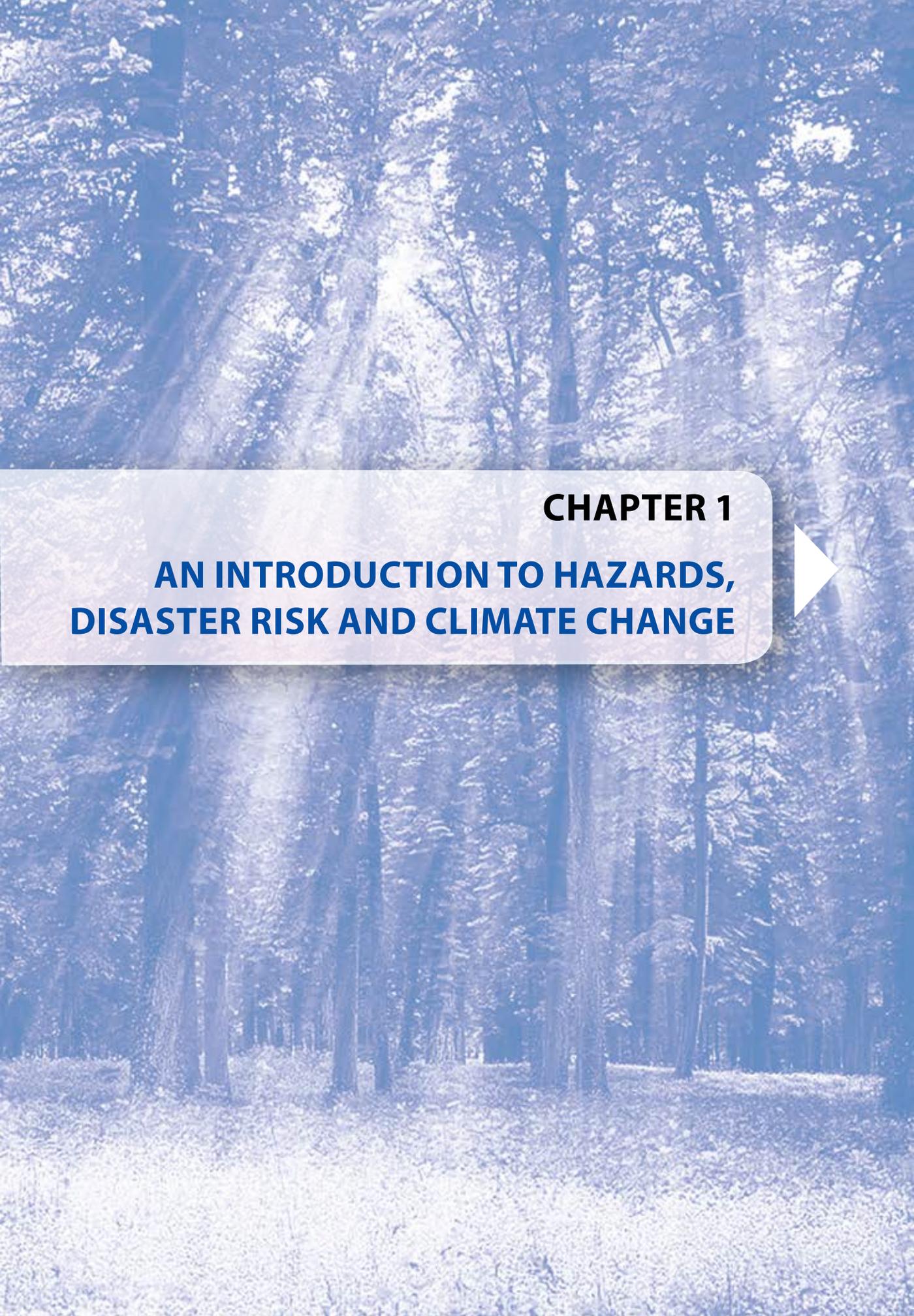
25	Preparedness <i>Phòng ngừa</i>	The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.	Kiến thức và khả năng được chính phủ, các tổ chức ứng phó và phục hồi chuyên nghiệp, các cộng đồng và cá nhân xây dựng nhằm dự báo, ứng phó và phục hồi một cách hiệu quả với các tác động của hiểm họa hay tình trạng có thể, sắp hoặc đang xảy ra.
26	Prevention <i>Phòng tránh</i>	The outright avoidance of adverse impacts of hazards and related disasters.	Sự ngăn ngừa triệt để các ảnh hưởng bất lợi của hiểm họa và các thảm họa có liên quan.
27	Public awareness <i>Nhận thức cộng đồng</i>	The extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually and collectively to reduce exposure and vulnerability to hazards.	Mức độ hiểu biết chung về rủi ro thảm họa, các yếu tố dẫn đến thảm họa và hành động có thể được cá nhân hay tập thể thực hiện nhằm giảm nhẹ mức độ nguy hiểm và khả năng dễ bị tổn thương trước hiểm họa.
28	Recovery <i>Phục hồi</i>	The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.	Khôi phục và cải thiện cơ sở vật chất, các hoạt động sinh kế, các điều kiện sống của cộng đồng bị ảnh hưởng bởi thảm họa, bao gồm các nỗ lực giảm thiểu các yếu tố rủi ro thảm họa.
29	Response <i>Ứng phó</i>	The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.	Việc thực hiện các hoạt động khẩn cấp và hỗ trợ xã hội trong hoặc ngay sau thảm họa nhằm bảo vệ tính mạng, giảm thiểu tác động về sức khỏe, đảm bảo an toàn xã hội và đáp ứng các nhu cầu cơ bản của những người bị ảnh hưởng.
30	Resilience <i>Khả năng ứng phó, phục hồi và thích nghi</i>	The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.	Khả năng của một hệ thống, cộng đồng, xã hội trong vùng hiểm họa để chống đỡ, chịu đựng, thích nghi và phục hồi các tác động của hiểm họa một cách kịp thời và hiệu quả, bao gồm bảo tồn và khôi phục các công trình và chức năng cơ bản, thiết yếu.

31	Retrofitting <i>Gia cố</i>	Reinforcement or upgrading of existing structures to become more resistant and resilient to the damaging effects of hazards.	Củng cố hoặc cải thiện cấu trúc hiện tại làm tăng khả năng chống chịu và thích nghi tốt hơn trước các tác động có hại của hiểm họa
32	Risk <i>Rủi ro</i>	The combination of the probability of an event and its negative consequences.	Sự kết hợp giữa khả năng một sự kiện có thể xảy ra với các hậu quả tiêu cực của nó.
33	Risk assessment <i>Đánh giá rủi ro</i>	A methodology to determine the nature and extent of risk by analysing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend.	Một phương pháp xác định bản chất và mức độ rủi ro bằng cách phân tích các hiểm họa có thể xảy ra và đánh giá các điều kiện hiện tại của tình trạng dễ bị tổn thương mà có thể gây hại cho con người, tài sản, các dịch vụ, các hoạt động sinh kế và môi trường trong khu vực nguy hiểm.
34	Risk management <i>Quản lý rủi ro</i>	The systematic approach and practice of managing uncertainty to minimize potential harm and loss.	Cách tiếp cận và thực hành mang tính hệ thống của việc quản lý trong những điều kiện không chắc chắn nhằm giảm thiểu thiệt hại và mất mát.
35	Risk transfer <i>Chuyển giao rủi ro</i>	The process of formally or informally shifting the financial consequences of particular risks from one party to another whereby a household, community, enterprise or state authority will obtain resources from the other party after a disaster occurs, in exchange for ongoing or compensatory social or financial benefits provided to that other party.	Quá trình chuyển dịch chính thức hoặc không chính thức các hậu quả tài chính của những rủi ro cụ thể từ một bên này tới một bên khác theo đó một hộ gia đình, một cộng đồng, một doanh nghiệp hay một cơ quan nhà nước sẽ nhận được các nguồn lực từ bên khác sau khi một thảm họa xảy ra, để đổi lấy việc duy trì hoặc đến bù cho các lợi ích xã hội hoặc tài chính cho bên đó.
36	Structural measures <i>Biện pháp công trình</i>	Any physical construction to reduce or avoid possible impacts of hazards, or application of engineering techniques to achieve hazard-resistance and resilience in structures or systems.	Bất kỳ một công trình xây dựng nào để giảm thiểu hoặc tránh các tác động do hiểm họa có thể gây ra, hoặc việc ứng dụng các phương pháp kỹ thuật nhằm thu được khả năng chống chịu và độ đàn hồi của các công trình hoặc các hệ thống đó.

37	Sustainable development <i>Phát triển bền vững</i>	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.	Sự phát triển đáp ứng được các nhu cầu hiện tại mà không làm tổn hại đến khả năng của các thế hệ tương lai trong việc đáp ứng các nhu cầu của họ.
38	Technological hazard <i>Hiểm họa kỹ thuật</i>	A hazard originating from technological or industrial conditions, including accidents, dangerous procedures, infrastructure failures or specific human activities, that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.	Một hiểm họa bắt nguồn từ các điều kiện công nghệ hoặc công nghiệp, bao gồm cả các tai nạn, các qui trình nguy hiểm, những sai sót/hư hỏng của cơ sở hạ tầng, hoặc các hoạt động cụ thể của con người, có thể gây thiệt hại về người, thương tích, bệnh tật, hoặc các ảnh hưởng khác liên quan đến sức khỏe, thiệt hại tài sản, tổn thất về sinh kế và các dịch vụ, gián đoạn hoạt động kinh tế - xã hội, hay thiệt hại về môi trường.
39	Vulnerability <i>Tình trạng dễ bị tổn thương</i>	The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.	Những đặc điểm và hoàn cảnh của một cộng đồng, hệ thống hoặc tài sản làm cho nó dễ bị ảnh hưởng của các tác động bất lợi từ hiểm họa.

i UNISDR; IPCC; MoNRE

ii UNISDR; IPCC; MoNRE



CHAPTER 1

AN INTRODUCTION TO HAZARDS, DISASTER RISK AND CLIMATE CHANGE



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1.1 INTRODUCTION

In this chapter, we first introduce some of the main terms and concepts related to disaster risk and climate change that will be used throughout this training material. We then describe in detail the major hazard types and discuss the main hazards that affect Viet Nam.

1.2 MAIN LEARNING POINTS

By the end of this chapter, participants should be able to:

- Understand the concepts of hazard, disaster, vulnerability and disaster risk and explain the interrelationship between them;
- Explain how these concepts relate to the management of disaster risk;
- Understand the terms climate change, climate change adaptation and climate mitigation;
- Explain how climate change differs from climate variability;
- Detail the causes and effects of natural hazards;
- Name the most common natural hazards in Viet Nam, their historical occurrence and geographical distribution in the country.

1.3 CONCEPTS AND DEFINITIONS

This section provides some concepts and definitions of commonly used terms in disaster risk management and climate change. The main terms used in this training material have specific meanings. It is important to define them carefully in order to understand the concepts surrounding disaster risk and climate change.

Unless otherwise stated, the definitions are taken from UNISDR's Terminology on Disaster Risk Reduction (2009) or from the United Nations Framework Convention on Climate Change (UNISDR 2009).

13.1 Disaster risk management terminologies

Natural hazard

Natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage¹.

The term 'natural hazards' typically refers to extreme events or processes that are hydro-meteorological or geological in origin.

Natural hazards are often categorized into sudden onset or slow onset depending on the speed of their occurrence:

SUDDEN ONSET: Sudden-onset hazards include natural hazards associated with violent forces (e.g. earthquakes, hurricanes, flash floods)

¹ Natural hazards are a sub-set of all hazards. The term is used to describe actual hazard events as well as the latent hazard conditions that may give rise to future events. Natural hazard events can be characterized by their magnitude or intensity, speed of onset, duration, and area of extent. For example, earthquakes have short durations and usually affect a relatively small region, whereas droughts are slow to develop and fade away and often affect large regions. In some cases hazards may be coupled, as in the flood caused by a hurricane or the tsunami that is created by an earthquake.

SLOW ONSET: Slow-onset hazards are those whose occurrence takes a long time to produce emergency conditions (for instance, natural hazards, such as long-term drought, that over a long time may contribute to severe food scarcity conditions, malnutrition and eventually famine conditions).

Natural hazards are the main focus of this chapter. However, the distinction between natural and human-made hazards is becoming increasingly more difficult to distinguish. For example, the destruction of forests on mountain slopes may lead to flash floods and landslides during periods of heavy rain. Landfill, blockage of drainage systems or improper construction may also create flooding. Landslides, floods, drought and fires are examples of a combination of both natural and human activities since their causes can often be traced to both natural events and human-made activities. One hazard can generate secondary hazards. For example, an earthquake can trigger tsunami, landslide and fire; while a typhoon can often lead to flooding and storm surge.

Disaster

The serious disruption of the functioning of society, causing widespread human, material or environmental losses, which exceed the ability of the affected people to cope using their own resources.

It is important to distinguish the concept of hazard (which refers only to a physical event) from the concept of disaster. A hazard does not necessarily lead to a disaster. However, if its effects on society are sufficiently severe or widespread to bring major losses and disruption then it is normal to say a disaster has occurred. Disaster impacts may include loss of life, injury, disease and other negative effects on human physical, mental and social well-being, together with damage to property, destruction of assets, loss of services, social and economic disruption and environmental degradation.

Disaster risk

The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period.

Disaster risk refers to the potential for disasters to occur rather than describing actual disaster events. The definition of disaster risk reflects the concept of disasters as the outcome of continuously present conditions of risk. Disaster risk comprises different types of potential losses, which are often difficult to quantify. Nevertheless, with knowledge of the prevailing hazards and the patterns of population and socio-economic development, disaster risks can be assessed and mapped, in broad terms at least.

It is important to understand that disaster risk is not just related to the physical threat from hazards. *A hazard can only lead to a disaster if people and social systems are vulnerable to its effects. It is therefore very important to look at both hazards and vulnerability when working on disaster risk.*

Vulnerability

The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard².

² This definition identifies vulnerability as a characteristic of the element of interest (community, system or asset), which is independent of its exposure. However, in common use the word is often used more broadly to include the element's exposure.

It is the combination of hazard and vulnerability that creates disaster risk. Vulnerability itself is a product of the likelihood of being exposed to a hazard, the potential to be adversely affected, and the capacity³ to avoid, cope with and recover from these effects. There are many aspects of vulnerability, arising from various physical, social, economic, and environmental factors. Examples of factors may include: location of settlements in hazard-prone sites, poor design and construction of buildings, inadequate protection of assets, lack of public information and awareness, limited official recognition of risks and preparedness measures, and disregard for wise environmental management. Vulnerability varies significantly within a community and over time. Vulnerability of individuals and social groups often varies according to ethnicity, gender, age, disability, income and education. It relates to access to knowledge and resources and to the ability to make and influence decisions.

There are two main terms relating to actions that societies take in response to disaster risk:

Disaster risk reduction

The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events⁴.

The concept of disaster risk reduction (DRR) is a holistic approach to addressing disaster risk that has become the guiding principle for international action on disasters.

Disaster risk reduction builds on and extends previous approaches by recognizing how underlying vulnerabilities contribute to risk. Disaster risk reduction therefore includes reduction in exposure, capacity building to manage the effects of hazards and attention to wider vulnerability reduction of people and property, and wise management of land and the environment.

Disaster risk management

The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.

This term is an extension of the more general term “risk management” to address the specific issue of disaster risks. Disaster risk management refers to the activities undertaken to achieve DRR. As in the past the main objectives of DRM are to avoid, lessen or transfer the adverse

³ UNISDR defines capacity as: “the combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals”. Capacity may include infrastructure and physical means, institutions, societal coping abilities, as well as human knowledge, skills and collective attributes such as social relationships, leadership and management. Capacity also may be described as capability. Capacity assessment is a term for the process by which the capacity of a group is reviewed against desired goals, and the capacity gaps are identified for further action.

⁴ Comment: A comprehensive approach to reduce disaster risks is set out in the United Nations-endorsed Hyogo Framework for Action, adopted in 2005, whose expected outcome is: “The substantial reduction of disaster losses, in lives and the social, economic and environmental assets of communities and countries.” The International Strategy for Disaster Reduction (ISDR) system provides a vehicle for cooperation among Governments, organizations and civil society actors to assist in the implementation of the Framework. Note that while the term “disaster reduction” is sometimes used, the term “disaster risk reduction” provides a better recognition of the on-going nature of disaster risks and the on-going potential to reduce these risks.

effects of hazards through integrated activities and measures for prevention, mitigation, preparedness, response and recovery (see Chapter 5). However, with disaster risk understood as a product of the physical nature of the hazard and the social conditions that generate vulnerability, the focus on planning the management of disasters shifts more to increasing capacities to decrease the threat of disasters.

Some examples of DRM actions at community level therefore range from: organizing groups to monitor the threats and warn the public early, training leaders and members on preparedness, and community projects such as construction of dykes and other flood control measures, to developing alternative livelihood opportunities to reduce the effects of hazards on household incomes and to projects that provide livelihood strengthening or encourage social networks that involve marginalized social groups to reduce the underlying causes of vulnerability.

1.3.2 Climate change terminologies

Climate

Climate describes the pattern of weather⁵ conditions experienced at a location over a period of time.

A description of climate indicates the mean and variability of measurable conditions such as temperature, precipitation and wind speed. The typical period over which these are averaged is 30 years, as defined by the World Meteorological Organization.

Climate change

A change in the state of the climate that can be identified by changes in the mean and/or variability of its properties, and that persists for extended periods, typically decades or longer (UN IPCC 2007)

Climate change refers to changes in long-term trends in the average climate. Current patterns of climate change appear to be linked strongly to the effects of human activity in altering the composition of the atmosphere (see Chapter 3).

It is important to distinguish long-term climate change from short-term climate variability. Climate variability generally refers to natural variation in weather patterns, such as precipitation patterns. Sometimes strong variations from the norm can last for several years, for example, in the case of prolonged drought periods. They can also be part of cyclical changes such as those produced by El Nino events. These types of variations would not normally be described as 'climate change'.

There are two types of action society takes in response to the threat of climate change – one to reduce its impacts on society (adaptation), and one to reduce the rate at which climate change occurs (mitigation). This training programme is mostly concerned with the first of these:

Climate change adaptation

The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

⁵ 'Weather' refers to the state of the atmosphere at a particular time, as defined by the various meteorological elements.

Adaptation refers to the action of dealing with the consequences of climate change, primarily by reducing vulnerability to its effects. (However, note that adaptation can also refer to exploiting any beneficial opportunities that climate change may bring). There are several definitions of climate change adaptation in the literature. Of these, perhaps the simplest is this alternative one from the UNFCCC: “Practical steps to protect countries and communities from the likely disruption and damage that will result from effects of climate change”.⁶

Climate change mitigation

In the context of climate change, a human intervention to reduce the sources or enhance the sinks of greenhouse gases (UNFCCC).

Actions to reduce anthropogenic⁷ climate change by reducing the net emission of greenhouse gases that cause global warming are referred to as ‘climate change mitigation’⁸.

Examples of climate change mitigation include using fossil fuels more efficiently for industrial processes or electricity generation, switching to solar energy or wind power, improving the insulation of buildings, and expanding forests and other “sinks” to remove greater amounts of carbon dioxide from the atmosphere.

1.4 AN INTRODUCTION TO DISASTERS IN VIET NAM

1.4.1 Topography and climate

Viet Nam has a land area of 320,000 km² and a coastline of 3,260km. Three quarters of the territory is covered by hills and mountains with elevations between 100 and 3,400m, while the plain areas include two major river deltas; the Red River Delta in the north and the Mekong River Delta in the south. The lowlands are extremely fertile and densely populated, and most of Viet Nam’s agriculture and industry are concentrated there.

Viet Nam has a tropical monsoon climate, although regional climate variations are considerable due to the length of the country and the diverse topography.

Annual mean temperature ranges between 18°C to 29°C, while mean temperatures during the coldest months vary between 13°C and 20°C in the northern mountains and between 20°C and 28°C in the tropical south. In most parts of the country annual rainfall ranges between 1,400mm and 2,400mm, but can be as high as 5,000mm or as low as 600mm on average in some regions.

Rainfall is unevenly distributed throughout the year, with about 80-90% of the rainfall concentrated in the rainy season, causing floods and frequent landslides. The number of rainy days in the year is also very different between the regions and ranges from 60 to 200⁹.

⁶ UNFCCC n.d.

⁷ Anthropogenic (from the Greek meaning “man-made”) effects, processes, or materials that are derived from human activities.

⁸ It is important to understand that climate change ‘mitigation’ means something completely different from disaster ‘mitigation’. In disaster risk management, mitigation is defined as: ‘The lessening or limitation of the adverse impacts of hazards and related disasters’ (UNISDR 2009).

⁹ MoNRE 2003

1.4.2 Natural hazards

Recent legislation¹⁰ issued by the Government of Viet Nam lists the following hazards: “heavy rain, tropical depressions, storms, floods, flash floods, whirlwind, lightning, and landslides caused by floods, surges, earthquakes, tsunamis”. However, this list does not include drought – which is a common occurrence in the country. Of these, the causes and effects of the main hazards occurring in Viet Nam are described below. For each hazard type a summary is provided of the occurrence, characteristics, predictability, vulnerability factors and main effects. Only factors contributing to vulnerability that are specific to the hazards are given below. For all hazards, vulnerability is also increased by lack of: information and awareness of risks; warning and communication systems; emergency response procedures; and measures to aid recovery and rehabilitation of communities.

Typhoon

Why do they occur?

A mixture of heat and moisture forms a low-pressure centre over the sea where water temperatures exceed 26°C. Wind currents spin and organise around a deepening low pressure that accelerates towards the centre. This is moved along tracks pushed by trade winds¹¹. An area of low pressure, or depression, becomes a typhoon when winds reach grade 8 on the Beaufort scale¹² or 63 to 119km per hour.

Characteristics

When the typhoon strikes land, strong winds and exceptional rainfall cause damage with secondary flooding and landslides. Low atmospheric pressure causes localized rise in sea level, which combines with the effects of winds to create a storm surge that can result in severe coastal flooding by the sea.

Table 1: Structure of a typhoon¹³

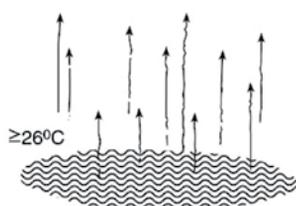
Designation	Maximum Sustained Wind Speeds
Tropical depression	Less than 63km/hr
Typhoon	119 to 241km/h
Super typhoon	241km/h and higher

¹⁰ Decree No. 14/2010-CP issued by the Government of Viet Nam in February, 2010 prescribes the organization, duties and powers of the Steering Committee, Flood Control Central Committee for the Prevention, Flood Search and Rescue and other ministries, sectors and localities of operational coordination of the response to disaster situations. The Decree applies to agencies, organizations and individuals in the country, organizations or individuals are living and working in the territory and waters and islands of Viet Nam.

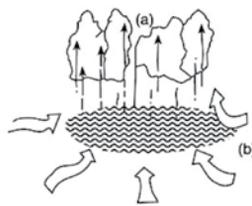
¹¹ The trade winds are the prevailing pattern of easterly surface winds found in the tropics, within the lower portion of the Earth's atmosphere, in the lower section of the troposphere near the Earth's equator. The trade winds blow predominantly from the northeast in the Northern Hemisphere and from the southeast in the Southern Hemisphere (see http://en.wikipedia.org/wiki/Trade_wind).

¹² The Beaufort scale is an empirical measure for describing wind velocity based mainly on observed sea conditions. Its full name is the Beaufort wind force scale. See <http://en.wikipedia.org/wiki/Beaufortscale> for more details.

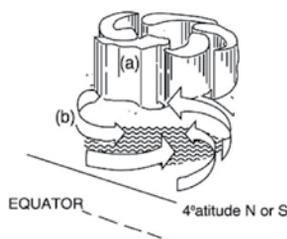
¹³ Source: Wikimedia Commons



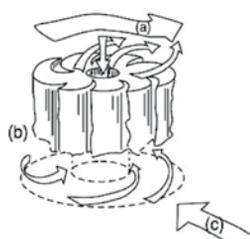
1 Warm sea temperatures (above 26°C) cause warm, rising, humid air.



2 (a) Cooler high altitude temperatures cause formation of cumulo nimbus clouds. (b) Rising warm air causes surrounding air to move toward the central low pressure area.



3 (a) Cumulo nimbus clouds form into long spiraling cloud bands. (b) Coriolis effect causes incoming winds to swirl around the central area of low pressure



4 (a) High altitude winds carry away air dispelled from top of cyclonic air system. (b) Drier air from higher altitude is slowly drawn down the center of the storm causing calm "eye". (c) Hurricane force winds circle in around the eye. Storm system is pushed along its track by trade winds.

Predictability

Typhoons can be tracked once they develop but accurate landfall forecasts are usually possible only a few hours in advance as unpredictable changes in course can occur.

Specific factors contributing to vulnerability

- Communities located in low-lying/coastal areas (direct impact)
- Communities living in adjacent areas (indirect impact caused by heavy rains, landslide and floods)
- Poor communications or weak warning systems
- Lightweight structures, older constructions, poor quality construction materials.
- Fishing boats lacking proper lifebuoys/flotation devices.

Typical adverse effects

A typhoon may cause the following adverse effects:

- Damage to human beings (casualties and public health) - Casualties maybe caused by flying debris, collapse houses or flooding. Disease risk may rise because of flooding (see floods section) and insufficient food reserves or supply
- Physical damage - Buildings (houses, hospitals, schools, etc.) damaged or destroyed by wind force; boats capsized or damaged
- Water supplies - Ground water or water containers may be contaminated by floodwater
- Crops, livestock and food supplies - Strong winds and rains can ruin standing crops, trees, and food stocks, agricultural land contaminated with saltwater from sea surges, animals killed, loss of aquaculture, trees uprooted

- Power, communications and logistics - Severe disruption is possible as wind brings down power lines, telephone lines. Transportation may be disrupted, town or city may be isolated
- Secondary hazards - Flooding, storm surges and landslides.

Flood

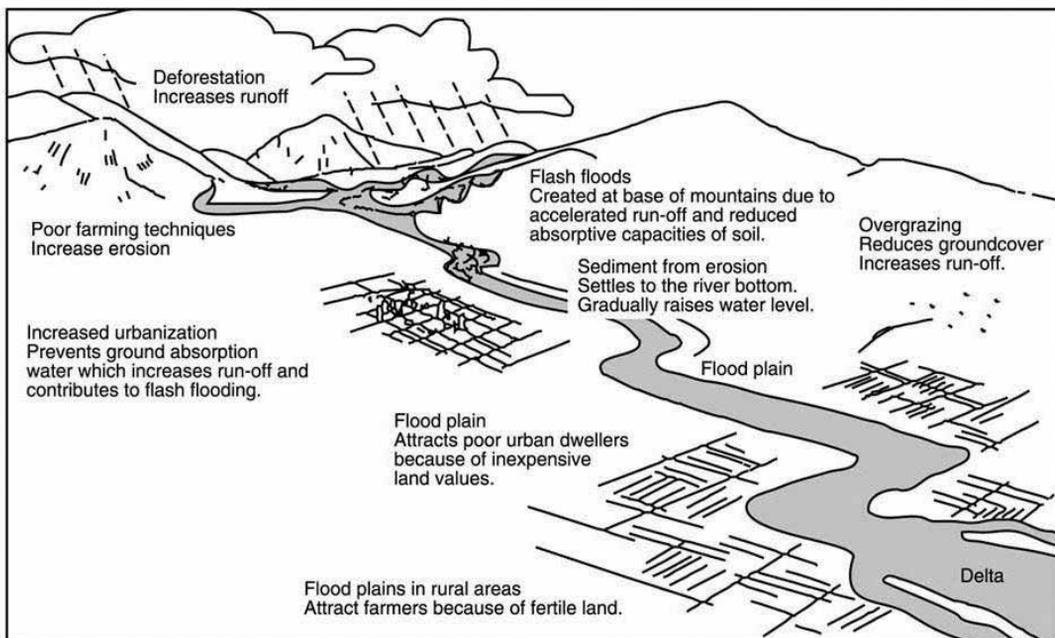
Why do they occur?

- Natural occurrence of flash floods, river and coastal flooding due to short periods of intense rainfall or seasonal weather patterns
- Human changes to watersheds (e.g. deforestation), drainage basins and floodplains can also directly or indirectly cause floods
- Dyke failure and sea storm surges from the sea also cause coastal flooding

Characteristics

- Rapid-onset floods – Fast build up of water in rivers caused by accelerated runoff of water associated with high rainfall, often caused by storms ('flash floods' are very rapid river floods caused by intense rainfall or dam failure)
- Slow-onset floods - Slow build-up of water in rivers and flood plains, usually seasonal water rise in river systems, although will depend upon locality
- Coastal floods - Associated with typhoons/tropical storms and storm surges.

Factors affecting degree of impact include: depth of water, speed of flow, rates of rise, duration, frequency of occurrence and time of occurrence.



Flooding and its causes
Natural Hazards, Disaster Management Center, 1989.

Predictability

Flood forecasting depends on knowledge of seasonal weather patterns, the coverage and characteristics of basin surface, the capacity of drainage basins and flood discharge capacity of river. Floodplain mapping and surveys by air and land assist this. Warnings are possible days in advance for seasonal floods and typhoons, but only minutes in advance in case of flash flood.

Specific factors contributing to vulnerability

- Locations of communities on flood-prone sites
- Reduction in the ability of land to absorb water (e.g. by covering with concrete)
- Buildings and foundations are not resistant to floods. Infrastructural facilities located in sites of high risk
- Unprotected food stocks, standing crops and livestock
- Ships and boats lacking proper lifebuoys/flotation devices
- Lack of water rescue tools and equipment, ability to swim, water rescue skills

Typical adverse effects

Floods may cause the following adverse effects:

- Damage to human beings (casualties and public health) - Deaths occur mainly from drowning; minor injuries are very common. There is a possibility of increased levels of infectious diseases (e.g. malaria, diarrhoea and viral infections)
- Physical damage - Houses and other infrastructure are washed away, or collapse due to inundation or damaged by floating debris. Landslides may occur from saturated soils. Often damage is greater in valleys than in open areas. Household possessions are damaged or lost
- Water supplies - Contamination or salt intrusion of wells and groundwater is possible (with salt water intrusion/seawater flooding). Unavailability of clean water
- Crops and food supplies - Harvests and food stocks may be lost due to inundation. Animals, farm tools and seeds might be lost
- Secondary hazards - Epidemics, waterborne diseases, landslides.

Landslide

Why do they occur?

Movements of soil and rock down a slope. These may be a result of (or a combined result of): naturally occurring vibrations (such as earthquake); weathering; changes in the water content of the soil; the removal of support to the slope; building on the slope; or other human changes to water courses or the composition of the slope.

Characteristics

Landslides vary in types of movement, e.g., they may be described as “falls or flows”. They may be secondary effects of heavy storms, torrential rainfalls or earthquakes. Landslides are more widespread than any other geological event.

Predictability

The frequency with which landslides occur and their extent and consequences may be estimated. Areas of high risk may be determined from information on the geology, geomorphology, hydrology, climatology and vegetation cover. Field observations may also indicate advance signs of slope failure, such as fissures in the soil surface.

Specific factors contributing to vulnerability

- Settlements built on steep slopes, softer soils or on cliff tops
- Settlements built at the base of steep slopes, at the mouths of streams from mountain valleys
- Roads and communication lines in mountainous areas
- Buildings with weak foundations
- Buried or old pipelines
- Lack of understanding of landslide hazard
- Over-exploitation of resources, deforestation of watersheds

Typical adverse effects

- Damage to human beings (casualties and public health) - Deaths often occur due to slope failure. Catastrophic debris slides or mudflows have killed many thousands of people worldwide
- Physical damage - anything on top of or in path of landslide will be damaged. Rubble may block roads, cut lines of communication or waterways. Indirect effects may include the loss of productivity of agricultural or forest lands and flooding

Drought

Why do they occur?

Immediate cause - Deficient rainfall (lack of rain for a long time); evaporation of water from lakes and rivers; human induced changes in ground surface and soil (e.g. excessive ground-water extraction), deforestation and rapid runoff.

Characteristics

- The reduction of water or moisture availability is temporary, but this reduction is significant in relation to the normal situation
- Meteorological drought is the reduction in rainfall
- Hydrological drought is the reduction in water resources
- Agricultural drought is the impact of such drought on human activity and is influenced by various factors, such as the presence of irrigation systems, the moisture retention capacity of the soil, the timing of the rainfall and the adaptive behaviour of the farmers.

Predictability

Periods of unusual dryness are normal in all weather systems. Rainfall and hydrology data must be carefully analysed to accurately predict drought. Advance warning is usually possible.

Specific factors contributing to vulnerability

- Locations in arid areas, where dry conditions are increased by drought
- Farming on marginal lands; subsistence farming
- Lack of water management
- Lack of seed reserves and food stocks
- Areas dependent on other weather systems for water resources
- Areas of low soil moisture retention
- Lack of drought resistant crop varieties.

Typical adverse effects

Drought may cause the following adverse effects:

- Difficulty in getting enough water for drinking, cooking and daily use
- Reduced productivity of crops and trees, which may die or cannot be replanted, may lead to food shortages
- Fish and shrimp die as water in ponds and lakes disappears
- Farm animals like pigs, cows and buffalo may either have to be sold or, if the drought lasts for a long time, may die due to thirst or sickness
- Reduced income for farmers; increases in price of staple foods, e.g. rice; increased inflation rates. Increased nutritional deficiencies and hygiene-related sickness, especially among children and old people
- As rivers stop flowing, the areas near the sea can be affected by saltwater intrusion and salinization.

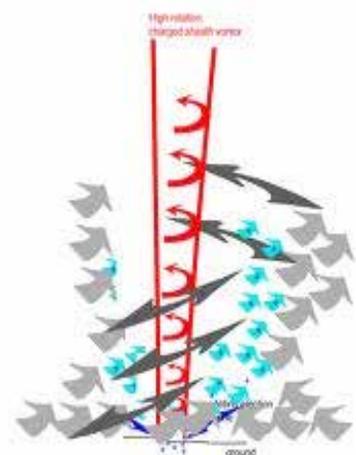
Whirlwind

Why do they occur?

A whirlwind is a localized weather phenomenon in which a vortex of wind (a vertically oriented rotating column of air) forms due to instabilities and turbulence created by heating and flow (current) gradients. Whirlwinds occur all over the world and in any season.

Characteristics

- Major whirlwind: a major whirlwind (such as a tornado) is formed from the most powerful type of thunderstorm (a super cell) or other powerful storms. When the storms start to spin, they react with other high altitude winds, causing a funnel to spin. A cloud forms over the funnel, making it visible.
- Minor whirlwind: a minor whirlwind or commonly called a 'wind devil' is created when local winds start to spin on the ground. This causes a funnel to form. The



Air and dust drawn in at ground level creates the outer turbulence vortex

funnel moves over the ground, pushed by the winds that first formed it. The funnel picks up materials such as dust or snow as it moves over the ground, thus becoming visible. The motion of warmer air drives whirlwinds of this class as it displaces cooler air and becomes a small-scale, rapidly rotating column of wind at the lower end of a 'thermal'.

Major whirlwinds last longer because they are formed from very powerful winds, and it is hard, though not impossible, to interrupt them. Minor whirlwinds are not as long-lived; the winds that form them do not last long, and when a minor whirlwind encounters an obstruction (a building, a house, a tree, etc.), its rotation is interrupted, as is the wind flows into it, causing it to dissipate.

Predictability

The occurrence of whirlwinds is highly unpredictable. Whirlwinds are often observed on the spot. Advance warning is therefore almost impossible but preventive measures can be taken to limit the damage.

Specific factors contributing to vulnerability

- Lightweight structures, older constructions, poor quality construction materials
- Fishing boats lacking proper lifebuoys/flotation devices

Typical adverse effects

A whirlwind may cause the following adverse effects:

- Damage to human beings (casualties and public health) - Casualties may be caused by flying debris or collapsed houses
- Physical damage - Buildings (houses, hospitals, schools, etc.) damaged or destroyed by wind force
- Crops, livestock and food supplies - Strong winds can ruin standing crops, trees, and food stocks, animals killed, loss of aquaculture
- Power, communications and logistics – Disruption is possible as winds bring down power and telephone lines.

Earthquake

Why do they occur?

Slippage of rock along a fault, or an area of tension in the earth's crust and rebounding to new position.

Characteristics

Shaking of earth caused by waves on or below the earth's surface resulting in faults on the earth's surface, tremors/vibrations, liquefaction (earth becomes like a liquid), landslides, aftershocks and tsunamis.

Predictability

The probability of an occurrence can be determined, but not the exact timing. Forecasting is based on monitoring seismic activity, historical incidence and observations.

Specific factors contributing to vulnerability

- Location of settlements in seismic areas (ground shaking can be amplified by certain types of surface material)
- Non-earthquake proof building design
- Dense collection of buildings with large numbers of people living there
- Lack of access to information about earthquake risks

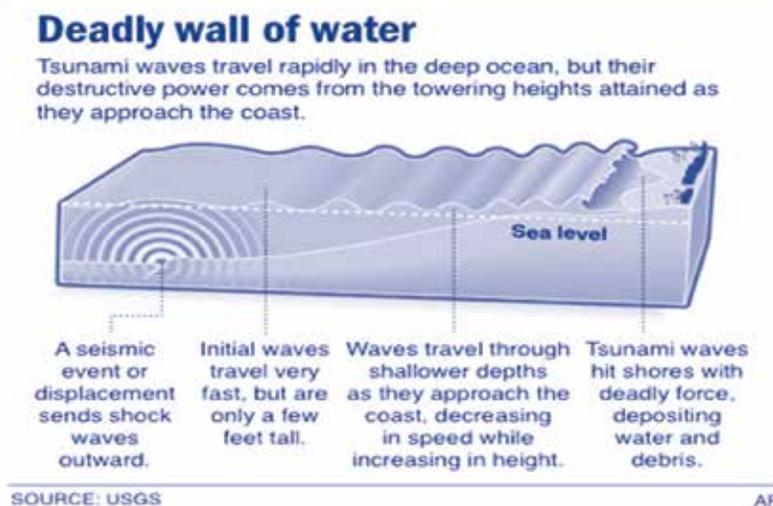
Typical adverse effects

- Damage to human beings (casualties) – Deaths and injuries often high, particularly near the epicentre, in highly populated areas or where buildings are not resistant; often massive social disruption
- Public health – Secondary threats to health due to disruption of water supply, or a breakdown in sanitary conditions
- Physical damage – Damage or loss of (crucial) infrastructure, power lines, telephone lines, nuclear/other power generation facilities. Fires, dam or dyke failures, flooding and landslides may occur
- Water supply – Severe problems likely due to damage to water systems, pollution of open wells and changes in water table.

Tsunami

Why do they occur?

- Tsunamis are usually the result of a sudden rise or fall of a section of the earth's crust under or near the ocean that displaces a water column creating a rise or fall in the level of the ocean above. This rise or fall in sea level is the initial formation of a tsunami wave
- A tsunami can also be generated by the massive displacement of seawater from a landslide, a volcanic eruption

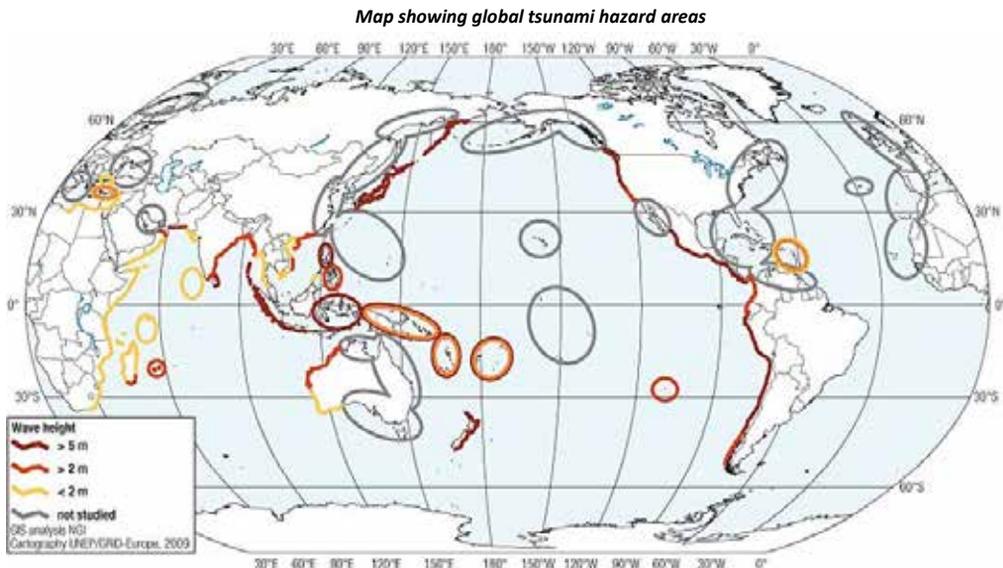


Characteristics

- Tsunamis consist of a series of waves of extremely long wavelength. They are not associated with the tides (although low and high tides may be a contributor to damage levels)
- Once generated, a tsunami wave in the open ocean can travel with speeds greater than 800 km/h. The Indian Ocean tsunami of 2004 took two and a half hours to travel from its source at the fault line to the west of Banda Aceh, Indonesia to Sri Lanka. Locally generated tsunamis can reach coastlines in just minutes, as in north-eastern Japan in 2011
- Tsunamis can travel virtually unnoticed through the open ocean because the wave height may be less than one metre
- Tsunami wave heights when approaching a shore can reach 30 m or more

Predictability

- Regional early warning systems for tsunamis in the Indian Ocean are being established which mirror the existing arrangements in the Pacific Ocean
- At the local level, the signs of an approaching tsunami are often recognizable. In many cases the sea will be sucked out before the first tsunami wave hits. In others, an unusual rise in the sea level will be seen. However, typically this will give only 5 to 10 minutes warning



Specific factors contributing to vulnerability

- Lack of knowledge about tsunamis, e.g. many people lose their lives after returning home in between the waves of the tsunami, thinking that the waves had stopped coming
- Settlements are located in low-lying coastal regions
- Buildings are not tsunami-resistant
- Lack of timely warning systems and evacuation plans

Typical adverse effects

Tsunami may cause the following adverse effects:

- Damage to human beings (casualties and public health) - Death occurs principally by drowning and injuries from batting by debris
- Physical damage - The force of incoming water can destroy everything in its path and therefore cause major damage to infrastructure. Withdrawal of the wave from shore scours the sediment and can collapse ports and buildings
- Water supply - Water is contaminated by salt water, debris or sewage, and drinking water supplies can be rendered undrinkable
- Crops and food supplies - Harvests, food stocks, livestock, farm implements, and fishing boats may be lost. Land may be rendered infertile due to salt-water incursion
- Power, communications and logistics - Severe disruption is possible as water and debris may bring down power lines, telephone lines or damage nuclear/other power generation facilities. Transportation maybe disrupted.

1.5 HISTORICAL TRENDS OF NATURAL HAZARDS FOR VIET NAM

Viet Nam is located in the tropical monsoon zone of Southeast Asia and within the typhoon centre of the Western Pacific - one of the five, most typhoon prone areas of the world. The country is vulnerable to a range of natural hazards - most of which are related to hydro-meteorological phenomena. Given the coincidence of typhoon and monsoon seasons with heavy rains, and the complicated topography of narrow and low plains backed by steep and high mountains, annually, monsoon rains, typhoon storms, floods, flash floods, drought and other calamities cause death, injury, crop and property loss and infrastructure damage in the country.

Annually over the past twenty years, natural hazards have caused an average of 489 deaths¹⁴. They also result in average annual economic losses equivalent to 1.3% of GDP; however, damage and loss data is chronically underreported, so real totals may be much higher. As most of the population is living in low-lying river basins and coastal areas, more than 70% of the population is estimated to be exposed to risks from multiple natural hazards¹⁵.

Table 2: Relative frequency of major natural hazards occurring in Viet Nam

High	Medium	Low
Flood, inundation	Heavy rain	Earthquake
Typhoon, tropical depression	Landslide	Frog
Flash flood	Forest fire	Tsunami
Drought	Salt Intrusion	
Whirlwinds		
Erosion		

Source: various CCFSC reports

¹⁴ National report on disaster reduction in Viet nam, the World Conference on Disaster Reduction, Kobe-Hyogo, Japan, 18-22 January 2005.

¹⁵ World Bank n.d

Floods

Most of Viet Nam's 2,360 rivers are short and steep, so that heavy rainfall in their basins produces intense, short duration floods. Sizeable portions of the country and especially the Central Highlands and Central Coast are subject to heavy rainfall. Three consecutive years of extreme seasonal flooding in the Mekong Delta claimed the lives of over 1,000 people.

Table 3: Major hazardous events in period from 1997 to 2009¹⁶

Year	Event	No. of people dead	No. of people injured	No. of people missing	Estimated economic loss (VND billion)	Areas affected
2009	Typhoon Ketsana	179	1,140	8	16,078	15 Central and Highlands provinces
2008	Typhoon Kammuri	133	91	34	1,939,733	9 North and Central provinces
2007	Typhoon Lekima	88	180	8	3,215,508	17 North and Central provinces
2006	Typhoon Xangsane	72	532	4	10,401,624	15 North and Central provinces
2005	Storm No. 7	68	28		3,509,150	12 North and Central provinces
2004	Storm No. 2	23	22		298,199	5 Central provinces
2003	Rains and floods	65	33		432,471	9 Central provinces
2002	Flooding	171			456,831	The Mekong River Delta
2001	Flooding	393			1,535,910	The Mekong River Delta
2000	Flash Floods (July)	28	27	2	43,917	5 Northern provinces
1999	Floods (November)	595	275	29	3,773,799	10 Central provinces
1997	Typhoon Linda	778	1232	2123	7,179,615	21 Central and Southern provinces

In 1999, two spells of torrential rains caused two extremely severe floods in Central Viet Nam. During the floods, water levels on all rivers exceeded the highest alarm levels. In the first flood period in early November, the flood water levels on rivers in Quang Tri and Thua Thien Hue provinces surpassed the historical flood levels (the flood water level in Hue was 1 meter higher than the historical level). In the December flood, the water level in Quang Ngai Province was higher than the historical level. These were the two biggest floods in the past 100 years in these areas. Together, the floods killed 715 people, inundated nearly 1 million houses, swept

¹⁶ CCFSC disaster database (<http://www.ccfsc.gov.vn/KW6F2B34/CatId/G986H8324D/Tong-hop-thiet-hai.aspx>) and Disaster Risk Management Program for Priority Countries, East Asia and Pacific: Viet nam, World Bank, 2009

away thousands of houses, and incurred an economic loss of nearly VND5,000 billion. This loss was among the greatest disaster-related damages recorded in the 20th century in Viet Nam.

Flash floods are often occurring in mountainous and hilly areas that are characterized by steep slopes, heavy rains and disadvantaged drainage conditions. Flash floods also may occur due to the failures of small reservoirs or landslides blocking upstream flows. Flash floods have happened in all 33 mountainous provinces in Viet Nam. The most damaging flash floods in mountainous areas happened in Son La in 1991, Muong Lay and Lai Chau in 1994, Ha Tinh in 2002 and Yen Bai in 2005.

Table 4: The flood seasons in different regions

Region	Start	End
North	May-June	September-October
North Central	June-July	October-November
Centre and South Highlands	October	December
Central Highlands	June	December
South	July	December

Source: Hydro-Meteorological Data Centre, at <http://hydromet.gov.vn>

Typhoons

Viet Nam is affected by typhoons and tropical storms from the Northwest of the Pacific Ocean, of varying intensity annually, with more frequent occurrences in the northern and central coastal region earlier in the season.

From 1954 to 2006, there were a total of 380 typhoons and tropical depressions in Viet Nam, of which 31% hit the North, including the Red River Delta 36% to the North Central and Central Coast and 33% of the Eastern South and the Mekong River Delta (MARD, 2007). The worst typhoon in recent memory was typhoon Linda in 1997 that killed 3,000 people along the southern coast.

Drought

After typhoons and floods, drought is responsible for the highest amount of damage to livelihoods and the economy. In 2010, an unprecedented drought impacted the majority of provinces in the country resulting in severe pressure on the agricultural output and provision of electricity.

In the past, severe drought has occurred at several occasions. Between 1976 and 1998, serious large-scale droughts affected 11 winter-spring crop periods causing serious damage. A nationwide drought in 1998 affected around 3.1 million people, particularly in Central Viet Nam, the Central Highlands, the Eastern South and the Mekong Delta causing an estimated damage of around VND500 billion or USD37 million¹⁷. Other recent droughts in 2002 and 2005 caused an estimated damage of 2,060 billion VND (USD135 million) and VND 1,743 billion (USD110 million) respectively.

Landslides

Landslides are a common type of hazard in Viet Nam, caused by river bank erosion, coastline erosion, and landslides on mountain slopes, land subsistence, etc. Landslides are usually

¹⁷ GTZ, ADPC and MRC, n.d.

caused by external factors (water), internal factors (geological changes) and human activities (deforestation, unplanned mineral exploitation or construction), etc. Landslides often come with mud floods or lead to flash floods.

Whirlwinds

The frequency and impacts of whirlwinds in Viet Nam is difficult to assess, partly because the term 'whirlwind' is used in different ways. In this chapter we follow the conventional international definition of a whirlwind as a localized vortex of wind. However, the term is used more broadly by some sources in the country. The main reference source existing on whirlwinds is a study by the Disaster Management Unit in 2001¹⁸. This report refers to both vortices (rotating columns of wind) and gales (sudden, strong winds) as whirlwinds. Unfortunately, the data in the report does not separate out these two types of wind phenomena, but it appears that each can occur in all parts of the country, though with higher frequency in the mountainous zones. Both are usually associated with thunderstorms. During the period 1993-1998, 235 gales and vortices were recorded in the country, which killed 234 people, injured 1,841 people and severely damaged more than 90,000 houses.

Earthquake

Earthquakes have occurred in Viet Nam though at limited magnitude and intensity and causing limited damage. They mostly occur at sea or in the North-western mountainous provinces. The northern region of Viet Nam has moderate to low seismicity but some major fault systems exist, such as those of the Red River (Song Hong), Ma River (Song Ma), and Lai Chau – Dien Bien.

In 1935 and 1983, earthquakes of magnitude 6.7 - 6.8 on the Richter scale occurred in the north west of Vietnam, namely the Dien Bien Phu earthquake (November 1935) and the Tuan Giao earthquake (June 24, 1983). Both destroyed and damaged many houses, buildings and agricultural lands in an area covering about 13,000km². Many people died or were injured by the collapse of houses. These were the largest magnitude earthquakes recorded in Viet Nam since 1900¹⁹.

Tsunami

Although a tsunami has not yet occurred in Viet Nam, many coastal areas may be affected due to the earthquake potential that exists in some neighbouring countries. The possibility of tsunami hitting the coast and islands is not high but remains possible. The central part of the central region, from Da Nang to Quang Ngai, faces the highest risk. Three sources of earthquakes have been defined that could result in tsunamis reaching Viet Nam's coastline. The most likely scenario is an earthquake over a magnitude 8 on the Richter scale at the Manila fault. The time for tracking the tsunami from the source to it reaching the central coast is around two – three hours²⁰.

1.6 GEOGRAPHIC DISTRIBUTION OF NATURAL HAZARDS

The country's geographic position and topographic condition result in special climate characteristics that result in a diversified pattern of hazards, some of which may cause serious disasters. Natural hazards occur almost round year and may result in disasters with particular characteristics in each region.

¹⁸ Whirlwind: a disaster study by the Disaster Management Unit, UNDP Project VIE/97/002, 2001

¹⁹ Seismic hazard study

²⁰ See UN-Viet Nam Factsheet on earthquakes and tsunamis in Viet Nam, March 2011

There are five principal hazard zones in the country. Each zone has different geography and topography, and principle types of hazards. Natural hazards affect particularly the coastal regions but also include flash floods in the upland areas, for example, following landfall of typhoons associated with heavy rainfall, as the typology in Table 5 shows:

It is possible to group provinces into five classifications:

Table 5: Typology of climate related natural hazards by region²¹

Hazard zone	Principle hazards
Red River Delta and the north central region	Monsoon river floods, typhoons, coastal storm surges, drought, saline water intrusion
Central coast, eastern southern region and Islands	Typhoons, storm surges, flash floods, drought, saline water intrusion
Mekong River Delta	Slow-onset flooding, typhoons, high tides and storm surges, salt water intrusion
Mountainous areas and central highlands	Flash floods, landslides, drought
Sea areas	Typhoons, storm surges

Hazards affecting different regions of the country are described briefly below (*taken principally from the World Bank 2010*):

Red River Delta and the North Central Region

The Red River Delta consists of nine provinces and Hanoi and Hai Phong cities. This is a densely populated region in the delta of the Red River. The main economic activities are located in this region. It is also one of the two main rice bowls of Viet Nam (the Mekong Delta is another one). The delta of the Red River is a flat, triangular region of 15,000 square kilometres. Two other rivers, the Lo and the Da, supply water to the Red River contributing to its high water volume, which averages 4,300 cubic meters per second. The entire delta region, backed by the steep rises of the forested highlands, is no more than three meters above sea level, and much of it is one meter or less. The area is subject to frequent flooding and storm; at some places the high-water mark of floods is fourteen meters above the surrounding countryside. For centuries flood control has been an integral part of the delta's culture and economy.

The North Central region is located in the northern part of central Viet Nam, consisting of six provinces. This region has a long coastline and is most prone



21 *MARD 2007*

to storms and floods. The weather is harsh. The continental hot dry wind blowing from Laos in summer is an example. This is also a highly populated region.

Central Coast, the Eastern South Region and Islands

The Central Coast contains five coastal provinces situated in the southern half of central part of Viet Nam. Viet Nam is wider at this point than in the North Central Coast region, so the inland areas are separate provinces. Like the North Central region, it is most prone to storms and floods.

The Eastern South Region and Islands contains those parts of lowland, southern Viet Nam that are north of the Mekong delta. There are seven provinces, including the islands along the coast, plus the independent municipality of Ho Chi Minh City. There is a concentration of economic activities and population in this region. The region is particularly prone to storm, flood whirlwind and forest fires.

Mekong River Delta

It is Viet Nam's southernmost region, and contains twelve mostly small but populous provinces in the delta of the Mekong, plus the independent municipality of Can Tho. The region is the rice bowl of Viet Nam and other agriculture and aquaculture products. It is prone to flooding. A tributary entering the Mekong at Phnom Penh drains the Tonlé Sap, a shallow freshwater lake that acts as a natural reservoir to stabilize the flow of water through the lower Mekong. When the river is in flood stage, its silted delta outlets are unable to drain out the high volume of water. Floodwaters back up into the Tonlé Sap, causing the lake to inundate as much as 10,000 square kilometres, or 25% of the region's total area. As the flood subsides, the flow of water reverses and proceeds from the lake to the sea. The effect is to reduce significantly the danger of devastating floods in the Mekong delta, where the river floods the surrounding fields each year to a level of one to two meters. While its inner part is prone to both drought and flood and storm, its coastal part is prone to storm and saline water intrusion.

Mountainous areas and Central Highlands

The Mountainous areas are comprised of the fifteen provinces in the north east and west of North Viet Nam, sharing borders with Laos and China and facing the sea in the east. This region is mountainous and not densely populated. This region is prone to flash floods, floods, and landslides. In addition, the coastal zone is prone to storm surge, storm and whirlwind.

The Central Highlands contains the five inland provinces (much of whose terrain is mountainous) of south-central Viet Nam. The region is prone to drought, flash flood and whirlwind.

Sea areas

The Sea areas refer to the East Sea and include the Paracel and Spratly islands²².

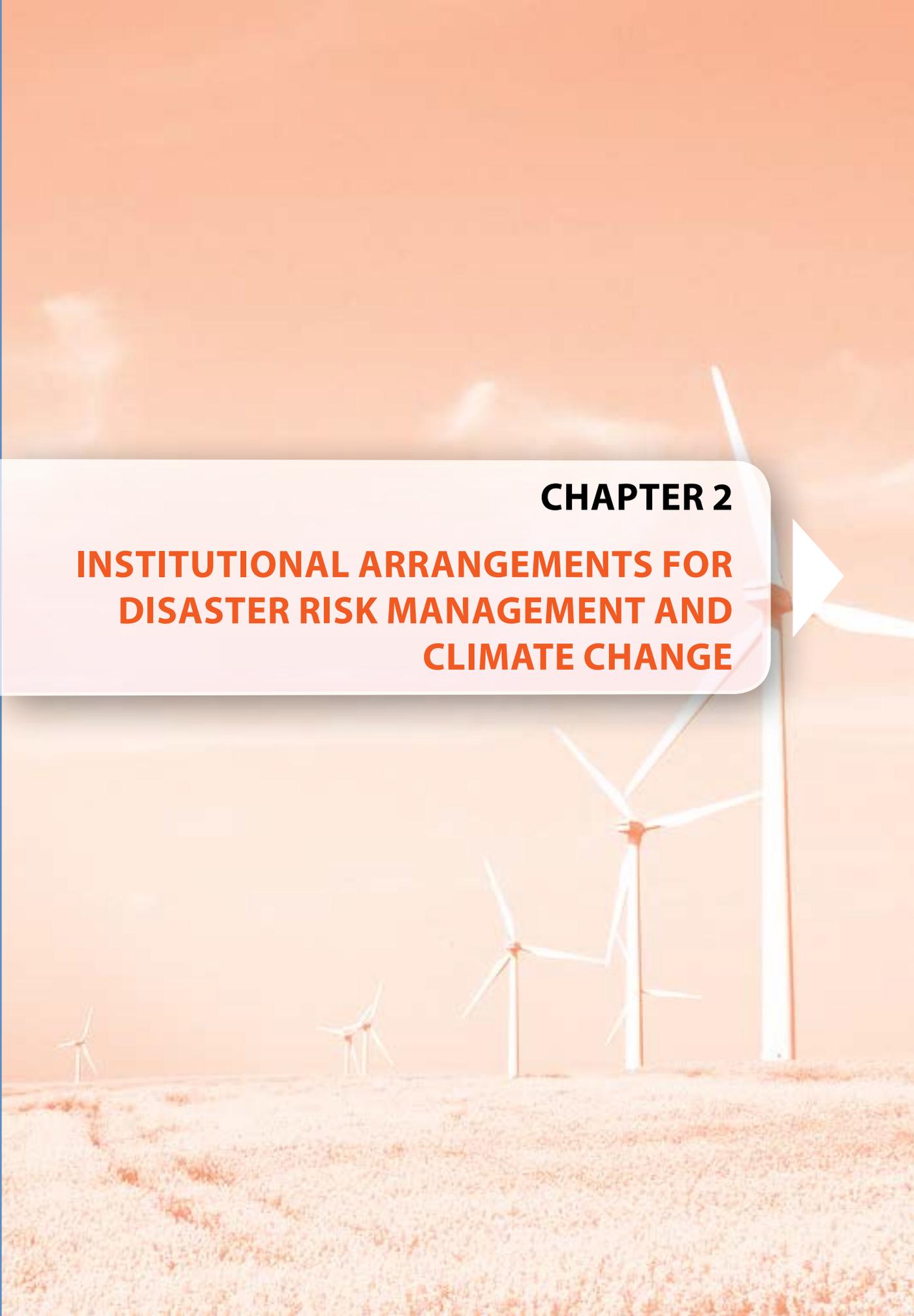
22 The Paracel (Hoang Sa) and the Spratly (Truong Sa) Islands are two archipelagos offshore Viet Nam. The closest point of the Paracel Islands is 120 nautical miles east of the central city of Da Nang and Re Island, a coastal island of Viet Nam. Meanwhile, the closest point of the Spratly Islands is about 250 nautical miles to the east of Cam Ranh Bay, NhaTrang city, KhanhHoa province.

1.7 CHAPTER REVIEW

- *A disaster occurs when a hazard impacts on a vulnerable community and causes damage, casualties and disruption of basic services*
- *Vulnerability is a set of prevailing socio-economic conditions, which influence the community's exposure and susceptibility to hazards*
- *Capacities are community's resources, means and strengths, which enable them to avoid, mitigate, prepare for, cope with, or quickly recover from hazards*
- *Disaster risk is a product of hazard and vulnerability; disaster risk management and disaster risk reduction are approaches that build on this understanding of risk*
- *The terms: climate change, climate change adaptation and climate mitigation were defined*
- *The causes and effects of major natural hazards were described in detail*
- *The most common natural hazards occurring in Viet Nam are floods, typhoons/tropical depressions, flash floods, drought and whirlwinds*

1.8 DISCUSSION QUESTIONS

1. Differentiate between hazards and disasters. Give examples for each.
2. What are the hazards that frequently affect your province? Cite some of your provinces vulnerabilities and capacities.
3. Describe the most severe damages caused by weather-related hazards.
4. Choose a specific hazard that affects your province. What might make somebody more likely to be exposed to this hazard than other people? What might make them more likely to suffer losses when exposed?
5. Which do you think are the most serious hazards affecting the country? What criteria are you using to judge this (e.g. effect on lives, livelihoods, infrastructure or the economic system)?



CHAPTER 2

INSTITUTIONAL ARRANGEMENTS FOR DISASTER RISK MANAGEMENT AND CLIMATE CHANGE



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2.1 INTRODUCTION

This chapter aims to give participants a basic understanding on the agreements, strategies and institutional frameworks that exist for disaster risk management (DRM) and climate change (CC) at the international and regional levels and in Viet Nam.

2.2 MAIN LEARNING POINTS

At the end of this chapter, participants should be able to:

- Possess an overview of international institutional arrangements for DRM and CC;
- Understand the institutional arrangements for DRM and CC in the country.

2.3 INTERNATIONAL INSTITUTIONAL FRAMEWORK FOR DISASTER RISK MANAGEMENT

Hyogo Framework for Action ((HFA)

In January 2005, a few weeks after the Indian Ocean tsunami claimed over 250,000 lives, 168 governments gathered in Kobe, Japan, at the second World Conference on Disaster Reduction and adopted the Hyogo Framework for Action 2005-2015: “Building the Resilience of Nations and Communities to Disasters²³” a global strategy to implement disaster risk reduction. Through this initiative Governments around the world committed to take action to reduce disaster risk and adopted a guideline to reduce vulnerabilities to natural hazards. The UN General Assembly adopted the HFA later that year. The Hyogo Framework for Action (or HFA, as it is widely known) assists the efforts of nations and communities to become more resilient to the hazards that threaten their development gains.

The HFA lays out a ten-year plan to reduce losses and to make risk reduction an essential component of the development policies and programmes of governments, regional and international organisations and non-governmental organizations. It represents international recognition that DRR is an issue not just for managing hazards but also for wider development and environmental resource management issues.

Disasters undermine development achievements, impoverishing people and nations. Without effectively tackling disaster risk the *Millennium Development Goals* will not be achieved.

The HFA assists the efforts of nations and communities to become more resilient to the hazards that they face, through action before as well as during and after disasters. Although the primary responsibility for the implementation of the HFA rests with governments, collaboration and cooperation between all stakeholders is crucial. In this context, the United Nations International Strategy on Disaster Reduction (UN ISDR) plays an important role in supporting national policies and coordination mechanisms, facilitating regional and international coordination, stimulating the exchange of good practice, and reviewing and documenting progress towards implementation of the HFA. UNISDR also produces practical tools to help decision-makers to promote and to implement DRR measures in their respective countries and regions.

The HFA comprises three strategic goals, five priorities for action and four cross cutting issues:

Strategic goals

1. The integration of disaster risk reduction into sustainable development policies and planning;

²³ see: <http://www.unisdr.org/eng/hfa/hfa.htm>

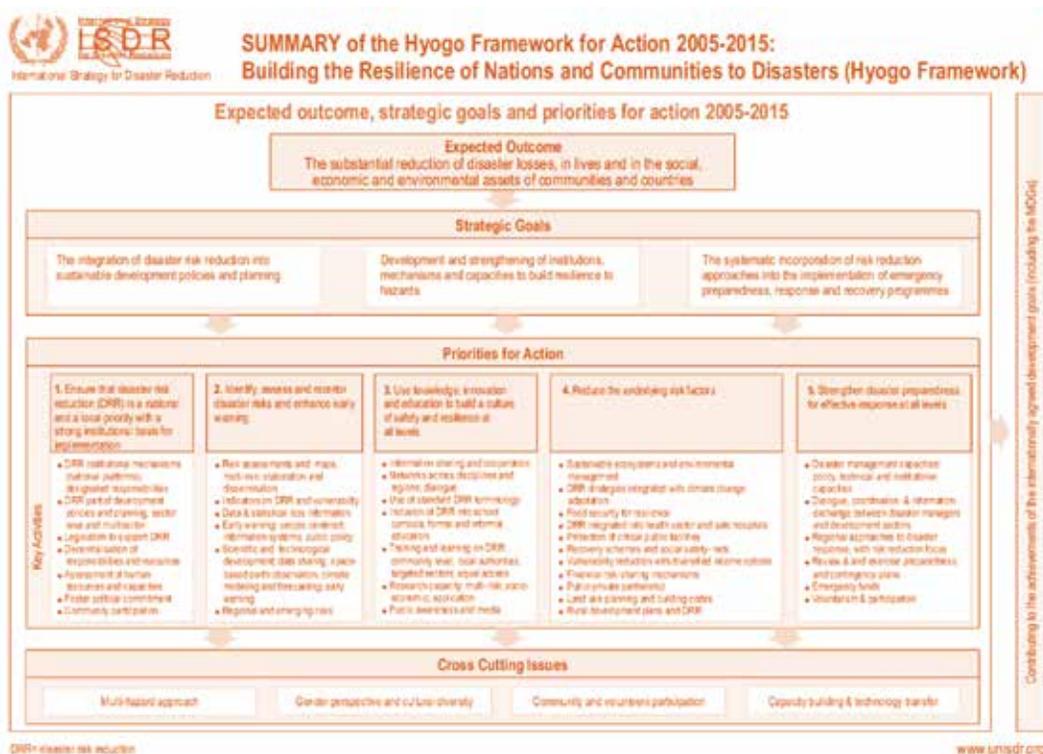
2. Development and strengthening of institutions, mechanisms and capacities to build resilience to hazards;
3. The systematic incorporation of risk reduction approaches into the implementation of emergency preparedness, response and recovery programmes.

Priorities for action

1. Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation;
2. Identify, assess and monitor disaster risks and enhance early warning;
3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels;
4. Reduce the underlying risk factors;
5. Strengthen disaster preparedness for effective response at all levels.

Cross cutting issues

- Multi-hazard approach²⁴;
- Gender perspective and cultural diversity;
- Community and volunteers participation;
- Capacity building and technology transfer.



²⁴ A multi-hazard approach recognizes that many locations are prone to multiple hazards and that action to reduce risks should be crosscutting across hazards, wherever possible.

Regional agreements

ASEAN Agreement on Disaster Management and Emergency Response

In July 2005, the Association of South East Asian Nations (ASEAN) **ASEAN Agreement on Disaster Management and Emergency Response (AADMER)** entered into force, after being ratified by all the ten Member States of ASEAN²⁵ - including Viet Nam. It is aligned with Hyogo Framework for Action and provides an instrument for coordination in all phases of a disaster and stipulate legal and other implications for member states.

AADMER is the first regional legally binding DRM agreement in the world and establishes a regional disaster management framework.

It contains provisions on disaster risk identification, monitoring and early warning, prevention and mitigation, preparedness and response, rehabilitation, technical cooperation and research, mechanisms for coordination, and simplified customs and immigration procedures to enable international relief.

AADMER also provides for the establishment of an ASEAN Coordinating Centre for Humanitarian Assistance on disaster management (AHA Centre) to undertake operational coordination of activities under the Agreement.

Since 2005, ASEAN has put in place measures to implement many provisions under the Agreement. Under the purview of a specialized ASEAN body called the ASEAN Committee on Disaster Management (ACDM), a standard operating procedure, training and capacity building, a disaster information sharing and communication network and a rapid assessment team have been set up or put into practice.

The objective of AADMER is: *“to reduce the impact of disasters on people in its member countries and their social, economic, and environmental situations.”*

The main principles are:

- o *Sovereignty, territorial integrity and national unity*
- o *Responsibility remains with affected member-country*
- o *Solidarity and partnership, strengthening coordination and cooperation*
- o *Prevention and mitigation*
- o *Disaster risk reduction should be mainstreamed*
- o *Participation and active involvement of all stakeholders.*

There are six general aims:

1. **Improve the capacities of ASEAN** for effective and efficient regional early warning and monitoring, preparedness, emergency response, and disaster risk reduction in the region by putting in place supportive policies, systems, plans, procedures, mechanisms, and institutional and legal frameworks, at both regional and national levels.
2. Enhance **humanitarian assistance and emergency response coordination** to provide efficient, timely, and reliable response to major disasters through common implementation of operational procedures and mechanisms and rapid mobilisation of resources.

²⁵ Indonesia, Malaysia, the Philippines, Singapore, Thailand, Brunei, Myanmar, Cambodia, Laos, and Viet Nam

3. Strengthen **technical and institutional capacities of Member States** through the provision of capacity development and training programmes for disaster management, disaster risk reduction, and emergency response; through active exchange of knowledge, experience, and expertise using various sharing and learning modes; and through the facilitation of information and data sharing for integrated disaster preparedness and risk reduction capacities.
4. Assist Member States and promote regional collaboration in **mainstreaming disaster risk reduction into national development policies**, plans and sectoral programmes and in formulating and implementing risk reduction measures that **link climate change adaptation** to ensure sustainable development.
5. Foster **closer partnerships and more collaborative initiatives** on disaster preparedness and response, disaster risk reduction and recovery and rehabilitation with partner organisations, international organisations, civil society organisations, academia, military, and UN specialised agencies, among others.
6. **Support community-based approaches** in disaster management and enhance disaster consciousness of the peoples in ASEAN to instil a culture of safety and resilience.

4th Ministerial Conference for Disaster Risk Reduction, Incheon, Republic of Korea, October 2010

The Asian disaster management ministers and international organizations organize the Asian Ministerial Conferences on Disaster Risk Reduction (AMCDRR) every two years since 2005, after the December 2004 catastrophic tsunami in the Indian Ocean. The conferences represent a unique opportunity for Ministers in charge of DRM from the Asia and Pacific region to exchange experiences on practices and innovative approaches in implementing HFA's five priorities for action at the national and local levels.

In October 2010, the 4th Asian Ministerial Conference on Disaster Risk Reduction was organized in Incheon, Republic of Korea, with the overarching theme of: "Disaster Risk Reduction for Climate Change Adaptation". There were two main outcomes:

The Incheon Declaration, made by the Heads of Governments, the Ministers, and the Heads of Delegations of the countries of Asia and the Pacific calls for:

1. Raising awareness and building capacity for disaster risk reduction (DRR) and climate change adaptation (CCA);
2. Developing and sharing information, technology, sound practices, and lessons learned in climate and DRM;
3. Promoting integration of DRR and CCA into development for green growth;
4. Urging all actors to implement the HFA in line with the five priorities for action;
5. Promoting investments on DRR and CCA; and
6. Promoting resilient cities; in recognition of the need to protect women, children and other vulnerable groups from the disproportionate impacts of disaster and to empower them to promote resilience within their communities and workplaces.

The Incheon Regional Roadmap and Action Plan focuses on the promotion of a comprehensive climate risk management approach (see chapter 5 for further details). It looks forward to establish climate resilient DRM systems that contribute to sustainable development at regional,

national, sub-national and community levels by 2015, and is divided into initiatives that are of priority and can be achieved in the next 2 years, and initiatives that can be undertaken in the next 5 years, in line with the priorities formulated under the Incheon Declaration.

2.4 AGENCIES WORKING ON DISASTER PREVENTION AND MITIGATION IN VIET NAM

The following sections introduce institutional arrangements and main agencies involved in disaster risk management in Viet Nam.

The Central Committee for Flood and Storm Control and Committees for Flood and Storm Control, and Search and Rescue in Ministries and localities

The national level

The Central Committee for Flood and Storm Control

The Central Committee for Flood and Storm Control (CCFSC) coordinates flood and storm control in Viet Nam. Established in 1946²⁶, this inter-agency committee is comprised of some 22 ministries and agencies and is responsible for the formulation of flood and storm related policies and mitigation measures.

The Minister of the Ministry of Agriculture and Rural Development (MARD) is the Chair of the CCFSC and reports to the Prime Minister. There are two other Vice Chairs of the CCFSC: the Minister of Defence and the Head of the Government Office.

The CCFSC membership is comprised of Ministers, heads of ministerial-level agencies and other heads of Government and has the duty to assist the Ministries and ministerial-level agencies to implement flood prevention and management work within the respective ministries and ministerial-level agencies and Government agencies.

The Standing Office of the CCFSC is the Department of Dyke Management and Flood Control (DDMFSC). The head office is in Hanoi, with two Centers for Flood and Storm located in Ho Chi Minh City and Da Nang City.

The organizational structure of the CCFSC is stipulated in Chapter II, Article 4 of Decree No. 14/2010/ND-CP dated 27/02/2010 (See Figure 1).

The CCFSC has the responsibility to advise and assist the Government in ensuring that sectors and local authorities implement the annual plans for floods and storm control. In brief, the main roles and responsibilities of the CCFSC include:

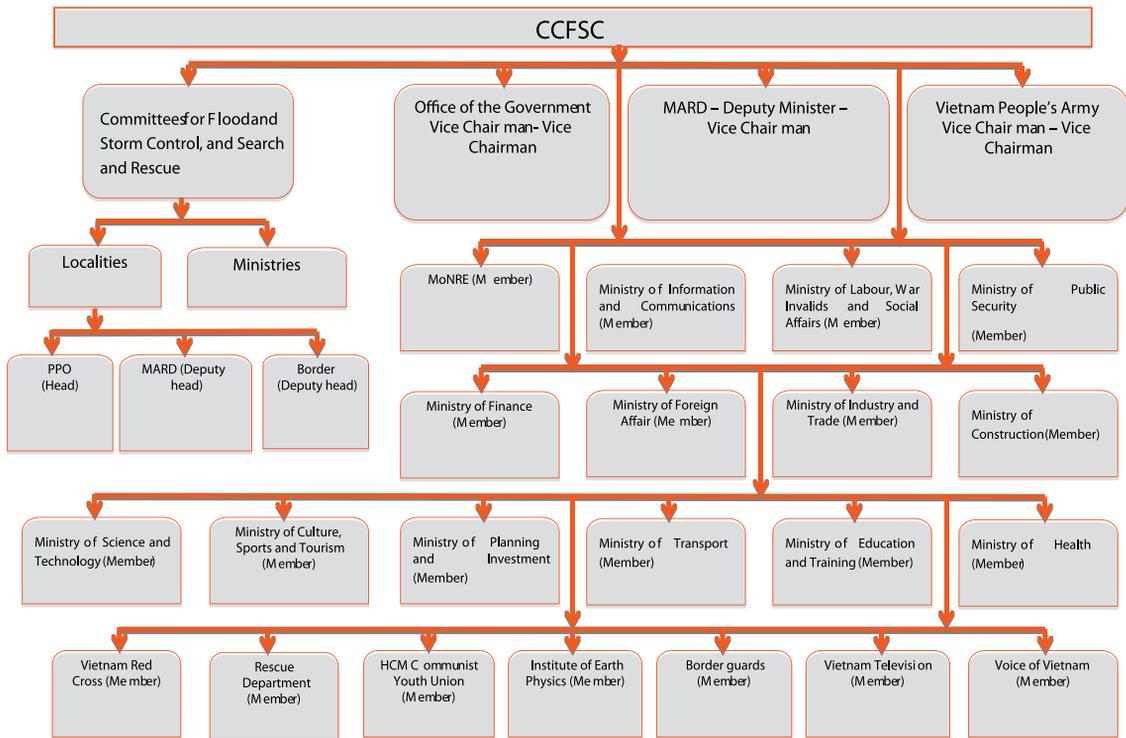
- Monitoring flood and storm events, issuing official early warnings and coordinating disaster response and mitigation measures
- Ensuring that ministries and provincial governments prepare and implement annual flood and storm preparedness and response plans
- Assisting the Prime Minister in assigning responsibilities to mobilize labour forces, and equipment to respond to emergency situations 'which exceed local capacity'
- Instructing localities on disaster response and recovery to overcome consequences of floods and storms

²⁶ In May 1946, once the Peoples' Democratic State was established, President Ho Chi Minh issued a decree to organize the Central Committee for Dyke Protection – now the Central Committee for Flood and Storm Control

- Issuing instructions for the mobilization of human resources and funds²⁷ to provide timely support to urgent situations, that sectors and localities are unable to solve
- Receiving information and reporting on damage caused by floods and storms
- Monitoring the planning and implementation of annual sub-national and sector specific disaster prevention and response plans²⁸.

Organizing review workshops to propagate experiences, lessons, and advanced technologies in disaster preparedness and mitigation in localities and sectors.

The organizational structure of the Central Committee for Flood and Storm Control



The Committees for Flood and Storm Control at provincial, district and commune levels

Committees for Flood and Storm Control (CFSC) exist at provincial, district and commune level. From the provincial level down to the commune level, the People's Committee (PC) takes the overall responsibility for flood and storm control plus search and rescue activity.

The local Committees for Flood and Storm Control, and Search and Rescue, are established by the Chairmen of Provincial People's Committees (PPC), with the function to assist the same level of the People's Committees to implement flood prevention and flood management work in the local areas.

The organizational structure of the Committees for Flood and Storm Control, and Search and Rescue in localities is stipulated in Chapter II, Article 5 of Decree No. 14/2010/ND-CP dated 27/02/2010. The functions are stipulated in Chapter II, Article 8 of this Decree

²⁷ In addition to the general funds allocated to each province for immediate relief

²⁸ Under the Ordinance on Flood and Storm Control, all 64 provinces and cities of Viet Nam are tasked with developing their own action plans to implement the National Strategy up to 2020.

At provincial level

The Committee for Flood and Storm Control, Search and Rescue is chaired by the Chairperson of the Provincial People's Committee (PPC) while the management and technical responsibility is held by the director of the provincial CFSC - with functions to assist at the same level - who is also the director of the provincial Sub-Department of Dyke Management and Flood and Storm Control, which is under the provincial Department of Agriculture and Rural Development (DARD).

At district level

The Chairperson of the district PC chairs the CFSC while the director of the district Sub-Department of Agriculture and Rural Development holds technical management responsibility.

At commune level

The Chairperson of the commune PC, with one assigned staff, is in charge of flood and storm control plus search and rescue activity and chairs the Commune CFSC.

The membership of the CFSC at provincial and local levels includes local representatives from similar ministries and sector agencies as in the CCFSC as well as the VNRC.

The Chair of the People's Councils at the same level establishes the committees for flood and storm control of provinces, districts and communes. The committees are comprised of:

- Chair of the local People's Committee (Chair)
- Head of DDMFC (Standing Vice-Chair)
- Heads/Deputy Heads of departments concerned with prevention and control of floods and storms of the locality

The operational budget comes from the provincial Government. The tasks of the local Committees include:

- Assisting the People's Committee of the same level to set up plans for the prevention and control of floods and storms and guide their implementation in their localities
- Monitoring and maintenance of dykes
- Preventing and protecting residential and commercial areas from floods and storms
- Issuing early warnings for hazards
- Receiving feedback from lower level committees on actions done to prepare for an impending hazard and, based on this information, give instruction on further action
- Mobilizing personnel and resources for emergency response
- Providing relief and rehabilitation
- Preparing damage and needs assessment report for sending to higher level committees.
- Assisting the respective People's Committee to prepare and implement flood and storm plans in the territory;
- Organizing dyke protection, flood and storm preparedness and mitigation;
- Advising local government in recovery and reconstruction activities.

Detailed functions of the CCFSC and Committees for Flood and Storm Control, and Search and Rescue in Ministries and localities

1. The functions of the CCFSC are stipulated in Clause 1, Article 11 of Decree No. 08/2006/ND-CP dated 16/01/2006 by the Government.
2. The functions of the Committees for Flood and Storm Control, and Search and Rescue in localities are stipulated in Chapter II, Article 8 of Decree No. 14/2010/ND-CP dated 27/02/2010.
3. The functions of the Committees for Flood and Storm Control, and Search and Rescue in Ministries are stipulated in Chapter II, Article 9 of Decree No. 14/2010/ND-CP dated 27/02/2010.

The authority of the CCFSC and Committees for Flood and Storm Control, and Search and Rescue in Ministries and localities

1. The authority of the CCFSC is stipulated in Chapter III, Article 10 of Decree No. 14/2010/ND-CP dated 27/02/2010.
2. The authority of the Committees for Flood and Storm Control, and Search and Rescue in localities is stipulated in Chapter III, Article 11 of Decree No. 14/2010/ND-CP dated 27/02/2010.

The authority of the Committees for Flood and Storm Control, and Search and Rescue in Ministries is stipulated in Chapter III, Article 12 of Decree No. 14/2010/ND-CP dated 27/02/2010.

Functions, duties and authority of some Ministries and agencies working on disaster prevention and mitigation

The Ministry of Agriculture and Rural Development (MARD)

The functions, duties, authority and organizational structure of the Ministry of Agriculture and Rural Development (MARD) are stipulated in Decree No. 01/2008/ND-CP, dated 03/01/2008 and Decree No.75/2009/ND-CP dated, 10/09/2009 by the Government.

Position and functions

Ministry of Agriculture and Rural Development is a Government agency, performing the State management functions for agriculture, forestry, salt production, aquaculture, water resource management and rural development in the whole country; and the State management of public services in sectors under its management.

Duties and authority in water resources management

- a. Direct and guide the implementation of legal documents on water resource management and dykes; prevent harmful effects of water and salt water intrusion after being promulgated by the competent authority
- b. Direct and guide the implementation of strategies, water resource planning; and strategies on disaster prevention and mitigation after approval by the Prime Minister
- c. Lead in developing regional water resource planning and reservoirs for agriculture, serving multiple purposes associated with different socio- economic sectors
- d. Approve dyke planning, water resource planning related to more than two provinces for flood prevention, drainage, water supply, drought prevention, salt water intrusion, soil

improvement, river and coastal erosion prevention and rural water supply

- e. Publicize and organize the direction, guidance, inspection, evaluation and synthesis of reports, the implementation of strategies, planning water resource development approved in the country
- f. Propose to the Prime Minister and implement measures to mobilize forces, materials and means for prevention and recovery from the consequence of flood, drought and inundation; troubleshooting water resource works and other damage caused by water; direct the diversion of flood water and flood reduction; operate large reservoirs and intermediate sized-reservoirs at the division level
- g. Guide the decentralization process for the Provincial People's Committee to approve water resource planning, dyke planning and flood prevention planning in the provinces
- h. Promulgate, monitor and inspect the implementation of national technical regulations, procedures and technical-economic norms on construction, exploitation and protection of water resource systems, dykes, the prevention of flood, storms, inundation, drought, water supply and drainage in rural areas
- i. Regulate the permitted load and license the issuance of vehicles on dykes; guide the Provincial People's Committee to grant, revoke and renew licenses for within the protection of irrigation works
- j. Organize, direct, guide and inspect the implementation of specific regulations for emergencies of flood diversion and flood reduction, safe evacuation measures to ensure production activities and people's lives, overcome inundation consequences, provide subsidies for people in areas affected by flood diversion and flood reduction; disaster prevention and mitigation measures such as typhoons, floods, drought, flash floods, landslides, salt water intrusion, sea level rise and tsunamis.
- k. Investment decisions to build, repair, upgrade and solidify dykes, water resource works under the Ministry's authority on a national scale from the State budget provided through the Ministry.

Water Resources Directorate

In March 2010, MARD established the Water Resources Directorate (WRD) that brings together DDMFSC and several other departments: the Department of Irrigation and Water Resources, Department of Water Supply and Sanitation, the Institute of Water Resources Planning, the Department of Science, Technology and International Relations and the Disaster Management Centre.

The functions, duties, authority and organizational structure of the WRD are stipulated in the Decision No. 03/2010/QĐ-TTg dated 25/01/2010 of the Prime Minister.

Position and functions

The WRD is a MARD affiliated agency, performing the functions of State management over water resources; managing and leading the public activities under the scope of the Directorate.

The WRD has its legal entity, its own seal, operational funds and its account opened in accordance with the legal regulations; headquarter located in Hanoi.

*Duties and authority*For water – related disaster prevention activities

- a. Propose to the Minister of MARD solutions to mobilize resources, materials and tools to prevent and mitigate consequences of floods, droughts, inundation, salt intrusion, land slide, polluted water resources; solve incidents at water resource works
- b. Direct, guide and examine the implementation process to prevent and mitigate consequences of floods, droughts, inundation, salt intrusion, landslide, polluted water resources; solve incidents at water resource works in order to ensure the production; recover from the consequences of flood, drought, salt intrusion; and mitigate water resource pollution.

For dyke management

- a. Undertake the adjustment of plans for flood prevention in river systems with dykes on a national scale and propose these to the Minister of MARD; approve planning and the adjustment of plans for dykes at the local and national scale
- b. Submit to the Minister of MARD for publication approved plans and the adjustment of plans for flood and flood prevention on river systems with dykes at the national scale; approve the planning and the adjustment of dyke plans, which are submitted by ministries, ministerial agencies and provincial People's Committees
- c. Provide guidance on processes, planning procedures, and adjustment planning for dykes
- d. Submit to the Minister of MARD for approval, the granting of licenses on some activities relevant to dykes of special Level, Level I, Level II, Level III and the construction and renovation of traffic related to dykes where construction affects at least two provinces, or cities according to the regulation
- e. Regulate the permissible load and license issuance for vehicles on dykes; provide guidance for issuing, revoking, and extending the validity of licenses for activities related to dykes according to the regulations.

For natural disaster prevention, response, and mitigation

- a. Implement the National Strategy for Natural Disaster Prevention Response and Mitigation to 2020 according to the Government Law and propose adjustment as necessary
- b. Propose to the Minister of MARD, or authorized level, solutions to mobilize resources, materials and tools for dyke maintenance and recovery from flood and storm impacts
- c. Monitor and update information on rain, storm, flood, whirlwind, typhoon, earthquake, and tsunami throughout the country; coordinate with other sectors, organizations, local provinces to propose in a timely manner to the CCFSC how to deal with problems of water resource works, handle the problem and recover from the impacts of flood and storm
- d. Direct, guide and inspect the implementation of specific regulations on emergency situations that need flood diversion and flood reduction and safe evacuation; ensure people's lives and the recovery from the consequences of inundation by supporting people; undertake disaster prevention and mitigation measures;
- e. Implement the duties of flood and storm control and disaster mitigation as assigned by the Minister of MARD and requested by the CCFSC.

Department of Dyke Management, Flood and Storm Control

The functions, duties, authority and organizational structure of the Department of Dyke Management, Flood and Storm Control (DDMFSC) are stipulated in Decision No. 03/2010/QĐ-TTg dated 25/01/2010 by the Prime Minister.

Position and functions

The DDMFC is a WRD affiliated agency, performing the function of State management of the dyke system and for flood and storm control for the whole country.

The Department has its legal entity, its own seal, operational funds and its account is opened in accordance with legal regulations.

The Department is located in the Hanoi and there are two regional centers in Da Nang city and Ho Chi Minh City.

Tasks and authorities

For dyke management

- a. Develop and propose plans assigned by the WRD to manage the basic survey of dykes, and for flood and storm control after approved by the competent authorities; undertake dyke planning and flood and storm control projects; appraise the design of dyke planning, flood and storm control and natural disaster mitigation
- b. Lead and coordinate with local authorities and related agencies the review and supplement and adjustment of dyke planning for all regions in the country and submit to the WRD for approval
- c. Lead the appraisal and submit to the General Director for approval or submit to MARD according to the planning authority, adjust dyke plans submitted by the ministries, ministerial-level agencies and Provincial People's Committees
- d. Lead and coordinate with local authorities and related agencies in developing planning, and adjustment of flood and storm control planning of rivers with dykes at the national scale to submit to the General Director
- e. Lead the appraisal and submit to the General Director the agreements for Provincial People's Committee to approve planning, adjust flood and storm control planning in detail for each river with a dyke submitted by the Provincial People's Committee
- f. Submit to the General Director the announcements for public planning for the adjustment of flood and storm control of rivers with dykes in the country
- g. Submit to the General Director the orders, instructions and procedures for planning and adjustments for dyke planning
- h. Conduct the appraisal and submit to the General Director for approval the investment in the construction, repair, maintenance, upgrading and solidifying dykes; undertaken the setting up and management of major and urgent projects on dykes and in flood and storm control; inspect, monitor, guide and sum up results of projects for dyke renovation, upgrade, maintenance, solidification in all provinces
- i. Conduct the appraisal and submit to the General Director, the agreement of construction projects using rivers where there are no construction works

- j. Lead the appraisal for agreements of dyke projects, regardless of funding, as assigned by the General Director
- k. Submit to the General Director, the decisions to approve for license issuance of activities related to special level of dykes, Level I, Level II, Level III and the construction, renovation and construction of traffic related to dykes for works affecting to more than two provinces or cities under the provisions of the law
- l. Lead the appraisal and submit to the General Director for the approval, the procurement plans for dyke projects as assigned by management in accordance with the law
- m. Submit, upon request, to the General Director the agreements for river and coastal erosion prevention
- n. Lead the appraisal and submit to the General Director for approval of solutions to address emergency situations on dykes
- o. Direct dyke maintenance, address technical problems of dykes. Lead the coordination with other departments, organizations and provinces to propose timely measures for the prevention, treatment and recovery of consequences relating to dykes
- p. Propose measures to mobilize the resources at the national and local levels for the rescue and protection of the dyke system from Level III to Special Level in emergencies
- q. Submit to the General Director the regulations on load allowance and license issuance for vehicles on dykes
- r. Advise the General Director on the guidance for granting, cancellation or extension of permits for certain activities related to dykes according to the regulations
- s. Submit to the General Director to direct and guide Provincial People's Committee organizing force to manage public dykes
- t. Join appraisal to balance investment projects on dyke repair, dyke maintenance plans and projects as assigned by the General Director
- u. Manage and conduct the formulation, submission and storage of construction documents in accordance to Government regulations.

For flood and storm control

- a. Organize to conduct flood and storm control work according to regulations; advise the General Director on the implementation of State management on the National Strategy for Natural Disaster Prevention Response and Mitigation to 2020 as prescribed by law
- b. Monitor and regularly update the situation of rain, storm, flood, typhoons, earthquakes, tsunamis in the country; coordinate with other departments, organizations, and provinces to propose in a timely manner measures to the CCFSC to address water resources work problems, overcome the consequences of disasters mentioned above; assess damage and propose to the General Director remedial measures due to storms, floods and disasters
- c. Lead the direction in developing, advising and proposing reservoir operation plans according to the regulations of multi-purpose hydro reservoir operation procedures in reducing downstream flooding as authorized by the Minister as the Chairman of the CCFSC

- d. Advise the General Director on how to direct, guide and inspect the implementation of regulations on emergencies in flood diversion, flood reduction and evacuation measures, that ensure production activities and people's lives, to overcome the consequences of inundation; undertake disaster prevention and mitigation measures
- e. Submit to the General Director to decide under the authority or submit to the competent authority to decide on the mobilization of forces, supplies and facilities for dyke maintenance and to overcome the consequences of floods and storms
- f. Advise the CCFSC to coordinate with VINASARCOM and other related ministries, branches and provinces in directing flood and storm control and search and rescue to minimize damage when an earthquake or tsunami occurs
- g. Advise the CCFSC and direct the planning and development of tsunami warning alarm systems for high risk areas
- h. Direct the management and use of reserve materials for flood and storm control; advise the General Director on the issuance of a total reserve materials for flood and storm control
- i. Update information on river and coastal erosion; propose, examine and supervise the addressing of erosion.

National Disaster Management Center

The functions, duties, authority and organizational structure of the National Disaster Management Centre (NDMC) are stipulated in Decision No. 14/QD-TCTC dated 31/03/2010 by the WRD.

Position and functions

The NDMC is under the WRD, with functions to support and serve State management and execution of specific tasks in the field of disaster prevention and mitigation and climate change adaptation across the country.

The NDMC has its legal entity, its own seal, operational funds and its account is opened in accordance with the legal regulations.

The NDMC office is located in Hanoi.

Tasks

For disaster risk management

- a. Participate in developing strategies, institutions, policies and planning related to disaster prevention and mitigation and climate change adaptation as assigned by the General Director
- b. Research and develop professional instructors with specialized knowledge, according to plans and with specific guidance from the General Director
- c. Perform specific duties as assigned to implement the National Strategy for Natural Disaster Prevention and Mitigation to 2020
- d. Under the direction of the General Director, implement the Scheme on "Community raising awareness and CBDRM" under the Decision No. 1002/QD-TTg on 13/07/2009.

Develop annual plans to implement this Project. Review the situation and propose implementation measures

- e. Based on assigned tasks, lead and coordinate with the Science, Technology and International Cooperation Department to contact organizations and international partners in the field of disaster prevention and mitigation; share information, exchange experience and techniques in the field of disaster prevention and mitigation
- f. Establish a database and information system for disaster prevention, mitigation and climate change adaptation and information on large reservoirs, water resource works and dykes for disaster prevention and mitigation work of the CCFSC
- g. Maintain and develop the Website of the CCFSC, a newsletter on flood and storm control and disaster mitigation
- h. Participate in appraising programs, schemes and projects of disaster prevention and climate change changed as assigned by the General Director
- i. Directly manage some projects of disaster prevention and mitigation and climate change adaptation as assigned by the General Director
- j. Engage in scientific research and application, technology transfer of specialized knowledge on disaster prevention and mitigation and climate change adaptation
- k. Participate in flood and storm protection; perform the flood and storm work as assigned by the General Director and the Standing Office of the CCFSC.

For technical service

- a. Perform technical consultancy on projects of disaster prevention and mitigation and climate change adaptation managed by partners;
- b. Conduct training; provide information in the field of disaster prevention and mitigation and climate change adaptation at the request of partners and according to the provisions of law;

The National Committee for Search and Rescue

The National Committee for Search and Rescue (VINASARCOM) is the Government's leading agency for search and rescue. It was established in 1996 and with its tasks updated in 2000²⁹ and again under Decision No. 76/2009/QĐ-TTg, dated 11/05/2009 by the Prime Minister.

VINASARCOM is situated under the office of the Prime Minister and chaired by a Deputy Prime Minister with the Minister of Defence as the permanent Vice-Chair. Other Vice-Chairs are the Ministry of Public Security, the Ministry of Transport and MARD.

The Head of the Standing Office of VINASARCOM is a permanent member. Other members include ten ministries and Viet Nam Television and Voice of Viet Nam (see Annex II for the organisational structure of VINASARCOM).

VINASARCOM is responsible for the preparation, organization and coordination of all search and rescue operations during disasters in conjunction with the Ministerial Committees for Search and Rescue under the authority of the ministries and the Provincial Committees for

²⁹ Decision No. 63/2000/QĐ-TTg of June 7th, 2000 on renaming and adding tasks to the National Committee for Search and Rescue

Search and Rescue which are under the authority of the Provincial People's Committees.

In each ministry and sectoral agency, these two committees are merged into a ministerial Committee for Flood and Storm Control and Search and Rescue (usually chaired by a Vice Minister) that coordinates and cooperates with the national central committee and offices at provincial level. Central government structures are complemented by a management system extending to provincial and local levels (see Figure 2).

These committees provide advice for the Prime Minister for major decisions.

The Working Regulations of the National Committee for Search and Rescue are stipulated in Decision No. 445/QD-UB dated 04/11/2009 by the Chairman of the VINASARCOM.

The Responsibilities of the VINASARCOM for flood and storm control are stipulated in Clause 3, Article 11, Chapter III, Decree No. 08/2006/ND-CP as follows:

VINASARCOM takes lead and coordinates with CCFSC and Committee for FSC and SAR in ministries, branches and localities in planning and preparing forces and means to conduct search and rescue in a timely and effective manner.

And in Clause 1, Article 3, Decision No. 76/2009/QD-TTg, which regulates as follows:

Coordinate with CCFSC, MARD, Ministry of Defense, Ministry of Public Security and other relevant agencies and localities to response to storm and tropical depression, flood, tsunami, tube flood and flash flood; broken dykes, reservoirs and dams.

Clause 4, Article 11, Chapter III, Decision 264/2006/QD-TTg stipulates the following:

- Lead and coordinate with relevant agencies to promptly implement the search and rescue and overcome the consequences of earthquake and tsunami.
- Provide on time real information relating to earthquake and tsunami for the Institute of Geophysics.
- Lead and guide the localities in developing plans for salvage and rescue for regions prone to earthquake and tsunami.

The Ministry of Natural Resources and Environment

The Ministry of Natural Resources and Environment (MoNRE) was established in 2002 under Resolution 02/2002/QH11 of the first session of the 11th National Assembly. The Department of Meteorology and Hydrology and Climate Change of MoNRE has the responsibility to assist the Minister of MoNRE in the State management of hydrology, meteorology, monitoring the forecast and warning of disasters and coordination of activities related to climate change and ozone protection. The Department is the Standing Office of the Viet Nam National Committee for UNFCCC and Kyoto Protocol.

The responsibilities of MoNRE in flood and storm control are defined in Clause 4, Article 11, Chapter III, Decree No.08/2006/ND-CP.

- a. Develop plans and direct the implementation of meteorological warning and forecasting
- b. Promulgate and direct the implementation of legal documents under its authority on forecasting and warning for the prevention and remedying of flood and storm

- c. Collect data and process information, perform warning and forecasting to provide timely official information about tropical depressions and storms and floods on major rivers in the country and warning of flash floods for the CCFSC and the ministries, branches, related local provinces and the mass media according to current regulations
- d. Manage the financial resources used for meteorological warning and forecast for flood and storm control work
- e. Research and apply updated science and technology and develop international relations in warning and forecasting, prevention and overcoming the consequences of floods and storms. Conduct professional training for staff working in warning and forecasting, and propagate and disseminate knowledge, experience and the law on forecasting and warning for flood and storm control
- f. Coordinate with ministries, branches and local provinces to examine and inspect the observance of the law, to settle complaints and criticisms about flood and storm warnings and forecasts.

The responsibilities of MoNRE for dyke management are defined in the Law on Dykes Chapter VI Article 42, Clause 3:

- a. Conduct meteorological and hydrological forecasting work; direct and guide development planning for land use in the protection of corridors for dykes, dyke embankments, sluices, and river banks under the provisions of this Law and other laws on land
- b. Lead and coordinate with ministries, ministerial level agencies to guide and examine the exploitation of sand, stone and gravel in the river; direct Provincial People's Committees to prevent illegal exploitation of mineral resources causing unsafe dykes.

The Institute of Science and Technology of Viet Nam

The Institute of Science and Technology of Viet Nam is a government agency (formerly the Viet Nam Academy of Science) established by Decree 118/CP dated 20/05/1975 of the Council of Ministers (now the Government). On May 12th, 2008, the Prime Minister signed Decree No. 62/2008/ND-CP stipulating the functions, duties, authority and organizational structure of the Institute of Science and Technology of Viet Nam.

The Regulation of Earthquake and Tsunami Warning in Clause 3, Article 11, Chapter III, Decision No.264/2006/QD-TTg dated 16/11/2006 stipulates that functions of the Institute of Science and Technology of Viet Nam are to:

- a. Lead the Institute of Geophysics to announce earthquake and tsunami warning; including the task of building seismic monitoring network, collecting information from domestic and foreign seismic monitoring network, collecting information from international tsunami monitoring networks and domestic sea level monitoring networks for earthquake and tsunami warning;
- b. Develop a five year plan and annual plans to implement earthquake announcements and tsunami warnings, rapidly and accurately
- c. Coordinate with MoNRE to develop mechanisms and policies to strengthen earthquake and tsunami warning
- d. Research methods and scientific and technological solutions for earthquake and tsunami warning.

For earthquake and tsunami prevention work, the responsibilities of MoNRE are regulated in Clause 2, Article 16, Chapter IV, Decision No. 78/2007/QĐ-TTg and cover the implementation of State management functions for earthquake and tsunami warning according to the Regulation of Earthquake Warning and Tsunami Notice, issued in Decision 264/2006/QĐ-TTg, dated 16/11/2006 by the Prime Minister.

The responsibilities of MoNRE for performing some specific tasks for earthquake and tsunamis are to:

- a. Examine and inspect in the field, earthquake warning and tsunami notices
- b. Lead and coordinate with related agencies the development of scenarios for tsunami warnings and to submit to the Prime Minister for approval
- c. Observe and transfer sea level data for international exchange and tsunami warning work
- d. Propagate and disseminate knowledge on prevention and response to earthquakes and tsunamis
- e. Direct and guide the management of the environment due to earthquakes and tsunamis.

2.5 ORGANIZATIONS WORKING IN DISASTER RISK MANAGEMENT IN VIET NAM

Viet Nam Fatherland Front

In times of disasters, the Fatherland Front calls for and channels emergency supply donations and coordinates with the mass media at central and local levels.

Viet nam Red Cross Society

The Viet Nam Red Cross Society (VNRC) is involved not only in relief work, which it does with a high degree of effectiveness utilizing its nation-wide network, but also in disaster preparedness. Activities undertaken include:

Prevention, mitigation and preparedness

- Planting mangroves along coastal dykes. At end of 2003, 20,000 ha have been planted in 8 coastal provinces
- Operation of about 40 disaster preparedness centres, used as base for relief operations and fund raising. Some of these centres also deliver emergency care and medicines free of charge for the very poor. Each centre has a store of basic relief items
- “Shock brigades” of 20-50 members each, trained on how to prepare for disasters, First Aid and emergency relief in more than 4,000 communes. They are on call during emergencies in the communes
- Training for primary school teachers and children in the central provinces on how to prepare for disasters
- Public education and awareness raising in communes through campaigns and posters;
- Two major relief warehouses (in the North and South), holding emergency food, clothing, First Aid kits, etc. available for rapid distribution during disasters
- Building of flood shelters which are used as classrooms at normal times

- Equipping of three hospital boats.

Response, relief and rehabilitation

- Evacuation, rescue and relief in coordination with local authorities
- Administering First Aid
- Preparation of needs assessment reports
- Reinforcing houses, building typhoon-resistant houses.

Red Cross volunteers in the communes

- Assist in evacuation, rescue and relief
- Assist in cleaning up operation
- Help in repair of damaged houses.

Viet Nam Women's Union

The Viet Nam Women's Union (VWU) advocates gender equality and the legal rights of all women in the country, and takes part in State Management. The VWU is organized at the central, provincial, district, commune and group levels. The VWU carries out education on the role of local institutions in reducing vulnerability to natural disasters. In addition, the VWU undertakes activities to increase women's general knowledge and skills, supports poverty alleviation for poor women, and promotes mother and children health.

The Women's Union is involved actively in disaster preparedness, relief and rehabilitation through the following activities:

- Advise members to prepare emergency food
- Cooking at evacuation centres
- Assist the Commune Sub-committee on Flood and Storm Control on logistical requirements for response
- Assess local conditions as basis for distribution of relief goods and assistance
- Rebuilding of houses
- Extending credit to members at a minimal interest rate
- Training courses to enhance women's skills and provide livelihood options.

Youth Union

During disaster times, members of the Youth Union help in dissemination of early warning, evacuation and rescue in close coordination with local authorities, and provide labour in rebuilding damaged houses.

Veteran's Association

In times of disasters, the Veteran's Association:

- Assists in damage assessment
- Extends credit to members.

A fund is set up from contributions of members – each member contributes 300kg rice, or

its monetary equivalent. Members can borrow as much as VND 300,000 each as seed money for livelihood projects, economic assistance for families undergoing financial difficulty, or assistance in house repair/strengthening.

Non-government organizations

Assistance provided by international NGOs cover prevention, mitigation, preparedness, relief and rehabilitation. If disasters affect areas where they are present, implementing long-term development projects, they are able to provide direct relief/rehabilitation assistance. In areas where they are not present, response is based on an appeal by the government or IFRC and information obtained from the Disaster Management Centre, IFRC, or directly from local agencies. Funds and relief assistance are channeled through the IFRC, VNRC or other local organizations (e.g. the People's Committee, the VWU).

The main international NGOs involved with DRM include: Oxfam, Save the Children Alliance, CARE International, World Vision International, Plan International, ActionAid, Challenge to Change, etc.

Assistance provided includes:

Prevention, mitigation and preparedness

- Integration of DRR in long-term development projects in the field of education, agriculture, health
- Preparedness training
- Setting up early warning systems
- Reforestation/afforestation
- Building of hospital boats
- Building water supply storages.

Relief

- Provision of food, shelter items, health kits

Recovery and rehabilitation

- Repair/rebuilding of houses
- Rebuilding of clinics, schools
- Rebuilding of bridges
- Provision of fishing boats, fish nets, seeds, fertilizers
- Micro-finance.

Disaster Management Working Group

The Disaster Management Working Group (DMWG) was set up in 1999 to support information sharing and coordination of relief activities. Its main purpose is to support hazard reduction and disaster management in Viet Nam through improved information sharing and coordination of interventions amongst all relevant agencies. The group is comprised of a large number of international and national NGOs, UN agencies and Government counterparts and meets on a monthly basis. The core group members are CARE International, Save the Children, Oxfam,

PDC, Plan International, UN DRMT, ActionAid, IFRC, Red Cross, ADPC, World Vision, and Habitat for Humanity.

The United Nations Disaster Risk Management Team (UN DRMT)

The United Nations Disaster Risk Management Team (UN DRMT) was originally established in April 2008 as the Programme Coordination Group for Natural Disasters and Emergencies (PCG NDE) within the framework of the One UN. In March 2012, following the approval of the One Plan for the period 2012-2016, the UN DRMT was developed based upon a ToR approved by UNDP, UNICEF, FAO, IOM, UNFPA, UN WOMEN, WHO, UN HABITAT, UNV and UNESCO who are all members. The objectives of the group are to ensure coordination of UN assistance; to ensure a prompt, effective and concerted response by the UN system at country level; and to deliver results in the One Plan³⁰ in a more coordinated *and effective manner*.

The private sector

In Viet Nam, the private sector or public and private companies have traditionally been involved strongly in disaster response through financial contributions or donations in-kind in strategic partnership with the VNRC and with NGOs. The involvement in disaster prevention, preparedness and mitigation however is still to be fully explored.

Under the initiative “*Promoting Community – Business Partnership in Flood Risk Reduction in the Mekong Delta*” of the Mekong River Commission (MRC) and the Asian Disaster Preparedness Centre (ADPC) in partnership with the Viet Nam Chamber of Commerce and Industry (VCCI) and the MARD Department for Dyke Management and Flood and Storm Control (DDMFSC), efforts have been undertaken to explore the opportunities of private sector involvement in the areas of flood safety, public awareness raising activities and training and capacity building before disasters.

Through a focus on corporate social responsibility, image creation or profiling, brand awareness and promotion, sponsorship, corporate volunteers and other mechanisms, public and private companies will be encouraged to commit to fund local authorities so they can conduct flood preparedness activities in the Mekong Delta regularly. In close partnership with VCCI, the project is currently documenting good practices and developing a strategy for public-private partnership in Viet Nam.

National platform for disaster risk reduction and climate change adaptation

As part of its obligations as a signatory to the Hyogo Framework for Action (HFA) 2005-2015, Viet Nam has committed itself to establish a multi-sectorial platform for disaster risk reduction and climate change adaptation, under Priority for Action 1

³⁰ Viet Nam is one of eight pilot “*Delivering as One*” countries implementing UN reform at the country level with the aim of making the UN in Viet Nam more responsive and effective to the country’s rapidly evolving needs. The One Plan seeks to combine and synthesize the work of the 14 resident UN organizations in Viet Nam – namely FAO, IFAD, ILO, UNAIDS, UNDP, UNFPA, UN-HABITAT, UNIDO, UNESCO, UNICEF, UN WOMEN, UNODC, UNV and WHO – within a single planning framework to better support the Socio-Economic Development Plan (2011-2016) of Viet Nam and the achievement of the Millennium Development Goals. The One Plan brings greater programmatic coherence, greater synergies and helps the UN respond better to national priorities. It presents the development challenges, the programme outcomes, outputs and expected results, implementing strategies, management responsibilities, and commitments of the Government and the participating UN Organizations. The eight pilot countries are making reforms based on four principles: One Leader, One Budget, One Programme and One Office.

National platform

A generic term for national mechanisms for coordination and policy guidance on disaster risk reduction that are multi-sectorial and inter-disciplinary in nature, with public, private and civil society participation involving all concerned entities within a country³¹.

The National Strategy on Natural Disaster Prevention, Response and Mitigation to 2020 mentions: “lack of synchronous planning and short of coordination among ministries, sectors and localities” and: “lack of timely adjustment in policies on the mobilization of resources for disaster prevention and mitigation” (sic) as some of the limitations to be addressed in disaster risk management in Viet Nam. Also the National Climate Change Strategy points out: “Review and formulate development planning and construction regulations in disaster-prone areas in the context of increasing disaster incidents due to climate change; reinforce and develop key, imperative disaster preventive structures”, and straightly requires to integrate Climate change issues into strategies and development programmes of sectors and provinces.

In response to this, MARD and MoNRE with support of the United Nations International Strategy for Disaster Reduction (UNISDR) and the Australian Government have organised during 2009-2011 two National Forum on Disaster Risk Reduction and Climate Change Adaptation in Hanoi. The Deputy Prime Minister, as the chair of the Forum as well as the leadership of MARD and MoNRE expressed their strong commitment towards implementing Viet Nam’s obligations regarding the Hyogo Framework for Action. A proposal for the establishment of the Platform was drafted following an extensive consultation process and was expected to be submitted to the Prime Minister in mid-2011 and the Platform formally established by 2013.

2.6 INTERNATIONAL INSTITUTIONAL FRAMEWORK FOR CLIMATE CHANGE

Introduction

Climate change is a local, regional and global challenge, which requires solutions at all levels. Greenhouse gas emissions have the same impact on the atmosphere whether they originate in Washington, London or Beijing. Consequently, action by one country to reduce emissions will do little to slow global warming unless other countries act as well. Ultimately, an effective strategy will require commitments and action by all the emitting countries. At the same time, it is essential that countries, regions and localities take steps to prepare for the impacts of climate change. Even if emissions reduction were to progress in the near future, the effects of increased concentrations of greenhouse gases in the atmosphere now would persist in the climate system for many decades to come. Climate change impacts are inevitable.

In Chapter 1, the main terminologies related to climate change, climate variability, climate change adaptation, and mitigation were introduced. This section outlines the major international agreements and conventions to which Viet Nam is party.

³¹ This definition is derived from footnote 10 of the Hyogo Framework. Disaster risk reduction requires the knowledge, capacities and inputs of a wide range of sectors and organisations, including United Nations agencies present at the national level, as appropriate. Most sectors are affected directly or indirectly by disasters and many have specific responsibilities that impinge upon disaster risks. National platforms provide a means to enhance national action to reduce disaster risks, and they represent the national mechanism for the International Strategy for Disaster Reduction.

Climate change at a global level: international agreements and conventions

Intergovernmental Panel on Climate Change

The World Meteorological Organization and the UN Environment Programme (UNEP) established the Intergovernmental Panel on Climate Change (IPCC) in 1988. The IPCC surveys worldwide scientific and technical literature and publishes assessment reports that are widely recognized as the most credible existing sources of information on climate change. The IPCC also works on methodologies and responds to specific requests from the Convention's subsidiary bodies. The IPCC is independent of the United Nations Convention.

United Nations Framework Convention on Climate Change

In 1992, the United Nations Framework Convention on Climate Change (UNFCCC) was adopted as the basis for a global response to the climate change problem. With 194 Parties, the Convention enjoys near-universal membership. The ultimate objective of the Convention is to stabilise greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system. The Convention itself sets no mandatory limits on greenhouse gas emissions for individual countries and contains no enforcement mechanisms. In that sense, the treaty is considered legally non-binding. Instead, the Convention provides for updates (called "protocols") that would set mandatory emission limits. The principal update is the Kyoto Protocol, which has become better known than the UNFCCC itself.

Viet Nam signed the UN Framework Convention on Climate Change (UNFCCC) on 11 June 1992 and ratified it on 16 November 1994. It signed the Kyoto Protocol on 3 December 1998 and ratified it on 25 September 2002.

Conference of the Parties

Since the UNFCCC entered into force, the parties have been meeting annually in Conferences of the Parties (COP) to assess progress in dealing with climate change, and beginning in the mid-1990s, to negotiate the Kyoto Protocol to establish legally binding obligations for developed countries to reduce their greenhouse gas emissions. From 2005 the Conferences have met in conjunction with Meetings of Parties of the Kyoto Protocol and parties to the Convention that are not parties to the Protocol can participate in Protocol-related meetings as observers. To date, 16 Conferences of Parties have taken place and each produced respective agreements.

Kyoto Protocol

The Kyoto Protocol is an international agreement agreed at COP3 in 1997 among 192 Parties and entered into force in 2005. The detailed rules for the implementation of the Protocol were adopted at COP7 in Marrakesh in 2001, and are called the "Marrakech Accords". The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions. The countries and the European community have committed to reducing their emissions by an average of 5% by 2012 against 1990 levels³².

³² *Recognizing that developed countries are principally responsible for the current high levels of GHG emissions in the atmosphere as a result of more than 150 years of industrial activity, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities." Industrialized countries must first and foremost take domestic action against climate change. But the Protocol also allows them to meet their emission reduction commitments abroad through so-called "market-based mechanisms". For example, one of the Protocol's market-based mechanisms, the Clean Development Mechanism (CDM), permits industrialized countries to earn emission credits through investment in sustainable development projects that reduce emissions in developing countries.*

The UNFCCC and its Kyoto Protocol are also designed to assist countries in adapting to the inevitable effects of climate change. They facilitate the development of techniques that can help increase resilience to climate change impacts – for example, the development of salt-resistant crops – and to exchange best practices with regard to adaptation. The Adaptation Fund was established to finance adaptation projects and programmes in developing countries that are Parties to the Kyoto Protocol.

The Kyoto mechanisms

Under the Treaty, countries must meet their targets primarily through national measures. However, the Kyoto Protocol offers them an additional means of meeting their targets by way of three market-based ‘flexible’ mechanisms. The Kyoto mechanisms are: International Emissions Trading - known as “the carbon market”; the Clean Development Mechanism (CDM) and joint implementation. The mechanisms help stimulate green investment and help Parties meet their emission targets in a cost-effective way.

Monitoring emission targets

Under the Protocol, countries’ emissions have to be monitored and records kept of the trading carried out. The UN Climate Change Secretariat keeps an international transaction log to verify that transactions are consistent with the rules of the Protocol. Parties submit annual emission inventories and national reports under the Protocol at regular intervals. A compliance system ensures that Parties are meeting their commitments and helps them to meet their commitments if they have problems doing so.

2.7 INSTITUTIONAL FRAMEWORK FOR CLIMATE CHANGE IN VIET NAM

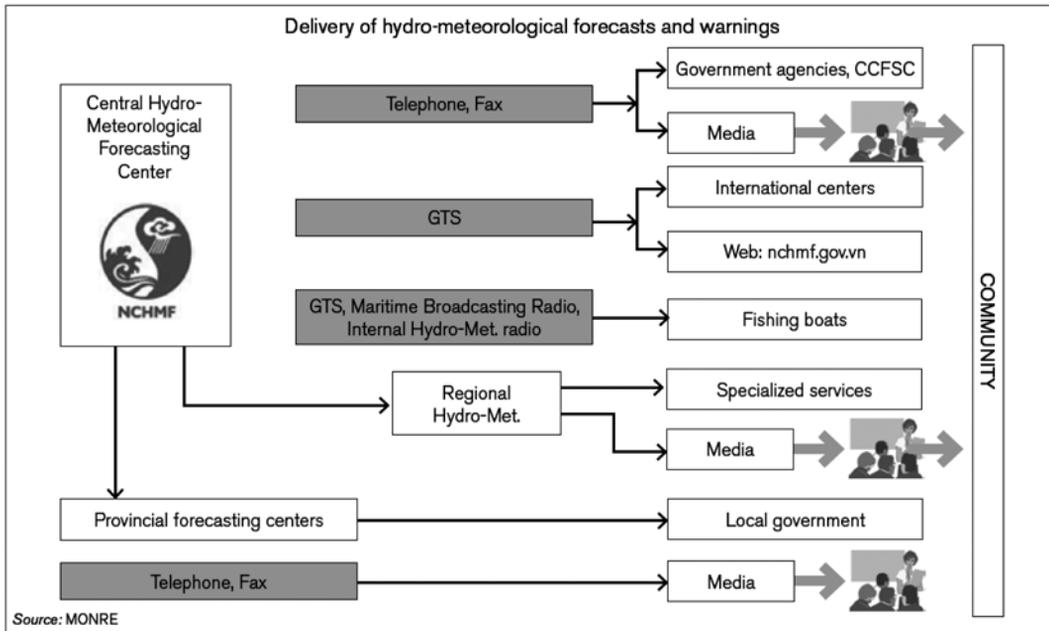
Ministry of Natural Resources and Environment (MoNRE)

MoNRE is assigned by Government to be the National Focal Point to take part in and implement the UNFCCC, Kyoto Protocol, and CDM in Viet Nam. The Minister of MoNRE set up a Steering Committee to implement frame Convention of United Nations on the climate change and Kyoto Protocol on 4 July 2007³³. So far the main responsibility of the Steering Committee is to assist the Minister of MONRE to direct, manage and coordinate activities to implement UNFCCC, Kyoto protocol and CDM in Viet Nam.

National Centre for Hydro-Meteorological Forecasting

The National Centre for Hydro-meteorological Forecasting (NCHMF) under MoNRE carries out hydro-meteorological forecasting. The NCHMF website: <http://www.nchmf.gov.vn> provides links to region-specific hydrological forecasts with interactive maps provide river station information (water and warning levels); daily meteorological forecasts; and forecasts for severe weather, tropical cyclone activity, and droughts.

³³ Decision 1016/QĐ-BTNMT on 4th July 2007; Prime Minister set up a National Committee of Climate change (NCCC) on 9th January 2012



When storms approach over the East Sea they are monitored by the Hydro-Meteorological Centre, which produces forecast bulletins every two hours on the approaching event. The bulletins are immediately and simultaneously sent to Viet nam Television/Voice of Viet nam and the Marine Broadcasting System for broadcasting nationwide and to the DDMFSC to be uploaded on the CCFSC website. Based on the bulletins, the CCFSC convenes meetings and prepares directives which are dispatched to relevant ministries and localities affected by the disaster, asking for appropriate actions, e.g. population evacuation, return of fishing boats to safe harbour, securing critical assets, etc.³⁴

Department of Meteorology and Hydrology and Climate Change

The functions of the Department of Meteorology and Hydrology and Climate Change of MoNRE were established with Degree 997 /QĐ-BTNMT issued in May 2008. The Department has the responsibility to assist the Minister of MoNRE in the state management of hydrology, meteorology, monitoring the forecast and warning of hazards and coordination of activities related to climate change and ozone protection. The Department is the Standing Office of the Steering Committee to implement frame Convention of United Nations on the climate change and Kyoto Protocol in Viet Nam. Specifically the Department is responsible to:

- Guide and monitor the implementation of procedures on forecasting and warning of earthquake, tsunami, typhoon, storm, tropical depression, flood and tides;
- Develop and manage the network for forecasting hazards; and guide the provision and utilization of forecast and warning information in the whole country;
- Research and develop natural disaster scenarios, guide and monitor the activities of Ministries, sector agencies and provinces in the preparation and implementation of disaster prevention plans, participate in the recovery activities in the aftermath of disasters.

³⁴ World Bank Disaster Risk Profile, 2009

Institute of Meteorology, Hydrology and Environment

The Institute of Meteorology, Hydrology and Environment (IMHEN), also under MoNRE, provides research and expertise for weather forecasting and climate modeling. The Institute was founded in 1976 (under Decree No 215/CP) and re-structured in 2003 to be an organization with scientific functions under MoNRE. IMHEN has a mandate for research and development on meteorology, climatology, agro-meteorology, hydrology, water resources, oceanography and environment.

Institute of Policy and Strategy on Natural Resources and Environment

The Institute of Policy and Strategy on Natural Resources and Environment under MoNRE coordinates with the relevant agencies in different ministries in dealing with CC adaptation. It has a broad mandate to deal with adaptation and includes the National Office for Climate Change and Ozone Protection. It conducts vulnerability and adaptation assessment tasks, undertakes analysis of climate impacts and adaptation options, exchanges research results and coordinates with the CCFSC to apply policy development within MoNRE and MARD.

The National Target Program to Respond to Climate Change

Under the Decision 158/2008/QĐ-TTg, dated 2nd December 2008, the National Target Program to respond to Climate Change (NTP-RCC) was approved by the Prime Minister of Viet Nam. This program focuses on the period 2009-2015. The NTP-RCC addresses climate change impacts and the need for adaptation and mitigation. The NTP-RCC examines the need of most sectors and will be the basis to address many climate change challenges and is the first effort to develop an inter-ministry network of communication and collaboration. A Steering Committee, chaired by the Prime Minister and an Executive Board with membership from several ministries was later established.

One of the most important features of the NTP-RCC is to encourage mainstreaming climate change concerns into the Socio-economic Development Strategy (SEDS 2011-2020) and Socio-economic Development Plan (SEDP 2011-2015), and policies on DRR, coastal zone management, and energy supply and use. Climate Change Action Plans to deal with climate change will be developed by economic sectors and all provinces. The NTP-RCC indicates the urgency of research and planning in the short term, and formulation and implementation of investment plans at later stages, requiring substantial financial and technical assistance. The NTP-RCC will be the foundation for a comprehensive strategy on adaptation and GHG emissions mitigation (see Annex II.2 for further details).

National Climate Change Strategy (NCCS)

On 5th December 2011, the Prime Minister approved Decision 2139/QĐ-TTg on the National Climate Change Strategy (NCCS). The Strategy identifies that climate change is the most serious challenge to humankind, which is predicted to have profound impacts on the global society. As one of the most vulnerable countries, the Government of Viet Nam considers climate change response vital to the development of the country.

The NCCS standpoints responding to climate change must be associated with sustainable development toward a low-carbon economy, taking advantage of opportunities to change development thinking, increase competitiveness and strengthen national position.

Climate change adaptation and GHG emission reduction must be carried out in parallel for effective response to climate change, with adaptation a priority in the initial phase.

Responding to climate change is a system-wide responsibility, led by the Government with the active engagement of the business sector, and the maximum involvement of and monitoring by civil-social organisations, trade unions and communities; it relies on internal resources while taking advantage of international cooperation mechanisms.

The strategy requires approaches to tackling climate change should be systematic, uniform, multi-disciplinary, inter-regional, focused, flexible to each period and concurrent with international regulations; scientific and locality-driven; taking into account social-economic benefits and climate change uncertainties.

One of the duties of the NCCS under Section IV, Strategic task 1: *Proactive disaster preparedness and climate monitoring* is for disaster risk reduction, including the review and formulation of development planning and construction regulations in disaster-prone areas in the context of increasing disaster incidents due to climate change; reinforcing and developing important, disaster preventive structures.

The NCCS also promotes the importance of the “4 on the spot” practice in addition to building capacity for professional rescue teams, which is the core factor in close collaboration between rescue forces for proactive response in case of emergencies.

The NCCS proposes to implement specific measures for effective disaster prevention, especially for flash floods and landslides in mountainous areas, with long-term effective maintenance and operation; also enhancing forest quality, cover barren land with trees, and promote the efficient use of forest to retain and enhance forest functions against disasters, desertification, invasion, and land degradation; protect, manage and develop mangroves and wetland ecosystems; by 2020: improve forest coverage to 45%.

The MoNRE will take the lead in the implementation of this Strategy. The strategy comprises six components with ten strategic tasks to deal with climate change. It outlines overall objectives, priority projects to be implemented in 2011-2015, and plans for 2016-2025 as well as objectives for 2050, with a vision to 2100. It also identifies strategic tasks to cope with global climate change.

There are two overall objectives to this strategy:

1. Utilize the national resources; carry out adaptation measures and GHG emission reduction; safeguard people’s life and properties; ensure the sustainable development goals.
2. Strengthen human and natural system resilience to climate change; develop the low-carbon economy to protect and enhance quality of life; ensure national security and sustainable development in the light of climate change and join forces with international community to protect the global climate system.

The specific objectives are:

1. Ensure food security, energy security, water security, poverty alleviation, gender equality, social security, public health; enhance living standards, conserve natural resources in the context of climate change;
2. Consider low-carbon economy and green growth as principles in achieving sustainable development; GHG emission reduction and removal to become a mandatory index in social and economic development.

3. Raise awareness, involvement, and coping capacity of stakeholders; strengthen scientific and technological potential and human resources; strengthen institutional arrangements to utilise the financial assistance, enhance the economic competitiveness and status of Viet nam; take advantage of climate change opportunities for social and economic development; promote climate-friendly behaviours.
4. Join forces with international communities in addressing climate change; increase international cooperation to address climate change effectively.

National Climate Change Committee

Under the National Climate Change Strategy, Strategic task 6: *Increase the role of Government in climate change response, b) Strengthening institutional capacity*, the Strategy establishes the National Climate Change Committee (NCCP).

The National Committee on Climate Change is in charge of consultation for the Government, and Prime Minister in studying, proposing, taking a lead, coordinating, cooperating and settling the major inter-ministerial tasks, national programs and strategies on climate change; as well as taking a lead, coordinating and operating the international cooperation missions on climate change.

The Committee members include the Prime Minister (as Chair), Deputy PM and Minister of MoNRE as Vice Presidents and a broad range of Ministers, and senior government officials, directors of institutes, etc.

The UN-REDD program

The United Nations Collaborative initiative on Reducing Emissions from Deforestation and Forest Degradation (UN-REDD) programme for Viet Nam seeks to address deforestation and forest degradation through capacity building at national and local levels. The objective of the Programme is to assist the Government in developing an effective REDD regime and to contribute to reduction of regional displacement of emissions. This will contribute to the broader goal of ensuring that by the end of 2012 the country is REDD-ready and able to contribute to reducing emissions from deforestation and forest degradation nationally and regionally.

The programme aims to:

- Build capacity at the national level to permit the Government of Viet Nam, and especially the REDD focal point in the Department of Forestry of the MARD, to coordinate and manage the process of establishing tools to implement a REDD programme;
- Build capacity at local levels (provincial, district and commune) through pilots in two districts in Lam Dong province that demonstrate effective approaches to planning and implementing measures to reduce emissions from deforestation and forest degradation. Regional displacement of emissions is known to be a significant problem in the lower Mekong Basin.

Other networks and organizations active in climate change

Mass organizations and media

Mass Organizations bridge the Communist Party, the Government and the people. They are far-reaching and therefore have a great effect on social and community structures. In this regard,

Mass Organizations and media have a considerable potential to make people conscious of threats and promote the concept and methods of mitigation and adaptation.

Non-government organizations

Climate Change Working Group

The Climate Change Working Group (CCWG) was established in February 2008 to address the growing concern and interest into climate change impacts and the need for support and information sharing on the topic in Viet Nam. The CCWG provides a forum for Vietnamese NGOs (VNGOs) and international NGOs (INGOs) to actively participate in the climate change debate. The CCWG plays a significant role in facilitating information and resource sharing and coordination among NGOs currently engaged in addressing climate change across a number of sectors and themes. The CCWG consists of a core group that facilitates and coordinates the working group. Current core members include 12 INGOs and VNGOs. Subgroups were established on (i) awareness and behavior change; (ii) adaptation; (iii) mitigation; and (iv) policy.

The Vietnamese NGO network

The growing role of civil society organizations in Viet Nam's development is gradually building recognition from the government and society. There are hundreds of Vietnamese organizations, which are increasingly and diversely involved in sustainable community livelihood development and environmental protection, especially at the grass root level. With aspirations to jointly combat climate change related problems, the network of Vietnamese Non-governmental organizations and Climate Change (VNGO&CC) was founded on 11th September 2008. Originally initiated by leading Vietnamese NGOs, including the Centre for Sustainable Rural Development (SRD), the Centre for Marine Life Conservation and Community Development (MCD), the Centre for Environment Research, Education and Development (CERED) and the Institute for Social Studies (ISS), the network has become an open forum for its members in exchanging information, cooperation, and helping each other to connect to the National Assembly, governmental organizations and other social organizations and donor agencies. Currently, there are more than 100 organizations and individuals registered to become members of the network.

The mission of the VNGO&CC includes:

- Creating channels for information sharing on climate change
- Supporting members in capacity building on responding to climate change
- Coordinating activities to increase efficiency of NGO's activities
- Bringing information and results of projects on climate change at grassroots-level to state agencies.

2.8 CHAPTER REVIEW

- The Hyogo Framework for Action is a landmark global strategy for DRR and its principles have been adopted in regional agreements.
- Complex national institutional arrangements and legislation for DRM exist, although these are best developed for floods and storms.

- Negotiations on climate change at international level have slowly progressed over the last two decades.
- The National Target Programme to Respond to Climate Change is the national mechanism for CCA and mitigation.
- National Climate Change Strategy provides the overall direction of activities to respond to climate change in Viet Nam.
- Many different groups, as well as the Government are involved in supporting DRM and CCA.

2.9 DISCUSSION QUESTIONS

1. What are the main institutional frameworks for disaster risk management in the country and how are they reflected in your province/sector?
2. What are the main objectives of the National Target Program to Respond to Climate Change? What are your organization's roles in the programme?
3. What mechanisms exist for the management of risks from geophysical hazards?
4. In what ways are the problems of disaster risk and climate change inter-related?

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CHAPTER 3

CLIMATE CHANGE IN VIET NAM



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3.1 INTRODUCTION

According to the Climate Risk Index³⁵ developed by Germanwatch, over the period 1990-2009 all the ten countries most affected countries by climatic disasters were developing countries. During this period, globally more than 650,000 people died from nearly 14,000 extreme weather events, with GDP (PPP) losses more than USD2.1 trillion. Viet Nam ranks fifth over that period, with annually on average 457 human casualties and average annual GDP (PPP) losses of USD1.9 billion - or 1.3% of GDP^{36,37}.

Examining the costs of additional stresses and potential losses from climate change, an ADB study concluded that the impact of climate change on real GDP by 2050 will be 1-3% compared with a baseline situation that assumes no climate change. ADB predicts that by 2100 the potential losses caused by climate change to Indonesia, the Philippines, Thailand, and Viet Nam may be as high as USD230 billion, or 6.7% of annual GDP (projected GDP in 2100), if the world does not invest in greenhouse gas emissions mitigation to avoid dangerous climate change³⁸.

According to the new Climate Change Vulnerability Index³⁹ of the vulnerability to the impacts of climate change over the next 30 years, Viet Nam is ranked 13th of 170 countries and is one of 16 “extreme risk” countries⁴⁰.

3.2 MAIN LEARNING POINTS

At the end of this chapter, participants should be able to:

- Understand the basic concepts of climate change, and
- Be able to provide details of the climate change situation in Viet Nam.

3.3 DEFINITION OF CLIMATE CHANGE

Climate change

In Chapter 1 we defined climate change as: *‘a change in the state of the climate that can be identified by changes in the mean and/or variability of its properties, and that persists for extended periods, typically decades or longer’*⁴¹.

The most general definition of climate change is a change in the statistical properties of the climate system when considered over periods of decades or longer, regardless of cause. Accordingly, fluctuations on periods shorter than a few decades, such as El Nino, do not represent climate change (see 3.4.3 for definition and Annex III.1 for further details).

Climate and weather

Climate encompasses the statistics of temperature, humidity, atmospheric pressure, wind, rainfall, atmospheric particle count and other meteorological elemental measurements in a

³⁵ Compiled from GDP losses (in purchasing power party, PPP) and death as a result of climatic extremes such as typhoons, heavy rainfall, and drought

³⁶ Note: Viet Nam’s GDP (PPP) in 2009 was USD 257 billion

³⁷ Harmeling 2010

³⁸ Zhuang et al. 2010

³⁹ Climate Change Vulnerability Index (CCVI), released by global risks advisory firm Maplecroft, enables organizations to identify areas of risk within their operations, supply chains and investments

⁴⁰ Maplecroft, 2010

⁴¹ IPCC 2007

given region over long periods. Climate can be contrasted to weather, which is the present condition of these elements and their variations over shorter periods. A region's climate is generated by the climate system, which has five components: atmosphere, hydrosphere (all water on earth), cryosphere (the frozen part of the earth's surface), land surface, and biosphere (the environment of planet Earth and its life).

Climate is commonly defined as the weather averaged over a long period. The standard averaging period is 30 years, but other periods may be used depending on the purpose. Climate also includes statistics other than the average, such as the magnitudes of day-to-day or year-to-year variations.

Climate in a narrow sense is usually defined as the "average weather," or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period ranging from months to thousands or millions of years. The classical period is 30 years, as defined by the World Meteorological Organization (WMO). These quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the climate system. The difference between climate and weather is usefully summarized by the popular phrase "*Climate is what you expect, weather is what you get*".

Over historical time spans there are a number of nearly constant variables that determine climate, including latitude, altitude, proportion of land to water, and proximity to oceans and mountains. These change only over periods of millions of years due to processes such as plate tectonics.

Other climate determinants are more dynamic:

- The thermohaline circulation⁴² of the ocean leads to a 5°C (9°F) warming of the northern Atlantic Ocean compared to other ocean basins. Other ocean currents redistribute heat between land and water on a more regional scale.
- The density and type of vegetation coverage affects solar heat absorption, water retention, and rainfall on a regional level.
- Alterations in the quantity of atmospheric greenhouse gases determine the amount of solar energy retained by the planet, leading to global warming or global cooling.
- The variables, which determine climates are numerous, and the interactions complex, but there is general agreement that the broad outlines are understood, at least insofar as the determinants of historical climate change are concerned.

3.4 CAUSES OF CLIMATE CHANGE

The greenhouse effect

Energy comes from the sun in form of sunrays, or waves, of varying sizes (solar energy). Of the total solar energy that reaches the Earth's atmosphere, about one third is reflected back into space by glaciers, water and other shiny surfaces, two thirds are absorbed by the Earth - warming the land, oceans and the atmosphere. A thick layer of ozone gas surrounds the Earth's atmosphere. This layer is called 'Ozone Layer'. Many of the waves⁴³ go back to space

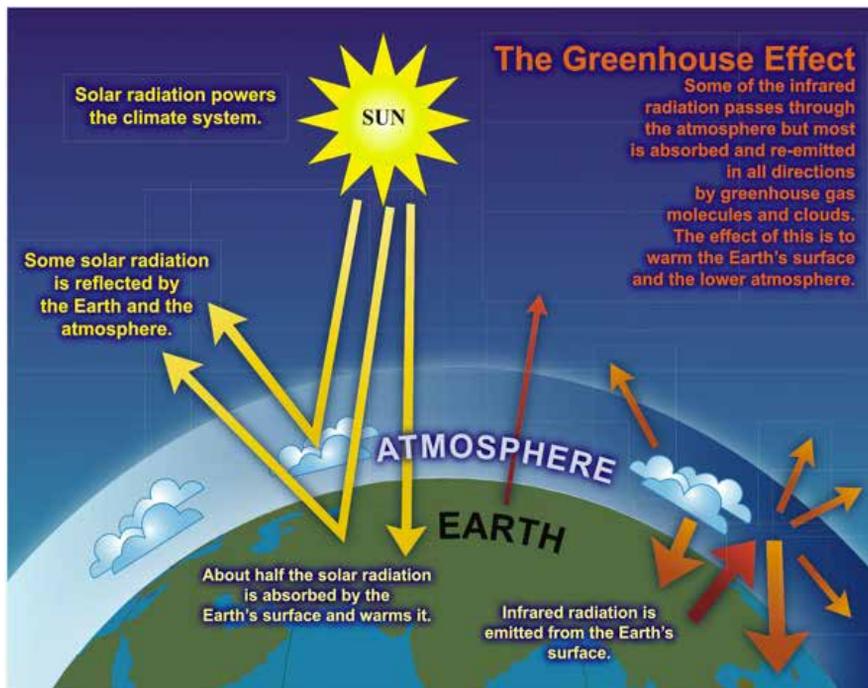
⁴² **Thermohaline circulation** refers to the part of the large-scale ocean circulation that is driven by global density gradients created by surface heat and freshwater fluxes; it is sometimes called the '**ocean conveyor belt**'

⁴³ Very small wavelengths cross the ozone layer - this is transmission; other wavelengths get stuck in this layer, this is

after hitting this layer, although ozone gas absorbs some of these waves. The remaining ones cross this layer and reach the Earth's surface.

During the night, energy is radiated, mainly in the form long waves, emanating from the surface of the Earth, buildings, the oceans, etc. Much of this thermal radiation is absorbed by gas molecules in the atmosphere surrounding the Earth (including clouds) and reradiated back to Earth. This is called the 'greenhouse effect'.

Many of the gases present in the Earth's atmosphere are called 'greenhouse gases'. These greenhouse gases trap most of the energy around the Earth. This energy is in the form of heat – which are long waves. It heats up the Earth round the clock. This is called the 'Greenhouse Effect'⁴⁴ - this is one of the reasons for 'global warming'.



Global warming

The present concerns about climate change arise from observations and projections of a global warming trend. Global warming is believed to be taking place because of an amplification of the 'greenhouse effect'. The greenhouse effect is a natural phenomenon caused by the presence of greenhouse gases (GHG) in the atmosphere. The main GHGs refer to any atmospheric gases that absorb long wave radiation (emitted from the Earth's surface); thereby causing the planet's surface to be warmer than it would be otherwise. These gases include water vapor, CO₂, CH₄, N₂O, many chlorofluorocarbons. Ozone (O₃) as well as being a shortwave absorber (in the ultra-violet range) also has a small, longwave greenhouse effect. Other components of the atmosphere also absorb long wave radiation (specifically aerosols and clouds) and hence have

absorption, whilst other waves of very large wavelength cannot get through and bounce back - this is reflection.

⁴⁴ The sub-zero temperatures in Siberia all through the year do not allow the growth of crops or vegetables. Scientists, several decades ago, constructed huge glass houses (greenhouses) and in it they trapped heat, as heat waves are long waves and could not escape through the glass. This helped in maintaining the glasshouses at higher temperature, suitable for certain types of vegetables and flowers. These glasshouses effectively trapped heat in what is termed the 'Greenhouse Effect'.

a greenhouse effect while not being gases themselves. As the concentration of greenhouse gases grows, more heat is trapped in the atmosphere and less escapes back into space. This changes the climate and alters weather patterns.

Although GHG only account for 1% of the atmosphere they have a major impact on global climate. Among these greenhouse gases, carbon dioxide is a major contributor to the global warming process because of its higher concentration in the atmosphere.

There are various natural stores or 'sinks' for GHG on earth⁴⁵. The main natural sinks are (1) the oceans and (2) plants and other organisms that use photosynthesis to remove carbon from the atmosphere by incorporating it into biomass.

Carbon sequestration is the term describing processes that remove carbon from the atmosphere. To help mitigate global warming, a variety of means of artificially capturing and storing carbon — as well as of enhancing natural sequestration processes— are being explored.

The causes of climate change are a subject of much debate. They can be divided into two categories: human causes and natural causes⁴⁶.

Human causes

Humans are believed to be aggravating causes of climate change due to a number of activities. Increase in carbon dioxide levels, in particular, appears to be associated mainly with fossil fuel combustion, land use change and deforestation.

Burning fossil fuels: such as oil, natural gas, and coal produces more carbon dioxide. The combustion of fossil fuel currently accounts for 80 to 85% of the carbon dioxide being added to the atmosphere⁴⁷. It is assumed that limiting the use of fossil fuels is essential if we are to reduce the amount of global warming in the long-term.

Land use change and deforestation: can lead to increased carbon dioxide emissions. Trees absorb carbon dioxide and give off oxygen. As more forests are logged, the amount of carbon dioxide increases. In addition, when vegetation decays or burns for farming, it releases carbon dioxide. Land use changes are responsible for 15 to 20% of current carbon dioxide emissions⁴⁸.

Natural causes

In order to assess the importance of net human (anthropogenic) emissions for global warming, climate scientists also have to consider natural causes of climate change, which can occur over both long and short time scales. These include the following:

Solar variation: the Sun provides the Earth with heat energy and variations in solar activity can trigger global warming or cooling.

Orbital variation: the Earth goes around the sun in an elliptical orbit, which plays a significant role in the distribution and amount of sunlight that reaches the Earth's surface, having a direct impact on glacial activity and creating changes in seasons.

⁴⁵ A carbon sink is a natural or artificial reservoir that accumulates and stores some carbon-containing chemical compound for an indefinite period. The process by which carbon sinks remove carbon dioxide (CO₂) from the atmosphere is known as carbon sequestration. The main natural sinks are: absorption of carbon dioxide by the oceans, photosynthesis by terrestrial plants; artificial sinks are: landfills, carbon capture and storage proposals.

⁴⁶ Borade 2007

⁴⁷ Trenberth 1997

⁴⁸ Trenberth 1997

Plate tectonics: The landmass on the planet is made up of plate tectonics that shift, rub against one another and even drift apart. This results in the repositioning of continents, wear and tear of the mountains, large-scale carbon storage and increased glaciations.

Volcanic action: In the course of volcanism, material from the Earth's core and mantle is brought to the surface, as a result of the heat and pressure generated within. Phenomena like volcanic eruptions and geysers release particulates into the Earth's atmosphere that can affect climate.

El Nino-Southern Oscillation (ENSO) phenomenon

A complex interaction of the tropical Pacific Ocean and the global atmosphere that results in irregularly occurring episodes of changed ocean and weather patterns in many parts of the world, often with significant impacts over many months, such as altered marine habitats, rainfall changes, floods, droughts, and changes in storm patterns⁴⁹.

The *El Nino* phenomenon has occurred every two to ten years for at least the last five centuries. Since the turn of this century, 23 *El Ninos* have affected the earth, but the four strongest have all struck since 1980.

El Nino is a fluctuation in the distribution of sea-surface temperatures and of atmospheric pressure across the tropical Pacific Ocean, leading to worldwide impacts on regional weather patterns. We do not yet know exactly why it takes place, but it is possible that global warming may change the frequency and strength of both *El Nino* and its sister effect, *La Nina* (see Annex III.1 for further details).

3.5 CURRENT CLIMATE CHANGE IN VIET NAM: OBSERVATIONS AND SCENARIOS

A number of landmark documents, such as the Fourth Assessment Report of the Intergovernmental Panel on Climate Change released in 2007⁵⁰, the UNDP Human Development Report (2007-8) on the impacts of sea level rise (SLR) on developing countries⁵¹, the National Target Programme to Respond to Climate Change⁵² and the Climate Change Scenarios for Viet Nam⁵³, as well as several other recent IHMEN reports⁵⁴ all have indicated that Viet Nam is 'particularly vulnerable to the adverse effects of climate change' as defined in the UN Framework Convention on Climate Change (UNFCCC).

Observations by the Institute of Meteorology, Hydrology and Environment (IMHEN) suggest that there are already effects on the country from climate change including mean sea level rise and there is also a correlation with increased climatic extremes as well as less spectacular, but gradually growing climatic stresses on resources and communities. Projections of future climate change trends derived from global climate models suggest that these effects are likely to intensify during this century. Though we cannot be certain about the precise rate of change,

49 *Comment: The El Nino part of the ElNino-Southern Oscillation (ENSO) phenomenon refers to the well above-average ocean temperatures that occur along the coasts of Ecuador, Peru and northern Chile and across the eastern equatorial Pacific Ocean, while LaNiña part refers to the opposite circumstances when well-below-average ocean temperatures occur. The Southern Oscillation refers to the accompanying changes in the global air pressure patterns that are associated with the changed weather patterns experienced in different parts of the world.*

50 IPCC, 2007

51 World Bank, 2007

52 MoNRE, 2008

53 MoNRE, 2009

54 See UNDP Climate Change Factsheet, April 2011

climate modelers have used a range of hypothetical 'climate scenarios' to describe what might take place in the coming decades.

The IPCC Fourth Assessment Report defines 'climate scenario' as: "A plausible and often simplified representation of the future climate, based on an internally consistent set of climatologically relationships that has been constructed for explicit use in investigating the potential consequences of anthropogenic climate change, often serving as input to impact models.... A climate change scenario is the difference between a climate scenario and the current climate".

During 2009, IMHEN applied global climate change scenarios to develop *Climate Change, Sea level Scenarios for Viet Nam*⁵⁵. These global scenarios are taken from the Fourth Assessment Report by the Inter-governmental Panel on Climate Change⁵⁶. These are different global socio-economic scenarios associated with certain levels of future greenhouse gas emissions and more or less severe climatic changes⁵⁷.

IMHEN chose three (B1, B2 and A2) of the six scenarios for the development of the *Climate Change Scenarios for Viet Nam*. They are low emission scenario (B1), intermediate emission scenario of the medium scenario group (B2), and intermediate scenario of the high scenario group (A2). The baseline period was identified as 1980-1999, which is the same period used in the Fourth Assessment Report of the IPCC. Of those chosen for use in Viet Nam, the B2 medium emissions scenario is officially proposed as the main basis for official climate change projections and planning.

Mean sea level rise

Rising sea levels have been observed over the past decades along the coasts of Viet Nam. Mean sea level rise (SLR) is accelerating and will strongly affect the Mekong Delta and Ho Chi Minh City, parts of the Red River Delta and also a significant coastal strip, including small estuaries.

The official Vietnamese prediction projects a maximum rise in mean sea levels of 75cm (based on the B2 medium emissions scenario by 2100. However, Viet Nam's own planning parameter is a one meter rise in mean sea levels by 2100, which is consistent with predictions according to the A2 high emissions scenario due to thermal expansion of warmer seawater whilst accounting for some melting of land ice. This figure is used in the *National Target Programme to Respond to Climate Change* (NTP-RCC) and the *National Climate Change Strategy*. A one meter mean sea level rise by 2100 is increasingly likely, and according to some of the data published after the IPCC's Fourth Assessment in 2007, mean sea levels may rise by as much as 1.5 meters by the end of this century.

Without major action such as dyke reinforcements and improved drainage, a one-meter rise in mean sea levels along the coast of Viet Nam would cause an estimated threat of inundation to 17,423 km² or 5.3% of Viet Nam's total land area⁵⁸. Of that total, nearly 82% is in the Mekong Delta, 9% in the Red River Delta and over 4% each in the North Central Coast and South East regions. The latter includes Ho Chi Minh City and includes land along the Saigon/Nha Be River.

Moreover, 33 out of 63 provinces and municipalities, or 5 out of 8 economic regions, are threatened by severe inundation. Among these 33 provinces and municipalities, Kien Giang,

⁵⁵ MoNRE 2009

⁵⁶ IPCC 2007

⁵⁷ UNDP 2007

⁵⁸ Of that total, nearly 82% is in the Mekong Delta, 9% in the Red River Delta and over 4% each in the North Central Coast and South East regions. The latter includes Ho Chi Minh City and includes land along the Saigon/Nha Be River.

Ca Mau, Hau Giang, and SocTrang are the four provinces that will be most affected by mean sea level rise⁵⁹.

The effects of SLR on saline water intrusion are not dramatic, but significant, especially for the Mekong River Delta. Over the period 1980-1999, the 0.4‰ salinity level reached more than 20km on many major rivers throughout the country; with a one-meter mean sea level rise by the end of the 21st century, salt water will penetrate further inland.

Rainfall

Climate change will increase annual total rainfall everywhere in Viet Nam, however, changes in rainfall patterns are complex and season and region specific. The probability of extreme rainfall events and flooding will also increase, especially in northern regions, including Hanoi, and increased risks of landslides in mountainous areas. In contrast, it is expected that rainfall will be concentrated, even more than now, in the rainy season months, leading to an exacerbation of drought problems during the dry months (December to May); average rainfall will decrease by about 20%, especially affecting the southern regions including the Mekong Delta. Decreasing rainfall in dry months will lead to increased drought risks, which is also because of higher temperatures that increase evapotranspiration.

Temperature

The B2 scenario will lead to an average annual temperature rise by 2100 of about 2.3°C compared to the last decades of the 20th Century⁶⁰. The temperature increase will be felt especially in the northern parts. However, recent scientific data suggests that the world is still on a high emissions pathway, and according to the A2 high emissions scenario the average annual temperature rise would be as much as 3.6°C in the north-central coastal region. Temperature rises will increase the number of heat waves and decrease the number of cold surges. If temperature rises by 10°C, the number of heat waves increases by 100 to 180%, while the number of cold surges decreases by 20 to 40%. In the Red River Delta, where summer temperatures for 2100 are projected to increase 1.6°C in the B2 medium emissions scenario and 2.4°C in the A2 high scenario, the number of heat waves would correspondingly double and triple⁶¹.

Floods

Flood damage is expected to be aggravated by an increase in daily rainfall of 12-19% by 2070 in some areas, affecting both flood peak discharges and the return period of floods⁶². Flood risk is also likely to be increased by changes in storm frequency and intensity, and the associated rainfall inland and storm surge on the coast.

Typhoon patterns

Considerable uncertainty exists about the expected frequency of typhoons in the coming century.

Viet Nam experiences tropical low depressions, tropical storms and typhoons annually⁶³. During *El Niño* years typhoons appear to be more frequent, stronger, and with landfall over a wider area.

59 With a sea level rise of one meter, Kien Giang has 3,896 km² or 62.5% of land threatened with inundation, Ca Mau 2,733 km² or 52.7%, Soc Trang 1,620 km² or 49.6%, and Hau Giang 1,397 km² or 86.5% of its land area.

60 MoNRE 2009

61 MoNRE 2010

62 MoNRE 2003

63 UNEP 2007

Past observations do not bear out a structural change in the typhoon pattern or in intensity in the Western Pacific/Southeast Asia as a result of climate change, but intensification of hurricanes (typhoons) has been observed in the Southern Atlantic/Caribbean region. Nevertheless, the possibility of gradual intensification of tropical storms and typhoons exists, according to an update of the IPCC's fourth assessment of 2007⁶⁴, also in Southeast Asia. For example, it is possible that due to a rise in temperatures, the north will become more subject to typhoon activity and the intensity of storms will increase, resulting in higher peak wind speeds and more intense precipitation. Coastal zones will suffer from more intense typhoons, posing higher threats to people's lives, livelihoods, infrastructure and agricultural production. Upland communities will be faced with increasing risks of flash floods and landslides from heavy rainfall. Furthermore, potential damage from tropical storms and typhoons appears to increase as a result of increasing population density in exposed areas and higher value economic infrastructure in these areas.

There are likely to be other climate change related impacts, including the potential for more landslides (due to more hydro-meteorological events). Impacts on heatwaves and coldwaves are also probable as well as whirlwinds, although much of these are difficult to estimate⁶⁵.

Salinization and water shortages

According to various observations and forecasts, the central coastal region and Mekong Delta are the regions likely to be worst affected by salinization and lack of fresh water for production and daily life, causing serious consequences. During dry months, several provinces in the Central coast and Mekong Delta already suffer the effects of saltwater intrusion on agricultural production, and many areas suffer water shortages for agricultural production and domestic use.

According to climate change scenarios for Viet Nam, when sea level rise occurs, the Mekong Delta will be faced with serious saltwater intrusion and floods in a large downstream area. Mangrove ecosystems will also be adversely affected by changes in the hydrological system due to sea level rise. The process of salinization at high levels potentially can kill vegetation and biological diversity of mangrove forest ecosystems in provinces such as Ca Mau and Kien Giang. National food security will be threatened and the lives of many poor farmers in the region will be affected significantly.

3.6 VULNERABILITY TO CLIMATE CHANGE IN VIET NAM

Viet Nam's population is already vulnerable to the stresses and shocks brought about by climate variability and is likely to be highly impacted by climate change⁶⁶. Climate change impacts will include major extreme events as well as more gradual changes in climate variables such as temperature and rainfall. As a result, climate change brings additional threats to people's lives and livelihoods. Different social groups and productive sectors are more or less vulnerable to specific stresses and shocks associated with climate change.

In Chapter 1 the term 'vulnerability' was defined in relation to disaster risk as: 'the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard'. We can use the word in almost exactly the same way in relation to climate change. Therefore, as with vulnerability to disasters, vulnerability to climate change should be considered as a combination both of the level of exposure to adverse climate impacts/events

⁶⁴ Markku et al. 2010

⁶⁵ World Bank 2011

⁶⁶ Hulme et al. 1999; Kelly et al. 2001

and as an underlying characteristic of individuals and human systems, including their capacity to manage the risks posed by climate change. We need to understand all these aspects in order to develop effective adaptation strategies⁶⁷.

Impacts on economic sectors

Climate change can be expected to impact to some degree on all sectors of the economy. For example, if droughts are becoming more likely, water supplies and hydro-electricity generation will be affected; increasing floods in urban areas can potentially disrupt trade and industrial production in urban areas. However, economic sectors that rely most heavily on environmental resources tend to be the worst affected by climate dynamics, especially if we focus on the direct effects on the economic livelihood of households. For Viet Nam, two main sectors likely to be impacted heavily are agriculture and fisheries.

Agriculture

Climate change can impact on crops and livestock in multiple ways, with consequences for rural livelihoods, food security and the general performance of the agricultural sector⁶⁸.

- Changes in temperature and rainfall patterns will affect the productivity of crops and may affect the timing of the cropping seasons. Some crops may no longer be viable under changing climatic conditions; others may become productive in places where they previously were not.
- The ecological changes associated with climate change may increase the prevalence and spread of pests and diseases, both of crops and livestock.
- Direct losses of crops and livestock could result from an increase in extreme weather events and their associated hazards such as floods, typhoons, whirlwinds and temperature extremes.
- Losses or declines in productivity could also result from slow-onset hazards such as droughts and from environmental changes such as increasing intrusion of saltwater into soils as a result of rising sea levels. Salinization of soils is already a major problem in the coastal plains and the river deltas, and is likely to become an increasing threat to farming in these sites in future.

Forestry

Forests are a product of the interaction and long-term evolution of natural factors, where climate plays a major role. Climate change, bringing increases in temperature and changes in precipitation, will affect the flora and forest ecosystems in different ways:

- By 2100, natural forest ecosystem such as dipterocarp forest⁶⁹, evergreen and semi-evergreen closed forests, could potentially be reduced seriously in area compared to the present. Closed forest ecosystems and semi-evergreen tropical moist ecosystems may be also affected strongly.
- Distribution and the boundaries of different forest types as well as secondary forest may be relocated. For example, forest tree species may move up to the north and to higher lands. Deciduous forests, with more drought-resistant plants, will grow due to decreased soil moisture and evaporation through plant growth.

⁶⁷ IPCC 2007

⁶⁸ MoNRE 2008

⁶⁹ *Dipterocarpaceae* is a family of 17 genera and approximately 500 species of mainly tropical lowland rainforest trees. Many are large forest emergent species, typically reaching heights of 40–70m tall, some even over 80m. The species of this family are of major importance in the timber trade.

- Increased temperatures, along with more light, will accelerate the process of photosynthesis, leading to enhanced anabolic processes of forest trees. In particular, the increase of carbon dioxide absorption, which also contributes to the development of forest ecosystems. However, when soil moisture is reduced forest biomass may also be reduced. Climate change increases the risk of forest fires in all areas and especially in the hot and dry months.
- The risk of decline, even extinction of plants and animals potentially increases due to climate change. When temperature and precipitation increases, forest pests and plant diseases will grow stronger and affect the overall growth and development of forest ecosystems as a whole.
- Climate change may also reduce the area of arable land due to water logging, salinity, acidification and drought leading to an increased risk of conversion of forests to agricultural land use.

Fisheries and aquaculture

The potential impacts of climate change on aquaculture and the fishing industry mirror those on agriculture⁷⁰.

- Changes in water and sea temperatures will affect the growth of fish and shellfish and may cause some marine species to move northward or into deeper water. There is likely to be gradual change in the stocks of fish and shellfish in any given fishing area.
- Climate change is likely to bring ecological changes including effects on food sources, nursery habitats (such as sea grass, mangroves and coral reefs), water quality and the spread of diseases, affecting the productivity and survival of both captive and free-living fish and shellfish.
- Aquaculture ponds and the dykes that surround them are vulnerable to extreme weather events, including river floods and coastal storm surges associated with typhoons and tropical storms. Floods and high intensity rainfall can be especially damaging for the stocks kept in saltwater ponds, because they alter the salinity of the water. Typhoons are a major physical threat to the marine fishing sector, commonly leading to loss and destruction of boats, as well as human deaths. By preventing boats from sailing, they can also disrupt the industry for days at a time.
- Saltwater intrusion into rivers and coastal wetlands will change water conditions and habitat. Some areas will become no longer suitable for freshwater species.

Natural resources and the environment

Due to climate change, SLR will inundate the coastal lowlands, especially the two major Delta areas of the Red River and the Mekong River. The areas affected by salinization will also be increased. These Deltas are home to the oldest wetland ecosystems as well as being major agricultural production areas in the country.

Biodiversity and ecosystems are also affected by the impacts of climate change. If sea level rises 1 meter by the end of the 21st century, about 78 important natural habitats, 46 conservation areas, 9 areas of biodiversity importance and 23 areas of important biodiversity will be affected seriously. Rising temperatures will alter the distribution and structure of various biomass ecosystems.

⁷⁰ MoNRE 2008

Freshwater resources are likely to decline, become exhausted or become increasingly scarce. This will have a large impact on human health, agriculture, security and environmental degradation, primarily on the quality of water resources and national water security.

Climate change, accompanied by rising sea level, will result in floods that will affect coastal mineral deposits, where reserves are likely to be lost and degraded. The quality of mineral resources (such as sand), will be affected making it difficult for surveying, exploration and mining. In the central highland and mountainous areas, due to the increase of natural hazards such as flooding and landslides, devastating degradation of mineral deposits could take place, as well as the loss of important mines resulting in increased toxic metal emissions from mine waste and pollution of the environment.

Energy sector

Overall, rising temperatures will increase the pressure on the distribution and management of the electricity sector. The amount of electricity required for air-conditioning needs in daily life and for economic activities will be increased. Heat waves, which may appear much more, will create further problems for the electricity transmission network. Rising temperatures also increase also the cost of ventilation and cooling for coal mining, as well as lead to increased power demand for the irrigation of crops.

Alterations in precipitation pattern, due to climate change, also will affect hydropower. Temperature increases will lead to increased evaporation and reduce the amount of water available to generate hydroelectric power, which in turn will affect the production and distribution of electricity. Irrigation needs in the region will increase, especially during the dry season, and drought will cause difficulties for regulating water resources for power generation needs with other needs. Increasing rainfall during the rainy season will increase the likelihood of flooding and cause difficulty for the regulation of reservoirs and sluices.

Utilization of renewable energy sources (wind and solar radiation) is being encouraged as part of the development of a national strategy on energy security and for reducing greenhouse gas emissions. Climate change will alter the structure of the wind and radiation regimes, such as: increasing convective cloud systems, reducing the short-wave radiation, increasing long-wave radiation, increasing the amount of variation of wind speed and the duration of sunshine. The situation will affect the potential and thus the ability, to exploit these types of energy sources.

Sea level rise will affect the operation of oil rigs at sea, transportation systems and gas and oil industries in coastal areas. Increased natural hazards at sea will add costs to maintenance and operation of machinery and vehicles.

Power plants and the electric transmission system (including high and low voltage) will be affected by the increase in natural hazards such as storms, floods and water logging due to climate change. Temperature increases and environmental pollution will contribute to increased degradation and lifetime of these projects.

Sea level rise will cause flooding of some factories, power stations, and of power distribution lines in the coastal areas. Rainstorms will also trigger landslides, destroying buildings, dams and hydropower systems, increasing maintenance costs and repair works in the power sector.

Transportation

Climate change will adversely affect the operation of transport, as the country is required to reduce greenhouse gas emissions. Rising temperatures will increase the energy consumption of motor engines and the need for cooling systems in vehicles. Along with the need for

technological innovation to reduce emissions of greenhouse gases (such as bio-fuel use), the impact on transportation costs is likely to increase.

Several major ports, as well as piers, wharves and coastal warehouses will either need to be climate proofed or moved to new locations. The North-South railway and sections of Highway 1 near the coast are at risk of flooding on annual or periodical basis and may need to be re-located.

Storms and floods may increase both in intensity and frequency, with increased levels of flooding affecting the road and rail systems in the plains and coastal areas. There will be an increased risk of traffic congestion in the central region and mountainous areas caused by floods and landslides. Rehabilitation and repair works of the traffic system may be destroyed or damaged by storms and floods. In the period from 2001 to 2005, storms and floods caused estimated damage to the transportation sector of up to VND 2,571 billion. If sea level rises to 100cm, approximately 11,000km of roads may be submerged. Traffic may be delayed, causing damage to economic activities.

Construction

Technology development has a close relationship with climatic factors. The increase of temperature and some disaster impacts will have negative impacts on planning, design and construction, increasing the cost and shortening the lifetime of the building.

Climate change can alter the scope of the climate development and climate characteristics of each region. So some state standards as well as construction standards will have to change accordingly. Increased investment in existing critical infrastructure in terms of retro-fitting maybe required while new construction will need to be “disaster proofed” or “climate proofed” to improve resilience to future weather related hazards and increase longevity.

Sea level rise, along with increases in some extreme phenomena on the sea, will lead to changes in the planned construction and renovation works on the marine and coastal areas of the lowlands. Many projects will be affected by saltwater risk, which will cause rapid decline in terms of building quality.

River and sea dykes are considered measures to protect the delta and coastal areas. Historically, these have provided an important solution to respond to climate change in the coastal areas and deltas. In terms of climate change, the cost of new construction, renovation and upgrading of existing dyke systems will increase.

Tourism

Tourism today has become an important economic sector, contributing to a substantial share of the county’s GDP. Sea level rise will affect the coastal beaches. Some beaches will be pushed further inland and limit the ability to use the beach as well as related service works. In such cases there will be a need for new construction or reconstruction to move infrastructure further inland/to more protected areas. Rain, storms and floods will restrict camping. Air and water quality degradation will also limit tourism activities.

Climate change will have negative impacts on the operation of transport for tourism, construction, including hotels and buildings for entertainment and tourist routes for tourism activities.

Public health

Climate change will impact on public health in several ways. Rising temperatures are likely to increase pollution levels and are directly harmful to the elderly, people with heart and

neurological diseases. Rising temperatures will also increase the possibility of some tropical diseases like malaria and dengue fever and may increase growth rates and development of many bacteria and insects, increasing the number of outbreaks of disease and the risk of vector-borne diseases.

Vulnerable social groups

As for disaster risk, vulnerability to the impacts of climate change is likely to vary greatly among different social groups in the population, according to factors such as ethnicity, gender, age and income. These factors were set out for the country in a recent World Bank discussion paper⁷¹.

Ethnic minorities in the country are likely to be especially vulnerable for reasons related both to economic livelihood and to social marginalization. Compared with the Kinh majority, minority groups tend to have less diversified incomes, reliance on staple crops, low levels of agricultural investment and poor access to credit, all of which may leave them vulnerable to gradual changes in climate conditions as well as climate shocks. Lower levels of educational attainment and fluency in the Vietnamese language also tend to mean that ethnic minorities are less able to take advantage of outside resources.

Gender inequalities link to climate change in complex ways, but overall they are likely to limit the capacities of women to adapt to the challenges they face. More women than men in the country are engaged in agricultural production and women tend to be responsible for water collection: two aspects of daily life that are likely to be impacted directly by climate change. Women may also be more at risk during extreme climatic events such as floods, partly because of the care-giving role over others in the home, including the young and older people. Young children are especially at risk from the physical dangers of flooding and from any increases in waterborne disease. Health status and physical frailty also make the lives and livelihoods of older people more vulnerable. They may be especially at risk from increases in maximum temperatures, especially during prolonged heatwaves.

Poverty is a major underlying factor in raising vulnerability. It would be wrong to suggest that only the poor are vulnerable to climate change, but in most cases it is the poor who are most likely to be affected the worse and who have least ability to adapt. World Bank research has concluded that as much as 20% of the population is still living under the poverty line⁷². Though the lowest poverty rates are found in the main cities, Hanoi and Ho Chi Minh City, within the cities the differences between social groups remain high, and the urban poor tend to be relatively more exposed and susceptible to climatic hazards than wealthier residents. Poorer urban residents, for example, commonly live in neighborhoods with low quality drainage and flood protection infrastructure.

The poverty rate tends to be greatest, however, in rural areas, and many poor rural families face multiple problems that are likely to increase the susceptibility of their livelihoods and limit their adaptive capacity. Various pieces of research⁷³ have revealed common characteristics of the rural poor in Viet Nam, which can be summarized as below:

⁷¹ McElwee 2009

⁷² World Bank 2007

⁷³ World Bank 2007a, b, UNDP 2007, Adger 2000, Kelly and Adger 2000

Characteristics of poor households in Viet Nam

- The household head of the poor is most likely to be a farmer: in 2010 almost 70% of the poor worked in agriculture
- Most live in rural, isolated or disaster prone areas, where physical and social infrastructure is relatively undeveloped
- Most typically have small landholdings or are landless
- They have limited access to credit and financial support from both government and private sectors
- Households are more than likely to have many children or few laborers
- The poor are disproportionately likely to be from an ethnic minority
- The poor have limited education: people who have not completed primary education make up the highest incidence of poverty.

It is important to recognize that the impacts of climate-induced changes will be made much more intense and difficult to cope with if they take place alongside other livelihood shocks. For example, ill health, aggravated by chronic malnutrition, can also generate major crises for the poor and vulnerable. The most common complaints in rural areas are malaria, dengue fever, tuberculosis, diarrhea, hepatitis, typhoid, cholera, and birth complications. Health shocks induced by these complaints often lead to indebtedness and asset liquidation. There is also the opportunity cost from labor days lost by both the ill and their caregivers. Animal mortality and disease are also systemically linked to crises impacting upon rural areas. Highly Pathogenic Avian Influenza A (H5N1) has severely affected the livelihoods of the rural population where poultry raising is one of the major income sources. The loss or culling of livestock deeply undermines the ability of households to meet the expenditure necessary for crises - including those associated with natural disasters and climate change impacts. Flooding and other climate change impacts are additional stress factors on lives and livelihoods that may push vulnerable people to migrate temporarily or permanently, in search of a safer and stable life (see box below).

Migration

It is likely that a large number of people will have to move due to climate change and environmental degradation. Viet Nam ranks 6th among countries in the world with the highest proportion of its population living in Low Elevation Coastal Zones^{74,75}. A comparative study of 84 developing countries of the effects of rising sea levels suggests that as a result of a one meter mean sea level rise, 10.8% of the Vietnamese population could be affected – the highest percentage among the countries analyzed⁷⁶.

The IPCC (2007) has identified the Mekong Delta as one of three 'extreme' global hotspots in terms of potential population displaced as a result of mean sea level rise. By 2050, as many as one million people risk being displaced in the Mekong Delta⁷⁷. Actual displacement is expected to be a result of many factors, including repeated floods and droughts causing accumulated stress on livelihoods. Vulnerable people may migrate temporarily or

74 Hugo 2008, Gordon

75 Deborah and Bridget 2007

76 Dasgupta et al. 2007

77 Nicholls et al. 2007

permanently. Women, children and elderly in particular are vulnerable to flooding and water supply problems. Cities and industrial parks are also affected. Poorer urban dwellers often live in areas with low quality drainage and flood protection infrastructure, whilst during floods critical services such as clean water supplies are often severely disrupted.

*Past experiences with environmental degradation suggests that climate change will reinforce **existing migration patterns** rather than creating new ones⁷⁸. The scale of migration, both internal and cross - border is expected to rise significantly over the next decades, but only partly as a result of climate change. In Viet Nam, in the absence of comprehensive statistical data, some studies point to environmental pressures as triggers for migration in places where livelihoods are **already under stress**, for example because of multiple crop failures caused by drought or floods⁷⁹. In Viet Nam **rural to urban migration** has been significant in recent years, with the urban population increasing by 78.2% from 1990 to 2007⁸⁰. Projections show that the numbers of urban population in Viet Nam who are at risk of multiple hazards (so not only climatic hazards) may more than triple from 21,158,000 in 2000 to 68,383,000 in 2050⁸¹. Migration is often seen as the result of a failure to adapt to a given situation. Migration is however also a possible and often successful **adaptation strategy**, especially at early stages of environmental degradation. Migration reduces the reliance on the environment for livelihoods and therefore helps to reduce vulnerabilities to the effects of climate change. For example, qualitative studies undertaken in Viet Nam suggest that remittances from migrant workers add non-“climate-dependent” income to the household and are often used to balance environmental stresses that affect household income.⁸²*

3.7 CHAPTER REVIEW

- Climate change is a long-term process distinct from short-term climate variability.
- There is mounting evidence that a process of global climate change is under way as a result of net human emissions of greenhouse gases into the atmosphere.
- Climate scenarios have been developed for Viet Nam that describe potential future changes in sea level, temperature and rainfall patterns and indicate probable increases in risk from hydro-meteorological hazards.
- The overall impacts are likely to be high for sectors such as agriculture and fisheries, and vulnerability within communities is likely to differ according to social dimensions.
- Increased rates of migration are a long-term potential consequence for the country.

3.8 DISCUSSION QUESTIONS

1. What is the atmospheric process that has lead to climate change?
2. What are the implications of sea level rise for communities living in coastal areas of the country?
3. In what ways is climate change likely to influence disaster risk in the country?
4. Choose one economic sector: How is it likely to be affected by climate change?
5. What patterns of migration are taking place now within your province? Is climate change likely to increase or decrease the movement of people?

78 ADB 2011, Dunn 2009

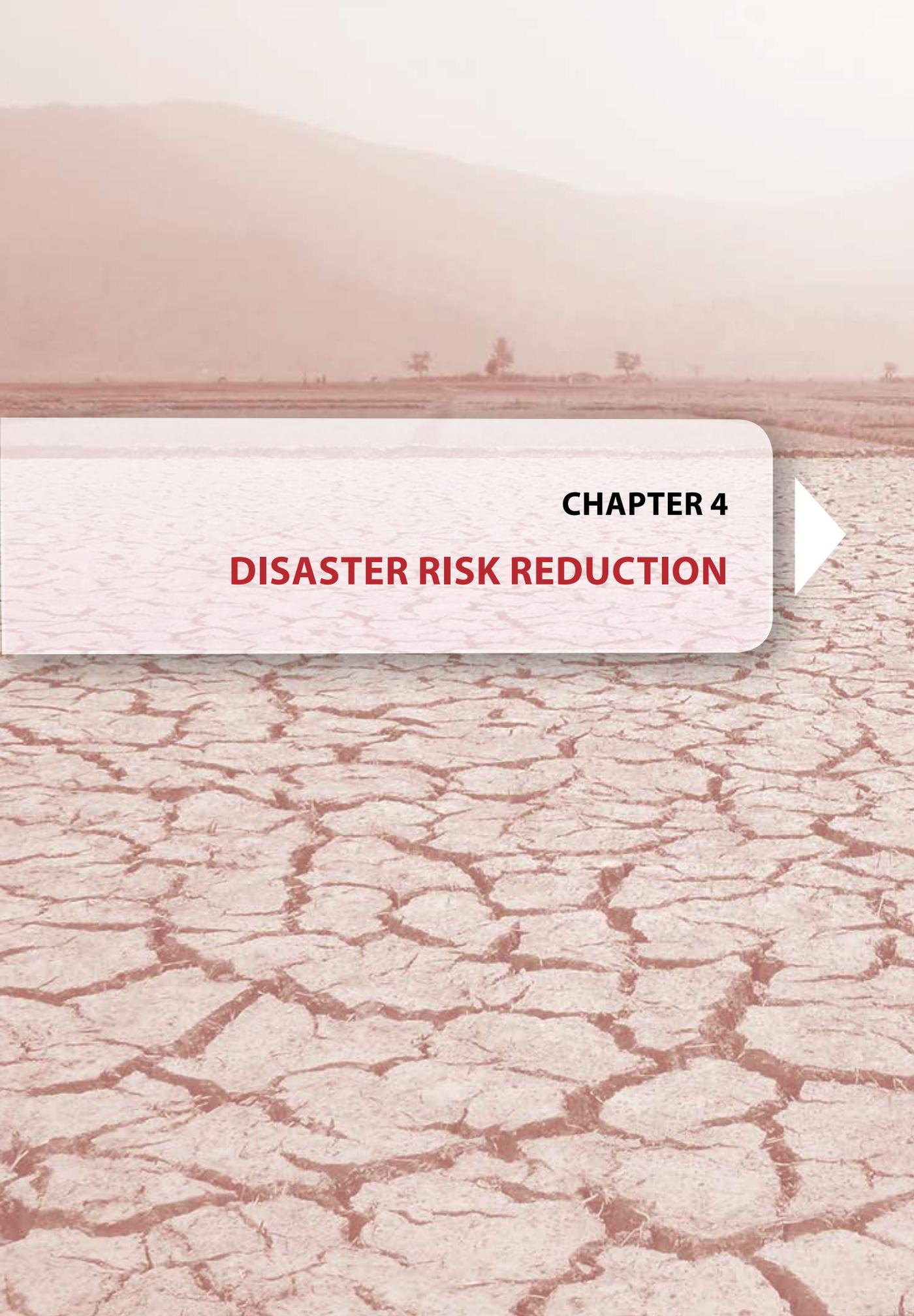
79 European Commission 2009

80 ADB 2011

81 ADB 2011

82 Adger 1999

Lined writing area with horizontal dotted lines.

The background of the entire page is a sepia-toned photograph of a dry, cracked landscape. The foreground is dominated by a dense network of dark, irregular cracks in the parched earth, creating a mosaic-like pattern. In the middle ground, there is a flat, open field with a few scattered, small trees or shrubs. The background features a range of low, hazy mountains under a pale, overcast sky. The overall mood is one of aridity and environmental hardship.

CHAPTER 4
DISASTER RISK REDUCTION



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4.1 INTRODUCTION

Disaster risk reduction (DRR) is a holistic approach to reducing the chances that hazards will impact on people and societies and increasing the capacity to manage risks. This includes building disaster resilience into development processes, by taking steps to minimize or even avoid the impacts of future hazards. It is an approach that informs strategies, policies and practices, and emphasizes that tackling disaster risks should be an integral part of development, not a separate or one-off action that takes place only at the time when a hazard event occurs.

“Disaster risk reduction is commonly understood to mean the broad development and application of policies, strategies and practices to minimise vulnerabilities and disaster risks throughout society. It is a systematic approach to the identification, assessment and reduction of the risks of disaster. It aims to reduce socio-economic vulnerabilities to disaster as well as dealing with the environmental and other hazards that trigger them. It is the responsibility of development and relief agencies alike and it should be an integral part of the way such organisations do their work, not an add-on or one-off action”⁸³.

Disaster risk reduction is therefore wide-ranging and there is potential for DRR initiatives in almost every sector of development and humanitarian work.

4.2 MAIN LEARNING POINTS

By the end of this chapter, participants should be able to:

- Better understand disaster risk, vulnerability and a framework for DRR;
- Identify the different components of vulnerability and how they contribute to the impact of a disaster;
- Appreciate what resilience and ‘building a resilient community’ means;
- Understand the importance of culturally appropriate programming in DRR (and climate change adaptation).

4.3 WHAT IS DISASTER RISK?

In Chapter 1, we defined disaster risk as: the potential for disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period. We emphasized that earthquakes, storms and torrential rains are natural phenomena that we refer to as ‘natural hazards’. In addition to hazards, ‘vulnerability’ to the natural phenomenon must be present for an event to constitute a disaster.

Furthermore, we defined vulnerability as: the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard. Thus, the characteristics of a person, or group and their situation influence their capacity to anticipate, cope with, resist and recover from the impact of a hazard⁸⁴. The risk people face differs according to their income, and how they live and where, whether they are male or female, what their ethnicity is, what age they are, whether they are disabled or not and to other factors. Vulnerability is often exacerbated as a result of poverty; reducing vulnerability therefore is also a question of dealing with poverty reduction.

⁸³ *Characteristics of a Disaster-Resilient Community: A Guidance Note, J. Twigg, 2007*

⁸⁴ *Wisner et al. 2005*

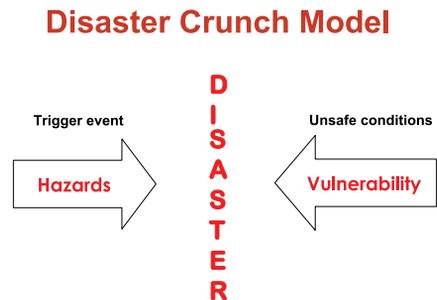
In general, 'risk' is conceptualized as the potential impact (deaths, injuries, property damage, disruption, losses, etc.) that could be caused by a hazard.

4.4 DISASTER PRESSURE AND RELEASE MODEL

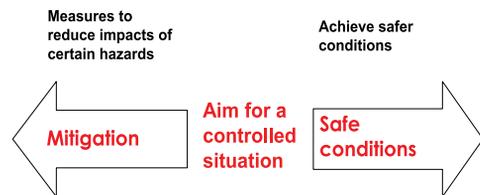
A framework that can be useful for understanding and reducing disaster risk is the "disaster pressure and release model"⁸⁵, also known as the disaster 'crunch' model. This model shows that vulnerability (pressure), which is rooted in socio-economic and political processes, has to be addressed (released) for DRR.

The disaster crunch model states that a disaster happens only when a hazard affects vulnerable people. A disaster happens when these two elements come together. As mentioned earlier, a natural phenomenon by itself is not a disaster, only a flood, or a drought, or wind, etc.; similarly, a population maybe vulnerable for many years, yet without the "trigger event", there is no disaster. We can therefore see that vulnerability - a pressure that is rooted in socio-economic and political processes - is built up and has to be addressed, or released, to reduce disaster risk. These processes may include poverty generation, gender inequity, social exclusion, age related discrimination and discrimination, exclusion or exploitation based on ethnic or religious factors.

The outcome of vulnerability reduction will be "safer" as opposed to "unsafe conditions", "more resilient or more capable communities" as opposed to "vulnerable communities" and "more sustainable livelihoods" as opposed to "unsustainable livelihoods".



Disaster Release Model



4.5 UNDERSTANDING VULNERABILITY

The concept of vulnerability has evolved over the years. In the context of hazards and disasters, vulnerability was traditionally associated with physical design standards and the ability of physical objects like bridges and buildings to resist physical forces. While this interpretation is still relevant, the idea of vulnerability has expanded to include the susceptibility of individuals, communities, systems and assets to disaster impacts. In this section, we will discuss the factors that contribute to vulnerability in five broad categories: physical factors, social factors, economic factors, environmental factors and governance factors.

Physical factors

Physical vulnerability can include the structural aspects of objects, such as materials and design. However, in some cases, it is also associated with physical location if this affects the chances of exposure (differences in the likelihood of exposure should be included in a vulnerability assessment). Proximity to a hazard may also be a factor in increasing risk, such as living close to the coast in the case of tsunamis or close to a river in the case of floods.

⁸⁵ Wisner et al. 2005

Socio-cultural factors

Socio-cultural factors influence the well being of individuals, families and communities and often reflect inequitable differential access to resources such as land, money and education. Aspects of socio-cultural vulnerability that you may want to consider include:

Access to food and water

Access to food and water of sufficient quality and quantity is considered a basic human right⁸⁶. People with limited access to food and water usually face heightened risk before, during and after hazards strike. Malnutrition decreases productivity and increases susceptibility to injury and disease. Unimproved water sources are more likely to be contaminated, induce diarrhoea, or pass water-borne diseases, increasing the likelihood of ill health and expense.

Health status and access to healthcare

Poor physical and mental health also contributes to vulnerability. Predisposition to infection, exaggerated exposure to communicable diseases, lack of defensive mechanism, and the inability to care for oneself all represent individual conditions of vulnerability. Sick and disabled people are particularly susceptible during a disaster. Inadequate healthcare infrastructure also can increase susceptibility to impact and reduce the ability of communities to cope.

Levels of literacy and education

These factors can influence the ability to access and use information, and influence skill sets and opportunities. These factors may also help in understanding hazards, hazard warnings, and ways in which to reduce impacts.

Social equity and marginalization

Inequity and marginalization can manifest itself geographically or in decreased access to information and economic and political opportunities due to wealth, ethnicity, age, gender or other factors. These marginalised groups may be more likely to suffer impacts, less likely to be able to access needed coping resources, and their potential contributions and concerns more likely to be ignored, making mitigation, preparation, response and recovery less effective.

Age

The very young and very old are more likely to be dependent on others for their survival. Additionally, both groups can be costly to a community if the ratio of dependents to “providers” is high.

Cultural aspects

Culture can influence vulnerability. Belief systems that are deeply rooted in a fatalistic vision of disaster or are destiny-oriented may be an indicator of perceived vulnerability. Such views can present a challenge when trying to move towards a culture of mitigation and preparedness. Language can also be a barrier. However, traditional and local knowledge systems may also hold untapped options for disaster risk reduction.

Economic factors

Economic factors influence the vulnerability of households, communities and nations to the impacts of disasters. Poverty is often associated with many of the physical, socio-cultural and

86 UN 1948; UN 1999; and UN 2002

environmental factors listed here and can affect both resource access and exposure. In fact, poverty is sometimes described in terms of lack of access to critical resources.

Economic factors increasing vulnerability include lack of collective resources to provide basic services and quality of life, a lack of economic diversity to help ride out crises or easily disrupted supply lines. Debt can create additional burdens. If money and resources generated cannot be reinvested to reduce vulnerability and increase access to and capacity of systems like communication networks, health care, financial systems, water, sanitation and transportation infrastructure, then disaster risk increases.

Environmental factors

Environmental factors heavily influence the susceptibility of communities and nations to impact. For example, deforestation is a commonly used indicator of environmental vulnerability; it reduces habitat, cover, and available fuel and can lead to increased likelihood of flooding and landslides.

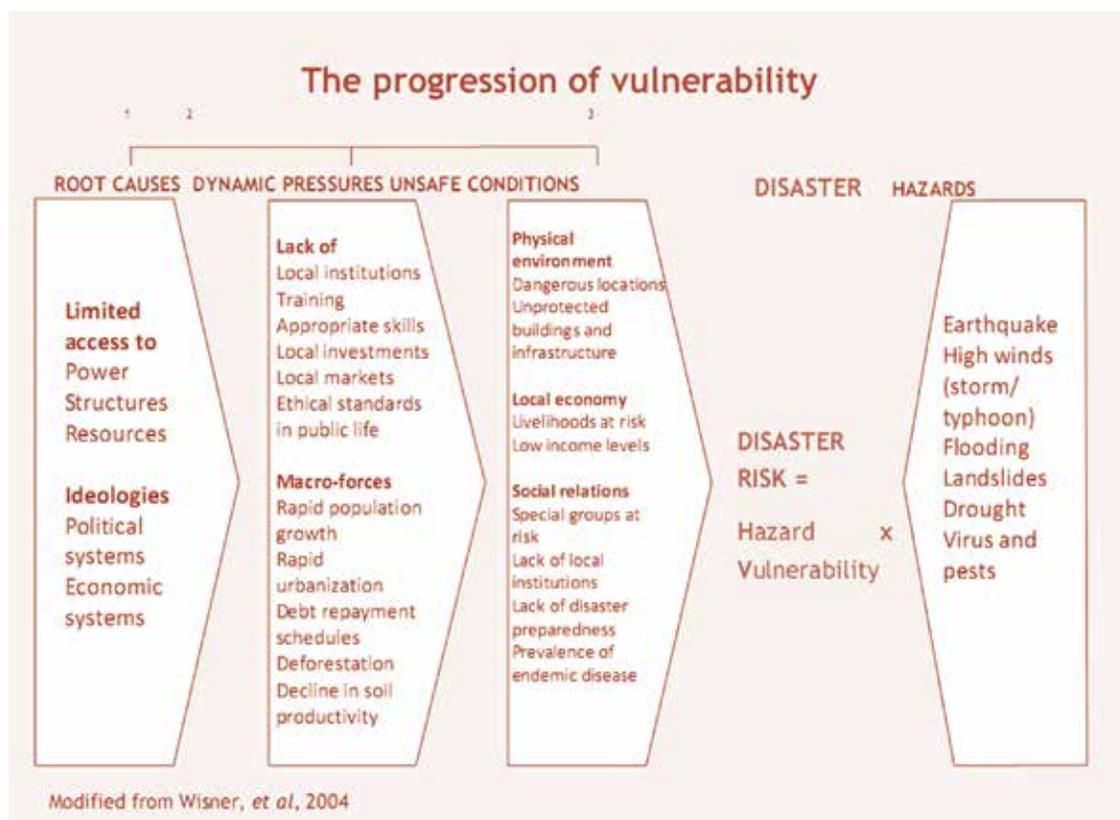
Households, communities and nations depend on the environment for basic survival and many economic and socio-cultural services. Water stress and soil degradation can be exacerbated by human activity and can decrease access to clean water and threaten food security. Pollution also reduces access to clean water and air and increases the likelihood of health problems. Additionally, environmental degradation, loss of biodiversity, and resource depletion can put livelihoods and economies in jeopardy, and limit options for adaptation to changing circumstances.

Governance

Governance is often very important in terms of most variability in capacity and vulnerability. Aspects such as corruption, equitable access, policy, enforcement, security and stability influence the distribution of resources necessary for well being before, during and after an event. Governance influences how each of the other factors increase or reduce vulnerability. It also directly shapes vulnerability, through the establishment and implementation of DRM policies and practices.

4.6 PROGRESSION OF VULNERABILITY

This framework, developed by Wisner et al (2004), is known as the “progression of vulnerability”, and builds on the disaster crunch model. It helps DRM and DRR practitioners to analyse vulnerability and to identify measures to reduce it:



By analysing the progression of vulnerability, the causes of disaster can be revealed at different layers. 'Unsafe conditions' can be seen relatively easily. Less obvious factors are 'dynamic pressures' that influence the unsafe conditions. The 'root causes' of these dynamic pressures tend to be more 'strategic, at a broader scale and deeply embedded in history and culture and can be difficult therefore to identify and remediate.

Vulnerability will be comprehensively reduced only when root causes are addressed. However, root causes are also the most stubborn and difficult to deal with, whereas activities can be undertaken more easily at other layers to reduce vulnerability.

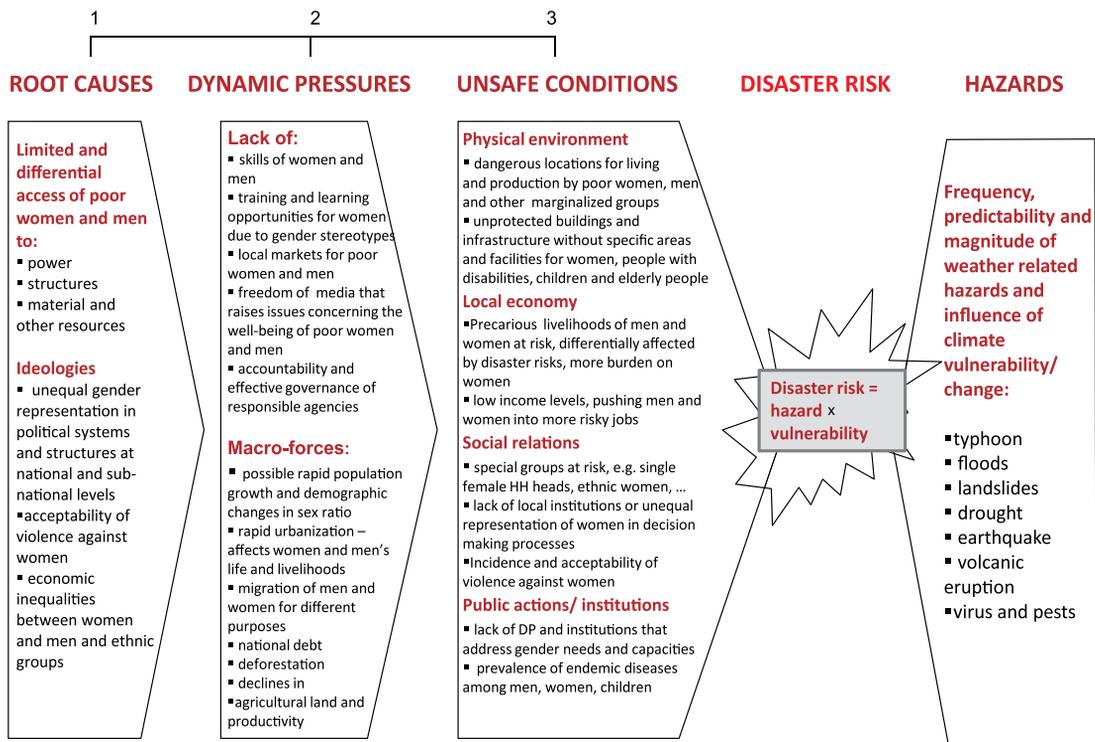
It is ineffective for DRM and DRR and development practitioners to deal with a problem at only one level; they must concomitantly address the issue at all levels.

Gender-aware progression of vulnerability

Recently, work by Oxfam GB in Viet Nam⁸⁷ has promoted a more gender-aware version of the progression of vulnerability; an approach which should be promoted in Government and INGO DRM activities:

⁸⁷ Vu, Smythe *et al.* 2011

The progression of vulnerability



Modified from Wisner, *et al.*, 2004

The following table provides some examples of the impacts of sudden and slow on-set hazards and the specific implications for women.

Table 6: Gender based differentiation in disasters and vulnerability: implications for women

Modified from: 'Gender and Disaster Risk Reduction: A training pack', Oxfam, July 2011

Condition/situation	Specific implications for women	Examples
Direct impacts of sudden-onset hazards (floods, flash floods, typhoons, landslides, etc.)	<ul style="list-style-type: none"> Women are at greater risk of injury and death due to societal restrictions and gender role Swimming is not a skill girls and women are encouraged to learn In some regions, women's clothing limits their mobility In some areas/cultures, women cannot respond to warnings or leave the house without a male companion Loss of crops and livestock managed by women (with direct loss to family food security) Women, rather than men, more frequently report post disaster stress symptoms 	<ul style="list-style-type: none"> Globally, statistics from past disasters show that more women than men die from disasters Due to floods, women report that they have lost livestock, household assets and land is lost or no longer farmable

Condition/ situation	Specific implications for women	Examples
Impacts of slow-onset hazards (drought, floods, desertification, deforestation, land degradation, etc.).	<ul style="list-style-type: none"> • Increased workload to collect, store, protect, and distribute water for the household – often a responsibility that falls entirely to women • Gynaecological diseases may increase during periods of long-lasting floods or drought • Increased domestic workload to secure food • Increased numbers of women-headed households due to men’s migration • Women’s access to collect food, fodder, wood, and medicinal plants lessens 	<ul style="list-style-type: none"> • When droughts worsen recorded that women walk further in search of water • Farmland is lost due to erosion/drought or desertification. As a result, young people and males migrate to the cities to find jobs, leaving women in charge of households • More women than men rely on forest-based products to sustain households. A large percentage of the rural population relies on traditional medicine as their primary source of health care. Women often have a more specialized knowledge of wild plants used for medicine than men.

4.7 PURPOSE OF DISASTER RISK REDUCTION

In Chapter 1, we defined DRR as: *the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.*

The purpose of DRR is therefore to decrease people’s underlying vulnerabilities and increase their capacities to better cope with and withstand hazards thus ensuring that their health and wellbeing, safety, livelihoods and assets are protected. Good DRR also continues after a disaster, building resilience to future hazards⁸⁸. As will be emphasized in Chapter 9, it is critical also to ensure that future climate changes are taken into account in DRR and to seek to integrate DRR within climate change adaptation.

Various prerequisites for DRR include a clear understanding of the cultural and organizational characteristics of each group of people as well as of their behaviour and interactions with the physical and natural environment. In addition, the mobilization of non-governmental organizations and participation of local communities is essential for successful DRR.

⁸⁸ White et al. 2004

4.8 FRAMEWORK FOR DISASTER RISK REDUCTION

In Chapter 2, we detailed the Hyogo Framework for Action 2005-2015: “Building the Resilience of Nations and Communities to Disasters” which is described as a global blueprint for DRR efforts during the next decade. Its goal is to substantially reduce disaster losses by 2015 in lives and in the social, economic, and environmental assets of communities and countries.

As we will see in Chapter 8 on Community Based Disaster Risk Management, local engagement is critical to effective DRR and all DRR programmes must take into account local cultures, heritage and history, indigenous knowledge, the hazards affecting the area, the capacities of the local authorities and people as well as local priorities for social and economic development.

Disaster risk reduction aims to achieve sustainable, lasting and effective reduction of risk leading to safer and healthier individuals, families and communities, efficient and diversified livelihoods and the protection of cultural and heritage assets.

In a simplified manner - and based on a framework for DRR first outlined by UNISDR in 2002 – DRR comprises the following prioritised areas for intervention:

- **Risk awareness and assessment** including hazard analysis and vulnerability/capacity analysis
- **Vulnerability reduction**, focusing on support to at-risk groups including pregnant/lactating women, single headed households, young children, the elderly and the ill
- **Capacity building** so that local people can better manage their own risk and develop and implement their own protective measures
- **Knowledge development** including education, training, research and information
- **Public commitment and institutional frameworks**, including organizational, policy, legislation and community action
- **Application of measures** including environmental management, land-use and urban planning, protection of critical facilities, application of science and technology, partnership and networking, and financial instruments
- **Early warning systems** including forecasting, dissemination of warnings, preparedness measures and reaction capacities

4.9 DISASTER RISK REDUCTION MEASURES AND BUILDING RESILIENCE AT THE LOCAL LEVEL

No one organisation can address every aspect of DRR. Disasters are complex problems demanding a collective response from different disciplinary and institutional groups - partnerships are essential. This is an important consideration when looking at the characteristics of a ‘*disaster-resilient community*’ (see below), because individual organisations will have to decide where to focus their own efforts and how to work with partners to ensure that other important aspects of resilience are not overlooked⁸⁹.

Thus, the Government, in partnership with other organizations, has an important role to play in helping vulnerable communities to understand that DRR measures and activities should be carried out and are best undertaken when there is a consensus that the measures are desirable,

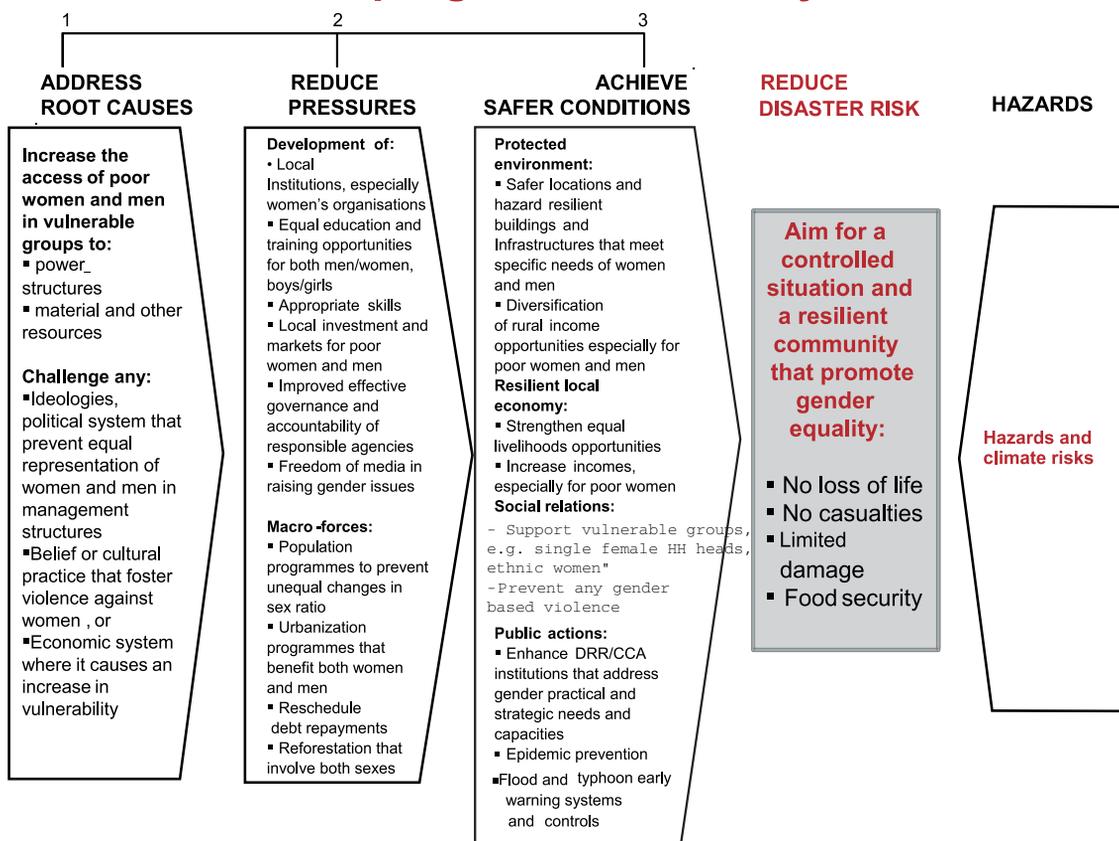
⁸⁹ Twigg 2007

feasible and affordable. Through DRR planning work, the aim should be to develop a “culture of safety” in which all members of a community are aware of the hazards they face, know how to protect themselves and will support the protection efforts of others.

Wherever possible, application of DRR measures should be identified through a participatory assessment process where local people are fully engaged in decision-making processes that will affect their lives and livelihoods. For the Government, working in partnership with the VNRC and Women’s Union/other Mass Organisations and INGOs the focus will be on at-risk communities in the most disaster prone provinces.

The ‘*progression of vulnerability*’ framework helps us to understand that to progress to safety the underlying or root causes of vulnerability must also be addressed. The counter to this - the ‘*progression towards safety*’ framework - helps to identify DRR measures in a more comprehensive manner. Many organizations use these frameworks for situation analysis in risk assessment and for providing guidance for wide-ranging approaches to DRR. The ‘*progression towards safety*’ framework thus helps to identify possible risk reduction measures. A gendered version of the framework has been developed recently by Oxfam GB in East Asia and a modified version is illustrated here:

The progression of safety



Modified from: Wisner et al, 2004; Vu, Smyth, et al. Oxfam GB, 2011

Actions may be taken to address root causes, reduce dynamic pressures, and achieve safer conditions and to reduce the potential impact of the hazards. For example, addressing root causes may include: increasing the access and control by vulnerable groups to resources and

power structures. This is usually achieved through advocacy for change and reforms in the legislative, socio-economic and political systems. The 'rule of law', equity in access to services, equity in gender relations, are all measures that fall into this category.

Actions to reduce dynamic pressures may involve specific training, local market development, reducing the level of corruption through to reforestation, careful urban planning and population programmes.

Achieving safer conditions may address the protection of the environment in which people live (through building codes, safer locations for critical infrastructure); the diversification and development of sustainable livelihood opportunities; as well as public services for early warning (e.g. loudspeaker systems in villages).

The following table illustrates some further examples of risk reduction interventions, which can be undertaken:

Measures to achieve safe conditions	Measures to reduce pressures	Measures to address root causes
<ul style="list-style-type: none"> • Community risk assessment • Disaster risk reduction planning • Formation and strengthening of disaster response organization • Public awareness raising • Disaster preparedness training • Simulation exercises and evacuation drills • Community organizing • Diversification of livelihood sources • Strengthening existing livelihoods • Reinforcing coping strategies • Maintenance of houses and community facilities • Training of Community Health Workers • Arrangements for timely and effective emergency response • Flood and typhoon early warning systems • Planting trees as windbreaks • Preserving water sources for the dry season • Strengthening buildings • Large-scale engineering works such as dykes 	<ul style="list-style-type: none"> • Sustainable agriculture practices • Tree planting • Land use management • Community health services • Cooperative marketing • Literacy classes • Local advocacy campaigns • Community negotiation 	<ul style="list-style-type: none"> • Networking building and cooperation between national and provincial governments and NGOs • Advocacy on national issues (e.g. change in policy to benefit vulnerable people; promote democratic and participatory approaches, etc.)

Building resilient communities

Community is often defined as a group of people living in the same area. They are likely to

share common interests, values, activities and structures. However, communities are complex and they are often not united. There will be differences in wealth, social status, labour activity, gender relations and ethnicity. Communities also do not exist in isolation. The level of a community's resilience is also influenced by capacities outside the community⁹⁰.

Whilst the definition of 'resilience' can be confusing, it is more useful to work with broad definitions and commonly understood characteristics. Using this approach, community resilience can be understood as capacity to:

- Absorb stress or destructive forces through resistance or adaptation
- Manage, or maintain certain basic functions and structures, during disastrous events
- Recover or 'bounce back' after an event⁹¹.

Resilience

The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions⁹²

A focus on resilience means putting greater emphasis on what communities can do for themselves and how to strengthen their capacities, rather than concentrating on their vulnerability to disaster or their needs in an emergency.

The terms 'resilience' and 'vulnerability' are opposite sides of the same coin, but both are relative terms. Like vulnerability, resilience is complex and multifaceted. Different features or layers of resilience are needed to deal with different kinds and severity of stress. The 'disaster-resilient community' is an ideal. No community can ever be completely safe from natural and other hazards. It may be helpful to think of a disaster-resilient community as 'the safest possible community that we have the knowledge to design and build in a natural hazard context', minimising its vulnerability by maximizing the application of DRR measures. Disaster risk reduction is therefore the collection of actions, or processes, undertaken towards achieving resilience⁹³.

Culturally appropriate approaches

Disaster risk reduction (and also climate change adaptation, CCA) policies, strategies and plans and the actual implementation of programmes and projects, should ensure that culturally appropriate approaches are adopted.

Culture

A set of distinctive spiritual, material, intellectual and emotional features of society or a social group. It can take many different forms such as, but not restricted to: building and architecture; oral traditions, performing arts, social practices; and language, religion, family practices, decision-making system.

While culture is meant to imply the context in which people live and work, culturally appropriate

⁹⁰ Twigg, 2007

⁹¹ Twigg 2007

⁹² Comment: Resilience means the ability to "resile from" or "spring back from" a shock. The resilience of a community in respect to potential hazard events is determined by the degree to which the community has the necessary resources and is capable of organizing itself both prior to and during times of need, UNISDR, 2009

⁹³ Twigg 2007

approach is a process of engaging people and communities. Practitioners involved with DRR and CCA should aim to adopt culturally appropriate approaches to:

- **Understand the larger cultural context, including diverse cultural perspectives:** this does not imply an exclusive focus on “traditions,” which are only one component of a person’s culture. Understanding the larger context is important to consideration of the dynamics that create problems. Considering diverse cultural perspectives is important to ensure that the programme will not create any resistance by adopting a “one-size-fits-all” solution.
- **Ensure culturally-appropriate access and participation:** in DRR and CCA is a process of engaging people and communities by finding out what people believe and think and what makes sense to them, and working with that knowledge (e.g. indigenous knowledge about signs of impending weather). Therefore, the approach is effective in addressing stereotypes and harmful practices that limit the access and participation of different groups, especially the marginalized.
- **Reinforce positive cultural values:** the approach should not be understood that it only addresses harmful practices, but rather it is a process that also reinforces cultural values that catalyse positive changes. These positive values, when reinforced, contribute to the realization of human rights and sustainable development.

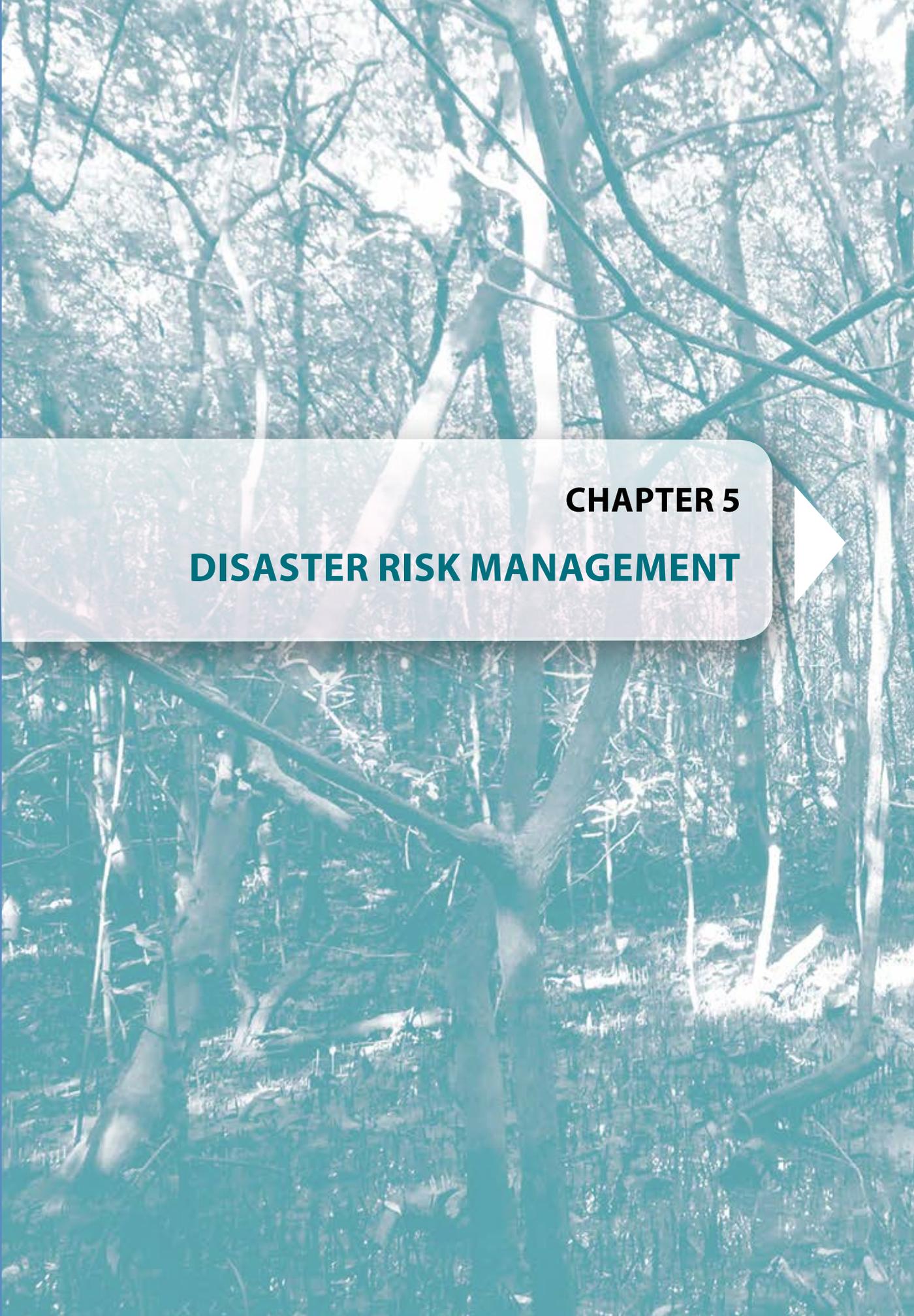
See Annex IV.1 for further details of steps that may be taken to ensure that DRR programming is culturally appropriate.

4.10 CHAPTER REVIEW

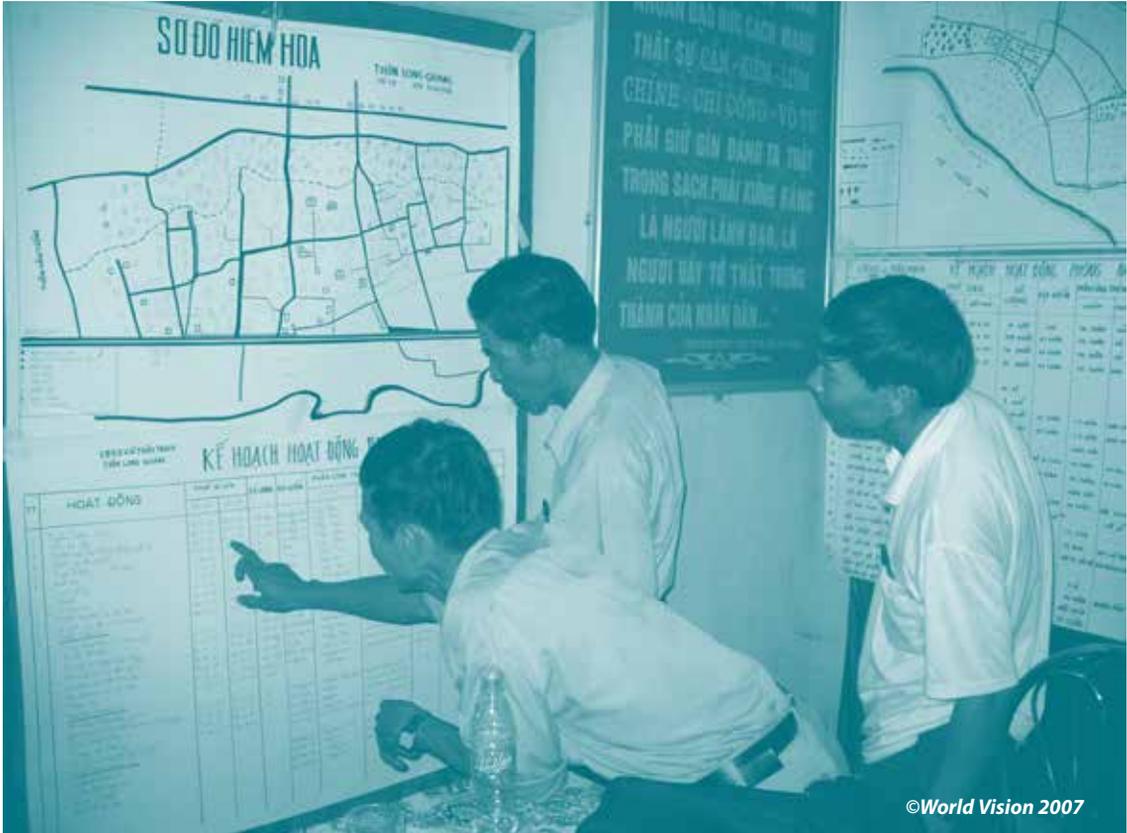
- ***The Hyogo Framework for Action 2005-2015: “Building the Resilience of Nations and Communities to Disasters” introduced 5 areas of priorities for DRR that are committed to by the Government of Viet Nam, as well as non-governmental regional and international organizations is highlighted***
- ***The components of DRR are detailed in the UNISDR DRR framework (2002)***
- ***Vulnerability is a complex condition created by multiple causes***
- ***Unsafe conditions are often only the most visible signs of vulnerability***
- ***To reduce the risk of disaster, there is a need to examine and address the root causes and dynamic pressures, which cause these unsafe conditions***
- ***The concepts of resilience and of building resilient communities are described***
- ***An outline is provided to help to ensure that DRR programmes are undertaken in a culturally appropriate manner.***

4.11 DISCUSSION QUESTIONS

1. What factors might make an individual or community more susceptible to the impacts of a disaster?
2. What environmental factors or conditions make your community more or less vulnerable?
3. What types of losses might be important to consider? Why?
4. If a disaster strikes, who or what will it likely affect, and how badly?



CHAPTER 5
DISASTER RISK MANAGEMENT



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5.1 INTRODUCTION

In this chapter we focus on how to apply the principles of disaster risk reduction (DRR) through a comprehensive approach to disaster risk management (DRM). Disaster risk reduction comprises a range of interventions undertaken before, during and after a disaster to prevent or minimize loss of life and property, damage to the natural environment, minimize human suffering and hasten recovery. It includes measures designed to improve the capacity of the different people and agencies involved and to reduce underlying vulnerability.

5.2 MAIN LEARNING POINTS

By the end of this chapter, participants should be able to:

- Define what is meant by comprehensive disaster risk management;
- Describe certain approaches to disaster risk management;
- Describe the main requirements of a disaster risk manager;
- Understand different types of disaster risk management measures and activities applicable at commune and village level in Viet Nam.

5.3 COMPREHENSIVE DISASTER RISK MANAGEMENT

The understanding of the causes and effects of disasters has shaped how governments, aid and development agencies, communities and people in general have responded to and managed disasters in the past up to the present. Nowadays, the comprehensive disaster risk management approach is widely recognised as being the most effective and is being utilised by a wide range of organisations. Generally this approach to DRM is adopted by the Government and non-government agencies in Viet Nam.

This approach combines technical and scientific analyses with attention paid to social, economic and political factors for disaster risk reduction. It also embraces multi-sectoral considerations and multi-disciplinary actors. The approach focuses on the understanding of the complexity of disaster risk by analysing the underlying conditions of risk.

The need for people's participation in assessing risk, planning for risk mitigation and managing impacts is therefore an essential component in DRM.

The burden of DRM and the resources to deal with it require a close working partnership among all levels of government (district, province, region, and central government) and the private sector (business and industry) as well as NGO's, and local communities. This makes sense, because disasters affect all aspects of society and do not abide by administrative boundaries.

The commonality of impacts and the types of damage and loss caused by hazards suggests that many of the same DRM strategies can and should be applied to all aspects of disasters, from mitigation right through to recovery. Understanding this concept reveals that comprehensive planning for all-hazards is usually preferable to planning for one hazard alone and therefore having many plans.

5.4 SOME IMPORTANT TERMS AND CONCEPTS

There are a number of important concepts that need to be understood in DRM, some are listed below whilst others are to be found in the Glossary of Terms for this material.

Risk management

The systematic approach and practice of managing uncertainty to minimize potential harm and loss⁹⁴.

Disaster risk management

The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster⁹⁵.

Disaster risk management activities are commonly described under the following categories:

Mitigation

The lessening or limitation of the adverse impacts of hazards and related disasters⁹⁶

Preparedness

The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.

Response

The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Recovery

The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.

Mitigation encompasses structural measures such as engineering techniques and hazard-resistant construction, as well as non-structural measures, such as improved environmental policies and public awareness⁹⁷. Non-structural measures are often quicker and cheaper to

⁹⁴ *Comment:* Risk management comprises risk assessment and analysis, and the implementation of strategies and specific actions to control, reduce and transfer risks. It is widely practiced by organizations to minimise risk in investment decisions and to address operational risks such as those of business disruption, production failure, environmental damage, social impacts and damage from fire and natural hazards. Risk management is a core issue for sectors such as water supply, energy and agriculture whose production is directly affected by extremes of weather and climate.

⁹⁵ *Comment:* This term is an extension of the more general term “risk management” to address the specific issue of disaster risks. Disaster risk management aims to avoid, lessen or transfer the adverse effects of hazards through activities and measures for prevention, mitigation and preparedness.

⁹⁶ *Comment:* Note that in Viet Nam there has been a long history of use of the term ‘prevention’ for some aspects of DRM. However, use of this term is now a source of confusion because the UNISDR also defines the term ‘prevention’; but in a very specific way. For the UNISDR, prevention is ‘the outright avoidance of adverse impacts of hazards and related disasters’. This definition refers to activities designed to completely avoid potential adverse impacts through action taken in advance. Examples include dams or embankments that eliminate flood risks, land-use regulations that do not permit any settlement in high risk zones, and seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake. Very often the complete avoidance of losses is not feasible and the task transforms to that of mitigation. Partly for this reason, the terms prevention and mitigation are sometimes used interchangeably in common use.

⁹⁷ It should be noted that in climate change policy, “mitigation” is defined differently, being the term used for the reduction of greenhouse gas emissions that are the source of climate change.

implement than structural measures but may be just as effective. In fact, structural measures may generate an unjustified sense of security, which actually increases risk, such as people building houses close to dykes because they believe, wrongly, that the dyke provides absolute security.

Preparedness action is carried out within the context of DRM and aims to build the capacities needed to efficiently manage all types of emergencies and achieve orderly transitions from response through to sustained recovery. Preparedness is based on a sound analysis of disaster risks and good linkages with early warning systems, and includes such activities as contingency planning, stockpiling of equipment and supplies, the development of arrangements for coordination, evacuation and public information and associated training and field exercises. These must be supported by formal institutional, legal and budgetary capacities. The related term “readiness” describes the ability to quickly and appropriately respond when required.

Disaster response is predominantly focused on immediate and short-term needs and is sometimes called “disaster relief”. The division between this response stage and the subsequent early recovery stage is not clear-cut. Some response actions, such as the supply of temporary housing and water supplies, may extend well into the recovery stage.

The early recovery task of rehabilitation and reconstruction begins soon after the emergency phase has ended, and should be based on pre-existing strategies and policies that facilitate clear institutional responsibilities for recovery action and enable public participation. Recovery programmes, coupled with the heightened public awareness and engagement after a disaster, afford a valuable opportunity to develop and implement disaster risk reduction measures and to apply the “build back better” principle.

Some examples of mitigation, preparedness, response and recovery measures and actions that can be taken at commune, village and household level for a range of hazards are provided in Annex V.1.

5.5 LINKING THE COMPONENTS OF DISASTER RISK MANAGEMENT

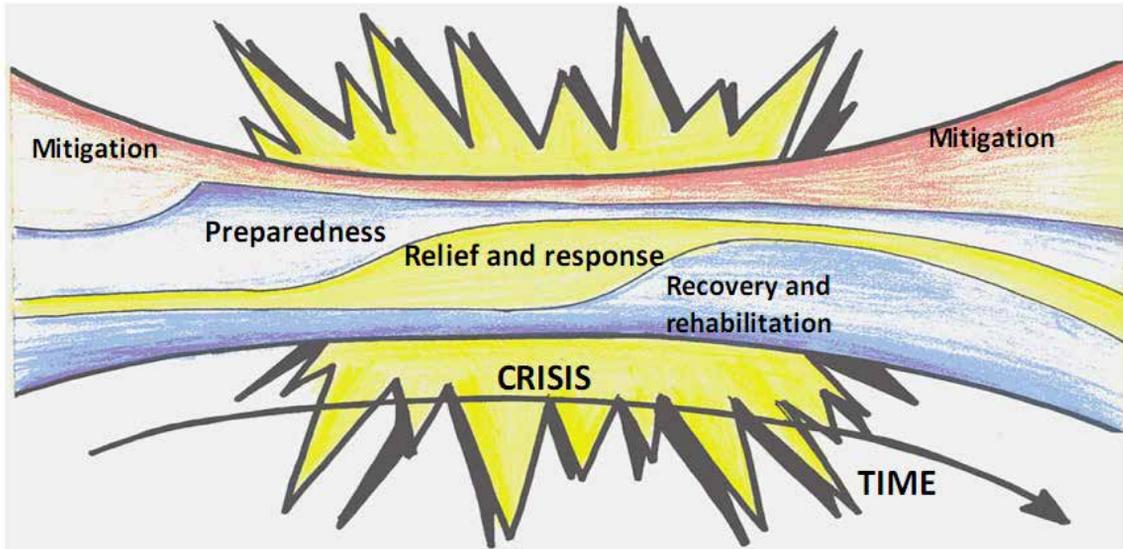
A number of models have been used to relate the various components of DRM to each other. The most well-known perhaps is the disaster management cycle, which describes a repeating and sequential series of actions to gain control over disaster events.

Although this model provides a comprehensive overview of the different facets of DRM, in practice the focus is mainly on activities immediately before and after the onset of the disaster. Usually the principal allocation of human, material and technical resources are given to emergency response, emergency preparedness and structural (engineered) mitigation. Other aspects of mitigation, together with prevention and recovery, tend to receive less attention. The model has also been criticized for deflecting attention away from the root causes of disaster risk. In addition this model suggests that it is possible to return to the period before the disaster. In fact, the aim of DRR is to ensure that after a disaster people move forward to safer lives with greater potential for social and economic development.

In reality, the phases in DRM do not happen one after another in a defined sequence. They can all occur at the same time, but at a certain time, some activities will receive more attention, e.g. relief and response activities will be undertaken more intensively in the immediate aftermath of a disaster. This idea is captured in the ‘expand-contract’ model.

The expand-contract model still refers to the same types of activities as the disaster management cycle, but emphasizes how each has to be seen as a continuous process, and not limited to one 'stage' in time.

EXPAND-CONTRACT MODEL



(Kotze and Holloway 1996)

5.6 HUMAN RESOURCES FOR DISASTER RISK MANAGEMENT: THE ROLE OF DISASTER RISK MANAGERS

Managing disaster risk is a process that involves many different people and organizations. For Viet Nam 'disaster risk managers' include members of the Committees for Flood and Storm Control at sub-national levels as well as staff of mass organizations and non-governmental organizations who have a responsibility relating to disaster risk. Guidelines for DRM are provided by the Government of Viet Nam in the form of the long established "four on the spot" motto. The overall aim of the 'on the spot' approach is to foster the capacity of local communities and government to solve local problems (on the spot). Recently a comprehensive booklet has been produced which details what actions local personnel involved with DRM (such as disaster risk managers) should undertake in order to effectively mitigate, prepare for, respond to and recover from disasters such as storms, floods, landslides, storm surges, salinity, drought and forest fires, using the available resources 'on the spot', to contribute to the reduction of loss of life and damage to public and private property⁹⁸.

Essential guidance from the Government is provided for local authorities to ensure that:

- (i) Each household or locality prepare all essential items to prevent or respond to natural disasters, which may occur at the locality at any time;
- (ii) The items prepared meet the emergence relief demands of the household or its locality; and
- (iii) They are ready to provide support to other households or other localities before external forces are asked to provide support.

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The following section provides further guidance for disaster risk managers to enable them to successfully undertake such tasks.

The disaster risk manager in conjunction with the local community and local mass organisations is responsible for building the community's DRM system to allow for effective response to and recovery from local events. The disaster risk manager will work closely with agencies and organizations in the community. Governmental and non-governmental organizations will engage in coordinated efforts to build capabilities and capacity. Partnership and coordination are essential components of a successful DRM program and will contribute to an efficient and effective disaster risk manager⁹⁹.

Main requirements of disaster risk managers

There are a variety of professional and individual qualities that are essential for a successful disaster risk manager:

- Be organized and professional;
- Apply specialized job knowledge into practice;
- Communicate effectively with superiors, subordinates, partners, stakeholders and the public;
- Balance competing requirements while looking out for the good of the community; and
- Maintain self-control in stressful situations.

Professionalism in the workplace

Professionalism can be displayed in various ways. Often, disaster risk managers have to work as mediators or facilitators, helping others make things happen. They integrate and coordinate the activities of a lot of other people and organizations in the community. Disaster risk managers know how to reconcile differences and compromise for the greater good of the community. The ability of a disaster risk manager to balance all of the requirements in an effective and systematic way requires a level of professionalism and commitment. This ability is a main characteristic of a disaster risk manager.

One way professional disaster risk managers show competence is through specialized job knowledge: awareness of current or pending legislation, familiarity with regulations, and a working knowledge of the agencies associated with disaster risk management.

Effective coordination

Disaster risk managers should work closely with other departments such as fire, flood control, planning, health, agriculture and public works. During a disaster, they should be coordinating operations among these and other departments. A good working relationship with other department leaders is essential.

On a day-to-day basis, the planning department, non-governmental organizations, and fire departments and others function independently. They have their own mandates, their own responsibilities, and their own structures. During a disaster however, all of these agencies and organizations must work together. Agency differences, competitiveness, and territoriality can cause problems, and may result in a slower response, or even prevent the delivery of critical

⁹⁹ A large city or province may have a full-time disaster risk manager with a paid supporting staff. There also may be a full-time fire and police department. A small community may have only a part-time or volunteer disaster risk manager with no staff support.

services. The disaster risk manager must always remember what is best for the public. Disaster risk manager's responsibility is to facilitate the effective coordination of all agencies active in disaster.

Community interaction

One potential problem with DRM programs is the lack of community support. If a community has few disasters then community support for DRM may be low. Even in large disaster-prone cities, there may be competing demands and limited support of DRM programs. Incorporating people in DRM actions at every opportunity is a way to build public awareness, increase buy-in, and make the DRM program more effective.

The following activities can help build community awareness and support for DRM and can help reduce disaster impacts:

- Develop creative ways to inform and involve local people in all phases of the DRM program.
- Keep the community in a state of readiness in case a disaster occurs.
- Use volunteers.
- Work with elected officials to cultivate a greater interest in DRM.

Duties of disaster risk managers

The success of DRM is based on the extent to which critical functions have been implemented. Disaster risk managers should consider all aspects of DRM, including efforts to strengthen mitigation and preparedness, and to promote sustainable recovery and rehabilitation.

At a local level, for example, disaster risk managers can help communities to undertake hazard, vulnerability and capacity assessments, to develop preparedness plans and mechanisms for early warning communication and to access funds and support for both structural mitigation works such as dykes and non-structural mitigation, such as tree-planting on unstable slopes. After a disaster has occurred, disaster risk managers have a role in helping people recover their livelihoods, access credit, and take steps to reduce future risk such as improvements in house reconstruction.

The following list concentrates mainly on examples of critical response functions required during emergencies. However, successful execution of these functions depends on actions taken during all components, including mitigation, preparedness and recovery.

Critical functions during emergency situations

Mobilizing emergency personnel and resources

The ability to mobilize personnel and resources on short notice in the face of a threat is essential. To be successful, two things must occur.

First, there must be an around-the-clock means of monitoring threats and potential disasters so that officials can remain informed. Second, officials, once alerted, must be able to mobilize their personnel and resources in a timely way.

The effective disaster risk manager will make sure that 24-hour monitoring and notification processes are in place, and that each manager of personnel and resources potentially involved in disaster response has workable mobilization procedures in place. Testing these procedures in advance is crucial.

Warning the public and taking protective action

These are two related activities. It is important to be able to provide the public with timely messages that are accurate, precise, understandable and authoritative, so that when the public hears a warning, people know that they can rely on the message, and take the protective action recommended.

The effective disaster risk manager will ensure that public notification systems are ready and that specific personnel are designated to transmit messages to the public that are both accurate and timely. In addition, they will have already performed a hazard and vulnerability analysis of the community to determine the most suitable protective actions in response to each hazard that is likely to occur in their community (See Chapter 6).

Caring for affected people

This encompasses a range of activities addressing the well being of the community. The community normally has existing services that do this on a regular basis; basic and standard processes are already in place for health care and social welfare. Often the problem is not the scarcity of resources and facilities, but a lack of coordination between the providers, the overlapping responsibilities of various providers, and an uneven allocation of resources.

The effective disaster risk manager will help all the agencies that provide day-to-day care services to better coordinate their response. This is another place where the manager can organize disaster exercises that can be very valuable in building greater coordination.

Assessing damage and needs

This becomes a critical function once the disaster strikes. Damage and needs assessment continue long after the immediate hazard passes. The information gathered through assessment is important to help officials allocate resources not only immediately, during response; but also long-range, during recovery.

The effective manager will rely on and coordinate the skills of many technical experts and also specialists in the community to do damage and needs assessments. Sometimes, a quick, superficial survey is all that's possible at the beginning of a disaster. Later, this work can be technical, involving engineers, architects, construction personnel, hazardous materials experts, psychologists, agricultural scientists, NGOs and the like. The disaster risk manager will ensure that the data gathered through the assessments reaches the right officials in a timely way to allow them to make appropriate response decisions.

The effective disaster risk manager will ensure that staff and community members are appropriately trained in damage and needs assessment techniques. It is also important to work with a variety of agencies to determine and practice protocols for collecting and sharing information (see Chapter 7). Streamlining and testing the damage assessment process prior to a disaster can help ensure more efficient collection of accurate data and more effective use of available resources.

Restoring essential public services

Restoring public services is always a high priority after a disaster. The utility companies usually are ready to go into action because they have their own disaster plans and are experienced at implementing them. The effective disaster risk manager, as the coordinating agent of the community's emergency planning, needs to be sure that there is on-going communication and coordination with the utilities.

Other public services, such as hospitals and public works departments must also be prepared to respond effectively. When the community conducts a disaster exercise, be sure to invite representatives of all these organizations.

Informing the public

This is a critical function during an emergency and involves telling community members about what has happened, what further risks there may be, where to seek assistance and medical care and when to return home. Failure to properly inform the public often compounds problems. It is important that the DRM plans be clear about who is authorized to release information, what can be released, and how it is to be released.

The role of the effective disaster risk manager is to make sure these plans are up-to-date, and that the personnel designated to handle the public information function receive the training they need. Furthermore, close coordination with the media to better understand and meet their needs is essential. In many communities, members of the media participate in drills and exercises.

Vulnerability analyses should identify populations that might require specialized communication strategies.

Record keeping

Record keeping during a disaster is essential for two reasons:

1. Officials should be able to document what is occurring so the community can learn from its experiences and not repeat mistakes. The records kept by all departments will be very useful in helping the community form an accurate picture of a range of disaster effects on the community. These records will be helpful in reviewing and possibly revising plans and mitigation strategies.
2. Good records are essential if the community hopes to receive financial assistance from the central government or the international community. While Vietnamese and foreign offices are willing to assist, the “price tag” may be increased documentation.

The effective disaster risk manager will ensure that all of the partners involved in disaster response have their own procedures for record keeping and use them. To the degree that it is feasible, the manager could suggest standardized record-keeping processes using state-of-the-art technologies.

Planning for recovery

Planning for recovery should occur before the disaster occurs. One good reason for this is that obtaining central government and international assistance is often not a simple process, and involves knowing the requirements and procedures for getting the aid. When the disaster hits, it is too late to do the research.

The effective manager maintains constant contact with the personnel of the agencies who can provide this assistance. This action will allow the manager to be up-to-date about changing requirements and procedures. Being known by the agency staff, and being up-to-date on the agency’s information can save a lot of time when time is critical.

Coordinating disaster risk management activities

This is an important function, because someone needs to pull the whole effort together, and to

coordinate all of the activities. The individuals who make up the DRM team may be individually well trained to assume their responsibilities, but someone needs to be sure the team functions well as a whole.

The effective disaster risk manager plays an important role in helping the DRM teamwork well together. This means helping the individuals involved in DRM keep their plans current. Organizing various disaster drills, tabletop exercises and full-scale exercises to test the plans will add realism to the planning. Coordinating all these activities is the essence of the disaster risk manager's job. It is not a small task.

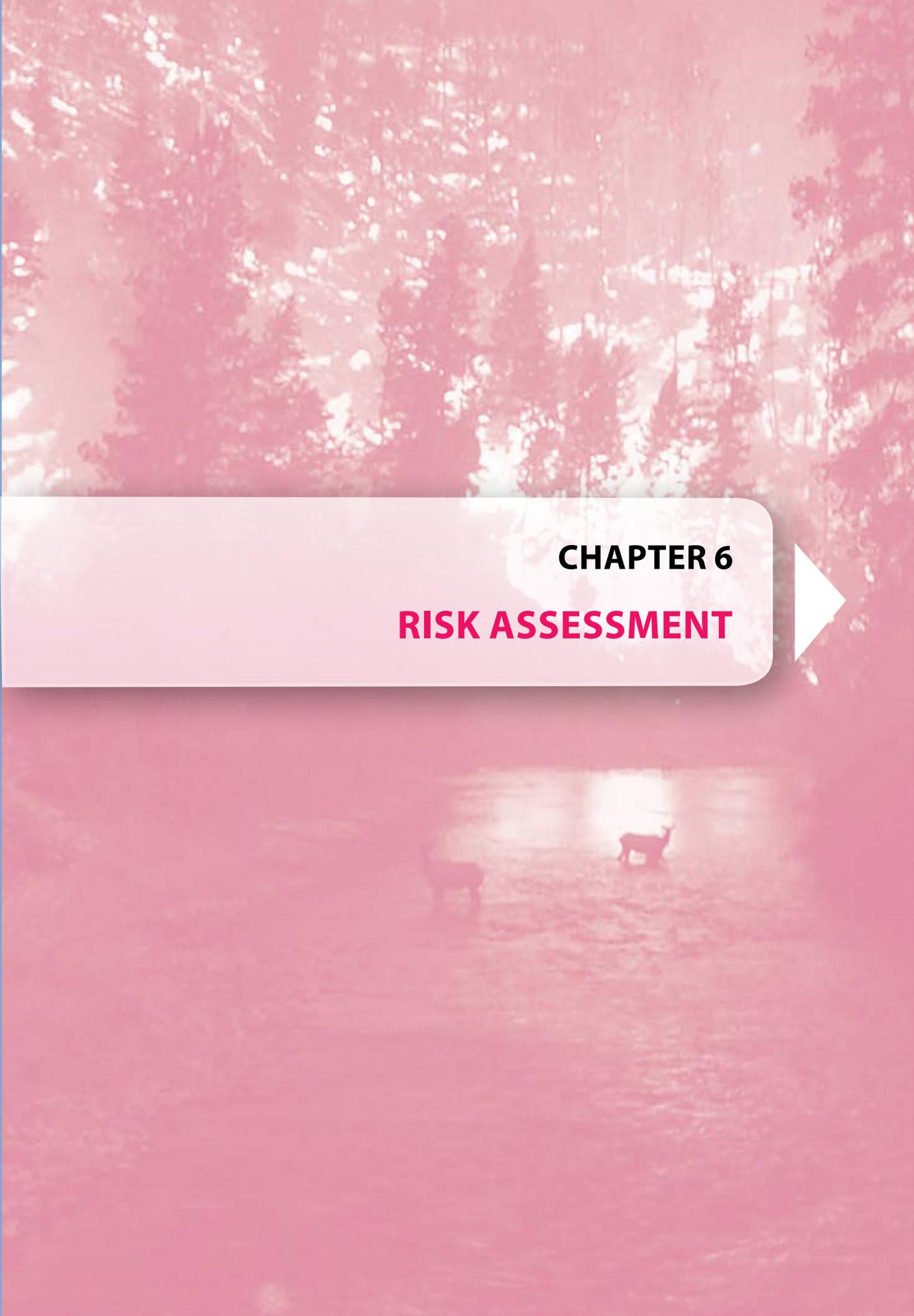
Successful execution of these emergency functions will not only improve response and recovery efforts, but also can also help inform mitigation strategies and help reduce future losses.

5.7 CHAPTER REVIEW

- Important **definitions in DRM** that should be understood by Government staff and others
- Activities **can be undertaken at all levels to reduce** vulnerability. It is essential for all people involved in DRM to try to aspire to develop DRM
- The various **DRM models** help us to plan and manage programme activities more effectively. Depending on the local context one model maybe found to be more effective than another but they are able to supplement each other
- Possible **DRM measures and actions for major, common hazards**, i.e. typhoons, floods, drought, landslides, earthquakes and tsunami which affect communes, villages and households in Viet Nam that can be taken by the Government, in partnership with Mass Organisations and INGOs, with local people in high risk areas for each specific hazard are detailed (see Annex V.1)
- The **roles and responsibilities for a disaster risk manager** are detailed.

5.8 DISCUSSION QUESTIONS

1. Identify structural and non-structural DRR measures and activities relevant for your district. Or, if you are working at the provincial level, what actions could you be involved with?
2. What is the most frequently occurring hazard in your district? What actions may be taken at the village/commune level to address this hazard?
3. What are the main roles and responsibilities of an effective disaster risk manager? In the context of your province/district, who are these people likely to be?



CHAPTER 6
RISK ASSESSMENT

6.1 INTRODUCTION TO RISK ASSESSMENT

6.1.1 Introduction

Risk assessment, a process to assess hazards, vulnerabilities and capacities is described in detail.

6.1.2 Main learning points

By the end of this chapter, participants should be able to:

- Realize the purpose of a risk assessment and know what essential information needs to be collected and analyzed;
- Understand the process of a hazard, vulnerability and capacity assessment (HVCA) at the local level;
- Describe the principles of a participatory approach and the use of appropriate participatory assessment tools;
- Understand risk assessment reporting.

6.1.3 Risk assessment

The Hyogo Framework for Action, priority 2 'Identify, assess and monitor disaster risks and enhance early warning' states that the: *"starting point for reducing disaster risk and for promoting a culture of disaster resilience lies in the knowledge of the hazards and the physical, social, economic and environmental vulnerabilities to disasters that most societies face, and of the ways in which hazards and vulnerabilities are changing in the short and long term, followed by action taken on the basis of that knowledge"*. National and local risk assessments are outlined as key activities.

Risk assessment can be undertaken at different scales (national, provincial, city/town, district, commune and village) and for different sectors. In this chapter we focus mainly on assessment of risk that may be undertaken in urban/semi-urban areas at the district, commune and village levels. Such assessment often uses participatory action research methods to place communities¹⁰⁰ in the lead role for the assessment, active planning, design, implementation and evaluation of activities aimed at reducing the community's risk to disaster. Whether they are rural, urban or semi-urban neighborhoods, it is crucial that communities exposed to hazards can contribute to the risk assessment and planning process. Risk assessment focuses on identifying the most potential hazards, vulnerable groups in a community, and explores what local capacities can be used to enhance the resilience of the community members. The risks facing a community can include natural hazards as well as other threats, such as environmental health risks or diseases.

Risk assessment forms an essential part of community based disaster risk management (CBDRM) (See Chapter 8 for further details). Once a community has assessed the risks it faces and an action plan has been developed, disaster risk reduction (DRR) measures need to be taken (see Chapter 4). These measures might include practical disaster mitigation measures, such as building dams or dykes, forming emergency response committees, developing community based early warning systems and practicing response and evacuation, advocating at the local or national government level for policy change in favour of protective action, or even measures to reinforce the livelihoods of the poorest in the community, hence their resources for self-protection.

¹⁰⁰ In this material, the term 'local communities' covers all the people living in a particular area or place

A particularly useful methodology for this task is **Hazard, Vulnerability and Capacity Assessment**¹⁰¹ (**HVCA**). Similar approaches are used by many non-government organizations and national governments. HVCA involves a process of collecting and analyzing information about hazards that people face in their locality, the different levels of vulnerability of local people and the capacities they possess to cope with a disaster and recover from it when it strikes.

6.1.4 Participatory assessment

Risk assessment can be undertaken using multiple methods, such as secondary data review, surveys/questionnaires and participatory research. There are also tools that help assess disaster risks, comprising remote sensing, Geographic Information System (GIS) and Global Positioning System (GPS)¹⁰². These tools can be used for multi-hazard and vulnerability mapping related to specific hazards, and combined with socio-economic and demographic data can help produce an analysis that can give a technical assessment, in addition to the information gathered through community participation. However, these tools normally often come at a high financial cost and not everybody can access them easily.

For planning purposes at the national level, disaster risk managers commonly use data available from other organizations in addition to primary information collected from the field. Sharing of information between agencies and communities, at all levels, is an important method of learning, data validation and cost minimization.

For the purpose of working in communities, we will focus upon assessment using participatory tools, which draw upon local knowledge of hazards, vulnerabilities and capacities, local development priorities and 'buy in' local people to the risk assessment and management process. This approach is often referred to as participatory assessment with the emphasis on the participation of all stakeholders involved in the assessment process. The idea behind participatory assessment *in general* is that it provides a means to:

- Identify, estimate and rank community issues, concerns, problems and resources with regards to social, economic, cultural, demographic data, etc.
- Understand the causes and complexity of problems faced by the community
- Understand how different problems affect different groups in the community
- Provide indicators that help to measure changes in people's accessibility to and control of power through continuous community assessment
- Contribute to raising awareness in the community about common interests
- Provide specific information on constraints and opportunities for development work
- Engage local people in assessing and managing risks to which they are exposed.

Due to the involvement of the community in the whole process of assessment, people from the community will better understand their situation and be able to identify actions to be taken locally.

¹⁰¹ There are other tools for organizational/institutional assessment, e.g. SWOT, however, in this chapter we focus on HVCA at the community level

¹⁰² These are extremely useful tools for environmental and natural resources management. They are widely recognized as supporting tools for the planning, monitoring, and management of the appropriate utilization of resources at the country, regional and global levels.

Participatory assessments can be designed so that they focus on disaster risk, as set out in the remainder of this chapter. The results of such an assessment will form the basis for the community to undertake DRM planning and action. These assessments will also feed up to districts and provinces to form part of their risk assessments.

Risk assessment

A methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend¹⁰³.

6.2 UNDERTAKING A RISK ASSESSMENT

Risk assessment is a process to assess the hazards, (which threaten a community) and the community's vulnerabilities and capacities. One methodology used for this task is HVCA.

There are four aspects that a risk assessment should include:

- a. **Hazard assessment:** identifying which hazard(s) affect the community, describing the nature and behavior of each hazard in terms of its frequency, magnitude, seasonality, location, warning signs, possibility of early warning and general knowledge of people about the hazard
- b. **Vulnerability assessment:** identifying what things¹⁰⁴ are at risk for each hazard type and why these are at risk (analyze the root causes)¹⁰⁵; the individuals, households, groups, assets and livelihoods that are most exposed to any given hazard are identified; the assessment includes the physical, geographical, economic, social, political and psychological factors that cause some people to be particularly vulnerable to a given hazard.
- c. **Capacity assessment:** identifying people's resources and capabilities to avoid, cope with and recover from the impacts of hazards; who has access to and control over existing resources, recognizing that as with vulnerability capacity varies from person to person (as well as from community to community). These resources include: knowledge of the risks, experience in dealing with disasters, resources including money, and expertise in local planning, management and organization
- d. **Community risk measurement:** understanding people's perception of risk to draw upon local knowledge and to ensure that disaster risk management plans are relevant to local issues.
- e. **Developing local priorities for action and community development:** so that risks and their remediation programmes can be ranked in a priority order.

¹⁰³ *Comment:* Risk assessments (and associated risk mapping) include: a review of the technical characteristics of hazards such as their location, intensity, frequency and probability; the analysis of exposure and vulnerability including the physical social, health, economic and environmental dimensions; and the evaluation of the effectiveness of prevailing and alternative coping capacities in respect to likely risk scenarios. This series of activities is sometimes known as a risk analysis process.

¹⁰⁴ Or elements

¹⁰⁵ A root cause is an initiating cause of a causal chain (an ordered sequence of events in which any one event in the chain causes the next), which leads to an outcome. Commonly, root cause is used to describe the depth in the causal chain where an intervention could reasonably be implemented to change the situation and prevent an undesirable outcome.

The result of a risk assessment is an assessment and ranking of the disaster risks faced by the community which can be then used as a basis for risk reduction planning by themselves and government agencies at district and provincial levels.

6.2.1 PREPARATION FOR A RISK ASSESSMENT

The following steps are suggested prior to undertaking a risk assessment:

- **Select the location:** identify the villages or communes where the risk assessment will be undertaken
- **Organize/undertake the following activities:**

Organize the team

- o Establish an assessment team (of local Government staff drawn from relevant departments, Mass Organizations and from NGOs) who will be responsible for facilitating and providing support; those who are facilitating should be trained in risk assessment
- o Assign tasks to each team member
- o Ensure that all volunteers and field staff are clear about the methodologies and trained in how to use them
- o Identify an appropriate time for the assessment with the local authorities and Mass Organisations and invite local people to participate in the assessment

Organize the community

- o Ensure that each community has one person assigned as a focal point (often the Red Cross or Women's Union staff member for that particular community)
- o Communicate with local authorities (i.e. the district and commune level People's Committees and the village head) on the purpose and specific, identified vulnerable groups in the community (e.g. households headed by women, the elderly, young people, children, disabled people, different castes, ethnic groups, etc.)
- o Agree on the schedule of the assessment with the community
- **Arrange Government or other facilities**, equipment, finance, material, food and lodging needed for the field trip and meetings with local people
- **Collect background information and secondary data** on the communities: based on available information sources and identifying information needs to be collected from the communities for the analysis of their situation of hazards, vulnerabilities, capacities and perception of risks
- **Check Sphere standards** as they will be used in the situation analysis (*See Chapter 8 for more details*)
- **Identify "key informants"**
 - o Very often, the key informants (the most important source of information) in the community are the commune level People's Committee chairperson, village leaders, local Red Cross and Women' Union chairpersons, local community based organizations, local residents, religious leaders, etc.

- **Assessment methodologies:** PRA tools, questionnaire (*See later in this chapter*)
 - o Prepare a checklist of questions for semi-structured interviews
 - o Prepare household interview questions (can be in the form of a questionnaire)
 - o Prepare PRA tools (these need to be modified so that they are appropriate to the specific community).

By the end of the preparation step, the assessment team should clearly identify the risk assessment objectives, the main areas of enquiry, the main questions, the key informants and assessment tools to be used (*See Annex VI.2 for full details of the tools and methods used in PRA*).

The following **matrix** is a useful planning tool for the assessment team. It helps describe needs, tools, and sources of information, the schedule and responsibilities for tasks related to risk assessment that the assessment team will undertake in the field:

Information needs	Tools	Information source/ informant	Schedule/ sequence	Which team/ member?	Tasking: Who does what?
<i>What data do we need to gather to identify the community's existing problems, hazards, vulnerability, capacity and people's perception of risk?</i>	<i>Which tools can be used to collect the needed information?</i>	<i>From whom or where will we collect the data (sources)? (Make a list of names and titles of people or groups, who the team will meet)</i>	<i>When will we undertake which activity or apply which tools with the community (at the start, middle or end of the field work)?</i>	<i>Which team and who will do what?</i>	<i>Who within each team will do what? (facilitator, documenter, process observer, etc.)</i>

Collection of information on hazards, vulnerabilities, capacities and the community's perception of risk

When meeting with people in the community for the first time, the team should:

- Introduce the overall purpose of the assessment, requirements and methods to the community representatives with community leaders (e.g. village head, religious leaders, school principles, midwives, community based organizations (CBO) leaders, political leaders, respected members of the community, etc.) and discuss:
 - o Who are the members of the assessment team
 - o Which organizations staff are from
 - o What skills staff and volunteers possess
 - o What are the objectives of the assessment
 - o What activities are to be conducted
 - o What would be the roles and responsibilities of the community

- o What would be the roles and responsibilities of the assessment team
- o What the assessment outcomes will be (and will not be)
- o How the assessment will help the community
- o What schedule the assessment is working to.
- Divide community participants into groups: collect information by using PRA tools according to assigned tasks (e.g. to discuss their general situation, disasters and undertaken response and preparedness measures, and discuss other questions as designed in the preparation step)
- Conduct in-depth household interviews, focus group discussions and participant observation (household interview questions should be prepared in the preparation step – see Annex VI.1)
- Collate and analyze information, using the progression of vulnerability framework

Participatory tools are commonly used for hazard, vulnerability and capacity assessment. The use of these PRA tools will be discussed below.

6.2.2 Hazard assessment

In Chapter 1, a hazard was defined as a: *‘Natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage’*¹⁰⁶.

The purpose of a hazard assessment is to specify what the characteristics of the potential hazards and threats are that people in a community face. To understand this we need to identify the factor(s) that relate to a hazard:

- a. **List the hazards:** *these can be identified from historical records and local knowledge e.g. flood, storm, etc.*
- b. **Force:** *wind (tropical storm, whirlwind), water (rain, flood, storm surge, etc. and also drought) land (earthquakes, landslides, deposits, mudflows, etc.), temperature (heat and cold waves), fire (forest fire, etc.)*
- c. **Warning signs:** *scientific, natural and indigenous indicators that a hazard is likely to happen*
- d. **Forewarning:** *the time between warning and impact of the hazard (i.e. the time gap between knowing that a hazard is likely to occur and when it actually does)*

¹⁰⁶ Natural hazards are a sub-set of all hazards. The term is used to describe actual hazard events as well as the latent hazard conditions that may give rise to future events. Natural hazard events can be characterized by their magnitude or intensity, speed of onset, duration, and area of extent. For example, earthquakes have short durations and usually affect a relatively small region, whereas droughts are slow to develop and fade away and often affect large regions. In some cases hazards may be coupled, as in the flood caused by a typhoon or the tsunami that is created by an earthquake.

- e. **Speed of onset:** *the speed of arrival and impact. We can distinguish between hazards that occur almost with limited warning (e.g. earthquakes) and hazards that can be predicted three-four days in advance (typhoon) to very slow-onset hazards like drought that may take months to develop*
- f. **Frequency:** *how often does the hazard occur? Predictably? Seasonally? Yearly? Once in every ten years?*
- g. **When:** *does the hazard occur at a particular time of year, certain months?*
- h. **Duration:** *how long is the hazard felt minutes (for earthquakes) days (for floods)/weeks/ months (for droughts)?*
- i. **Location:** *where the hazard occurs*
- j. **Cause:** *what starts the hazard*

We can use a **hazard matrix** to systematise the information about a certain hazard:

Hazard type	Force	Warning signs	Forewarning	Speed of onset	Frequency	When	Duration
Flood							
Typhoon							
Etc.							

We may broadly identify three basic kinds of hazard:

- Those that come from natural phenomena including: typhoons, droughts, floods and earthquakes.
- Those that come from violence including: civil conflict, intimidation and harassment.
- Those resulting from deterioration including: seasonal disasters, rapid population growth, environmental pollution, and negative impacts of the global/regional economy.

The frequency and severity of the threat or hazard will also change over time and from one place to another. Vietnamese communities often suffer from a number of different hazards and some may occur at the same time, e.g. storm and landslide. It is important that in your area you are:

- Aware of the history of hazards - some occur infrequently or may not strike the same place often enough to be remembered by the people there
- Aware of new hazards - increasing numbers of threats or hazards are becoming worse or emerging due to changes in environmental, economic, social or political trends
- Trends in hazard occurrence – some hazards may be occurring more or less frequently, or with greater or less magnitude than previously
- Able to predict these threats and their consequences - how probable are these hazards? Where might they strike? Who is at risk? To answer these questions requires collaboration with others
- Aware of local small scale hazards - there are increasing numbers of small-scale local disasters which may not make the headlines but collectively may present a more serious

problem than any catastrophic event, e.g., in poor areas, fires, landslides and flash floods are common events. Red Cross, Women's Union and other Mass Organization staff are in a unique position to work with affected communities and identify these local hazards and to act at local and national level to address them. When we have identified the possible hazards, it is then important to make some reasonable assessment of how probable such threats are and how serious they might be if they occurred.

6.2.3 Vulnerability assessment

Vulnerability was defined in Chapter 1, as: *'The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard'*¹⁰⁷

Vulnerabilities are constraints that affect a household, community's or society's ability (or inability) to absorb losses after a disaster and to recover from the damage.

Vulnerability is a complex combination of interrelated, mutually reinforcing and dynamic factors. In Chapter 4 we described five different types of factors that affect vulnerability: physical, socio-cultural, economic, environmental, and governance factors. For the purposes of vulnerability assessment, another way to describe this complexity was proposed by Anderson and Woodrow (1989) who grouped vulnerabilities into three categories:

- **Physical/material vulnerability** - for example, poor people who have few physical/material resources suffer more from disasters than rich people. People who are poor often live on marginal land; they do not have any savings or insurance; they are more likely to be in poor health. These factors make them more vulnerable to disasters and mean that they have a harder time surviving and recovering from a disaster than people who are better off economically.
- **Social/organizational vulnerability** - people that have been marginalized in social or economic terms are vulnerable to suffering from disasters whereas groups which are well organized and in which there is a high commitment to each other suffer less when a catastrophe strikes.
- **Attitudinal/motivational vulnerability** - people that have low confidence in their ability to affect change or who have "lost heart" and feel defeated by events they cannot control are harder hit by disasters than those who have a sense of their ability to bring about changes they desire.

6.2.4 Capacity assessment

Capacities are *'the combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals'*¹⁰⁸ and coping capacity as: *'the ability of people, organizations, using available skills and resources to face and*

¹⁰⁷ There are many aspects of vulnerability, arising from various physical, social, economic, and environmental factors. Examples may include poor design and construction of buildings, inadequate protection of assets, lack of public information and awareness, limited official recognition of risks and preparedness measures, and disregard for wise environmental management. Vulnerability varies significantly within a community and over time. This definition identifies vulnerability as a characteristic of the element of interest (community, system or asset), which is independent of its exposure. However, in common use the word is often used more broadly to include the element's exposure.

¹⁰⁸ Capacity may include infrastructure and physical means, institutions, societal coping abilities, as well as human knowledge, skills and collective attributes such as social relationships, leadership and management. Capacity also may be described as capability. Capacity assessment is a term for the process by which the capacity of a group is reviewed against desired goals, and the capacity gaps are identified for further action.

manage adverse conditions, emergencies or disasters'. These qualities increase the ability of an individual or community to cope with a threatening event or process. Coping means managing "resources" in adverse situations. Coping can include active ways of solving problems. "Coping mechanisms" are employed by individuals/communities as actions to help reduce disaster risk, before, during and after hazards events.

We can use similar categories to describe capacities as for vulnerabilities:

- **Physical/material capacity** – the physical/material resources available to people strongly shape their capacity to reduce risk and cope with and recover from disaster impacts. Even people whose houses have been destroyed by a typhoon or whose crops have been destroyed by flood can often salvage things from their homes or farmlands. Sometimes they have food in store or crops that can be recovered. Some family members have skills, which enable them to find employment if they migrate either temporarily or permanently.
- **Social/organizational capacity** – capacities to do not depend on material assets alone, but also on the personal, social and organizational resources available to people. Even when everything is destroyed, people still have their skills and knowledge (although they may be traumatized and bereft); they have family and community organization. They have leaders and systems for making decisions.
- **Attitudinal/motivational capacity** – people also have positive attitudes and strong motivation such as the will to take protective action, as well as the will to survive and willingness to help each other. These are important capacities and form the basis for risk reduction just as much as the physical resources that people have.

Table 7: Examples of different types of vulnerability and capacity

Category	Vulnerability	Capacity
Physical/material	<ul style="list-style-type: none"> • Hazard-prone location of community, houses, farmland, infrastructure, basic services, etc. • Lack of physical access and control over means of production (land, farm inputs, animals, capital, etc.) • Occurrence of acute or chronic food shortage • Lack of basic services: education, health, safe drinking water, shelter, sanitation, roads, electricity, communication, etc. • High mortality rates, malnutrition, occurrence of diseases, insufficient caring capacity • Overexploited natural resources • Improper land use pattern • Lack of job opportunities and discrimination in employment • Insecure or risky sources of livelihood • Inadequate economic fallback mechanisms • Loss of business opportunities 	<ul style="list-style-type: none"> • Resources such as tools, seeds for crops, livestock, draught animals, cash, jewelry, other items which can be sold • Food stocks • Physical access to and control over resources (food and clean water), social services (health, education) and facilities (sports, etc.).

Category	Vulnerability	Capacity
	<ul style="list-style-type: none"> • Lack of access to markets, exploitation by middlemen or dependency on money lenders • Slums and shanties in low lying areas • Poor road construction • Housing near to sea and rivers, sub-standard materials used in construction • Inadequate school infrastructure and services 	
Social/ organizational/ institutional	<ul style="list-style-type: none"> • Inadequate skills and educational background • Level of awareness of hazards and causes of vulnerability • Weak family/kinship structures • Lack of leadership, initiative, organizational structures to solve problems or conflict • Ineffective decision-making where people or groups are left out • Unequal participation in community affairs • Ethnicity, religion, caste, class, ideology, conflict rumors, divisions, etc. • Unjust practices, lack of access to political processes • Absence or weak community organizations (formal or informal, governmental, indigenous) • Limited or neglected relationship with local government and administrative structures • Feeling of isolation from outside world • Excessive alcohol consumption • Exposure to violence (domestic, community conflicts) • Improper governance • Lack of awareness and practice of general safety measures • Poor hygiene practices • Lack of adherence to building codes • Poor traffic management system 	<ul style="list-style-type: none"> • Skills and abilities • Close-knit communities that have good leadership and social networks for support • Communities with caring local and national institutions • People who share the physical resources they have in times of need • Supportive family structures • Communication means for family members who are physically separated • Political organization and empowerment, the right to vote • The means to express opinions, e.g. through the media or through advocacy to those in authority

Category	Vulnerability	Capacity
Attitudinal/ motivational	<ul style="list-style-type: none"> • Negative attitude towards change • Passivity, fatalism, hopelessness, dependency • Lack of initiative, no "fighting spirit" • Lack of unity, cooperation, solidarity • Negative beliefs/ideologies • Dependency on external support - a helpless "victim" mentality • Lack of awareness about hazards and their consequences 	<ul style="list-style-type: none"> • Coping in adverse situations • Active ways of solving problems, methods for handling stress and defence mechanisms • Positive attitude • Sense of humour even during crises • Proactive attitude • Knowledge and awareness

6.2.5 Information analysis and recommended measures

The assessment team:

- Analyses information, using the following risk assessment matrix, and looks especially at the community's perception of risk.

A risk matrix is used in the risk assessment process; it allows the severity of the risk of a hazard event occurring to be determined. In simplest terms: how likely it is to happen and how bad it would be if it happened. Utilising the Disaster Crunch Model a basic matrix, showing hazard, vulnerabilities and capacities may be developed:

Table 8: Risk assessment matrix

Hazards <i>that threaten the community</i>	Vulnerabilities <i>(material/physical, organizational/social, motivational)</i>				Capacities <i>(material/physical, organizational/social, motivational) coping strategies/available resources</i>		
	Disaster situation: elements at risk	Unsafe conditions	Dynamic pressures	Root causes	Individual and household capacities (of men and women)	Community capacities	Access to resources/capacities
Warning signals forewarning, frequency, timing, duration, etc.							

For each hazard, related risks and vulnerabilities should be analyzed with the community members to understand the situation clearly and to prepare for the next step in identifying disaster risk reduction measures.

Table 9: Hazard, risk, and vulnerability identification

Hazard	Risk (or possible impact)	Vulnerability
Hazard 1 <i>e.g. Flood</i>	Risk 1 <i>People drown</i>	Vulnerability 1 <i>People don't know how to swim</i>
	Risk 2 <i>Household items damaged or washed away</i>	Vulnerability 2 <i>There is a lack of awareness of the importance of keeping essential household items in a safe place</i>
	Risk 3	Vulnerability 3
Hazard 2	Risk 1	Vulnerability 1
	Risk 2	Vulnerability 2

Perceptions of risk

People have different perceptions of risk. In designing and implementing effective risk reduction measures with people at risk, we must consider how they perceive their risks and what importance they place on reduction of specific risks. A professional assessment of risk, while technically accurate, must also consider how local people perceive and understand the risks and their choices available to them to reduce those risks. Local people are sometimes less comfortable with scientific concepts and base their perceptions of risk on a range of normative values, history, culture and heritage and their own desires for a safe and secure future. Through risk assessment we can ascertain community and hazard specific DRR measures and activities. These are based on the local hazards and the community's specific vulnerabilities and capacities, so that we can effectively choose and design meaningful measures that utilise and build on their strengths while reducing their vulnerabilities.

Questions for risk perception analysis

- Which hazard (s) potentially may cause the most loss of life or damage to homes and income earning assets?
- Which hazard risk needs to be reduced first, according to people's perception?
- Which element(s) at risk need to be protected?
- Which are the priorities for risk reduction?

Purposes of risk perception analysis

- **Report on the results** of the analysis to the community (*people who came for the first meetings are expected, other community members can join this meeting too*) when meeting with community people for the second time

- Ensure that the community people **verify** the information and **analyze** the collected data
- Obtain additional **information** to fill in any gaps
- Use the **problem tree tool** to analyze the causes of each problem, starting by identifying concerned issues/problems raised by the community people (see Annex VI.2 Participatory Assessment Tools for an explanation of problem tree analysis)
- **Rank risks** against the priorities established (see above)
- Work with the community to help them **identify appropriate emergency preparedness and disaster risk reduction measures at the** district, commune and village levels
- Identify **prioritized activities** for the immediate and longer term.

Transforming vulnerability into capacity

After analyzing hazards, risks, vulnerabilities and capacities discussions with the community members should focus on how different vulnerabilities can be transformed into capacity using available resources (See Chapter 4 Disaster risk reduction for further details). Discussion results can be presented in the following table:

Table 10: Transforming vulnerability into capacity

Actions to transform vulnerabilities into capacities	CIT C = Change; I = Influence; T = Full Transformation	Type of activity Short, Medium, Long term	Requirement TS=Technical support FS=Financial support CW=Community work
<i>Example:</i>			
Hazard 1 – Vulnerability 1			
a. temporary relocation of residents	I	S	CW
b. develop community using acceptable standards	C	L	TS
c. build sea wall	T	M	FS,TS, CW
Hazard 1 – Vulnerability 2			
Hazard 2 – Vulnerability 1			

Three categories of C, I and T are provided for each identified activity or measure, which are detailed as:

C = change - Indicates that change could be brought about through community intervention, and that change could occur immediately or in the short term

I = influence - Indicates that some level of influence would be required to bring about change, for example the initiative requires the approval and backing of local government

T = full transformation - Indicates that a high level of intervention, support and assistance (i.e. from government, regional groups or an outside agency) would be required to bring about any change.

For each suggested transformational action, we need to ask the following questions:

- A: Can this be undertaken immediately?
- B: Does it require resources?
- C: Can we find the necessary resources ourselves? If yes, how?
- D: Does it require technical support? If so, Where from?

Note: Report on disaster risk assessment results should be written using the format in Annex VI.3 Main contents of a community risk assessment report (or a HVCA) report

Factors requiring attention during a risk assessment and the planning process

- Introduce clearly the **purpose** of the risk assessment to the local authorities and to people in the community
- Gain community trust and engagement
- Respect community priorities and values
- Thoroughly prepare the assessment **plan** and **methodologies**
- Apply PRA tools **flexibly**
- Facilitators only play a **facilitating role** in group discussions and collecting information, and are not to provide “words” to participants, nor force their opinions on people in the community
- Pay attention to the use of **appropriate words and phrases** that are easy to understand by the local communities (in accordance with local officials’ and people’s knowledge)
- Facilitators can provide **advice** to the communities on DRR activities
- Ensure the **participation** of all target groups from the community
- Ensure the accuracy of information by **cross checking** different sources
- Pay attention to **local customs, traditions and religion**
- Ensure that **different groups** (men, women, elderly, children, people with disabilities, people living with HIV/AIDS, marginalized or excluded people) in the community are able to express their opinions
- **Respect and listen** to people’s opinions
- Ensure that the results of **information collection and analysis** are achieved with people’s full participation

- Encourage communities to use their **available resources** in the implementation of the overall development programme (never promise anything that is not clearly feasible!)
- Measures should be **relevant** to specific community needs, capacities and conditions (specific, clear and realistic)
- Facilitators should always **be pleasant and encourage** community participation
- **Lessons** should be learnt at the end of each assessment to improve further next time.
- Agree on **methods to ensure that lessons are not lost.**

6.3 RISK ASSESSMENT - A REGULAR ACTIVITY

The risk assessment can be used as a monitoring and evaluation tool to measure progress or change in the communities. It also helps identify necessary adjustments for the community's DRM plan. Therefore, it is important to make risk assessment a regular activity because plans go out of date – hazards change daily, seasonally and yearly. The following are suggestions to help ensure this:

- Intensify **awareness raising** on hazards, disasters and the importance of disaster response and preparedness for the local people and officials
- Emphasize that DRR is a **common responsibility** of all individuals and agencies
- Red Cross and Women's Union staff and volunteers as well as I/NGO staff in the vicinity will often have capacity in the use of the risk assessment
- **Technical and financial support** in risk assessment to extend its use (from Government or non-government)
- There should be **agreement** with communities and local authorities on the application of risk assessment after training.
- Use risk assessment in the **collection and analysis of information** for annual DRM planning and implementation
- Supplement and **adjust annual plans** according to risk assessment results
- Provide **advice** to the local authorities in DRR
- **Share information and assessment results** with other organizations
- **Identify activities** that the Red Cross and Women's Union can be involved in, provide support and cooperate with other organizations
- **Introduce other organizations** who are interested in supporting various DRR measures.

An **assessment report** should be written by the team following such an assessment and documented plans filed (this document can be used as baseline data for evaluating the community based disaster risk management plan implementation as well as for responding to future disaster/s).

Other outputs may include: local risk maps, local and publicly displayed risk management and awareness posters.

6.4 PRINCIPLES OF A SUCCESSFUL ASSESSMENT

6.4.1 In preparation

- a. **GIGO** Garbage in = Garbage out
- b. Remember: *“What you can’t see is often more important than what you can see!”*
- c. **Foresee any obstacle** that may jeopardise the work (e.g. logistics, transportation, etc.) when you are in the field
- d. Understand the **cultural context**
- e. **Be sensitive** to the different views and needs of men and women (i.e. be aware of gender relations)
- f. Consider the **timing**, check with people in the community when it is appropriate to meet
- g. **Be on time** for appointments
- h. **Coordinate** with others (Government, other assessment missions, NGOs, etc.)

6.4.2 In collecting and analysing information

- i. Ensure **community participation**
- j. **Use the tools in an order** from simple to more complicated ones
- k. Always ask **clear questions** and try to avoid too many yes or no questions
- l. **Use simple language** and avoid technical terms
- m. Make sure that the opinions and information provided are clearly understood to **avoid miscommunication** between the team and community stakeholders
- n. Verify and triangulate¹⁰⁹ to **ensure accuracy**
- o. Beware of raising **expectations** of the community
- p. Beware of **bias or distortions**
- q. **Take notes and share results with local people**
- r. **Provide regular feedback**

Remember!

- *Assessment gets more sophisticated as time goes on (as resources and capacity increase)*
- *An assessment is an event to be repeated*

6.5 PARTICIPATORY ASSESSMENT TOOLS

There are many tools developed by different organizations based on their experiences in working with communities. These tools can be used separately, or in combination to supplement each other.

¹⁰⁹ Triangulation is often used to indicate that more than two methods are used in a study with a view to double (or triple) checking results. This is also called “cross examination”. The idea is that one can be more confident with a result if different methods lead to the same result.

6.5.1 Participatory assessment tools used commonly for risk assessment

Some PRA tools that can be used for disaster risk assessment are:

No.	Participatory tool	Hazard	Vulnerability	Capacity
1	Hazard map	√	√	√
2	Historical profile	√	√	√
3	Seasonal calendar	√	√	√
4	Gendered resource mapping		√	√
5	Transect walk		√	√
6	Livelihood/coping analysis		√	√
7	Institutional/social network analysis		√	√
8	Semi-structured interviews	√	√	√
9	Focus group discussion	√	√	√
10	Observation	√	√	√
11	Ranking	√	√	√ (if capacity is to be enhanced)
12	Problem tree	√ (goes to causation)	√	√

6.5.2 Principles of facilitating PRA tools

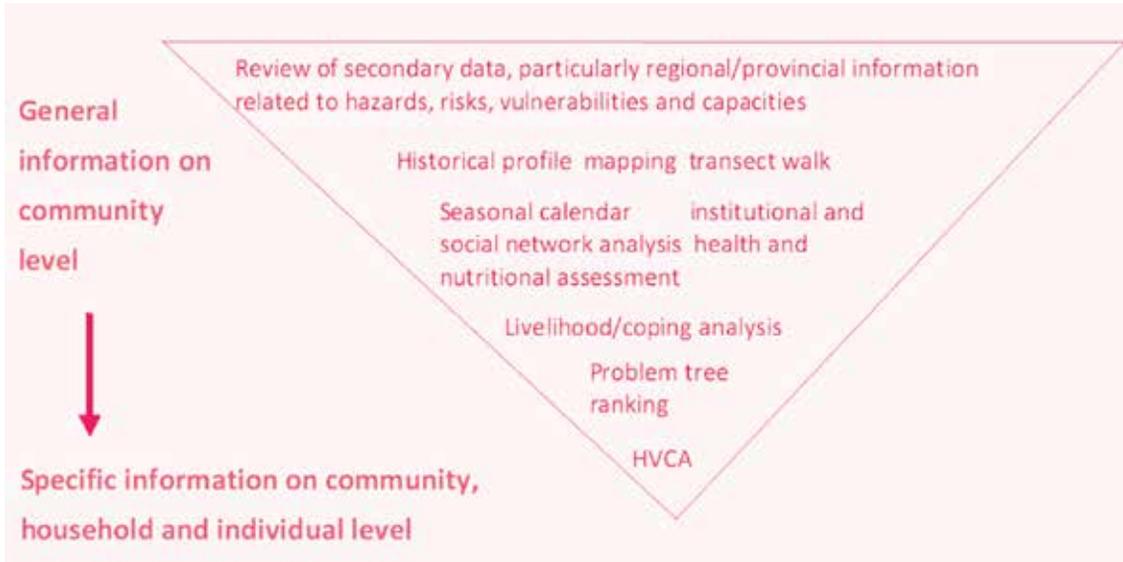
During any risk assessment, the team members should be willing to:

- **Encourage** community people engage fully
- **Listen and learn** from the people. Have confidence in people's ability to analyze, teach and plan
- **Be flexible** in applying, experimenting, combining different methodologies, aiming to allow vulnerable people to express themselves
- **Be open** to making mistakes and to admit that we make mistakes
- **Continuously try to do better**
- **Be flexible** with community priorities and their schedule. **We should adjust** to their priorities, not them to our schedule
- **Spend time** with the people

6.5.3 Sequence in the use of PRA tools for a risk assessment

The simpler PRA tools should be used first to collect general information before using more complex ones for information analysis.

The following sequence is suggested for risk assessment:



6.6 CHAPTER REVIEW

- Conducting a participatory risk assessment, or **hazard, vulnerability and capacity assessment** is an important part of determining local DRM needs
- It is important to understand the principles of how to undertake a good assessment. There are several useful matrixes that should be used by the assessment team. Assessment teams ask questions, prepare reports, use a problem tree (to analyse the causes of problems), rank the risks and work with the community to identify appropriate measures.
- The main purpose of disaster risk assessment is for the community to assess their own situation and discuss the possible solutions for their community.
- Disaster risk assessment is a process of learning for both the community and for the assessment team.
- There are a range of PRA tools, which provide different techniques to collect information. It is important to select the tools, which are most relevant to the target groups; and a number of tools are used to ensure that information is triangulated.
- The assessment team should not impose its ideas or point of view on the community but rather facilitate the discussions and learning with the community.
- People have different perceptions of risk. Therefore they will have different priorities to solving problems. It is important that these perceptions of risk are taken into consideration during the disaster risk assessment process.

6.7 DISCUSSION QUESTIONS

1. What are the main components of a disaster risk assessment?
2. What are the main factor(s) that create or result in a hazard?
3. What are the three main categories that are used to describe vulnerability and capacity?
4. What are some dynamic pressures that can affect a community?
5. What are some of the underlying causes for people's vulnerability?

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CHAPTER 7

**DISASTER INFORMATION
MANAGEMENT AND DAMAGE AND
NEED ASSESSMENT (DANA)**





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7.1 INTRODUCTION

Timely and accurate information of damage and needs is essential when making decisions for emergency response and recovery operations at all levels, from the community to the international level. Information also needs to be communicated effectively within the Government system and with other stakeholders to avoid confusion and duplication.

In the aftermath of a disaster, in order to undertake an adequate and appropriate response, it is important to identify the immediate as well as longer term needs of the affected population. Assessment of damage data at the local level is essential to ensure disbursement of funds from provincial/national level to rehabilitate or reconstruct damaged infrastructure. In addition, excessive or inappropriate distribution of relief can be avoided (which may reduce the capacity of people in the affected communities to recover instead of helping them).

This chapter provides some knowledge and guidance on disaster information management, damage and humanitarian needs assessment and reporting requirements for a Government staff at different levels involved in disaster response and recovery.

7.2 MAIN LEARNING POINTS

By the end of this chapter, participants should be able to:

- Understand the importance of timely and accurate information management
- Utilise the Government approved¹¹⁰ reporting templates for the assessment of damage and humanitarian needs after a disaster
- Realize the importance of baseline data collection before (as well as after) disasters.

7.3 INFORMATION MANAGEMENT

7.3.1 Types of information

There are several types of information that we should consider in the aftermath of a disaster. Each one has different specific objectives and, therefore, should be treated differently.

Table 11: Types of information

Information type	Purpose
Public information	Dealing with local, national, regional and international media
Operational information	Should be managed at the Government's coordination centre (i.e. the DMC) and lead to decision-making based on the information collected
Internal information	Helps to ensure an adequate flow of information for all Government staff about specific issues that are of relevance
Reporting	Should be promoted at national, regional and international levels as an accountability tool and be well-planned and updated regularly
Stakeholder communication	Should help to increase communication and coordination with and between the stakeholders involved at different levels with the response and recovery operation

¹¹⁰ See Decision No. 31 QD/PCLBTW on 24th February 2012

7.3.2 Sharing and exchanging information

Sharing and exchanging information by the Government among various organisations is crucial during emergencies. Collaboration is necessary to ensure a timely and effective recovery. This communication includes both “technical” aspects (e.g. communications equipment) but also the flow of information between the different levels and with different stakeholders.

- Information gathering and reporting are essential components of any organisation involved in disaster preparedness, response and recovery programming
- An effective information system provides selective information relevant to the specific decision maker’s needs. It also clarifies particular problems and available options, and helps the user to make reasonable choices about what actions to take. It does not drown the decision makers in a sea of information, but rather, adds value and coherence to their activities.

The C/CFSC Standing Offices at different levels should always maintain an updated list of contact addresses, telephone/fax numbers to improve communication.

7.3.3 Information management system

Information management system includes data collection, packaging of data into useful information and dissemination of this information through reports, articles and other means.

District and commune level staff of different CFSC member organisations – notably DARD – and the mass organisations (the VNCR and Women’s Union) - are responsible for collecting data and reporting this information to the higher level (provincial and national) managers and leaders, who will then base their decisions partially on this information. Reports and information can add value to decision-making process by:

- Selecting and presenting only information relevant to the decision makers’ context
- Logically organizing the information
- Providing an initial analysis and recommendations
- Formatting the document for easy reading, with attention drawn to major points

There is a clearly defined sequence to the process of managing information – converting raw data to useful information:

- Information “in”
- Sorting (grading, collating, discarding what is unreliable)
- Evaluation
- Decision making
- Information “out” (dissemination)
- Action

Passing on information is every bit as important as receiving it!

7.4 ASSESSMENT

7.4.1 The importance of assessment

Assessment is a vital element of the planning process for responses in different sectors. Assessment provides the information on which decisions are made. If Government officials responsible for organizing post-disaster relief and recovery operations are to make effective decisions about the deployment of resources, it is essential that they be properly informed. They must have appropriate and timely information about what has happened, what needs to be done, and what resources are available. Their decisions can save lives, minimize injury damage and loss, prevent the escalation of the disaster, prevent secondary hazards and inform people who need to know. A well-organized response will also help to build confidence and enhance credibility.

Relief and recovery operations are, in essence, the management of information and resources, based on assessments and reports. Information is needed at all levels of Government administration but the nature of the information required will vary from one level to another. Good assessments and reporting require forethought; the assessment and reporting system should be established in preparedness planning.

7.4.2 Types of assessment

There are two broad types of assessment—preliminary damage assessments and detailed damage assessment.

1. Preliminary damage assessments take place within hours after an incident, and focus on lifesaving needs, imminent hazards, and critical lifelines. The ability of local governments to perform the preliminary assessments accurately and within the first few hours after an incident is critical to providing an adequate local government response for life-threatening situations and imminent hazards.
2. Detailed damage assessments take place days and weeks after a disaster, and records details about the types of damage, affixing a monetary value to damages. This assessment focuses on sector-specific damages and identifies recovery needs.

Coordinated and timely assessment permits local government to prioritize response activities, allocate resources, and request assistance quickly and accurately.

Some of the data required is already available in the form of *baseline data* (maps, population statistics, etc.), which should be readily accessible; however, this baseline data must be supplemented by *real-time information* (mostly in the form of incoming reports from various sources after the disaster).

Assessment of damage caused by a hazard or a disaster is the responsibility of the Government. The Department of Dyke Management and Flood and Storm Control in Hanoi collate information. Such damage data will help various C/CFSC members as well as a broad range of other stakeholders to make decisions on response and recovery activities related to human lives, livelihoods and property. Every effort must be made by Government staff at the different levels to ensure the timeliness and accuracy of this information. This data should be synthesized from relevant local authorities' damage reports (either from documentation or by telephone interviews) and triangulated with reports from different Government agencies, such as the

departments of health, education, agriculture, etc. the Government Statistics Office (GSO), the VNRC, the Women's Union, INGOs and community based organisations working in the vicinity of the disaster.

7.5 DAMAGE AND NEEDS ASSESSMENT TEMPLATES

Recent analysis has shown that the majority of stakeholders involved with DRM in Viet Nam value the systematic collection of data by the Central Committee for Flood and Storm Control (CCFSC) on the impact of disasters. The CCFSC has well-established mechanisms to collect such data through its representatives at the provincial, district and commune level. However, the current system lacks information on humanitarian needs and only provides limited information on human impact. Many stakeholders consider such information essential for their decision-making processes. There is, therefore, a need to improve the system to respond to such demands.

On 24th February 2012, the head of the Standing Office of the CCFSC issued a new Decision 31 QD/PCLBTW, providing the most updated and revised DANA templates and report formats to be utilized for the assessment of damage and humanitarian needs.

The templates

The following templates are for future reporting on disasters for use by the CCFSC members, other Mass Organizations, the Red Cross Movement, UN and non-government agencies.

Template 3 **Damage Report:** information for this report will start to be collected and collated **immediately after the disaster** and will be updated regularly for three to eighteen months. The report summarizes the damage and human impact of the disaster.

Template 5a **Recovery Needs Report - first three months:** used as soon as feasible after the occurrence of the disaster and provides information on the relief and early recovery needs for up to three months.

Template 5b **Recovery Needs Report - after three months:** used to provide information on the relief and early recovery needs after three months, for as long as mid and long term recovery needs are required.

Template 6 **Baseline information:** this information, updated annually, is **collected and collated during the period from January to May** (outside the normal seasonal disaster season) by the **provincial authorities** and provides data on the pre-disaster situation. This data will be used to compare with the situation after the occurrence of a disaster.

NOTE:

Templates 3 and 6: provide **official Government data** and are completed only by provincial CFSC and the CCFSC members;

Template 5a and 5b: is completed based primarily upon information from the CFSC members - particularly from data provided by the Viet Nam Red Cross Society and other Mass Organizations present near the disaster - along with information from national and international NGOs and UN agencies also working in the area.

The templates are to be used at all levels of the C/CFSC: commune, district, provincial and national (central). In the immediate aftermath of a disaster, most disaster information has to be collected at the village and commune level and aggregated at the district and province level prior to being sent to the CCSFC who will verify and collate information from all disaster-affected areas.

Grouping of indicators

In templates 5a and 5b the indicators are grouped under the following main headings:

FOOD SECURITY, NUTRITION and FOOD AID
SHELTER
EDUCATION
HEALTH
WATER, SANITATION and HYGIENE
EARLY RECOVERY (livelihoods)

This grouping has the advantage that Ministries, Mass Organizations and specialized agencies have the relevant information collated together.

Another advantage is that the grouping is based on the Inter-agency Standing Committees (IASC) Clusters¹¹¹. The Cluster system was introduced in Viet Nam in May 2009 and is followed by all UN agencies, and the INGOs and Red Cross Movement members of the Disaster Management Working Group (DMWG):

This grouping of indicators links with the main charters of the draft 2011 Sphere Project Handbook¹¹² for:

- Water, sanitation and hygiene promotion¹¹³;
- Food security, nutrition and food aid¹¹⁴;
- Shelter, settlement and non-food items¹¹⁵;
- Health action¹¹⁶.

111 The Inter-Agency Standing Committee (IASC) globally has designated eleven Clusters: Agriculture and fisheries; Early recovery; Education; Emergency shelter; Emergency telecommunications; Health; Logistics; Nutrition (and food security); Protection; Water, sanitation and hygiene (WASH). In Viet Nam, in May 2009, the following Clusters were proposed, each Cluster has a designated lead agency – a Government of Viet Nam Ministry and a Co-lead (a UN agency/INGO): Agriculture and Fisheries (FAO), Early Recovery (UNDP), Water, sanitation and hygiene (UNICEF), Education (UNICEF and Save the Children UK), Health (WHO), Emergency Shelter (UNHABITAT), Nutrition (UNICEF) and Logistics (WFP)

112 The 2011 version of which is available in Vietnamese

113 Water, sanitation and hygiene promotion covers: 1) WASH, 2) hygiene promotion, 3) water supply, 4) excreta disposal, 5) vector control, 6) solid waste management and drainage.

114 Food security, nutrition and food aid covers: 1) Assessment and analysis 2) Infant and Young Child Feeding, 3) Food Assistance, 4) Food Security and Livelihoods and 5) Treatment of Acute Malnutrition and Micronutrient Deficiencies

115 Shelter, settlement and non-food items covers: 1) Shelter and Settlement, and 2) Non-Food Items: Clothing, Bedding and Household Items.

116 Health action covers: 1) Health Systems and 2) Essential Health Services.

These four Sphere charters have their equivalent in the new DANA grouping, which is based on the IASC clusters.

Link with other information flows and assessments

In addition to the disaster management information system of the CCFSC, the parallel information flow within ministries, those produced by the General Statistics Office (GSO) PACCOM¹¹⁷ and Mass Organizations will continue to be essential.

In the aftermath of a disaster, multi-stakeholder, in depth assessments conducted by Joint Assessment Teams (JAT) – comprising members from the NGO/INGO, Red Cross and UN agencies will continue to be required. However, these assessments can be conducted in only a limited number of communes and the CCFSC information will be necessary to provide an overall picture.

The proposed templates do not cover the JAT assessments nor any that may be developed for cluster-specific assessments, which would most likely happen once data from the JAT is assessed.

Please keep in mind that the capacity at the commune level to collect information is limited and that the data needs to be relevant for multi-stakeholders¹¹⁸.

The following are the recommended templates for use at all levels:

7.5.1 Damage Report

Purpose

The purpose of the Damage Report is to provide information on the impact the disaster had on the population and the damage it caused on social services and essential sectors of the economy. It will provide more indicators for the CSFC and other stakeholders to take action for response in the first three months and early recovery from the disaster.

Template 3

Template 3: DAMAGE REPORT

This **Damage Report** should start to be used **immediately after the disaster** when information is available from the affected areas; it should continue to be **updated regularly for approximately three to eighteen months** (depending upon the nature, scale and complexity of the disaster).

¹¹⁷ People's Aid Coordinating Committee

¹¹⁸ Besides templates, simple guidelines are established to provide information about assessment responsibilities and methods.

Annex 4: Issued with Decision No. 31 QĐ / PCLBTW dated 24 Feb. 2012 by CCFSC

TABLE on DAMAGE CAUSED BY DISASTER

Name of locality (province, district, commune)

Type of disaster

Disaster affected area

Of which most affected communes/villages/towns/districts:

From month year.....to month year

No.	Type of damage	Code	INDICATORS	Units Currency	General damage		
					Quantity	province / city	
						Price Unit (VND)	Value (mio. VND)
1	PEOPLE	NG01	Number of dead people	Person		X	X
		NG011	Of which: Children (under 16)	Person		X	X
		NG012	Of which: Women	Person		X	X
		NG02	Number of people missing	Person		X	X
		NG021	Of which: Children (under 16)	Person		X	X
		NG022	Of which: Women	Person		X	X
		NG03	Number of people injured	Person		X	X
		NG031	Of which: Children (under 16)	Person		X	X
		NG032	Of which: Women	Person		X	X
		NG04	Number of households affected	households		X	X
		NG05	Number of affected people	Person		X	X
2	SHELTER	NH01	Number of houses collapsed or swept away	No.			

	NH011	Permanent houses	No.			
	NH012	Semi-permanent houses	No.			
	NH013	Temporary houses	No.			
	NH02,	Number of houses unroofed or damaged	No.			
	NH021	Permanent houses	No.			
	NH022	Semi-permanent houses	No.			
	NH023	Temporary houses	No.			
	NH03	Number of houses submerged	No.			
	NH04	Other damage to housing (*)	mio. VND	x		
3	EDUCATION	Number of schools affected	No.			
	GD011	Number of classrooms collapsed or swept away	No.			
	GD012	Number of classrooms unroofed or damaged	No.			
	GD013	Number of classrooms submerged	No.			
	GD02	Number of pupils, students not going to school (due to disaster)	No.	x	x	
	GD03	Number of student desk sets damaged	No.			
	GD04	Number of student books damaged	No.			
	GD05	Other damage to education (*)	mio. VND	x	x	
4	HEALTH	Number of hospitals or clinics affected	No.			
	YT011	Number of rooms collapsed or swept away	room			
	YT012	Number of rooms unroofed or damaged	room			
	YT013	Number of rooms submerged	room			
	YT02	Other damage to health infrastructure (*)	mio. VND	x	x	
5	AGRICULTURE, FORESTRY AND INDUSTRY	Area of rice field damaged	ha			

NN011	Lost completely (more than 70%)	ha		
NN012	Productivity decreased (from 30% to 70%)	ha		
NN02	Area of flowers, vegetable or secondary crops damaged	ha		
NN021	Lost completely (more than 70%)	ha		
NN022	Productivity decreased (from 30% to 70%)	ha		
NN03	Area of long-term industrial crops damaged	ha		
NN031	Lost completely (more than 70%)	ha		
NN032	Productivity decreased (from 30% to 70%)	ha		
NN04	Area of short-term industrial crops damaged	ha		
NN041	Lost completely (more than 70%)	ha		
NN042	Productivity decreased (from 30% to 70%)	ha		
NN05	Area of fruit orchards damaged	ha		
NN051	Lost completely (more than 70%)	ha		
NN052	Productivity decreased (from 30% to 70%)	ha		
NN06	Forest area damaged	ha		
NN07	Area of salt field damaged	ha		
NN08	Arable land area submerged, eroded or covered with sediment	ha		
NN09	Residential land area eroded or covered with sediment	ha		
NN10	Seedlings damaged	ha		
NN11	Seeds damaged	tons		
NN12	Food damaged	tons		
NN13	Number of dead large livestock	No.		
NN14	Number of dead small livestock	No.		

		NN15	Number of dead poultry	No.			
		NN16	Pesticides washed away	tons			
		NN17	Fertilizer washed away	tons			
		NN18	Salt damaged	tons			
			Livestock and poultry feed/fodder damaged	tons			
		NN 20	Plants damaged	mio. VND	x	x	
			Other damage to agriculture, forestry and industry (*)	mio. VND	x	x	
6	IRRIGATION	TL01	Dykes from Level III to "special" grade damaged				
		TL011	Length	m		x	x
		TL012	Amount of soil	m ³			
		TL013	Amount of stone, concrete	m ³			
		TL02	Dykes from Level IV or less, damaged				
		TL021	Length	m		x	x
		TL022	Amount of soil	m ³			
		TL023	Amount of stone, concrete	m ³			
		TL03	Embankments damaged				
		TL031	Length	m		x	x
		TL032	Amount of soil	m ³			
		TL033	Amount of stone, concrete	m ³			
		TL04	Canals damaged				
		TL041	Length	m		x	x
		TL042	Amount of soil	m ³			
		TL043	Amount of stone, concrete	m ³			
		TL05	Reservoirs or dams damaged				

	GT034	Amount of stone, concrete	m ³		
	GT04	Bridges and sluices damaged			
	GT041	Permanent bridges swept away or destroyed	No.		
	GT042	Permanent bridges damaged	No.		
	GT043	Temporary bridges (wooden) swept away or destroyed	No.		
	GT044	Temporary bridges (wooden) damaged	No.		
	GT045,	Underground pipes and culverts drifted away, damaged	No.		
	GT05	Other vehicles damaged			
	GT051	Ferries, canoes or ships sunk	No.		
	GT052	Ferries, canoes or ships damaged	No.		
	GT053	Cars or special purpose vehicles damaged	No.		
	GT054	Boats or transportation ships (cargo ships) damaged	No.		
	GT06	Roads congested due to flooding	No.		
	GT07	Wharves damaged	No.	x	x
	GT08	Airports damaged	mio. VND	x	x
	GT09	Other damage to transport (*)	mio. VND	x	x
8	FISHERIES	Area of aquaculture or seafood cultivation damaged	ha		
	TS01	Lost completely (more than 70%)	ha		
	TS02	Productivity decreased (from 30% to 70%)	ha		
	TS02	Amount of shrimp and fish (product) lost	tons		
	TS03	Shrimp and fish farming			

	TS031	Shrimp hatchling (for shrimp farms)	per 10,000		
	TS032	Fish hatchling (for shrimp farms)	per 10,000		
	TS033	Other hatchlings (farming)	mio. VND	x	x
	TS04	Aquaculture and seafood products lost	mio. VND	x	x
	TS05	Floating fish cages and fish shrimp ponds damaged	No.		
	TS06	Fishing equipment damaged			
	TS061	Vessels (> 100CV) sunk or destroyed	No.		
	TS062	Vessels (> 100CV) missing	No.		
	TS063	Vessels (> 100CV) damaged	No.		
	TS064	Vessels (from 50CV to 100CV) sunk or destroyed	No.		
	TS065	Vessels (from 50CV to 100CV) missing	No.		
	TS066	Vessels (from 50CV to 100CV) damaged	No.		
	TS067	Vessels (<50CV) sunk or destroyed	No.		
	TS068	Vessels (<50CV) damaged	No.		
	TS069	Fishing tools damaged	tons		
	TS07	Other damage to fisheries (*)	mio. VND	x	x
9	COMMUNICATION	Communication stations damaged	No.		
	TT02	Communication pylons collapsed	No.		
	TT03	Communication wires or cables broken	m		
	TT04	Other damage to communication (*)	mio. VND	x	x
10	INDUSTRY	Electricity poles broken or collapsed			
	CN011	Of which Middle and High Voltage	No.		
	CN012	Of which Low Voltage	No.		
	CN02	Electricity wires or cables broken			
	CN021	Of which: Middle and High Voltage	m		

		Cn022	<i>Of which: Low Voltage</i>		<i>m</i>		
		CN04	Transformer stations damaged		No.		
		CN05	Small hydropower infrastructure damaged		No.		
		CN06	Plants and factories damaged		No.		
		CN07	Mining sites damaged		No.		
		CN08	Amount of coal washed away or lost		tons		
		CN09	Machinery and equipment damaged (*)		mio. VND	x	x
		CN10	Other industrial products washed away (*)		mio. VND	x	x
		CN12	Other damage to industry (*)		mio. VND	x	x
11	CONSTRUCTION	XD01	Construction sites damaged due to water (washed away or collapsed)		mio. VND	x	x
		XD02	Construction tools damaged		mio. VND	x	x
		XD03	Other construction materials damaged		mio. VND	x	x
12	WATER & SANITATION	MT01	Residential areas polluted		ha		
		MT02	Number of people lacking clean water		No.	x	x
		MT03	Number of wells flooded		No.		
		MT04	Number of water supply infrastructure damaged		No.		
		MT05	Number of sanitation facilities or bathrooms damaged		No.		
13	OTHER WORKS	CT01	Cultural buildings collapsed or washed away		No.		
		CT011	<i>Cultural buildings</i>		No.		
		CT012	<i>Cultural or historical heritage</i>		No.	x	x
		CT02	Cultural buildings damaged		No.		
		CT021	<i>Cultural buildings</i>		No.		

	CT022	Cultural or historical heritage	No.		
	CT03	Offices collapsed or washed away	No.		
	CT04	Offices damaged	No.		
	CT05	Markets or trade centers collapsed or swept away	No.		
	CT06	Markets or trade centers damaged	No.		
	CT07	Warehouse collapsed and washed away	m ²		
	CT08	Warehouse damaged	m ²		
	CT10	Other damage to other works (*)	mio. VND	x	x
14	TOTAL DAMAGE	Total damage in monetary value	mio. VND	x	x
15	EARLY RECOVERY	Number of people rescued	person	x	x
		Number of people assisted with cash or kind	person	x	x
		Amount of money provided in assistance	mio. VND		

(*) The table lists the types of assets together with

(x) Skip did not list

The Provincial Committee for Flood and Storm Control and Search and Rescue.....

Name

Title/position

Signature

Date and time of report

Timing and frequency

The Damage Report should be submitted as quickly as possible after the disaster strikes. It will be updated regularly until the indicators are sufficiently accurate and can last up to three to eighteen months after the disaster.

Responsibilities

Village leaders and members of the CSFC in the affected communes, districts and provinces are responsible for undertaking rapid assessment and for reporting.

- Village leaders are responsible for providing information about the disaster as soon as it is possible to the head of the commune level CSFC. The members of the CSFC in the commune are responsible for actively following-up on the assessments by the village leaders, to facilitate and supervise the assessment and to verify the information by assessing the most affected villages themselves.
- The staff of the commune CSFC aggregate the information collected from the village leaders and local people and prepares a report - according to the indicators of this template - and provides this to the district CFSC authorities by phone or other means.
- At the district level, this data is aggregated and verified by crosschecking with village leaders and other local people. The data is then forwarded to the provincial CSFC – this may be by hand, fax, email or over the mobile phone/landline – whichever is quickest and functioning at the time.
- The provincial level CFSC will collate the data from the affected districts into this template and enter the information into the computer using the software provided by CCSFC.

All levels are responsible for forwarding reports to the higher levels by phone, fax, computer or messenger and for actively following-up with the lower levels by calling by phone or facilitating and supervising the assessment in the most affected the areas.

All levels of CSFC should also forward a report to the People's Committee in their administrative area and send copies to all CSFC member organizations; information should be crosschecked at each level.

The assessment for indicators is as follows:

- Protection, Water, sanitation and hygiene and shelter: Department of Agriculture and Rural Development (DARD), with assistance from the Viet Nam Red Cross/other mass organisations as required
- Agriculture and Fisheries: Department of Agriculture and Rural Development (DARD)
- Health: Department of Health (DoH)
- Education: Department of Education and Training (DoET)
- Transportation: Department of Transport (DoT)
- Electricity supply: Department of Industry and Trade (DoIT)
- Telecommunication: Department of Post and Telecommunications (DoPT)

- Flood control and irrigation: DARD.

The representatives of these departments at the commune, district and provincial levels are responsible for assessing the indicators, for forwarding the information to the CCFC in their area and to the next level up in their department.

Accuracy

Each update should achieve a higher level of accuracy until a sufficient degree is achieved.

How to assess

Village leaders, with the assistance of representatives of the member organisations of the CSFC and other mass organisations in the village, will collect the information by interviewing the affected households in their community, including women and children and by direct observation. Only information that is directly related to the disaster is relevant, e.g. the number of people who are injured due to the disaster and not because of other reasons.

Please take note that: Poor households affected refers to those households that are listed by MoLISA as poor and have been impacted by the disaster.

A well, borehole or water supply construction is damaged if it requires major repairs before it can be used for providing safe drinking water again.

A house is damaged seriously, if it needs major repairs before it can be inhabited again.

7.5.2 Recovery Needs

Purpose

The purpose of the Recovery Needs Report is to provide information on the essential relief needs of the affected population and the needs to enable households to recover as soon as possible from the disaster. It provides information for stakeholders on which relief and recovery items are required. The report gives an overall picture, but does not cover all needs. There might be other outstanding needs. In addition to this report, it will necessary to produce reports with more comprehensive findings, e.g. derived from the more in-depth assessments by Joint Assessment Teams (JAT) visiting the affected areas.

Template 5a

This **Recovery Needs Report - first three months** is to be used as soon as feasible after the occurrence of the disaster.

The report should continue to be **updated regularly for approximately three months** (depending upon the nature, scale and complexity of the disaster) and provides information on the relief and early recovery needs for **up to three months** after the disaster.

This report is based primarily upon information from the CFSC members - particularly from data provided by the Viet Nam Red Cross Society and other Mass Organizations present near the disaster, along with information from I/NGOs and UN agencies also working in the area.

Template 5a - Needs for the first three months

Type of disaster (specify):

Province/district/commune name:

Date and time of report:

#	Code	Needs	Units	Number of people affected	Number of people need support	Assistance			Dimension and technical specifications	Priority level (*)
						Total	Locally mobilized	Needs support		
A	CLT	FOOD	kg							1/ available within 10 to 30 days
1		Rice								2/ within 1 to 2 months
2		Box of canned food								3/ after 2 months
3		Drink	1litre bottle of water							
B	CTM	LIVELIHOOD SUPPORT								
1		Cash grant	VND							
2		Cash for work	VND							
3		Preferential loans for livelihood support	VND							
C	CHH	GOODS								
1		Blanket	piece							
2		Mosquito net	piece							
3		Sleeping mats	piece							

Timing and frequency

This report should be submitted as quickly as possible after the disaster. It will be updated regularly until the indicators are sufficiently accurate, which can last up to three months after the disaster.

Responsibilities

The responsibilities for assessing needs are with the CFSC members – primarily the Viet nam Red Cross Society (VNRC) chapter in the affected areas (supported by the International Red Cross Movement) - and other Mass Organizations, in particular the Women's Union, the Youth Union and the Farmer's Union. In addition, non-governmental organisation and UN agencies in the vicinity will provide inputs. The organisations will forward the information to the Standing Office of the CCFSC (comprised of staff from the Disaster Management Centre (DMC) and the Department of Dyke Management, Flood and Storm Control (DDMFSC) under MARD in Hanoi. The DMC will compile the report.

Accuracy

Each update should achieve a higher level of accuracy until a sufficient degree is achieved. For each indicator, the specific quality and size requirement must be indicated under remarks. This is important for agriculture and fishery items. The varieties, types, quality and sizes required for these items should be assessed by carefully consultation with farmers and fishermen in the affected areas and with the staff of the district and provincial DARD.

How to assess

Separate guidelines will be prepared for the assessment of needs.

Essential steps in needs assessments are:

- Coordinate with the CSCF members where the assessment will take place to avoid duplication;
- Visit a number of the most affected communes and villages;
- Include all affected geographical areas (e.g. coast, coastal plains and mountains) and all ethnic groups;
- Assess the situation by on-site visual inspection;
- Interview main informants, e.g. village heads, Mass Organization representatives, with the purpose of obtaining a better insight into the needs of the affected population;
- Organize a meeting with most affected population with the equal participation of women, ask them which problems they face for each of the Clusters (- protection, water, sanitation and hygiene, etc.);
- Interview the most vulnerable affected population; women headed households, disabled persons, elderly persons and orphans - either using structured interviews or a questionnaire;
- Verify own assessments with the information already obtained;
- Consider carefully the local coping capacity in the affected villages and communes;

- Interview some of the main informants at the district and provincial level, e.g. staff of VNRC, as to whether the needs in other, affected communes are similar;
- Use human impact indicators to estimate the needs in communes where the need were not assessed, on the realistic assumption that the needs are proportional to the human impact, apply this only for areas that are geographically similar and that have largely similar ethnic populations;
- Report back and verify the findings with the local CSFC members;
- Include only needs in the template, which cannot be met at the commune, village level or by the affected population themselves. Include the response of the district and province level authorities, the private sector and non-government organizations in the column “already covered”.

Warning

Incorrect assessments of early recovery needs in agriculture can create another disaster for the affected farmers, e.g. a failure of harvest. Supplying the wrong seeds can again lead to serious food shortages.

Template 5b

This **Recovery Needs Report - after three months** is to be used three months after the occurrence of the disaster and follows template 5b.

The report should continue to be **updated regularly for as long as medium and long term recovery needs are required** (depending upon the nature, scale and complexity of the disaster) and provides information on the relief and early recovery needs for **up to three to eighteen months** after the disaster.

This report is based primarily upon information from the CFSC members - particularly from data provided by the Viet Nam Red Cross Society and other Mass Organizations present near the disaster, along with information from I/NGOs and UN agencies also working in the area.

Template 5b - Recovery needs (after three months)**Type of disaster (specify):****Province/district/commune name:****Date and time of report:**

No.	Code	Needs	Units	Quantity	Size	Technical specifications	Number of beneficiaries	In terms of money		
								Local budget	State budget	Other sources
A	TNH	HOUSES								
1		Number of houses that need rebuilding								
2		Number of houses that need repair								
B	TGD	EDUCATION								
1		Number of classrooms that need rebuilding								
2		Number of classrooms that need repair								
3		Number of desk and chair sets that need replacement								
4		Learning aids								
C	TYT	HEALTH								
1		Number of rooms that needs rebuilding								
2		Number of rooms that need repair								

Timing and frequency

This report should be submitted starting three months after the disaster. It will be updated regularly until the indicators are sufficiently accurate, which can last up to three to eighteen months after the disaster.

Responsibilities

Similar to Template 5a.

Accuracy

Similar to Template 5a.

How to assess

Similar to Template 5a.

7.5.3 Baseline Data

Purpose

The purpose of the baseline information is to provide data on the situation before the disaster. This can then be compared with the data after the disaster.

Template 4

Baseline Data is collected and collated during the **period from January to May** by the **provincial CFSC authorities** and provides data on the pre-disaster situation. This data will be used to compare with the situation after the occurrence of a disaster.

The data should be **updated at least annually**. Once finalized, the table should be submitted to the CCFSC - prior to April - and placed on the CCFCS website and linked to provincial websites and/or maps.

Each province will be responsible for the updating and accuracy of their data¹¹⁹ on their respective WebPage on the CCFSC website damage and needs assessment software.

Province:

Date of update:

Order	Category	Items ¹¹⁹	Unit	Quantity
1	HUMAN	Total population	No.	
		Children (under age of 16)	No.	
		Female	No.	
		People with disabilities	No.	
		Households	No.	
		Poor households	No.	
		Female headed households	No.	
2	SHELTER	Houses	No.	

¹¹⁹ For example, by validation with GSO data

¹²⁰ Where feasible this should be cross checked/aligned with GSO and VietInfo data

Order	Category	Items ¹¹⁹	Unit	Quantity
3	WATER, SANITATION and HYGIENE	Households with no access to safe drinking water	No.	
4	FOOD and AGRICULTURE	Households with insufficient access to food	Ha	
		Rice area	Ha	
		Other crops area	Ha	
		Large cattle	No.	
		Young cattle (calves)	No.	
		Fisheries area	Ha	
5	HEALTH	Number of hospitals and health centres	No.	
		Number of rooms	No.	
		Number of beds	No.	
6	EDUCATION	Number of classrooms	No.	
		Number of children in school	No.	
7	LOGISTICS	Length of commune road	M	
		Length of inter-communal road	M	
		Length of provincial road	M	
		Length of national road	M	
		Sluices and bridges	No.	
8	FLOOD CONTROL	Length of national dykes	M	
		Length of local dyke, inferior and ring dyke	M	
		Length of irrigation channels	M	
		Reservoirs	No.	
		Dams	No.	
		Pumping stations	No.	

Name

Title/position

Signature

Date and time of report

Responsibilities

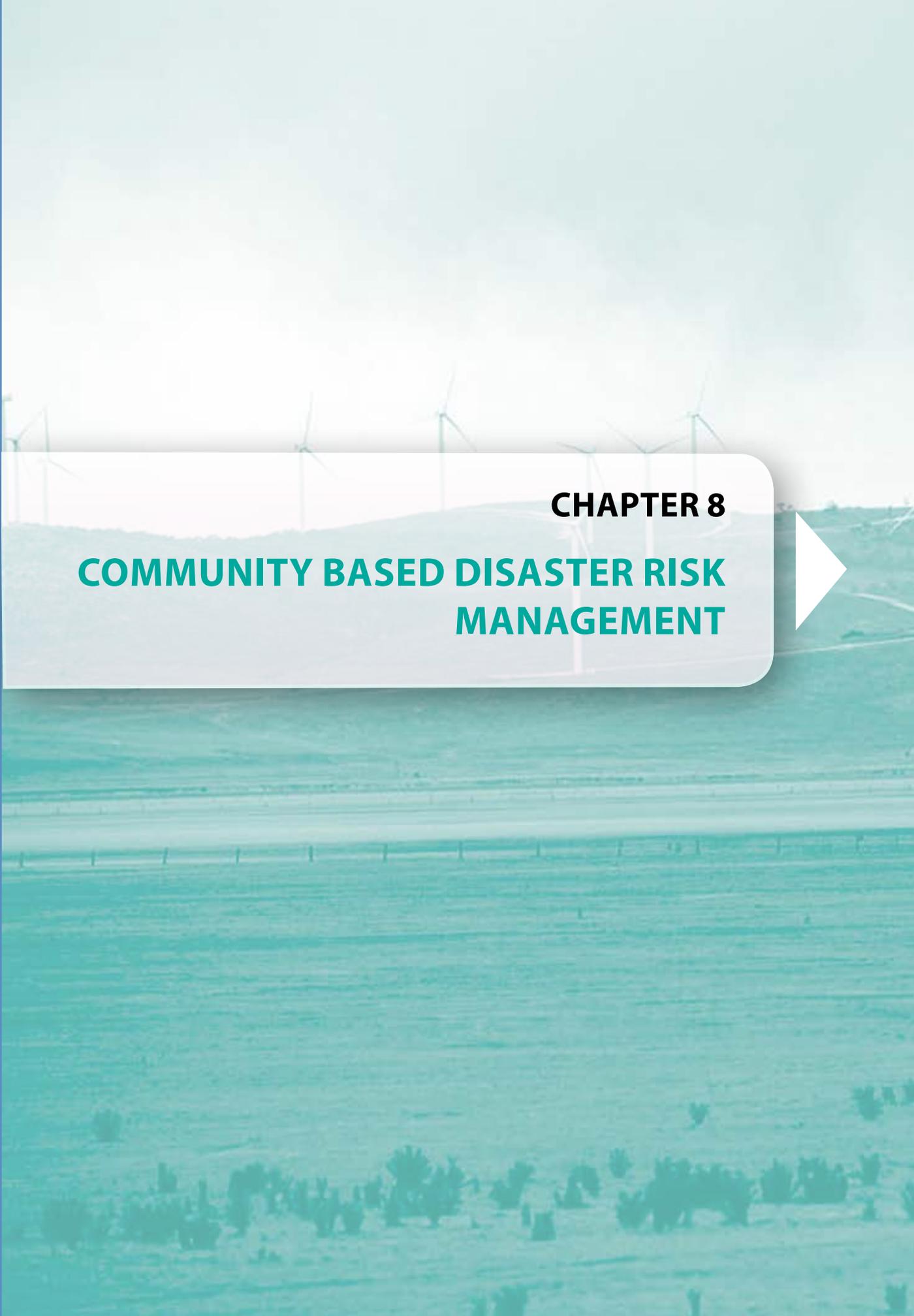
The Baseline data will be collected by the provincial authorities (CCFSC) with participation of the General Statistical Office.

7.6 CHAPTER REVIEW

- Timely and accurate information of damages and needs plays an important role in decision-making and problem solving.
- Information management system includes different means of collecting information, which is conducted from lower levels (district and commune) and is reported to higher ones (provincial and national). The information is the base for the managers or leaders to make decisions.
- Damage and need assessment is a vital element of the planning process for responses in different sectors.
- The four templates described for damage and need assessment, which include different groups of indicators, are provided for reporting on disasters, are officially approved by the CCFSC, under Decision 31 (2012) for use by the C/CFSC members, mass organizations, the Red Cross Movement, UN and non-government agencies.

7.7 DISCUSSION QUESTIONS

1. What is the purpose of damage and need assessment and how often should it be updated?
2. What groups of indicators are used to assess damage and need after a disaster?
3. Has your community conducted a damage and need assessment? Are the specific disaster risk reduction activities in your community consistent with the assessment?

The background image shows a landscape with several wind turbines on a hillside under a bright sky. The foreground is a flat, grassy field with a fence line. A semi-transparent teal overlay covers the bottom half of the image, and a white rounded rectangle is positioned in the upper right quadrant of this overlay, containing the chapter title. A white arrow points to the right from the right edge of this rectangle.

CHAPTER 8
**COMMUNITY BASED DISASTER RISK
MANAGEMENT**



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8.1 INTRODUCTION

There are many disaster risk management (DRM) initiatives at the community level in different parts of the world that have produced tangible results. However, many of the projects are run on external funding and often the end of funding means the end of the initiative. So long as the communities are not the owners of the projects, the projects cannot be carried out in a sustainable way. Community-based disaster risk management (CBDRM) is an approach that tries to root DRM more firmly within the community.

To this end, useful lessons from different organizations in different socioeconomic circumstances are important. To apply effectively these lessons, there is a need to establish a strategic framework for CBDRM and to disseminate good practices widely among various stakeholders.

8.1.1 Main learning points

By the end of this chapter, participants should be able to:

- Explain the purpose, the importance and main features of CBDRM and that the goal of CBDRM is to reduce risk at the commune, village and household level by decreasing vulnerabilities and increasing capacities of people with their active participation
- Acknowledge that CBDRM contributes to people's participation and empowerment in achieving sustainable development and sharing in its benefits
- Explain the main concepts and approaches to engaging communities in DRM and in developing local capacity in CBDRM, in which local people - who have many vulnerabilities - are the primary actors in analysing their situation, planning the course of action to deal with the disaster prone situation and implementing measures that will improve the situation
- Appreciate the steps involved in CBDRM and the specific tasks of different stakeholders in each step
- Understand the main components of the CBDRM programme of the Government of Viet Nam
- Explore the main ways to implement CBDRM activities in hazard prone communes; the principles for working with people at commune and village level and that external stakeholders have supportive and facilitative roles in CBDRM and are sensitive to people's perceptions.

8.1.2 New approaches to managing the risk of disasters in Viet Nam

A recent study¹²¹ has found that there is an upward trend in the number of reported disasters in the regions where most of the world's poor and vulnerable people live: sub-Saharan Africa, South and South-East Asia, and Latin America and the Caribbean¹²². This is mainly determined by a steep rise in reported floods in all regions. When weather-related disasters are analysed separately, the average rate of increase is 4.9% per year¹²³. An increase in the number of people exposed to disasters partly explains the trend, but not fully. It is possible that an increase in the

¹²¹ *Time's Bitter Flood: Trends in the number of reported natural disasters*, Steve Jennings Oxfam GB, 27 May 2011

¹²² Also see various IFRC, *World Disaster Reports over the last decade*

¹²³ For countries whose first report was from 1990 or before (159% over 20 years)

number of hazards is responsible for some of the increase in reported disasters, even if only a small part. This is consistent with the reported increase in extreme weather events across many parts of the world. The implications of a continuing and steep rise in the numbers of disasters for the millions of vulnerable people living in Viet Nam are obvious.

At a country level, the number of reported disasters is greater in more populous countries¹²⁴. This is partly explained by how disasters are defined but also as population is an approximation of the number of people exposed to disasters. This is important because the population in Viet Nam is set to increase in the coming decades - Viet Nam is currently the thirteenth most populous country globally - which implies that there will be more disasters and more humanitarian assistance needed. Conversely, countries with higher 'bureaucratic quality' (a measure of effective governance) seem to have a lower number of disasters reported, presumably because a responsible state with functioning services is willing and able to put in place measures such as DRR that can prevent a hazard becoming a disaster. This suggests that strengthening governance and government institutions could, to some extent, counteract any future rise in the number of disasters.

In Viet Nam, traditional approaches to development planning, have been mainly "top-down"¹²⁵, and have not been fully successful in addressing the problems of poverty and inequity. One reason could be that local people were not involved and therefore there was no ownership, a lack of appropriateness to real problems and those activities were not sustainable. The "bottom-up" or participatory approach, puts people at the centre of the decision making process. Participatory and community-based approaches are now integrated in many development programmes.

The CBDRM approach is becoming more relevant in the light of the increasing damage that disasters inflict upon vulnerable communities. Viet Nam's location in one of the most typhoon-prone areas of the world makes it vulnerable to a range of hydro-meteorological hazards. From 1990-2009 the country suffered an estimated annual economic loss equivalent to 1.3% of GDP. More than 70% of the population is exposed to risks from multiple natural hazards. Due to rapid development and urbanization, cities are increasingly vulnerable.

There is likely to be a gradual intensification of storms and typhoons due to climate change in Southeast Asia, with damage exacerbated by increasing population density and economic infrastructure in exposed areas. The Ministry of Natural Resources and Environment (MoNRE) predicts an increase in extreme rainfall and flooding. As well as large-scale events, there is likely to be an increase in the occurrence of small to medium-scale disasters, such as landslides, floods and fires. In this context, the CBDRM approach offers a viable alternative for managing and reducing risks in Viet Nam.

8.2 COMMUNITY BASED DISASTER RISK MANAGEMENT IN VIET NAM

Community based approaches to DRM are not new to Viet Nam; initial practices took place more than a decade ago through action by various INGOs and the VNRC¹²⁶.

¹²⁴ According to the General Statistic Office (GSO), Viet Nam's population in 2009 was approximately 86 million people – the country has the third largest population in Southeast Asia (after Indonesia, and Philippine) and the thirteenth largest one in over the world. Almost 30% of the population lives in urban areas. Those living in rural areas make up for 70% of the whole population but the number is plummeting due to rapid urbanization and migration into big cities

¹²⁵ "top-down" is where decisions are made by leaders at higher levels

¹²⁶ E.g. the VNRC started to build its network of over 35 Disaster Preparedness Centres in the most disaster prone province of the country the mid-nineties

Acknowledging the importance of a CBDRM approach, in July 2009, the Prime Minister approved the programme: “Community awareness raising and community-based disaster risk management (CBDRM)” under Decision 1002/QĐ-TTg. This ambitious, VND988.7billion (US\$53.5 million)¹²⁷ project will be implemented over a twelve-year period in about 6,000 communes frequently affected by disasters.

The CBDRM Programme has two main components:

- Component 1: strengthening the capacity of local officers at all levels for managing and implementing CBDRM activities;
- Component 2: improving the capacity of communes in CBDRM.

Full details are provided in a summary of the Decision in Annex VIII.1.

Essential to the sound development and implementation of the Government’s CBDRM programme therefore is the need to build upon the good practice that has been derived by numerous INGOs and the Red Cross Societies – working with a broad range of local partners and Governments - throughout the country over this time period.

Partnerships are fundamental to the ultimate success of the Government’s CBDRM programme. Innovative, creative approaches, which benefit from the synergies that are derived from combinations of stakeholders working together, should be central to the Government’s approach to the programme planning and implementation.

Guidance on the implementation of the CBDRM programme at commune level is provided below.

8.3 WHAT IS COMMUNITY BASED DISASTER RISK MANAGEMENT?

Community-based disaster risk management (CBDRM) is a process of reducing peoples’ vulnerabilities and strengthening their capacity to prevent, mitigate, prepare for, cope with and recover from hazards. A thorough assessment of the people’s exposure to hazards and an analysis of their vulnerabilities and capacities is the basis for a DRR programme. The direct involvement of men and women in the community in undertaking local level risk reduction activities is essential.

As the people in the community are involved in the whole process, their needs, as well as their own resources and capacities, are considered. There is therefore more likelihood that their problems will be addressed with appropriate interventions.

The aim of CBDRM is to develop **more resilient communities**, that means local people and authorities have adequate knowledge and skills for responding to and recovering from emergency situations or disaster events quickly, using resources mobilised by themselves.

The process used in CBDRM actively engages people in at-risk communities in the identification, analysis, treatment, monitoring and evaluation of disaster risks in order to reduce their vulnerabilities and enhance their capacities. This means that the people are at the heart of decision-making and implementation of CBDRM activities. The involvement of and support to the most vulnerable is of great importance.

¹²⁷ Of which, 55% is expected from the State Fund, 5% from residents and 40% - in the form of grants - from other Governments and international organizations

8.3.1 Community

A **community** can be described as a group that may share one or more things in common, such as living in the same environment, or place of residence and sharing common problems, concerns, hopes and ways of behaviour. People in a community may face the same disaster risk or have been affected similarly by a previous disaster. Although the community is not a homogeneous unit but a dynamic mix of different groups, interests and attitudes, the sharing of common things gives a certain sense of belonging to each other. In this material, we will use the term community to describe people living at the commune, ward and village level in a particular locality.

8.3.2 Basic concepts of community based disaster risk management and the role of the community

Community based disaster risk management is premised on three practical considerations:

- Local people can understand their opportunities and constraints better than outsiders
- Nobody is more interested in understanding local affairs than the community whose survival and well being are at stake
- People are the country's most abundant and valuable development resource, which should be harnessed and developed.

8.3.3 The importance of community-based disaster risk management

The following table underlines the importance and relevance of CBDRM:

No.	Importance and relevance of CBDRM	Detailed explanation
1	Responsive	Based on the community's needs; considers the community's perception and prioritization of disaster risks and risk reduction measures so the community can claim ownership. CBDRM leads to a general improvement of quality of life for the vast majority of poor people and of the natural environment
2	Risk reduction activities are community-specific	Identified after an analysis of the community's disaster risk (hazard, vulnerability and capacity) and perceptions of disaster risk
3	Links disaster risk reduction with development	DRR and development both aim at addressing vulnerable conditions and causes of vulnerabilities
4	Participatory process and content	A successful bottom-up strategy includes broad-based local participation in comprehensive planning and decision-making, activities that promote motivation
5	Existing capacities and coping mechanisms are recognized	Builds upon and strengthens existing capacities and coping strategies

No.	Importance and relevance of CBDRM	Detailed explanation
6	Integrated	Pre-, during and post-disaster measures are planned and implemented as necessary by the community; there is linkage by the community with other communities, organisations and government agencies at various levels, especially for vulnerabilities which the local community cannot address by itself
7	Proactive	The stress is on pre-disaster measures of prevention, mitigation and preparedness
8	Comprehensive	Structural (or “hard”, physical) and non-structural (or “soft” e.g. health, education, livelihoods, organization, advocacy, etc.) DRR activities are undertaken; short-, medium- and long-term measures to address vulnerabilities
9	Multi-sectoral and multi disciplinary	Considers roles and participation of all stakeholders in the community; combines indigenous/local knowledge and resources with science and technology and support from outsiders; addresses concerns of various stakeholders while upholding the basic interest of the most vulnerable sectors and groups
10	Empowering	People’s options and capacities are increased; more access to and control of resources and basic social services through concerted action; more meaningful participation in decision making which affects their lives; more control over the natural and physical environment; participation in disaster mitigation and risk reduction develops the confidence of community members to participate in other development endeavours
11	Developmental	Contributes to addressing and reducing the complex relation of conditions, factors and processes of vulnerabilities present in society; CBDRM process should contribute to progressive improvements in public safety, disaster resilience or resistance of communities and societies, and equitable and sustainable development
12	Releases opportunities	For education, financial assistance, etc. thus addresses identified local needs
13	Allows replication of a community’s success	Is a powerful factor in continuing local initiatives and in improving the utilization and management of local resources

8.3.4 Features of community based disaster risk management

The following are the main features of a CBDRM approach:

- The focus of attention is the **local community**. Within the community, priority is given to the condition of the most vulnerable as well as to their participation in situation analysis,

planning and implementation of risk reduction activities

- The essence of CBDRM is **addressing the factors that increase disaster risk**, especially unsafe conditions but also dynamic pressures and possibly even the root causes of vulnerability; the main strategy is enhancing the community's capacities
- To expand the community's resource base, CBDRM brings together various **stakeholders** - from national to local level - for DRR. A wide range of approaches to DRR are employed
- CBDRM is an **evolving and dynamic framework**. Lessons from practice continue to build into the theory of CBDRM through sharing of experiences and tools by communities and CBDRM practitioners to enrich practice
- While Government's and civil society¹²⁸'s role is important, the primary requirement for grassroots development is **local leadership and local responsibility**. They are capable of initiating and sustaining their own community development
- Responsibility for change rests with those living in the local community.

8.3.5 Participatory approach

A CBDRM programme can only be successful with the full participation from the community members in the analysis of the situation, needs assessment as well as in decision making.

The advantages of community participation are:

• Better information

Local people are the best sources of information about their living environment; knowledge that can be used for decision-making.

• Community empowerment

Participatory process develops confidence, skill, capacity and co-operation of local people. This helps them to increase their coping capacity to challenges of individuals and groups in the community.

• Professional education

External experts obtain a more comprehensive understanding about the community when they are providing assistance and therefore, they are more efficient in their work.

• More appropriate responses

¹²⁸ Although this term is not yet in common use in Viet Nam, the term "civil society refers to the wide array of non-governmental and not-for-profit organizations that have a presence in public life, expressing the interests and values of their members or others, based on ethical, cultural, political, scientific, religious or philanthropic considerations. Civil Society Organizations (CSOs) therefore refer to a wide of array of organizations: community groups, non-governmental organizations (NGOs), labor unions, indigenous groups, charitable organizations, faith-based organizations, professional associations, and foundations". The World Bank, 2011

The solution is more appropriate to the needs and desires of the people. Proposals or projects prepared by and for the community can be amended properly before approval. The result is that resources are more appropriately used.

- **Towards development**

People have a clear understanding of the practical solutions for the community and have positive attitude towards development, which can help to avoid disputes.

- **Smaller expenditure**

People are more committed to their environment so they can better manage and maintain this, reducing the likelihood of misuse of resources.

- **Democratically desirable**

Community participation in planning is an important part in the trend to a more democratic society.

- **More humane and sustainable settlements**

This is the result from the above action.

8.4 IMPLEMENTING THE COMMUNITY-BASED DISASTER RISK MANAGEMENT PROGRAMME OF THE GOVERNMENT OF VIET NAM

The Government and other stakeholders have a role in supporting disaster prone communities to implement a CBDRM programme and build on their coping capacities and resilience.

Selecting the communes/wards

6,000 communes and villages are to be targeted over the next ten years under the Government's CBDRM programme. To determine which communes are to be included, a set of national selection criteria¹²⁹ will be established - as part of a nationwide risk assessment - at the central level. Provincial and district level authorities therefore will select the most vulnerable communes for inclusion in the Government programme, based on this set of criteria, as guided by the Disaster Management Centre, MARD, in consultation with the Standing Office of the CFSC and People's Committees at provincial, district and commune levels and with other organisations involved in DRM.

These decisions should be based upon a proper understanding of the socio-economic, cultural and institutional structures prevalent in the particular commune that may be selected for intervention. An important factor is the commitment and interest of the local people and authorities to implement the CBDRM programme.

In order to avoid possible problems/misunderstanding, visits to the communes will enable consultation with stakeholders by the local authorities in the area. This can be done together with Mass Organisations and INGO representatives (if present).

¹²⁹ Suggested criteria for selection are likely to be based upon a range of quantitative and qualitative indicators, including, for example: historical frequency and magnitude of hazards; poverty statistics for the commune/villages; population and demographics of the commune/villages; the level of the community's exposure to disaster risks; capacity of the local authorities, Mass Organisations and stakeholders present in the vicinity; the readiness of and commitment from community to implement the programme; accessibility to the communes. Secondary data is required for this process and information may be gathered from health records from provincial, district and commune level hospitals and clinics and provincial/district education offices.

Activities may include:

- Organise meeting to provide an introduction to the CBDRM programme and share selection criteria with provincial, district and commune level authorities and representatives from the communes/wards/villages, other stakeholders
- Collect secondary data for all disaster prone communes/wards/villages from district and provincial levels
- Analyse information and compare the level of risk in the communities. Relevant information needs to be prepared and kept as a part of baseline data
- Select the most vulnerable communes/wards based on the national selection criteria
- Inform the selected communes/wards, local government authorities and other partners.

8.5 COMMUNITY BASED DISASTER RISK MANAGEMENT STEPS

While exact approaches may vary, in this material **6 steps** are outlined that should be undertaken one after another, although sometimes, certain activities of one step can be undertaken while implementing other steps:

Step 1 Orientation and induction – *an introduction for commune/village level stakeholders and establishment of the organisational structures required to undertake the Government's CBDRM programme*

Step 2 Local level planning and preparation for the implementation of CBDRM – *organisation of commune and village level*

Step 3 Community based disaster risk assessment and identification of disaster risk reduction actions

Step 4 Community based disaster risk management planning

Step 5 Implementation of the community based DRM plan

Step 6 Participatory monitoring and evaluation.

Step 1: Orientation and induction of provincial, district and commune level stakeholders to a community-based disaster risk management approach

Ideally, the commune/ward/village level Government and Mass Organisation cadres, as well as village leaders, village representatives, etc. should be involved fully in the CBDRM process, thus be clearly aware of overall Government programme goal, objectives, components and outputs. Orientation meetings can be organised for related agencies and individuals at different levels.

a. Stakeholder orientation

Stakeholders at district, commune/ward and village levels should be consulted as much as possible to get an understanding about the disaster context prevailing in the district/communes and potential DRR measures before starting to undertake community level activities, e.g. in prioritising the more disaster prone and vulnerable communities first and IF a CBDRM intervention is appropriate in that situation. This will also enhance the relationship between stakeholders, which will help cooperation and coordination during the implementation of the CBDRM process. Also this will verify the compatibility of any proposed DRR projects that arise later (following the risk assessment) with the provincial and district socio-economic development plan as well as with the annual, Provincial CFSC plan.

A meeting between stakeholders should be organised for information sharing.

Some of the stakeholders at the provincial, district and commune/ward/village level are:

<ul style="list-style-type: none"> • CFSC members • Provincial, district and commune level People's Committee chairpersons/deputies • Municipal authorities/mayors/city councils • Provincial DM Centre staff • Department of Agriculture and Rural Development • Department of Construction • Department of Transportation • Department of Labour and Social Affairs • Department of Education and Training 	<ul style="list-style-type: none"> • Water Supply Company • Department of Energy • Department of Information, Culture and Sports • Post and Telecommunications Office • Police, fire and ambulance services • Mass Organisations, principally the Viet Nam Red Cross, the Women's Union and the Youth Union • INGOs • Religious leaders • Private businesses
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b. Information that should be made clear to all partners during the orientation:

- Details of the Government's CBDRM Decision 1002 (see Annex VII.11)
- Programme coverage (communes/wards/villages in the districts/province) included in the programme
- Programme outputs and activities
- Programme implementation plan and methodologies (approaches)
- Opportunities for cooperation and coordination between the Government, Mass Organisations and non-government organisations and the people themselves.

c. Establishment of the CBDRM structures

This step also includes the establishment of the CBDRM structure at different levels, such as the provincial Trainers' group, Technical Working Groups (TWG), etc. as stated in the CBDRM Implementation Guidelines from the DMC (*see separate documentation*). Every effort should be made to ensure equal participation of men and women in these groups. If women do not meet selection criteria at the moment, plans to build their capacities and opportunities for their participation should be provided. Those to be involved in the CBDRM programme – Government staff, volunteers, government agencies, NGOs and other actors at the district/commune/ward should be introduced.

Step 2: Local level planning and preparation for implementation of community-based disaster risk management

Basic training in CBDRM should be provided to staff and volunteers who are implementing the programme in the communities¹³⁰. The TWG member in charge of training should coordinate with the provincial trainers' group in the organisation of the planned training events.

¹³⁰ Training events can be organised along with the implementation process. For example: training in risk assessment can take place before the staff and volunteers undertake the assessment in the community, but training in awareness raising for different target groups can be undertaken later.

Community organising and mobilisation

To ensure full participation of both men and women from the community, there should be equal representation of both male and female members in the commune/ward/village (CBDRM) committees:

Formation, building and training a Village or Ward CBDRM Committee

Disaster risks are better managed by a group of people selected by the community, e.g. a Village or Ward DRM Committee that will ensure that risks are reduced through the implementation of the community DRR plan. Therefore, those involved with the risk assessment should help to facilitate the community to build its own DRM committee, if there is none yet, or strengthen the existing one, if there is any.

Training the leaders and members of the committee to build their capacity is important (this should also be undertaken in Step 3). Ideally, households in a village/ward should be organised in **small groups** from 30 to 50 households - depending on the geographical areas - who will select a group leader to organise the group communication and activities. The assessment team should assist each small group will identify its representative and active members to form a small Village/Ward Disaster Risk Management Committee (V/WDRMC) and a Village/Ward Action Team (V/WAT).

The Village Disaster Risk Management Committee (VDRMC)

A DRM Committee should be formed in a community meeting with as many people as possible present. The CBDRM programme should be introduced; the purposes of establishing a VDRMC and VAT as well as their expected duties should be explained clearly to everyone (see below):

- The VDRMC members are selected representatives from the small groups as well as several respected or 'natural leaders' nominated by the community as a whole. Each committee must have a nominated leader, a treasurer for account keeping and a secretary for record keeping. Other committee members are optional.
- The VDRMC should not exceed 7 members who are respected by the community and can make decisions in consultation with people in the community
- The VAT should have from 20 to 25 members who are capable of undertaking DRM related activities decided and planned with the VDRMC.

The community can decide together on the criteria for the selection of the VDRMC and VAT members, their own election method (e.g. open voting by raising hands or paper ballot), but issues to consider before the election takes place should encourage the following aspects:

- Gender balance: male and female representation, contribution of opinions, participation in community decision making, etc. Furthermore, equal opportunities, such as occasion to express their point of views or to attend training events should also be provided to both men and women.
- Representation from different social and economic groups and ethnic minorities in the village, especially the poor and very poor
- Representation from different parts of the village
- Good relationships with other committees.

Where there a committee already exists, they should take on responsibility for DRM activities.

Tasks of a Village Disaster Management Committee include:

- Meet regularly to discuss and agree on a VDRMC Action Plan (initially monthly)
- Organise village meetings to discuss issues/concerns related to disasters
- Participate in appropriate training events at commune level
- Take the lead in community based disaster risk assessment and DRR planning and ensure the participation of other members in the community in the whole process
- Communicate between the commune/ward/village and households
- Disseminate information related to disasters
- Mobilise human, material and financial resources for the implementation of the CBDRM plan
- Assign tasks to the VAT
- Organise DRR activities as prioritised by the community
- Monitor the implementation of activities in the CBDRM plan and make sure that its objectives are achieved
- Coordinate DM work with other stakeholders in the village and at higher levels

The Village Action Team (VAT)

Members of the Village Action Team (VAT) should be mentally and physically healthy. They can be selected by the small groups of households but they themselves should be + committed to the CBDRM work in their village on a voluntarily basis. These may already exist in communes in the form of Red Cross 'shock brigades'; if so, there is no need to create new teams but rather provide orientation to this group in CBDRM.

Tasks of VAT include:

- Participate in community meetings, disaster risk assessment and DRR planning
- Participate in appropriate training events
- Implement DRR activities as identified in the CBDM plan
- Visit households to disseminate DRR messages (including early warning messages) and ensure that preparedness activities are being undertaken
- Undertake First Aid, search and rescue and help vulnerable people to evacuate during disaster
- Help vulnerable people in the village in recovery activities after disaster
- Clean the environment after disaster.

Step 3: Community based disaster risk assessment and identification of disaster risk reduction actions

Community based disaster risk assessment is a process whereby all stakeholders collect and analyse disaster risk information under the leadership of the TWG member in charge. Based on this, plans are made and appropriate activities implemented that aim to reduce disaster risks that may adversely affect people's lives. The risk assessment involves a participatory

analysis of past patterns of hazards and present threats as well as the climate change trends at community level - hazard assessment, combined with an understanding of the underlying causes of why hazards become disasters - vulnerability assessment and the available resources an affected community uses to reduce risk - capacity assessment, and of how different people measure risk – the perception of risk.

Disaster risk related information is collected using participatory tools or techniques. The assessment team may initially analyse the information collected but the important part of this process is to share and verify this information with the community before moving to the next steps.

Local people, authorities, organisations and other stakeholders in the “at-risk” communities should be involved in this assessment process. Government/Red Cross/Viet Nam Women’s Union or NGO staff and volunteers only act as community facilitators. To ensure the quality and objectivity of the collected information, only those who were trained in risk assessment should facilitate the community based disaster risk assessment.

For all community meetings, the assessment team should crosscheck with both male and female members of the community that they are consulted during the decision making process.

Findings from the assessment should be captured in the risk assessment (or **H**azard, **V**ulnerability and **C**apacity report). This report should be shared with the village leaders and commune/ward authorities and used as a working document, i.e. it should be checked regularly against the community situation and DRM action plan to ensure that activities supported by the project are relevant.

Detailed guidance on how to undertake a community based disaster risk assessment is provided in Chapter 6 Risk Assessment. See also Chapter 4 on Disaster Risk Reduction.

Step 4: Community based disaster risk management planning

A CBDRM plan¹³¹ should be developed from the results of the disaster risk assessment. This CBDRM plan helps to consolidate the community’s efforts to prepare for, respond to and recover from disasters as well as to reduce level of disaster risk by reducing vulnerabilities and strengthening capacities of local people and authorities. The plan provides guidelines for operations and clarifies roles and responsibilities before, during and after a disaster happens.

The plan should cover two aspects:

- Emergency response, and
- Longer-term disaster risk reduction.

Emergency response preparedness covers: early warning, evacuation (*including evacuation routes, evacuation location, which people are involved in evacuation, etc.*), search and rescue and relief. This information should be included in the commune disaster preparedness or flood and storm control plan provided to the district and provincial level CFSC authorities and to be included in the annual provincial CFSC plan.

A CBDRM plan should provide detail of the following:

- List of the most frequent hazards

¹³¹ This should be clarified with the individual commune few are likely to have a CBDRM plan. Communes may have two plans as explained above. In this case, we can guide which information should be included in which plan.

- Identification of pre-, during and post-disaster community requirements to address vulnerabilities
- Identification of available resources and capacities the community can build on or has to mobilize from outside (boats, vehicles, communication equipment, evacuation sites, volunteers, etc.)
- The organizational structure of the community
- Roles and responsibilities of leaders and committees
- Policies, decision-making mechanisms and operational guidelines
- Early warning systems
- Evacuation protocols and routes
- Evacuation centre management plan
- Mitigation measures, such as reinforcement of houses, improving drainage, additional maintenance on footbridges, or crop diversification are examples of things that can be included in the disaster risk management plan.

The CBDRM plan should also contain the following information:

- Database of houses, buildings and construction types
- Timetable of activities to implement the plan or schedules to conduct drills to test the efficiency and effectiveness of the plan
- Master-list of community members (names, family composition, age, gender)
- List of volunteer teams, including contact details
- A summary of the risk assessment (including a risk assessment map)
- Directory of main people and their contact details: local Government officials, NGOs, religious groups, etc.
- Organizational structure including functions and responsibilities of all committees
- Identify and list communication facilities: Government and private telecommunications
- Places where different equipment can be rented (e.g. water pumps, generators, loaders, corrugated sheets, water tanks, etc.)
- Identify Government and private shops for the procurement of different items, e.g. relief supplies, materials for reconstruction
- An alternative road network that can be used in a disaster situation (if the present road is prone to damage).

All activities for emergency preparedness and DRR included in the CBDRM plan should be identified and prioritised by the local people based on the level of risks and available resources.

The following process should be undertaken to identify community activities:

- Present findings from the risk assessment to community representatives from all sectors and groups
- Check the information accuracy and seek clarifications

- Help the people to prioritize elements at risk, and ask why they feel themselves to be at risk
- Discuss people's previous experience in addressing risks
- Help the people to identify problems related to disasters in their community then make a list of possible solutions or activities for emergency response preparedness and for reducing risks (to reduce vulnerabilities and to enhance capacities).

Particularly for DRR activities, the following should be discussed:

- Analyse the criteria people use to select DRR activities
- Discuss each activity vis-à-vis gender, class, environment, age, etc.
- Check information analysed in the HVCA matrix or 'progression of vulnerability' model to define which vulnerabilities are being addressed (see the "progression of vulnerability" in Chapter 4 Disaster Risk Reduction and the HVCA matrix in Chapter 6, Risk Assessment)
- Rank DRR activities according to priority
- Reach consensus/agreement among different groups on the DRR measures that should be prioritised
- Determine scale of coverage of intervention vis-à-vis resources, skills, mandate, etc.
- Discuss and assign tasks and responsibilities for each activity within the VDRMC, VAT and local people.

The disaster pressure and release model helps the field team in facilitating community discussion in this step.

The CBDRM facilitators (i.e. trained trainers) can provide technical advice and support to people in the communities; help them to work with other stakeholders to undertake the prioritised activities. In case the required expertise does not exist within the team, external support should be sought.

Prioritised emergency preparedness and DRR activities are then translated into a CBDRM plan using a template (see Annex VIII.2).

The CBDRM plan should be checked and revised annually. The community should also undertake simulation or rehearsal for certain activities, such as early warning and evacuation.

Step 5: Implementation of the community DRM plan

The VDRMC should lead the process to implement the CBDRM plan and motivate other members of the community to support the activities in the plan.

The contents of the plan should be made known to all people in the community to ensure that they are aware of their roles and responsibilities in the implementation of the plan, e.g. participation in different activities, contribution of skills, provision of labour or materials, etc.

Tasks should be assigned to specified members of the VDRMC and people in the community. Ideally, a simulation exercise on disaster response should be organised every year.

The plan is not rigid and needs to be reviewed and adjusted regularly (6 monthly or yearly) to ensure that it will help the community to achieve its DRM objectives.

Step 6: Participatory monitoring and evaluation

Participatory monitoring and evaluation (M&E) is a communication system in which information flows amongst all the people involved in the project: the people in the community, implementing staff and the support agency, concerned government agencies and donors.

The progress and effectiveness of activities need to be checked to ensure that they are contributing to the achievement of the CBDRM programme objectives.

Indicators to measure the success of each activity as well as the overall programme should be identified and agreed from the design phase and informed to all stakeholders.

The methodology, indicators on the project expected results and impact should be discussed and agreed, and staff/volunteers assigned to undertake M&E should also be clear from the beginning of the programme. A community M&E Team should be set up to take up this task. A comprehensive M&E framework for the Government's CBDRM programme exists and should be utilised for this purpose.

8.6 SELF-RELIANCE AND BUILDING RESILIENT COMMUNITIES

Increasing self-reliance (men and women's capabilities, judgment, resources and independence) and the building of safer and resilient communities is the primary objective of all CBDRM approaches. All efforts should ultimately focus on building communities resilience that promotes capacities, measures and actions for DRR and climate change adaptation (CCA). This is only feasible in partnership with national and local governments, non-government agencies and other DRM stakeholders that bring their own set of unique knowledge and skills in the sciences (environmental, hydrology, basic, and social), education, culture, and communication and information to improve the conditions of the communities against recurring disasters and the possible impact of climate change.

Community based approaches to DRR implementation will use existing tools that have proven to be effective against disasters and climate-related events. These include, but are not limited to: vulnerability and risk assessments, early warning systems, land-use planning and building code regulation, and institutional and legal capacities. The CBDRM programme will also ensure that adaptation measures to climate change and disaster risk reduction is integrated into all sectors, especially education and community development planning.

See Chapter 4 Disaster Risk Reduction for further details of building resilient communities

8.7 ADVOCACY

Definitions of advocacy vary; however, the one adopted by CARE US provides a clear overview:

"Advocacy is a strategy to influence policy makers when they make laws and regulations, distribute resources, and make other decisions that affect peoples' lives. The principal aims of advocacy are to create policies, reform policies, and ensure policies are implemented. There are a variety of advocacy strategies, such as discussing problems directly with policy makers, delivering messages through the media, or strengthening the ability of local organizations to advocate." **CARE USA**¹³²

¹³² CARE USA, 2001. *Advocacy tools and guidelines*

Advocacy in the CBDRM will most likely be primarily targeted, within the Governmental system to the next higher level (e.g. village to commune authorities, commune to district, etc.); while from NGOs, the primary targets are ostensibly bilateral donors, international financial institutes and the UN agencies - the primary agencies funding DRR measures and development projects. Local people will most likely use the existing local Governmental system, e.g. village leaders/respected local persons will 'lobby'¹³³ the commune/district or provincial level authorities/local NGOs or the Mass Organisations in the vicinity.

The most common advocacy priorities relevant to the CBDRM approaches are likely to be around the issues of: capacity building; cooperation and partnerships; implementing different aspects of the priorities for action of the Hyogo Framework; disaster management information systems; urbanization/migration; vulnerability/poverty; mainstreaming (e.g. DRR and CCA in SEDP); sustainable/resilient livelihoods; gender and child roles in DRR and CCA.

8.8 LINKAGES BETWEEN COMMUNITY BASED DISASTER RISK MANAGEMENT AND THE "FOUR ON THE SPOT MOTTO"

There are obvious linkages between the traditional approaches to DRM enunciated by the *four on the spot motto*¹³⁴, and CBDRM. Both aim to foster and develop the capacity of local communities and government ('on the spot') to solve local problems. The *four on the spot motto* provides guidance for disaster risk managers in 'natural' disaster management in order to undertake effective preparedness, response and recovery from disasters using the available resources 'on the spot'. Therefore, for CBDRM 'practitioners' involved with commune/ward/village level assessments, planning and implementation of DRR projects, it is a useful source of guidance and information and will help contribute to the reduction of loss of life and damage to public and private property.

¹³³ Action to influence a viewpoint

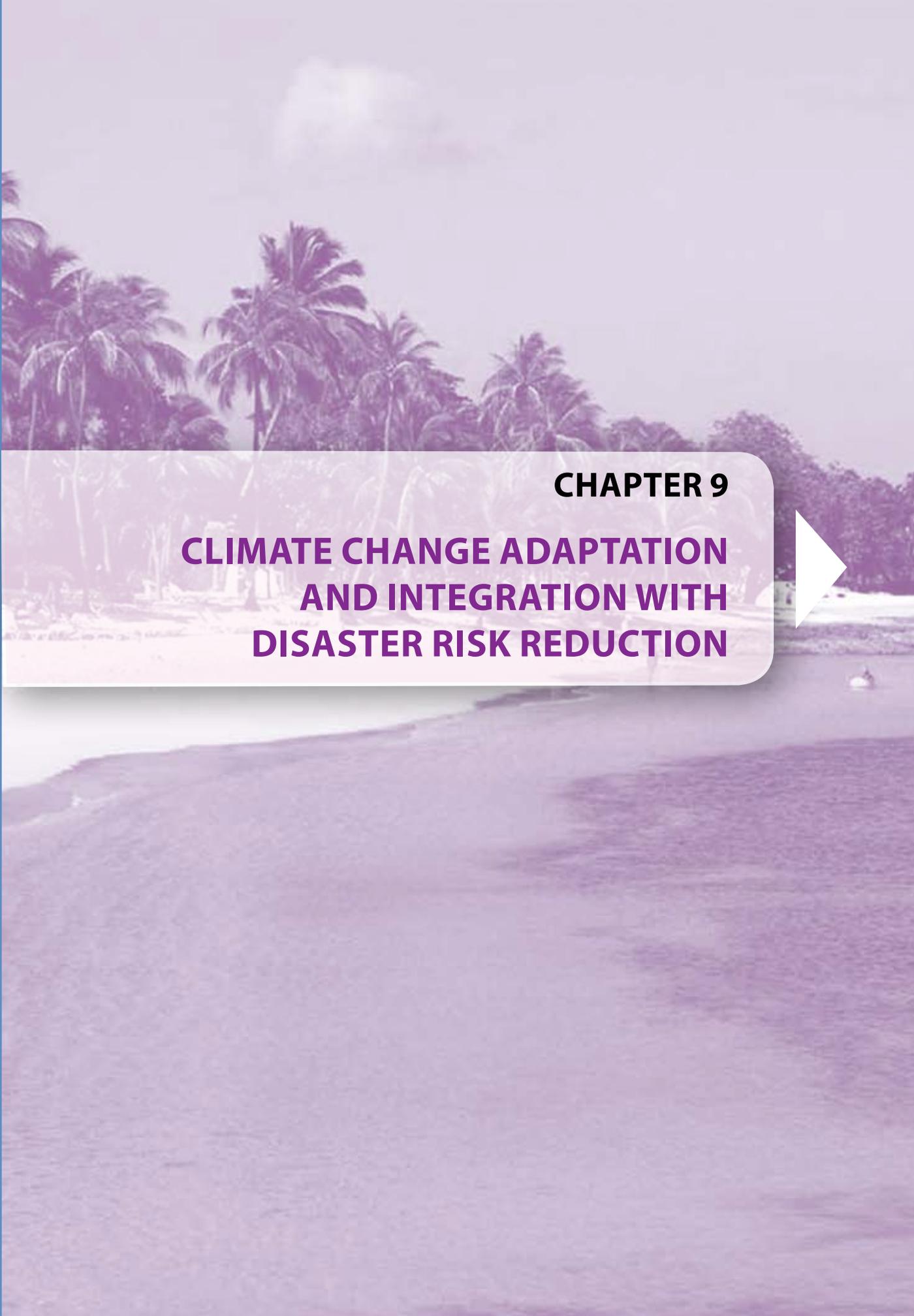
¹³⁴ This has been most comprehensively documented in a booklet produced by the Joint Advocacy Network Initiative (JANI) in 2010, see: http://www.preventionweb.net/files/13235_13235FouronthespotMotto1.pdf. under a project funded by the European Commission Humanitarian Aid Department and coordinated by CARE International in Viet Nam

8.9 CHAPTER REVIEW

- Community based disaster risk management (CBDRM) is a process of reducing people's vulnerabilities and strengthening capacities to mitigate, prepare for and cope with hazards
- The aim of CBDRM is to develop "resilient communities" and engage people in all aspects of activities for emergency preparedness and DRR
- One of the most important reasons for undertaking a CBDRM approach is that it is an empowering process
- The main features of CBDRM are that it focuses attention on the local community; addresses unsafe conditions and, to some extent, the dynamic pressures and root causes of vulnerability; it engages various stakeholders and places the responsibility for change with the local people
- Understand the main components of the CBDRM programme of the Government of Viet Nam
- There are **6 main steps** for implementing a CBDRM programme:
 1. Orientation and induction
 2. Local level planning and preparation for implementation of CBDRM
 3. Community based disaster risk assessment and identification of disaster risk reduction actions
 4. Community based DRM planning
 5. Implementation of the community DRM plan, and
 6. Participatory monitoring and evaluation
- Village/Ward DRM Committee and Village/Ward Action Team should be established in communes/wards for the local level implementation of the CBDRM actions.

8.10 DISCUSSION QUESTIONS

1. Give two important features of CBDRM.
2. Why is CBDRM important? How is it relevant to your community? Explain.



CHAPTER 9

**CLIMATE CHANGE ADAPTATION
AND INTEGRATION WITH
DISASTER RISK REDUCTION**





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9.1 INTRODUCTION

Chapter 1 introduced some of the terms related to climate change and Chapter 3 provided a detailed discussion of the likely impacts of climate change for Viet Nam, emphasizing not just the overall vulnerability of the country but also the heightened vulnerability of certain sectors and social groups.

It is recognised by the National Target Programme to Respond to Climate Change (2008) and the National Climate Change Strategy (2011) that adaptation is necessary now to prepare Viet Nam for a changing climate. New investments of financial, institutional and human resources are required to understand, prepare for and reduce climate change impacts. Opportunities exist to establish adaptation plans and integrate those into national socio-economic development strategies.

The first part of this Chapter discusses adaptation to climate change in general, including long-term changes in mean conditions such as average temperature and seasonality of rainfall, as well as changes in the patterns and intensity of extreme weather events. However, for a country so exposed to risk from climatic hazards as Viet Nam, the implications of climate change for extremes are especially significant and adaptation actions designed to tackle those impacts are of critical importance in the short and long term.

The second part of the Chapter therefore focuses on the linkage of climate change adaptation (CCA) with disaster risk reduction (DRR), emphasizing the synergy between the two and the logic of working on them both in an integrated process.

9.2 MAIN LEARNING POINTS

By the end of this chapter, participants should be able to:

- Understand the meaning of climate change adaptation and types of adaptation activity;
- Be familiar with the concepts of anticipatory, autonomous and planned adaptation, and what we mean by adaptive capacity;
- Understand the importance of convergence and the linkages between CCA and DRR, and the challenges and opportunities of integration of CCA and DRR with development.
- Recognize the importance of integrating gender dimensions in action on climate change adaptation and disaster risk reduction.

9.3 CLIMATE CHANGE ADAPTATION

9.3.1 Adaptation - main concepts

The IPCC definition of adaptation is the: *“adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities”*¹³⁵. In simple terms, this means action taken to reduce the harmful effects and utilize any benefits of changes in mean climatic conditions and patterns of extreme climatic events. However, there is much more behind this simple definition that we need to consider.

The term climate change adaptation is normally used to refer to response to long-term trend changes in climate and climate-induced changes in the environment. This includes sea level

135 IPCC 2007

rise attributed to global warming – via thermal expansion of seawater and melting of ice. The term is not normally used refer to short-term coping ‘adjustments’ in response to short-term climate variability, such as shrimp farmers in Viet Nam routinely altering production and pricing according to harvest projections based on seasonal conditions¹³⁶. However, the distinction between the two forms of adjustment is not clear, and, in practice, adaptation is likely often to proceed in an iterative step-by-step process as people and institutions make a series of short-term adjustments.

The scope of adaptation actions is wide. Adaptation is not narrowly defined and can take many forms. It can include actions, for example, to protect livelihoods and lives, maintain public health, sustain economies and resources, and prevent environmental degradation. These actions may be technological (e.g. reinforcing flood defences), behavioural (e.g. people changing diet as certain food crops become less viable), managerial (e.g. planning water allocations in irrigation systems) or policy-related (e.g. changing health promotion priorities to match changing disease risk).

Adaptation actions, for example, are likely to be of high importance in the agricultural sector in Viet Nam. Many climatic stresses affect these livelihood activities and a high proportion of poor and vulnerable people depend on them, especially rural women and ethnic minority groups. Actions to substantially increase investment in crop variety and other aspects of farming systems, as well as in better-targeted extension that is accessible to farmers are required. These investments will help ensure good productivity and yields in an even wider range of climatic extremes.

Adaptation can take place at any scale, from the programmes and strategies of international agencies to the actions taken by households and individuals.

In international debate the focus is usually on promoting anticipatory adaptation: “*adaptation that takes place before impacts of climate change are observed*”, also referred to as proactive adaptation¹³⁷. This emphasizes the need to take steps to adjust to likely climate impacts in advance in order for society to be actively prepared for change and reduce high impacts and cost burdens at a future time. The IPCC makes a distinction between anticipatory and ‘reactive’ adaptation, which is when adjustment occurs in response to impacts once they have taken place¹³⁸. Again, however, this distinction is likely to be blurred in practice and over time – as action commonly follows some form of trigger event: people could respond reactively to evidence of change in a way that anticipates greater change in future.

The IPCC has also made a distinction between so-called ‘autonomous’ adaptation and ‘planned’ adaptation. Autonomous adaptation is an adaptive activity that is not consciously or knowingly carried out as an adaptation to climatic change but is simply a response to changes that are experienced, typically: “*triggered by ecological changes in natural systems and by market or welfare changes in human systems*”¹³⁹. It may also be referred to as spontaneous adaptation. Autonomous adaptations are those types of adaptation most commonly undertaken independently by local communities in Viet Nam and elsewhere.

This contrasts with planned adaptation, which is: “*the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change and that action is required*”

136 FAO 2004

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138 IPCC 2007

139 IPCC 2007

to return to, maintain, or achieve a desired state"¹⁴⁰. Planned adaptation is what the Government of Viet Nam aims to initiate nationwide. This type of adaptation should consist of activities whereby institutions aim to shape future adaptation and reduce vulnerability, by assessing the distribution of climate impacts, the ability of individual actors to respond to climate change and adaptation options and the ways in which adaptation practitioners deliver and gain access to external resources to facilitate adaptation¹⁴¹.

The distinction between these two forms of adaptation is blurred. Not only the Government but also a range of actors could carry out planned adaptation, including communities, if they have access to information on climate risks. Also adaptive actions carried out by governments for their wider benefits may be examples of autonomous adaptation. Adaptation activities in Viet Nam can therefore be specific projects, policies and legislation addressing the risks of climate change, such as planting mangroves to protect shore lines, as well as more diffuse actions to strengthen building codes and their enforcement, diversify local livelihoods to reduce dependence on at-risk resources, or establishing schemes to assist vulnerable households in times of crisis¹⁴².

Just as some actions could be described as adaptive, so some could be described as maladaptive, if they are likely to increase risk that people face in the future. Addressing climate change implies thinking about the long-term, such as sustainable forest management, rather than focusing only on the short-term benefits, such as maximizing timber extraction. It also means looking at how different actions affect different people, because what may be adaptive for one individual or group may increase the vulnerability of others. All this requires us to think of adaptation not just as a narrow, target-based solution but a strategy that needs to be part of all development activities, and integrated with strategies for DRR, sustainable development and poverty reduction¹⁴³.

9.3.2 Adaptive capacity

The ability of a system to adjust to climate change, to moderate potential damages, to take advantage of opportunities, or to cope with the consequences (IPCC 2007).

Adaptive capacity refers to the ability to undertake effective adaptation measures. As such, it describes the capabilities of people and institutions to identify and undertake adaptation activities, and so is related to knowledge, resources and decision-making structures. In Chapter 4, the term resilience is defined by UNISDR as: *the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions*. Which one can see, is closely linked with adaptive capacity.

Institutional adaptive capacity is clearly related to the ability of organisations to mobilise resources and to concentrate human capital in areas that are relevant to climate policy¹⁴⁴. In these terms, the adaptive capacity of public institutions is related to their ability to anticipate problems and to manage risk and challenges¹⁴⁵.

¹⁴⁰ IPCC 2007

¹⁴¹ Adger 2000

¹⁴² Adger et al. 2002

¹⁴³ Viner and Bouwer 2006, Schipper and Pelling 2006

¹⁴⁴ Adger 2000

¹⁴⁵ Brook, Adger and Kelly 2005

In this context, public institutions must also have the necessary degree of flexibility to deal with the unexpected conditions that we should expect from climate change's impacts. It is less about identifying and implementing specific climate change adaptation measures and more about strengthening an on-going process where resources are available to identify vulnerabilities and employ adaptive strategies¹⁴⁶.

Development of local adaptive capacity can be considered as the process of increasing the capacity of individuals or groups to make choices and to transform those choices into desired actions and outcomes to respond to, cope with and adapt to future changes. In Viet Nam, there are various examples of adaptive capacity that have been initiated by non-government organizations and Mass Organisations working with vulnerable groups.

Generally, successful efforts to improve adaptive capacity for the vulnerable, increase their choices and actions in different contexts are often based upon four main elements¹⁴⁷:

Improving adaptive capacity for the vulnerable

1. Information provision, access and use: *Informed people are better equipped to take advantage of opportunities, access resources, exercise their rights, negotiate effectively and hold Government and non-government actors accountable. Without relevant and timely information, which is presented in forms that can be understood, it is harder for poor and vulnerable groups to take effective actions. Information dissemination does not stop with the written word, but also includes group discussions, storytelling, debates and other culturally appropriate forms using a variety of media including radio, television and the Internet.*

2. Inclusion and participation: *Participation addresses the question of how individuals and groups are included in decision-making and the role they play once included. Participation not only ensures that people's knowledge and perspectives come into the decision-making process but also helps achieve decision that are supported by local communities and match their needs and priorities. The process of participation may lead to improved organisation of local individuals and groups, thereby enhancing the capacity to develop new initiatives and organisations to cope with stresses.*

3. Accountability: *Accountability refers to the ability to call important stakeholders, either from public or private sectors, to account, requiring that they be answerable for their policies, actions and use of funds. Public or social accountability mechanisms hold government agencies accountable to people.*

4. Organisational capacity: *Local organisational capacity refers to the ability of people to work together, organise themselves and their livelihoods, and mobilise resources to solve problems of common interest using their own local knowledge and capacities. Poor and vulnerable people's organisations are often informal. They may also be formal as in the case of farmers' groups, women organisations or fishermen's union. Poor people's organisations may be effective in meeting survival needs, but they are constrained by limited resources and knowledge, and often have limited capacity to influence decisions made by Government.*

¹⁴⁶ Beckman, An and Bao 2002

¹⁴⁷ While this has yet to be contextualised for Viet Nam, these are vital elements for forming resilience, either to climate change impacts or disasters. These are generalised statements and can be used or elaborated for both CCA and DRR/DRM.

9.3.3 Opportunities and challenges of developing planned adaptation activities

Mainstreaming

Adapting to climate change requires adjustments in organizations at every level: village, commune, district, provincial and national. Governmental institutions (ministries, provincial governments and agencies), private entities and NGOs must consider integrating climate change in their planning and budgeting in all levels of decision making and coordinate their actions among themselves.

Adaptation has to be mainstreamed in investment planning, whether public or private. Feasibility studies need to include risk assessments that take into account climate change in order to promote the construction of infrastructure strong enough to cope with extreme climate variability and to face climate events¹⁴⁸.

Coordination

Climate change impacts do not happen in isolation. Sectors can be affected directly or indirectly by climate change and a change in one sector can increase or decrease the effects of climate change in another sector. Adaptation to climate change is essentially a crosscutting issue and therefore should be considered in a cross-sectoral way¹⁴⁹. The Climate Change and Disaster Management Working Groups (see Chapter 2) established in Viet Nam are already active in promoting such cross-sectoral approaches. The National Platform for DRR and CCA (was expected to be established in 2011) will further opportunity for policy dialogue amongst stakeholders working in DRR and climate change.

Stakeholder involvement

Due to the crosscutting nature of the issue, there is a need for stakeholder engagement in the development of adaptation plans or strategies. Climate change calls for wide participation, since structural changes and changes in paradigms are likely to be needed. The development of the National Target Programme, the National Strategy as well as other major policy has each required extensive consultation at different levels amongst relevant ministries and other stakeholders.

The amount of financial support that needs to flow in order to address adaptation strategies surpasses the capacities of governments. The Government is active therefore in devising policies, incentives and regulations to turn private initiatives toward strengthening adaptation. A combination of markets and public policy could refine risk sharing through, for example, innovative insurance schemes, improved natural resource management and climate proofing of infrastructure¹⁵⁰.

Technologies

Different forms of technology will be often employed, whether “hard” forms, such as new irrigation systems, or “soft” technologies, such as insurance schemes. As well as a combination of hard and soft, as with early warning systems that combine hard measuring devices with soft knowledge and skills that can raise awareness and stimulate appropriate action. Many of these technologies are already available and widely used in Viet Nam¹⁵¹.

148 *Dessai and Hulme 2007*

149 *Viner and Bouwer 2006*

150 *Aggarwal et al. 2004*

151 *Baumgartner et al. 2002*

Scientific and technical capabilities

Climate change requires adequate information development and management. New and strengthened scientific and technical capabilities (hardware, software, know how) will have to be put in place to face adaptation challenges. Some of the main ones are:

1. Developing systematic climate, hydrological and ocean observation systems;
2. Continuing development of climate change scenarios for Viet Nam;
3. Undertaking detailed analyses and assessments of vulnerability and adaptation options¹⁵².

Linking climate change mitigation and adaptation

As noted in Chapter 1, use of the term 'mitigation' in relation to climate change is different from the use of the word 'mitigation' in DRM. Climate change mitigation refers to the net reduction of greenhouse gas emissions.

There are opportunities for Viet Nam to start preparing now for a low-carbon, developed economy by using modern technologies and making investments that should help save costs and be socially and economically attractive, while at the same time mitigating emissions¹⁵³. The opportunity to move towards a low-carbon economy is growing as new and additional finance is becoming available to developing countries and efforts at capacity building are stepped up.

A main aim in this development should be to ensure that climate change mitigation activities are at least not maladaptive to the consequences of climate change. For example, in Viet Nam, forestry activities in general and climate-mitigation forestry projects in particular, rarely acknowledge that tree planting efforts may be undermined if, for example, a plantation is poorly adapted to climate change impacts, such as damage from typhoons. At best, actions should serve both adaptation and mitigation goals. An important forestry asset that Viet Nam can use against climate change impacts is its mangrove system: conserving and restoring protective mangrove greenbelts can lessen the dangers from storm surges, while also increasing carbon storage¹⁵⁴.

The agricultural sector could also play an important role in reducing emissions, especially in more capital-intensive production systems. Actions such as more efficient management of irrigation water in rice fields could reduce energy use, while also facilitating adaptation through reducing vulnerability to drought. Mitigation actions within the agricultural sectors should also be designed to provide development co-benefits in terms of livelihoods, food security, poverty reduction and improved gender equality¹⁵⁵.

9.4 INTEGRATING DISASTER RISK REDUCTION STRATEGIES WITH CLIMATE CHANGE ADAPTATION AND DEVELOPMENT

9.4.1 Converging agendas for disaster risk reduction and climate change adaptation

Disaster risk reduction and CCA share a number of priorities and methods in common. However, the similarities between CCA and DRR are often overlooked, or submerged, by different professional and technical interests.

¹⁵² Adger 2003

¹⁵³ UNDP 2007

¹⁵⁴ MoNRE 2008

¹⁵⁵ MoNRE 2010

While their scope and specific interests may differ, CCA and DRR both focus on reducing people's vulnerability¹⁵⁶. Climate change adaptation requires the re-shaping and re-designing of development, social and economic practices to respond effectively to new or anticipated environmental changes¹⁵⁷. Similarly, DRR seeks to influence development decision-making and protect development aspirations from environment-related risks. The effectiveness of both adaptation and DRR are limited if they are not viewed within the broader context of sustainable development and poverty reduction¹⁵⁸.

There are also fundamental interactions between climate change and disasters that strengthen the argument for a functional linkage between adaptation efforts and DRR:

1. Climate change is likely to change the intensity and frequency of natural hazards
2. Climate change will influence underlying vulnerability to hazards
3. Disaster events will impact on underlying vulnerability to climate change

Disaster risk reduction that does not take into account long-term change in hazards may be unsustainable; the same applies to adaptation actions that do not take into account disaster risk. Efforts in DRR that do not take account of changing hazards may not only fail to achieve their objectives, but even increase vulnerability, for instance, when flood defences provide a false sense of security but will fail to provide lasting protection against rising flood risk¹⁵⁹.

Climate change further amplifies the impacts of disasters while complicating community's perceptions of preparedness and readiness to respond, cope with and in a long-term, adapt to stresses¹⁶⁰.

Adaptation and DRR policy makers, experts and practitioners must communicate and collaborate with each other effectively to ensure a comprehensive risk management approach to development at local, national and international levels of government. This could result in the following benefits:

- Reduction of climate-related losses through more widespread implementation of DRR measures linked with adaptation
- More efficient use of financial, human and natural resources
- Increased effectiveness and sustainability of both adaptation and DRR approaches.

It is increasingly recognised that CCA and DRR must be integral components of development planning and implementation, to increase sustainability. In other words, these issues need to be 'mainstreamed' into national development plans, poverty reduction strategies, sectoral policies and other development tools and techniques.

Both CCA and DRR systematically identify and reduce the vulnerabilities to the various hazards faced, whether related and/or unrelated to climate change. The measures needed, whether termed DRR or adaptation, are in many cases similar. They include protection of environmental resources, land use planning, building codes and their enforcement, risk assessments and early warning systems, public awareness and education programmes, and most importantly sustained political commitment, policies, budgets and administrative systems to drive and support an effective risk reduction agenda.

¹⁵⁶ Allen 2003

¹⁵⁷ Blaikie et al. 1994

¹⁵⁸ Few et al. 2006

¹⁵⁹ Hewitt 1997

¹⁶⁰ Blaikie et al. 1994

For both CCA and DRR, the real objective is effective development planning and programming¹⁶¹. Managing risks and uncertainties for all shocks and stresses is simply good business, particularly in the face of mounting evidence that disasters are hampering development and poverty alleviation¹⁶².

At the most general level DRR and CCA have in common:

- A commitment to sustainable community safety and well being
- A focus on vulnerability reduction, and
- The enhancement of resilience.

Beyond this, as we shall refer to below, they share common approaches, programmes, tools and outcomes.

Furthermore, common strategies that address community based DRM and CCA duplicate each other. For example, the 2009 Government of Viet Nam's CBDRM Decision 1002 (see Chapter 8 for further details) drew largely from activities undertaken by the non-government sector in a broad range of community based risk reduction and adaptation activities. Thus, there is a strong push to integrate further the two fields to enhance programme effectiveness and reduce confusion for local communities.

Communities have (often unawares) been adapting to climate change for years and often have the experience and ability to deal with change when provided with technical support and financial and material resources.

9.4.2 Differences between disaster risk reduction and climate change adaptation

At the present the differences between DRR and CCA include:

1. Climate change adaptation focuses on long term, multi-year programmes whereas DRR focuses more on shorter-term responses.
2. Climate change adaptation focuses more on changes in average conditions whereas DRR focuses on extreme events.

These differences are not irreconcilable and integration can be achieved, in principle quite easily.

Commonly identified barriers to integration include the difference in the technical language and terminology used in DRR and CCA, compounded by different approaches to project implementation¹⁶³; and institutional, financial and political barriers¹⁶⁴ (which act to inhibit stakeholders from truly collaborating and creating cross-disciplinary and holistic programs.

These barriers arise often from administrative and management arrangements that have developed separately and integration of CCA and DRR can therefore be achieved, in part, by enhanced coordination and cooperation between Ministries, principally MARD and MoNRE, including collaborative policy development (which includes, for example, agreement for desired social protection and public health), collaborative programme implementation and the sharing of tools and methods.

¹⁶¹ Shaw 2004, UNISDR 2009

¹⁶² Adger 2000

¹⁶³ Schipper and Pelling 2006

¹⁶⁴ Helmer and Hilhorst 2006

9.4.3 Similarities between disaster risk reduction and climate change adaptation

The similarities between DRR and CCA are equally strong.

1. Both aim to build resilience in the face of hazards and risks;
2. For both DRR and CCA, vulnerability is heavily influenced by poverty and the underlying causes of peoples' vulnerability;
3. Both must be integrated into relief, recovery and development plans and policies and therefore require multi-stakeholder participation;
4. Measures to relieve risk by enhancing mitigation and measures to adapt to climate change must ultimately be effective at the local level and engage local communities;
5. Both recognize that the starting point for reducing risk and increasing adaptive capacity lies at the junction of current conditions of risk generation and climate change;
6. The strategic benefits of environmental management measures aid both current and less well understood future risk reduction needs;
7. Both require a basis in risk assessment and management for remediation, protective and capacity building actions to be effective.

9.4.4 Importance of integration of disaster risk reduction and climate change adaptation

Despite earlier segregation, the policy debate is now starting to emerge which recognizes that to be effective both have to address these issues and they have to address them in a parallel and coordinated and integrated way.

The main benefits of integration have been identified as:

1. Reduced climate impact related losses through widespread DRR measures
2. Increased efficiency of resources (financial, human and natural, which is crucial when considering aid efficiency) and reduced overlaps and wastage in duplicated programmes
3. Enhanced effectiveness and sustainability of CCA and DRR approaches through mutual support, resource sharing and knowledge exchange.

Without such integration communities will face increased administration costs, reduced efficiency in the use of financial, human and natural resources, and reduced overall effectiveness of efforts to reduce risk.

An approach developed some years ago requires the mainstreaming¹⁶⁵ of DRR (and now CCA) considerations into 'everyday' community and Government activities. This includes:

1. Legislation that addresses the overall sources of risk to communities;
2. Social, economic and environmental development planning;
3. Land use planning;
4. Building design;
5. Agricultural practice;

¹⁶⁵ The word 'mainstreaming' this is often used to describe integration or incorporation into the normal or conventional way of doing things

6. Transportation and other infrastructure;
7. Education, training and awareness raising.

Climate change requires two modes of adaptation¹⁶⁶:

First, the internalization of risk management so that the development agenda responds to increased levels of uncertainty associated with greater levels of climate variation and larger extremes in weather events.

Second, the 'climate proofing'¹⁶⁷ of development decisions for long-term investments aims to take gradual changes in climatic regimes into account alongside other future components such as demographic change, affecting investments from agricultural science to infrastructure projects.

The DRR community has also advocated for prospective risk management¹⁶⁸ (or proactive risk management) and this fits well with CCA goals. Proactive risk management places an emphasis on investing to reduce risk before any event rather than managing risk through response. This argument has long been made on human rights grounds but recent economic arguments have had more impact on policy communities, for example, leading to DFID's earmarking of 10% of bilateral emergency relief funding for risk reduction.

The post-disaster period offers great potential for building risk reduction into development but there is only limited evidence that this happens. Too often, the time pressures and political expediencies of reconstruction lead to risk being built back into development. Proactive risk reduction acknowledges the close tie between risk and development and the opportunity that adaptation to climate change opens for enhancing development opportunities amongst the poorest as part of risk reduction investments. The diversification of livelihoods or access to micro-credit, for example, can act to distribute risk and provide new livelihood opportunities.

In Viet Nam, although there have historically been separate communities of policy makers, practitioners and researchers working on DRR and CCA (with limited overlap in networks, meetings and methods and tools), progress towards the development of the National Platform for DRR and CCA¹⁶⁹ will help to improve this situation allowing greater opportunity for regular stakeholder consultation, knowledge sharing and policy dialogue.

Some DRR specialists are sceptical of the sudden popular interest in CCA and the adaptation community's perceived focus on a long-term agenda that only encompasses part of the entire array of natural disasters (excluding earthquakes, for instance). Some DRR experts also feel that the CCA community often focuses too much on climate as the main driver and fails to acknowledge the social factors behind vulnerability. Adaptation experts have tended to focus more on longer-term issues and particularly changing averages and of course find that the

¹⁶⁶ Benson and Clay 2004

¹⁶⁷ Climate proofing of development is a methodological approach aimed at incorporating issues of climate change into development planning. It enables development measures to be analysed with regard to the current and future challenges and opportunities presented by climate change. It can be applied at national, sectoral, local and project level, and is making development measures on these levels more efficient and resilient, from *Climate Proofing for Development: Adapting to Climate Change, Reducing Risk*. Authors: Marlene Hahn & Vienna Alexander Fröde, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, 2010.

¹⁶⁸ Prospective disaster risk management: Management activities that address and seek to avoid the development of new or increased disaster risks. Comment: This concept focuses on addressing risks that may develop in future if risk reduction policies are not put in place, rather than on the risks that are already present and which can be managed and reduced now. (UNISDR 2009)

¹⁶⁹ See Chapter 2 Institutional arrangements for disaster risk management and climate change

DRR community fails to address those. An additional complication is that the two communities often use different language for similar issues¹⁷⁰.

9.4.5 Processes for the integration of disaster risk reduction and climate change adaptation

Strategic, evidence based policy and programmes

A principal aim is to ensure that adaptation support moves from a project-based approach to a policy based and strategic programme implementation including being integrated with national development planning and sectoral plans and strategies. Therefore, National Action Plans for Adaptation (NAPAs)¹⁷¹ must be seen as a step towards the sustainable implementation of adaptation activities. In view of this, it is important that the following three 'I's – Investment, Institutional strengthening, and Information and involvement – are undertaken with this overarching goal of integration in mind.

Integrated and local level risk assessment

Risk management approaches are often top-down, however, they are potentially important tools for integrating DRR and CCA adaptation. If they are to be successful, they must be undertaken at local levels and be directly informed by examples of how households and communities approach vulnerability and their adaptation strategies. A suggested first step is to examine on-going natural resources management projects, DRR and poverty reduction activities and livelihoods management activities to assess how they can be adapted to reduce risks and to increase adaptive capacity.

The Government and donors should also assess their own support to local-level initiatives and partnerships – including through providing direct local-level access to DRR and climate adaptation financial resources and technical advice and ensuring communities' participation in policy development and implementation. The CBDRM Programme of the Government - to be undertaken in close collaboration with the non-government agencies, Mass Organizations alongside people in selected communes – will go a long way to addressing this.

A focus on strengthening existing local adaptive capacities and strategies through a range of social and political interventions and through delivering financial and technical resources to local people would be a move towards a holistic strategy for including risk reduction and adaptation in development planning. Whether it is financial or technical investment that is needed, adaptation support must focus on responding to the needs of the poorest and most vulnerable members of society, building on and complementing local knowledge and coping practices.

Institutional strengthening

Strong Government institutions are critical for the country to be able to adapt to climate change, as well as for development and to mitigate the risk from hazards. These institutions can be strengthened by: a more convergent and linked-up approach to adaptation planning

¹⁷⁰ DFID 2005

¹⁷¹ *The purpose of developing a National Adaptation Programme of Action (NAPA) is to identify the urgent and immediate needs of a country to adapt to the present threats from climate change. Addressing these needs will expand the current coping range and enhance resilience in a way that will promote the capacity to adapt to current climate variability and extremes, and consequently to future climate change as well. The process is uniquely for the Least Developed Countries (LDCs) as they have the least capacity to deal with climate impacts. "NAPA" is a process, not a single document. It is a mean for LDCs to disseminate their proposed programmes to address their urgent and immediate adaptation needs.*

and indeed sustainable development more broadly, at national level; and support, where appropriate, for the devolution of programme management responsibility.

Disaster risk reduction and climate change occupy separate policy spheres in the international arena, and usually also at national levels, despite the fact that they interplay and overlap on all levels¹⁷². In practice, DRR is usually handled by MARD and MoF, which typically have few operational links with MoNRE that leads climate change policy or the MPI, MoF who oversee national planning and development policy. Although there are efforts by the Government to help coordinate overall processes through the NTP RCC and other upcoming mechanisms.

Information and involvement: access to climate change information

The Governments around the world, including the Government of Viet Nam are increasingly basing development planning and policies on climate information and analyses in order to:

- Have a better understanding of socio-economic and political factors, local conditions, how vulnerability is generated and how vulnerable groups are differentiated and differently exposed.
- Identify ways of strengthening people's resilience and capacity for hazards and longer term climate change impacts, such as through social protection measures and other forms of livelihood support and asset-building.
- Better understand synergies and differences between different sectors. This could be encouraged through stakeholder identification at all levels and in all sectors, systematic and regular dialogue between stakeholders, information exchange and joint activities and programmes between climate change and disaster reduction bodies, communities and experts, in collaboration with national and regional development policymakers and practitioners.

Climate findings must be translated into comprehensible formats and made accessible to vulnerable communities, to inform their local adaptive strategies. Additional climate change studies also require funding to ensure that the gaps are filled where climate information is currently lacking. Equally, local knowledge and information must be harnessed to inform programming and action planning of principal development sectors. Options would include maximising the potential of existing traditional social networks and investigating the potential of social networking and internet-based innovations as approaches to communicating and sharing information.

Involvement of the non-government sector and communities

The two-way flow of climate change information and the countries' ability to develop robust development strategies is contingent on the involvement of non-government agencies and communities. Good practice involves the proactive and systematic deepening of engagement with at-risk communities, including the participation of the most vulnerable groups in planning, decision-making, implementation, and monitoring and evaluation. Participation must be clearly defined and explicitly recognised through policy, legal and institutional provisions.

Communities should be empowered to engage with local and central governments so they can actively use political systems to help meet their needs. An element of this must be the two-way flow of information between the Government and communities. The role of the Government should be to provide resources to explain and interpret legal issues, clearly map

¹⁷² Adger and Brooks 2003

out the responsibility of different political organisations and ensure that communities are informed about opportunities for engagement. Communities and groups should be supported and given the forum to participate directly in political discussions relating to resource rights and management.

Non-government agencies should advocate for greater political commitment to and financial support for adaptation from the Governments and donors. Such agencies can provide invaluable insights into the local politics and social changes that affect patterns of vulnerability seen on the ground.

Coordinated and comprehensive development plans

Disaster risk reduction and CCA, as well as being integrated with each other must be integrated into national, regional and local development plans and into relevant sectoral policies and strategies (such as water, agriculture, environment, planning, finance and rural development, etc.). They should not be viewed as separate sectors with separate frameworks, tools and approaches. Adaptation to climate change and DRR should therefore draw on existing frameworks, tools, approaches and experience from established sectors.

Funding and investment

Strategies for DRR, water resources management, food security and environmental sustainability and other components of CCA should be a feature as high political priorities, with sufficient budgets allocated in national development planning and should be allocated funding within Ministries responsible for programmes and technical support including MARD, MoNRE, MoC, MoT, MoET and MoH.

Plans should make allowance for changing livelihoods and cultures as a result of the impacts of climate change. Investments should be made in diversifying sources of household income and supporting sustainable alternative livelihood strategies to spread the risk posed by climate change to the poorest and most vulnerable communities.

If DRR is integrated into development planning, it can be 'absorbed' within existing development budgeting and can bring cost savings in the longer term. The cost-effectiveness of this approach is further demonstrated when the link between climate change and the increasing frequency and severity of extreme weather events is taken into consideration.

Funding mechanisms for adaptation should benefit from experience gained in reducing natural disasters, for instance by using successful knowledge and tools and tailoring such tools to different contexts and sectors rather than "reinventing the wheel"¹⁷³. At the same time, well-funded adaptation efforts are likely to help standardise good DRR practice, strengthen local and expert knowledge bases, and accelerate the development of quantitative information (Group of Eight 2005). There is often little political will or financial incentive to invest resources to ensure that something does not happen, rather than investing in visible infrastructure or social programmes¹⁷⁴.

Attention to incentives, institutions and instruments to promote good risk-aware (both natural disasters and climate change impacts) development is urgently needed¹⁷⁵. Both agendas, however, suffer from a lack of political influence and human capacity to raise the profile of

¹⁷³ Schipper and Pelling 2006

¹⁷⁴ Schipper and Pelling 2006

¹⁷⁵ Downing, Olsthoorn and Tol 1999

climate-related risk management in mainstream development planning and practice, although adaptation now is gaining significant political attention in Viet Nam.

Local adaptive capacity should be strengthened

To develop long-term sustainable adaptation solutions, communities need financial and technical support to help them build on existing coping strategies and plan for managing natural resources, and so reduce the risk of disaster.

Developing and using appropriate risk reduction tools

Available decision making tools have already begun to incorporate long-term and gradual climate change aspects and there is time to refine this intrinsically political process. Capacity building for adaptation to extreme weather risks that are unexpected or that exceed management capacity is, however, urgently needed.

Policy responses to cope with extreme disaster risk have far reaching implications for the social and spatial distribution of wealth and power. This distribution needs to be changed if the risk to property and life from extreme weather events is to be reduced. Fortunately, the lessons learnt from the science and practice of DRR as well as the existing institutional frameworks and organisational forms for its implementation in Viet Nam go a considerable way in meeting this challenge. The climate change community is, however, in danger of wasting time and money 're-inventing the wheel' if this knowledge is not translated from DRR into CCA¹⁷⁶.

Disaster risk reduction offers approaches and tools¹⁷⁷ with which to tackle the immediate and root causes of risk. The selection of tools depends on the political context and technical capacity of those at risk. Ideally, approaches can combine work on the immediate and root causes to ameliorate human vulnerability by, for example, improving housing standards to reduce exposure and susceptibility through participatory methods that can enhance accountability and legitimacy in local leadership. The timely integration of risk management into development and climate change adaptation is likely to be best facilitated by boundary organisations that position themselves at the interface between the DRR, the development and the climate change communities¹⁷⁸.

National and international initiatives

In Viet Nam, progress is being made at the national level with the current development of the Disaster Risk Management Law (anticipated to be promulgated in 2012/13) by MARD, which makes clear mention of a DRR in the context of a changing climate. The Law, which is set to be ambitious in its scope, will help to further bring about convergence of the DRR and CCA agendas. In addition, MoNRE developed a National Climate Change Strategy which was released in late 2011 that is set to define the country's position and commitment at international level in CCA (with DRR mentioned). In the development of this Strategy, a much more integrated approach was taken by the Government used in terms of how CCA and DRR are seen.

At the international level, the Bali Action Plan on climate change agreed by Governments in December 2007, clearly identifies consideration of disaster reduction strategies for enhancing action on adaptation and is a significant step toward achieving a properly integrated approach. Disaster reduction managers are beginning to contribute to national climate change policies

¹⁷⁶ Schipper and Pelling 2006

¹⁷⁷ Substantial tool kits and directories of research are managed by the UNISDR and ProVention Consortium

¹⁷⁸ Examples include the ProVention Consortium (<http://www.proventionconsortium.org>) and the Dutch Red Cross Red Crescent Climate Centre, in The Hague, The Netherlands

and to consider how to adjust risk assessment and reduction measures in response to projected changes in risk patterns.

9.5 CLIMATE SMART DISASTER RISK MANAGEMENT

Climate smart disaster risk management (CSDRM) is a relatively new approach to DRM that is more cognisant of future climate change impacts¹⁷⁹. It has arisen from concern that existing efforts to reduce the impact of disasters need to be further improved. The climate is changing and weather patterns are becoming more extreme and less predictable¹⁸⁰. Together with other threats to human development, increasing disaster risks hampers progress achieved in promoting resilience under the HFA.

The CSDRM approach is the result of input from researchers, community leaders, nongovernment organisation workers and government officials from ten disaster-prone countries across East Africa, South and South East Asia: *“It responds to a clear call, from those working to build resilience to disasters, for a practical, evidence-based method of incorporating climate change considerations into existing DRM models”*.

There are 12 components of CSDRM, which are organised into three action-oriented pillars:

1. Tackle changing disaster risks and uncertainties;
2. Enhance adaptive capacity;
3. Address poverty and vulnerability and their structural causes.

To apply a CSDRM approach requires investment in capacity building, developing/or establishing new partnerships, technical assistance and innovation to achieve the changes required. In Viet Nam a favourable environment for CSDRM potentially exists; there is access to climate science (both nationally, e.g. through MoNRE, and globally) and information is accessible; a wide range of DRM stakeholders are able to operate in the country. Such DRM stakeholders need to be flexible, innovative and committed to a shared approach to address the dynamic threat to human development in the country that disasters represent.

9.5.1 The climate smart disaster risk management approach

An integrated social development and disaster risk management approach that aims simultaneously to tackle changing disaster risks, enhance adaptive capacity, address poverty, exposure, vulnerability and their structural causes and promote environmentally sustainable development in a changing climate”.

The CSDRM approach provides guidance for strategic planning, programme development and policymaking and may be used to assess the effectiveness of existing DRM policies, projects and programmes in the context of a changing climate. It is an approach to help crosscheck DRM interventions for their responsiveness to current and future climate variability.

The approach has ‘three pillars’ that are based upon established concepts, related mainly to the progression of vulnerability from root causes to unsafe conditions¹⁸¹ and to those associated with resilience, adaptive capacity and uncertainty. The three pillars of action are detailed in Table 12:

¹⁷⁹ Mitchell 2010

¹⁸⁰ IPCC 2007

¹⁸¹ Wisner et al. 2004

Table 12: Climate smart disaster risk management¹⁸²

1. Tackle changing disaster risks and uncertainties	2. Enhance adaptive capacity	3. Address poverty and vulnerability and their structural causes
1a Strengthen collaboration and integration between diverse stakeholders working on disasters, climate and development	2a Strengthen the ability of people, organisations and networks to experiment and innovate	3a Promote more socially just and equitable economic systems
1b Periodically assess the effects of climate change on current and future disaster risks and uncertainties	2b Promote regular learning and reflection to improve the implementation of policies and practices	3b Forge partnerships to ensure the rights and entitlements of people to access basic services, productive assets and common property resources
1c Integrate knowledge of changing risks and uncertainties into planning, policy and programme design to reduce the vulnerability and exposure of people's lives and livelihoods	2c Ensure policies and practices to tackle changing disaster risk are flexible, integrated across sectors and scale and have regular feedback loops	3c Empower communities and local authorities to influence the decisions of national governments, NGOs, international and private sector organisations and to promote accountability and transparency
1d Increase access of all stakeholders to information and support services concerning changing disaster risks, uncertainties and broader climate impacts	2d Use tools and methods to plan for uncertainty and unexpected events	3d Promote environmentally sensitive and climate smart development

For more information of the 'three pillars of CSDRM, please refer to Annex IX.1

The CSDRM approach recognises the complexities and interdependencies of any one intervention and thus promotes the interrelation of the three pillars. The CSDRM approach needs to be tailored to local realities and specific challenges.

9.6 GENDER, DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTATION

9.6.1 What is gender?

To incorporate gender into DRR and CCA, it is important to understand the terms and issues that link women and men to disasters and climate change.

¹⁸² Mitchell et al 2010

Gender

The socially constructed relationships between females and males throughout their life cycles. Gender differences are deeply rooted in every culture, but are changeable over time, and have wide variations both within and between cultures. ‘Gender’, along with other aspects of social identity such as class, age, ethnicity and race, determines the roles, power, and access to and control over resources for females and males in any culture
(based on: Oxfam GB, 2010)

A gender approach provides the theoretical and methodological instrument to analyse gender relations, to understand their dynamics in specific contexts, such as climate change, and to build proposals to promote equality. *The goal is gender equality; enhancing gender equity is a step in that direction.*

The use of a ‘gender lens’ can help people to better understand social processes, thereby ensuring that risk reduction and adaptation consider gendered differences and do not inadvertently continue or even increase inequality.

To target scarce resources effectively, disaster practitioners should be aware of gender issues in disaster, and respond appropriately. Seeing disaster through a gender lens can help identify the main issues for policy makers, planners and practitioners, expose critical system gaps, and bring a gender focus into the analysis of disaster mitigation and response. And therewith makes DRR and climate change adaptation more effective.

“In a disaster, gender concerns might seem a luxury that can wait while more urgent matters are addressed. Yet the failure to address gender-based inequalities immediately after disaster and throughout the response can condemn women and girls to less aid, fewer life opportunities, ill-health, violence and even death. To reduce future suffering during disasters, aid organizations must ensure full respect for women’s and girls’ human rights – civil, cultural, economic, political and social, including the prevention and prosecution of gender-based violence.”

Source: “Please don’t raise gender now – we’re in an emergency!” World Disaster Report 2006, Chapter 6, International Federation of the Red Cross Red Crescent Societies Geneva

It is also important to underline that not all women (and men) are the same. Other differentiators, such as age, class, caste, ethnicity, (dis)abilities, also shape people’s capacities and vulnerabilities.

9.6.2 Promoting gender equality

Gender equality

The equal enjoyment by women, girls, boys, and men of rights, opportunities, resources, and rewards; an equal say in the development process; and the same level of dignity and respect. Equality does not mean that women and men are the same, but that they have the same power to make choices, and the same opportunities to act on those choices.
Source: Oxfam GB, 2010

Gender equality gives women and men the same entitlements to all aspects of human development, including economic, social, cultural, environmental, civil and political rights; the same level of respect; the same opportunities to make choices; and the same level of power to shape the outcomes of these choices (Oxfam GB).

Ideally, the incorporation of a gender perspective into development would bring about gender equality. Gender equality is defined in various ways, but tends to refer to five main components: rights, opportunities, value, situation and outcome, and agency. Despite growing global awareness and literature around the topic of gender, women remain subordinate, particularly in many developing countries. On aggregate level at the global scale, women are the poorest and least educated and have the fewest resources, which perpetuate their vulnerability to the harmful effects of climate change and climate-related stresses¹⁸³.

Gender does not mean 'women', but as society assigns women often a much lower status compared to men, more effort should be undertaken to bring about equality. Women's needs and capacities should therefore be considered and prioritised. Gender also does not mean that we only work with women; in fact, to bring about change in gender relations, men should understand gender issues and help to combat gender inequality.

Gender inequality in social, economic, environmental and political spheres results in different opportunities for men and women in society which, for example, at the time of disaster may mean that women do not receive directly information about emergency situations; are not involved in household decisions about use of relief items; are less active in voluntary relief and recovery work; may have challenge in access to evacuation shelter (where women's privacy and practical needs are not always considered) and relief goods; and employment in disaster planning, relief and recovery programme.

Women are often portrayed as the 'victims' of disaster and their central role as a crucial agent in response to disaster is often overlooked. A woman's pre-disaster familial responsibilities are magnified and expanded by the onset of a disaster or emergency, with significantly less support and resources. However, women play a central role within the family, securing relief from emergency authorities, meeting the immediate survival needs of family members and managing temporary relocation.

Gender mainstreaming

A globally recognized strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring, and evaluation of policies and programmes in all political, economic, and societal spheres. This is to ensure that women and men benefit equally from processes of development, and that inequality is not perpetuated. Source: Oxfam GB, 2010

The UNDP has a dual strategy for working toward gender equality: gender mainstreaming and women's empowerment¹⁸⁴. Women's empowerment is often necessary as an explicit form of affirmative action, since many women suffer inequality and require specific attention to enable them to participate fully in gender mainstreaming.

Like the theme of gender, the issue of climate change is also a crosscutting issue that has to be mainstreamed into all programme activities of UN agencies. In UNDP, climate change is integrated across the core themes of work. The Human Development Report of 2007-08 highlighted the potential of climate change to undermine attainment of the Millennium Development Goals and, aware of this, UNDP strives to harmonize human development and the management of climate change by promoting mitigation and adaptation measures in order to hasten socio-economic progress¹⁸⁵.

¹⁸³ *The need to prevent discrimination against women has been outlined in the UN's Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)*

¹⁸⁴ UNDP, 2008

¹⁸⁵ UNDP, 2008

Gender mainstreaming in DRR and CCA (and climate change mitigation) supports the vital and continual participation and equal benefiting of both women and men in all aspects, because successful risk reduction and adaptation requires the participation, knowledge, and skills of all community members.

9.6.3 Differential impacts of disasters and climate change

Throughout the world, there are gender-specific differences, in access to and control of resources, in consumption patterns and lifestyles, in decision-making power and vulnerability to disasters caused by natural hazards and climate change. Disasters and climate change therefore impact upon women and girls differently compared to men and boys. When confronted by disasters and changes in climate, women and men reveal vulnerabilities specific to their sex.

Although climate change impacts will affect all countries, its impacts will be differently distributed among different regions, generations, age classes, income groups, occupations and genders. The poor (of which 70% are women) will be disproportionately affected. IUCN Website, 2010

Women and children are disproportionately affected¹⁸⁶

- Disasters do not affect people equally and have different impacts on men and women. Although different types of disasters occur globally and affect different populations, commonly women and children are disproportionately affected, suffering more during and after disasters. Often more women die than men as the direct and indirect result of disasters¹⁸⁷.
- The main reason why women are more vulnerable to disasters is mostly because of their social and economic status; where low social and economic rights exist for women, the situation is worse¹⁸⁸.
- With existing patterns of gender discrimination, men and boys are likely to receive preferential treatment in rescue efforts and both women and girls may, in some circumstances, suffer more from the shortages of food, safety and economic resources in the aftermath of disasters.
- In several cultures women are less likely to have swimming skills.
- Understanding whether men or women died and who survived, has immediate implications on the gender-differentiated needs.

¹⁸⁶ This section is modified from: "Caught in the Storm: The Impact of Natural Disasters on Women", Lin, C. and Ramdas, K.N., The Global Fund for Women, 2005 and *Damage, loss and needs assessment: An introduction for staff of the Asian Development Bank*, Draft, Neil Britton and Ian Wilderspin, 2008

¹⁸⁷ E.g. Oxfam International estimates that three times as many women than men died in the Indian Ocean tsunami in 2004 – about 70-80%; 61% of deaths caused by Cyclone Nargis were women; in the 1991 cyclone in Bangladesh, 91% of deaths were women

¹⁸⁸ Physical differences between men and women are unlikely to explain the result, e.g. women are often at an advantage in famines because they can cope better with food shortages due to their lower nutritional requirements and higher body fat. Social norms can provide some explanation. In many countries women are supposed to look after children, the elderly and their homes, which hamper their own rescue efforts in most natural disasters. From: *The Gendered Nature of Natural Disasters: The Impact of Catastrophic Events on the Gender Gap in Life Expectancy, 1981-2002*; Neumayer, E. and Plüumber, T. London School of Economics and Political Science /University of Essex and Max-Planck Institute of Economics, 2007.

Gender analysis undertaken appropriately within all sectors after a disaster event, is thus essential in helping direct aid and in planning equitable recovery¹⁸⁹.

Women are at increased risk of violence

- In the chaos and confusion that occurs in the aftermath of a disaster, stress factors increase and women face increases violence, including sexual abuse, rape and domestic violence.

Targeting women's health care needs

- In addition to the general effects of disaster and lack of health care, women are vulnerable to reproductive and sexual health problems. Consideration of the specific health needs of women therefore needs particular attention. Diseases, such as malaria, impaired psychosocial health and other health related issues particularly affect women's health.
- Emotional stress caused by disasters is often identified by women as a major challenge. Women more frequently than men, report post disaster stress symptoms¹⁹⁰. However, men also face specific stress factors that they often do not easily communicate.

In planning, special efforts to address the specific health needs of women, e.g. including provision of suitable facilities for prenatal and maternity care need to be made. Psychological counseling for post-traumatic stress should therefore be considered for women and girls as they may have to cope with the loss of family members as well as the on-going challenges created by the disaster.

Adequate, equitable relief and recovery and compensation for losses

- In situations where there provision of relief assistance may be inadequate, women may have been forced to share food and non-food item, which may impact on the overall longer-term recovery process. Also women may have lost their rights to access to land during and in the aftermath of disasters.

The provision of safe, temporary or permanent housing and how land rights maybe secured by women who have lost their husbands, or property or are relocated from their land will need consideration.

Continued vulnerability faced by women

- In the aftermath of a disaster, traditional gender roles dictate that women become the primary caretakers for those affected by disasters – including children, the injured and sick, and the elderly – substantially increasing their emotional and material work load.
- Women's vulnerability is further increased by the loss of men and/or livelihoods, especially when a male head of household has died and the women must provide for their families and take on additional responsibility for providing income. Often this is in the agricultural sector or informal economy, which may be hardest hit by the disaster. Where a woman's and girl's educational and literacy levels are low, some may become unemployed and vulnerable to impoverishment, exploitation, early and forced marriages and trafficking.

Planning that helps women to become more self-sufficient, e.g. through income-generating and job creation schemes for women whose livelihoods and/or main providers were lost, is important and will help enable women to provide for themselves and their families.

¹⁸⁹ *Italicized sections are recommendations for appropriate action*

¹⁹⁰ WHO, 2011

Inclusion in decision-making processes in risk reduction and adaptation

- Women are often the first to mobilise local relief efforts (often taking on traditionally male roles) as well as establishing women's groups and often play an important role in longer term risk reduction activities; however, they are often excluded from policy - and decision-making and go unrecognised.

Men and women may need to be made aware that they need to go beyond their traditionally assigned gender roles or division of labour to fill in the gaps and further assistance/service delivery would be needed. Gender analysis will enable this to be ascertained.

- It is important to ensure that women are involved in all decision-making processes in DRR and CCA. Such processes must build on their capabilities, include women's input, and their leadership, with its unique perspective, should be encouraged.
- These efforts can both protect and advance the rights of women; in fact, the recovery period after a disaster provides unique opportunities for longer-term social and structural change that may help to improve women's lives in the future.

It is important therefore to keep a gender focus and to be able to particularly support women and girls facing disasters and climate change to reinforce their capacity to overcome these situations. Therefore, gender-responsive risk reduction and adaptation strategies for DRR and climate change are essential.

Specific gender issues brought by a changing climate¹⁹¹

- *Women, due to social roles, discrimination and poverty, are affected in different ways by the effects of climate change and by extreme climate events that often translate into disasters;*
- *Women are not sufficiently represented in decision making processes on climate change, or in adaptation and mitigation strategies; and*
- *Women must be included in these processes and strategies because of their rights, because they are 'more vulnerable', and because they have different perspectives and experiences with which they can contribute, e.g. to implement adaptation measures.*

In Viet Nam, the *National Target Program to Respond to Climate Change* (NTP-RCC) identifies the need to conduct vulnerability assessments at sectoral, regional and community levels, and identifies the poor, women and children as among the groups that are most vulnerable to the impacts of climate change. Gender is identified as a cross-cutting issue in the NTP-RCC. However, the NTP RCC does not explain the different roles of men and women, their responsibilities or decision-making powers. These are critical issues as climate change may worsen existing gender inequalities, create additional workloads for women, and lead to higher vulnerability of women in poor households. In fact, knowledge of these risks is still developing in Viet Nam.

¹⁹¹ As pointed out by the Women's Major Group at the 14th Meeting of the United Nations Commission on Sustainable Development, 2006

Addressing the gender-specific implications of disasters and climate change in Viet Nam has been identified as a cross-sectoral issue in the work of the UN and other agencies with the Government.

9.6.4 Gender a crucial dimension of disaster risk reduction and coping with climate change and climate change adaptation

"In the face of a changing climate, where weather-related hazards have become more frequent and/or intense, 'business-as-usual' DRR is no longer sufficient. Disaster risk analysis and planning now imperatively needs to go beyond using people's perceptions and past hazard trends. It now needs to examine how climate change is affecting hazard trends, as well as other perceived or likely changes, and how these impact on women and men, girls and boys." Source: Oxfam GB, 2011

In at-risk communities, men and women have distinct roles and responsibilities, which give rise to differences in vulnerability and ability to cope with change. Some of the ways gender roles are linked to DRR and CCA are:

Due to a **gender-based division of labour**, men and women perform different jobs/tasks. Disasters and climate change will alter what they can do, exposing men and women to **different risks and opportunities**. For example, men may migrate for work while women may spend more time working in the field and collecting fuel and water. However, in other situations, particularly young women migrate to urban areas, for example to work as servants or in the garment industries.

- Men and women have different **access to and control of resources**, including physical resources like land, social resources like networks, and financial resources like income-generating work and credit. In times of change, they will have **different options and 'safety nets' for coping with change**.
- Based on their distinct roles, women and men have different **sets of knowledge and skills**. Recognizing their contributions will result in a wider **range of options for preparing for and coping with change**.
- **Participation in decision making** and politics, and access to decision makers is not always equal for men and women and this may affect their **participation and the representation of their ideas in short- and long-term decision making on risk reduction and addressing the impacts of climate change**.

9.6.5 Incorporating gender issues into disaster risk reduction and climate change adaptation

Effectively incorporating gender into DRR and CCA requires specific steps:

- Generating **sex disaggregated data** through community vulnerability and capacity assessments, and/or gender analyses, including SEAGA.
- Identifying those **women who are marginalized and particularly at-risk**, including economically destitute women, women belonging to ethnic minorities, women with chronic disabilities or health problems, women subject to gender based violence and women with insufficient security and privacy
- Engaging **women as full and equal partners** in community-based DRR and CCA planning, and integrating women at the highest levels of planning and decision-making.

9.6.6 What should be our focus in gender in climate change adaptation? Strategic gender mainstreaming in DRR and CCA

I. Ensure that DRR and CCA is a national and local priority with a strong institutional basis for implementation

- *Strengthen gender awareness and mechanisms in institutions dealing with DRR and CCA*
- *Promote participatory approaches in DRR and CCA.*

II. Identify, assess and monitor disaster risk and climate change risks and enhance early warning

- *Involve local women in disaster risk assessment and climate change monitoring*
- *Strengthen women's capacity and involvement in early warning*
- *Ensure women's access to disaster risk and climate change information.*

III. Use knowledge, innovation and education to build a culture of safety and resilience at all levels

- *Support participatory research to explore gender aspects of DRR and CCA policies, strategies and plans*
- *Strengthen poor women's capacity building, as well as their access to assets*
- *Involve men in these efforts*
- *Make DRR and CCA curricula an integral part of formal and informal education..*

IV. Reduce the underlying risk factors to disasters and climate change

- *Enhance gender equality policies, legislation and strategies in DRM and climate change*
- *Ensure that women participate in decisions relating to DRR and CCA at all levels, which will result in more sustainability and fairness*
- *Strengthen poor women's livelihood opportunities and overall resilience.*

V. Strengthen disaster preparedness for effective response at all levels

- *Take women's physical, psychological, social and economic vulnerabilities and capabilities into account in community based disaster risk management (CBDRM) plans (see Chapter 8)*
- *Funding for DRR and CCA must play a role in promoting women's rights*
- *Apply gender budgeting methods in climate change and DRR financing..*

Modified from Irene Dankelman, January 2008

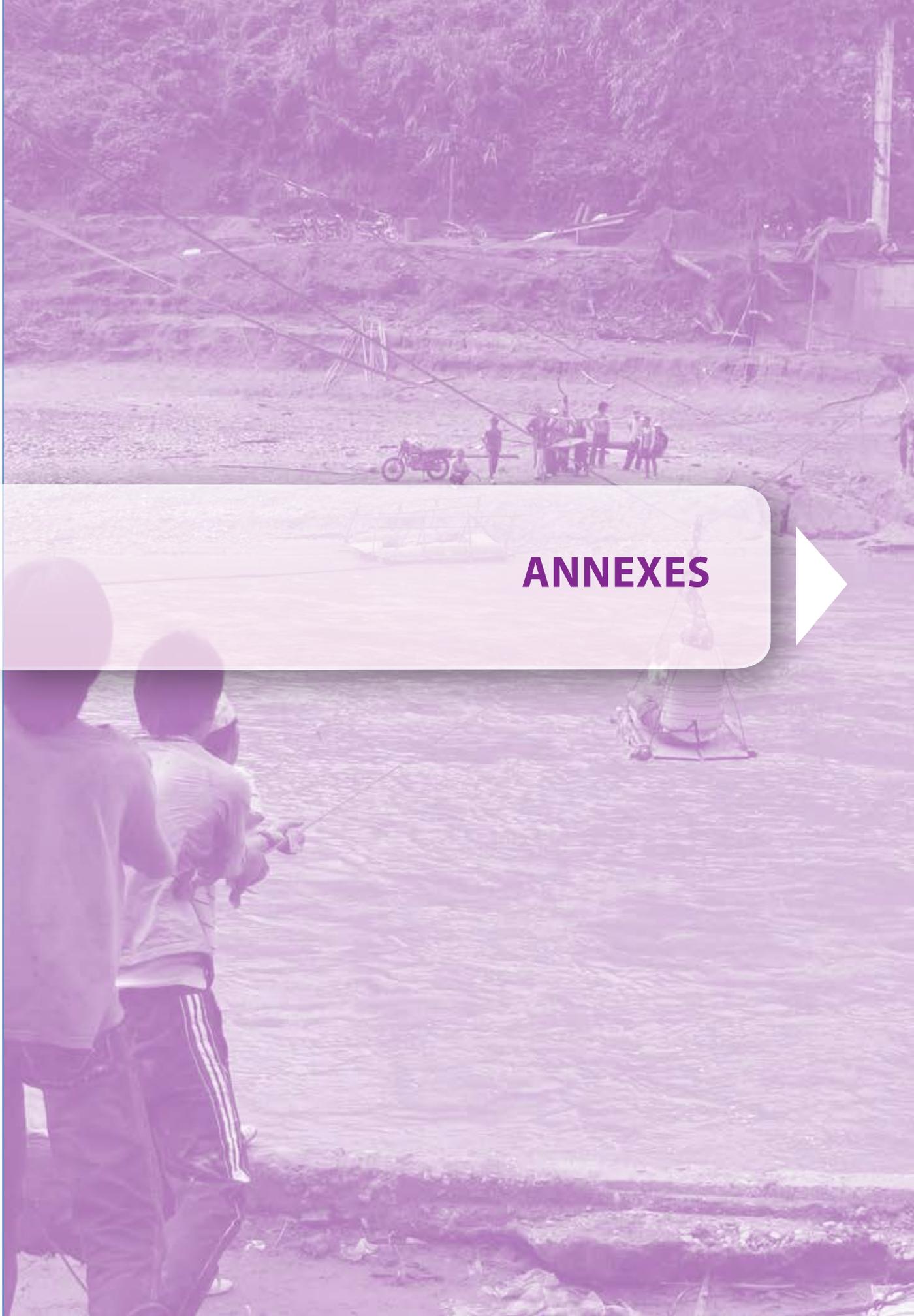
9.7 CHAPTER REVIEW

- *Climate change adaptation is normally used to refer to response to long-term trend changes while DRR has usually focused on shorter to medium term responses.*
- *Adaptation mainly refers to actions taken by people and institutions in response to the long-term effects of climate change or to the expectation of long-term change; adaptive capacity refers to the ability to undertake adaptation.*
- *Adaptation is diverse: it covers many types of activity, and can be taken by all types of actors, at all scales.*
- *Planned adaptation describes actions that are taken through deliberate policy decisions; this process is helped if there is strong mainstreaming, coordination, stakeholder involvement, technological development and capacity, and linkage with climate change mitigation.*
- *Adaptation cannot be treated as a stand-alone issue, since climate change impacts will hinder almost all efforts of development.*
- *There are strong linkages between CCA, DRR and development in terms of their focus on vulnerable people and the tools and methods they use to work towards community safety and wellbeing.*
- *Disaster risk reduction and CCA need to be integrated with development policy planning.*
- *People from the communities should be involved in DRR and CCA integration and planning at the local levels.*
- *Climate smart disaster risk management offers a new approach to DRM that is more cognisant of future climate change impacts.*
- *Gender is a crucial dimension of disaster risk reduction and climate change adaptation. In at-risk communities, men and women have distinct roles and responsibilities, which give rise to differences in vulnerability and ability to cope with change.*
- *Incorporating gender dimensions in disaster risk assessment and DRR actions is essential, together with full involvement of women in planning and decision-making.*

9.8 DISCUSSION QUESTIONS

1. Give an example of a potential adaptation action at each of these scales household, commune, province, country or region.
 - a. Can you define for each example whether it is anticipatory or reactive, autonomous or planned?
 - b. What are the main factors that you think are needed in order for each action to be successful, e.g. in terms of technology, skills, who is involved, coordination and resources?
2. What similarities and differences do DRR and CCA have?
3. Suggest methods for integrating DRR and CCA in your own work?
4. Why should local communities be involved in development planning?
5. What are the three pillars of action of the CSDRM approach?

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ANNEXES



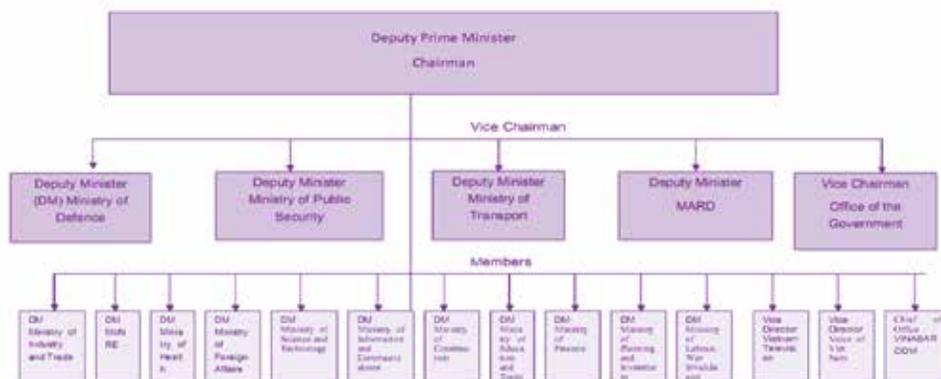
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ANNEXES CHAPTER 2

Annex II.1: Organizational structure of the VINASARCOM



Annex II.2: Summary of the National Strategy of natural disaster prevention, response and mitigation to 2020

There are some main points of the Strategy:

1. The goal of prevention, response and mitigation is not only applied to water-related disasters but also for other common natural disasters in Vietnam, which is determined based on 12 research projects providing the basis of the strategy.
2. The contents of the strategy are relatively complete and comprehensive. Besides the vision, direction, goals, tasks and measures, the Strategy provides an focus and real action plan including 6 programs improving legislation and policy, 6 programs strengthening the organizational structure, 22 programs developing and reviewing of planning, 3 programs raising awareness of the community, 2 programs reforestation and watershed protection, 7 programs improving disaster management capacity, and a number of programs building capacity forecast and disaster warning.
3. Among six measures of prevention and mitigation, some have very new vision, for example, "Disaster Management, including availability, response and mitigation should be integrated into the planning and socio-economic development as a whole for each region and sector and country", "Prevention and mitigation should be a priority for the willingness, to continue research on the effects of climate change global climate, sea level rise and other extreme weather phenomena in order to provide appropriate actions".
4. The strategy defines the tasks and measures not only for the whole country but also for each region.
5. Principles for the prevention and mitigation of natural disasters in Vietnam is the "four on spot motto" (the orders, local resources, materials, equipment and support on spot). The guidelines proposed by CCFSC based on past experience in rescue and flood control from the 1960 and 1970 in North Vietnam. This is one of the special experience of Viet nam which was confirmed in this strategy.
6. The principles of the strategy on the prevention and mitigation applied specifically to the Mekong Delta is the strategy of "living with flood", ensuring safety for sustainable development; leader in flood storm, wind, salt water intrusion, simultaneously drought (see details in the full analysis).
7. Finally, the social movement in which communities play an important role in disaster management is also a new point in this strategy.

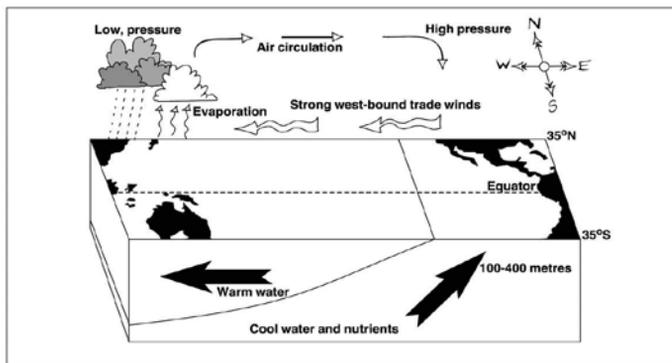
ANNEXES CHAPTER 3

Annex III.1: El Niño-Southern Oscillation (ENSO) phenomenon

In normal conditions, trade winds (the name given to winds that regularly blow west along the equator) push warmer surface waters towards Southeast Asia, where they accumulate, evaporate and fall as heavy tropical rains. Meanwhile, off the Pacific coast of Latin America, cooler waters well up from the ocean depths, causing dryer conditions along the shores of Latin America.

During *El Niño*, trade winds weaken or reverse, and the warm surface waters of the western equatorial Pacific shifts east. This generates unseasonal rain and storms over the Pacific coast of the Americas, while leaving drought to afflict Southeast Asia and the western Pacific. Once *El Niño* has passed, seawater and air circulation reverse. If the swing back is dramatic, it creates a condition called *La Niña*. During *La Niña*, the warm waters off Latin America move west and are replaced by unusually cold currents, chilling sea surface temperatures. Westbound trade winds blow stronger than usual and cycles of flooding and drought are often inverted. Heavier rains fall on the western Pacific, southern and eastern Asia, and northern Australia and as far west as southern Africa.

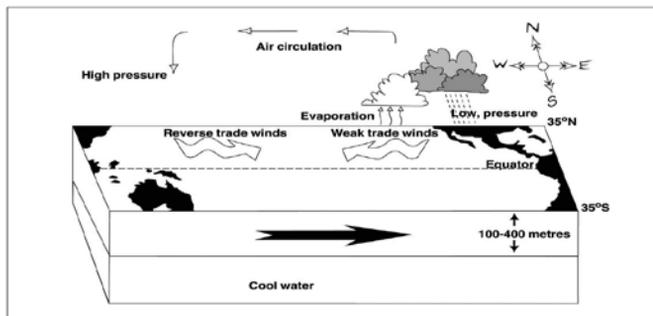
La Niña



Normal/La Niña

Conditions: trade winds push warm surface waters west, causing heavy seasonal rains in the west Pacific and south-east Asia. Cooler waters well up off Latin America, bringing dry coastal conditions. The *La Niña* phase exaggerates these effects.

El Niño



El Niño

Conditions: trade winds weaken or reverse, allowing warm surface waters to mass off Latin America, bringing unseasonal heavy rains and flooding. Meanwhile, the west Pacific and south-east Asia suffer from severe drought

Annex III.2: Special Report on Emissions Scenarios

In the Special Report on Emissions Scenarios (SRES) in 2000, IPCC introduced 40 scenarios, reflecting relatively diversified possibilities of greenhouse gas emissions in the 21st Century. These emission scenarios are classified into four families namely A1, A2, B1, and B2 with the main characteristics as follows:

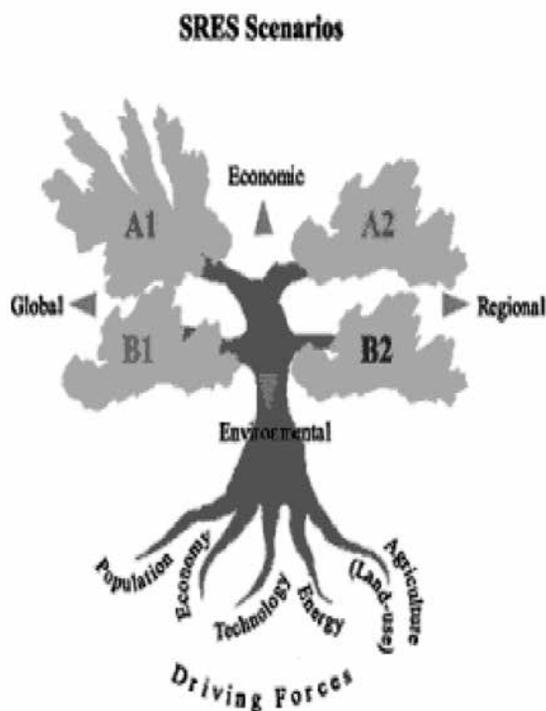
- A1 family: Rapid economic growth; a global population that peaks at nine billions in 2050 and declines thereafter; the rapid introduction of new and more efficient technologies; A convergence of world-income and way of life, a convergence among regions and increased cultural and social interactions. The A1 scenario family develops into three groups based on their technological emphasis:

- A1FI: An emphasis on fossil-intensive (high emission scenario);
- A1B: An emphasis on a balance across all energy sources (medium emission scenario);
- A1T: An emphasis on non-fossil energy sources (low emission scenario).

- A2 family: A very heterogeneous world; self-reliance and preservation of nations; continuously increasing population in the 21st century; Regionally-oriented economic development; technological change and per capita economic growth are more fragmented and slow (high emission scenario, similar to A1FI).

- B1 family: Rapid economic growth as in A1, but with rapid changes toward a service and information economy; global population reaches the peak in 2050 and declines thereafter; Reductions in material intensity and the introduction of clean and resources efficient technologies; The emphasis on global solutions to economic, social and environmental sustainability (low emission scenario, similar to A1T).

- B2 family: Continuously increasing population, but at a rate lower than A2; The emphasis is on local rather than global solutions to economic, social and environmental sustainability; Intermediate levels of economic development; Less rapid and more diverse technological change than B1 and A1 families (medium emission scenario, in the same group of A1B).



ANNEXES CHAPTER 4

Annex IV.1: Applying culturally appropriate approaches in programming

Step 1: Situation analysis

- Understanding the larger context
 - What are the political and legal frameworks relevant to culture in this programme context?
 - What are the economic, social and cultural realities in the programme context?
- Culturally-appropriate access and participation
 - What are the main socio-economic issues relevant to the programme?
 - How do these issues relate to cultural characteristics (ethnicity, age, gender, religions and beliefs, languages, sexual orientations, etc.)?
- Reinforcing positive cultural values
 - Have local forms of cultures been given proper consideration?

Step 2: Programme design and planning

- Understanding the larger context
 - What are the cultural assumptions behind the programme design?
 - What are the norms, practices and beliefs among various groups and sub-groups at stake that could impact the programme?
- Culturally-appropriate access and participation
 - What are the existing and potential barriers for the main actors to be fully involved in the programme design?
 - Who are the strategic partners that are or can be involved in the programme implementation?
 - Who are the local power-holders that control access and participation in the programme?
- Reinforcing positive cultural values
 - How can cultural resources be used to catalyse positive change and sustainable development?

Step 3: Programme implementation

- Understanding the larger context
 - How does the programme take into account culturally specific processes, mechanisms and forums relevant for exchanging views and preventing tensions?
- Cultures
 - How does the programme include a broad range of stakeholders from different backgrounds (ethnicity, age, religion, gender, social group, etc.)?
- Reinforcing positive cultural values
 - How does the programme contribute to the safeguarding and promotion of cultural diversity?

Step 4: Programme monitoring and evaluation

- Understanding the larger context
 - To what extent does the programme ensure that its implementation process is culturally relevant?
- Culturally-appropriate access and participation
 - To what extent does the programme include a broad range of stakeholders from different backgrounds (ethnicity, age, religion, gender, social group, etc.)?
- Reinforcing positive cultural values
 - To what extent does the programme contribute to the safeguarding and promotion of cultural diversity?

ANNEXES CHAPTER 5

Annex V.1: Commune, village and household level DRM measures and actions

The tables below illustrate different measures and actions that can be taken by people in high-risk areas for a specific major hazard type.

Note that many measures and actions are appropriate for a number of different hazards.

Note also that this is not a complete list of activities but is just indicative of the sorts and range of actions that can be taken.

Typhoons

Mitigation and preparedness		Response	Relief and recovery
Commune/ village level	Household level		
<ul style="list-style-type: none"> Improve vegetation cover, e.g. planting trees / bamboos around houses and villages to break the wind and prevent soil erosion Establish a public awareness system Establish emergency response teams (trained in First Aid, search and rescue, early warning, etc.) based in the communes and villages 	<ul style="list-style-type: none"> Listen for typhoon warnings on your radio, TV or on the public loudspeaker system Discuss and agree with your family members on what to do when a typhoon occurs Identify who you can seek support from during a typhoon Prepare a waterproof emergency bag containing: spare clothes, matches/lighters, drinking water, dry food, a torch, important documents (e.g. land title, deeds, birth and/or marriage certificates) and other essential items; check the bag's contents periodically to ensure that the items are always in good condition and ready for use at all times Store the emergency bag, along with food, fuel, potable water, medicine, tools, equipment and other necessary items in a safe, high place during the storm season (e.g. a mezzanine, upper floor or attic) Trim dead tree branches and cut down dead trees to reduce the danger of these falling on your house during a storm 	<ul style="list-style-type: none"> If your house is not very strong, on receiving a typhoon warning, immediately evacuate to pre-identified, safe places. Help the elderly, young children, pregnant women and persons with disability to evacuate Stay inside a strong house or building and don't go out Never go out to sea when there is strong wind or imminent typhoon Stay away from any broken electric wires or wet electric sockets Never take shelter under a tree, or stand near electric poles as they could fall on you and cause injury 	<ul style="list-style-type: none"> Continue to listen to typhoon warnings on the TV, radio or loudspeaker system Check that the electrical sources in the house are safe before using Check whether your family members and neighbours are affected and provide support Check any damaged parts of your house to and carry out repairs Check the water source to ensure it is not polluted by dead animals, dirty, or contains salt water

<ul style="list-style-type: none"> Organise training in disaster response for people in the community Identify safe areas and make evacuation plans 	<ul style="list-style-type: none"> Protect water sources from contamination by covering wells and water containers Identify a safe place to take shelter if you have to leave your house Move animals to a safe place Protect your fishing equipment and fish, shrimp and crab ponds Strengthen your house to make sure that it can stand firm during a storm 	<ul style="list-style-type: none"> Switch off the main electricity source to your home Take care of small children and stay together 	<ul style="list-style-type: none"> Check the dykes and the trees surrounding your house for damage Help to check the animals are alright Clean up the environment
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Floods

Mitigation and preparedness		Response	Relief and recovery
Commune/village level	Household level		
<ul style="list-style-type: none"> Develop a master plan for flood plain management Undertake local flood control measures (e.g. channels, dykes, dams, flood-proofing, erosion control) Improve vegetation cover, e.g. planting appropriate <i>Vetiver</i> grass/trees along river banks to prevent river erosion 	<ul style="list-style-type: none"> Discuss and agree with your family members on what to do when floods occur Identify where you can get help if someone in your family is injured during floods. For example, local health workers, First Aid trained persons, etc. Prepare bamboo/wood and ropes to make an attic area in your house to stay in. Make sure that you can escape through a window, or through the roof, should the water level become too high Listen to the TV, radio or public loudspeakers for flood warnings Prepare an emergency bag (water proof) containing spare clothes, matches/lighters, drinking water, dry food, torch, important documents and other essential items; check the bag's contents periodically to ensure that the items are always in good conditions and ready for use 	<ul style="list-style-type: none"> Listen to the weather forecasts on the radio/TV to get up-to-date news on the flood situation Switch off the electricity supply to your house at the main source Move up to a pre-identified high and safe place, for example, a two-storey building or a hill, when water rises to a pre-identified level. Watch out for snakes or other dangerous animals as they will also move to the higher ground 	<ul style="list-style-type: none"> Use mosquito nets when you sleep during the day and at night to prevent mosquito and insect bites (at all times) Don't go to areas near riverbanks, or where there was landslide, or to where there are no people living Don't enter any houses/buildings that have been flooded unless they are checked by the authorities

Mitigation and preparedness		Response	Relief and recovery
Commune/ village level	Household level		
<ul style="list-style-type: none"> • Set up local level flood detection warning system • Establish a public awareness system • Establish a village/commune emergency response team (trained in First Aid, search and rescue, early warning, etc.) based in the villages/commune • Organise training in disaster response, etc. (as for typhoons) for community members 	<ul style="list-style-type: none"> • Protect your valuables and important documents (e.g. land title, deeds, birth and/or marriage certificates) by putting them into a waterproof bag and store with the emergency bag, tools, equipment and enough food and water for at least one week in a dry, high safe place • Strengthen your house to make sure that it can stand during floods. Protect your house by putting sandbags around the house • If your family has a boat, make sure that it is well maintained and can be used when necessary • Protect your water supply by covering your well and water containers, etc. • If it has been raining heavily for over 3hrs in a flash flood and landslide prone area, you should move to a pre-identified safe place • Regularly clear and clean drains and ditches • During the flood season, boats should be kept ready at the river banks 	<ul style="list-style-type: none"> • Move the cattle/livestock to high ground along with sufficient fodder • Don't walk into water if you see that an electricity wire or post has fallen into the water or touch any electrical socket to prevent electrocution • Don't walk, wade, swim, ride a motorbike or bicycle, play or work in flooded areas as you could be swept away and drown. Even if the water is calm you could fall into a hole, as you cannot see it • Wear a life jacket if you have one. If not, you can use other things that float to hold onto, e.g. inner tubes, big empty, plastic containers, or banana trees can be used as life buoys if you have to move into a flooded area 	<ul style="list-style-type: none"> • Don't touch any damp electrical sockets or turn on the electricity until everything is dry or has been checked • Don't use any food that soaked in floodwater • Ask the Department of Health or Red Cross staff or to check the water quality and to clean your well before using it again • Check and repair your home thoroughly if it has been flooded before returning • Repair your latrine to make it safe (in terms of safety and hygiene)

Mitigation and preparedness		Response	Relief and recovery
Commune/ village level	Household level		
<ul style="list-style-type: none"> Identify safe areas and make evacuation plans, ensure that people know where to evacuate to if necessary and how to get there 		<ul style="list-style-type: none"> Keep away from riverbanks or springs in the flooded areas as these may be undermined and may collapse Don't drink floodwater. Instead collect and use rainwater to drink and cook with. Try always to boil the water. If you have no alternative, use filtered or purified water (using water purification chemicals) Don't eat spoiled food or food that was soaked in floodwater as there are a lot of bacteria in it and you could be infected and become ill 	<ul style="list-style-type: none"> Seek medical help if you or any of your family members become ill Participate in cleaning up the environment in your area and around your house Plant <i>Vetiver</i> grass, bamboo or appropriate trees around your house and in public areas to stabilise soil and to protect it against floods

Drought

Mitigation and preparedness		Response	Relief and recovery
Commune/ village level	Household level		
<ul style="list-style-type: none"> Establish drought and famine early warning system Develop with other appropriate stakeholders, a response plan Set up a rain water harvesting and storage system 	<ul style="list-style-type: none"> Listen regularly to the TV, radio and loudspeakers for weather forecasts and warnings of drought, especially when there has been little or no rain for some time Don't waste water! Protect all your water sources carefully Repair broken pipes and taps Store water in any possible container Store seed crops in a safe place for use after the drought Collect grass to feed the animals 	<ul style="list-style-type: none"> Listen to advice about what to do during the drought period regularly (e.g. from the radio, TV, loudspeakers l o c a l authorities and organisations) Don't waste water! Use household water, for example, to water the plants or in the latrine Collect water from the nearest safe drinking supply 	<ul style="list-style-type: none"> Check and repair the water systems Restore crop cultivation

Landslides

Mitigation and preparedness		Response	Relief and recovery
Commune/village level	Household level		
<ul style="list-style-type: none"> • Carry out hazard mapping to identify at risk and safe areas • Check legislation and land use regulation • Undertake local level awareness raising and emergency response rehearsals • Establish monitoring, warning and evacuation systems • Replant new trees where they have been cut down or have died. Plant appropriate trees, such as bamboos and <i>Vetiver</i> grass along the slopes as advised by experts • Do not fell trees. You can trim some branches or take off dead wood. Do not remove the bark of the main trunk • Find out the history of landslides in your area 	<ul style="list-style-type: none"> • If possible, buy insurance • Talk about what each of your family members should do to cope with the landslide risks or if a landslide occurs • Your family should not construct a new building in a landslide prone area, for example at the base of a slope, near a riverbank or close to the shoreline • Regularly observe the land around your house for signs of landslides, e.g. slanting trees, cracks in the walls of buildings or on the hillsides, depressions in the ground or in the roads 	<ul style="list-style-type: none"> • Listen to the weather forecasts and warnings on the TV and radio about heavy rains • Watch out for landslide warning signs, i.e. fallen or inclined trees, cracks on walls or slopes, depressions in the ground or in the roads, heavy rain for over 3 hours, abnormal sound caused by moving soil and stone • If you are living close to a spring or river be especially alert. Watch out for the change of water from clear to muddy colour, as such change is caused when there are landslides upstream. Be ready to move away immediately! • If you live in the area where landslides occur frequently, evacuate immediately to a pre-identified safe area, especially when requested to do so by authorised person(s) • Listen for any abnormal sound, which is caused by earth movement, such as: trees breaking or the crushing of stones • Remain alert and be ready to move out to a safe area • Try to avoid the path of a landslide. If you cannot, try to roll like a ball and cover your head with your hands 	<ul style="list-style-type: none"> • Keep away from a landslide area because the earth is still unstable and there may be more landslides • Check the safety of the damaged buildings • Relocate to safer areas if necessary

Earthquake

Mitigation and preparedness		Response	Relief and recovery
Commune/ village level	Household level		
<ul style="list-style-type: none"> • Undertake awareness raising and training in earthquake preparedness and response • Organise commune and village level emergency response rehearsals 	<ul style="list-style-type: none"> • Prepare a disaster/emergency bag that contains appropriate basic food, medicine, toiletries and clothing • Know how to turn off the electricity and water at valves and main switches • Know where you should go for protection when your house starts to shake • Strengthen and protect buildings • Train your family members to escape/save themselves if an earthquake happens • If feasible, arrange bedding/a place for elderly or disabled people near to an exit, so that they can be evacuated most easily 	<ul style="list-style-type: none"> • If you are indoors <ul style="list-style-type: none"> • Take cover under a sturdy desk, table, or bench, or against an inside wall, and hold on • Stay away from glass, windows, outside doors and walls and anything that could fall • Stay inside until the shaking stops and it is safe to go outside • Be aware that electricity may go out or that sprinkler systems or fire alarms may turn on in modern buildings • Do not use elevators • If you are outside <ul style="list-style-type: none"> • Stay there • Move away from buildings, trees, streetlights and overhead electricity cables • If you are in a moving car <ul style="list-style-type: none"> • Stop as quickly as safety permits, pull to the side of the road and stay in the car • Avoid stopping near or under buildings, trees, overpasses, and electricity cables • Do not attempt to drive across bridges or overpasses that have been damaged 	<ul style="list-style-type: none"> • If anyone has stopped breathing, give mouth-to-mouth resuscitation. Stop any bleeding injury by applying direct pressure to the wound • Do not move seriously injured people unless they are in immediate danger of further injury • For minor injuries, use a First Aid kit • Keep a battery-powered radio with you so you can listen for emergency updates and news reports • Be aware of possible tsunamis if you live in a coastal area. When local authorities issue a tsunami warning, assume that a series of dangerous waves is on the way. Move inland to higher ground as quickly as possible (see table below)

Mitigation and preparedness		Response	Relief and recovery
Commune/ village level	Household level		
		<ul style="list-style-type: none"> • Proceed cautiously after the earthquake has stopped, watching for road and bridge damage • If you are trapped under debris • Do not light a match • Do not move about or kick up dust • Cover your mouth with a handkerchief or clothing • Tap on a pipe or wall so that rescuers can find you. Use a whistle if one is available. Shout only as a last resort — shouting can cause you to inhale dangerous amounts of dust 	<ul style="list-style-type: none"> • Do not use the telephone unless there is a severe injury. For more detailed emergency procedures, consult your First Aid manual • Wear shoes in areas near fallen debris or broken glass • Participate in rebuilding houses and public building

Tsunami

Mitigation and preparedness		Response	Relief and recovery
Commune/ village level	Household level		
<ul style="list-style-type: none"> • Establish early warning systems • Plant mangrove or appropriate trees along the coastal areas • Build barriers, such as breakwaters • Strengthen and protect buildings along coasts • Undertaken village and commune level awareness raising and training in tsunami preparedness and response • Organise commune and village emergency response rehearsals 	<ul style="list-style-type: none"> • Learn the tsunami warning signs: <ul style="list-style-type: none"> o A big earthquake o Any unusual change in sea level (sea level may drop before the waves comes) o A roaring noise • Know where to run to if a tsunami occurs – know several high, safe areas and plan your evacuation routes to get to them • Learn swimming • Prepare buoyancy items to use as life buoy or life vests and keep them ready in convenient places • Train your family members to escape/save themselves if a tsunami happens • Identify and recognize the main button to switch off electricity, gas, and water off • If feasible, arrange bedding/a place for elderly or disabled people near to an exit, so that they can be evacuated most easily • Prepare a disaster/emergency bag that contain appropriate basic food, medicine, toiletries and clothing 	<p>If you are aware of any of the warning signs:</p> <ul style="list-style-type: none"> • Run to a safe place immediately, the safest place is on high ground over 15 meters or at least 1 km from the coast • Do not wait to be told; do not wait until you see the wave; do not try to save any belongings from your houses! Run! • Follow the evacuation route that has been determined to reach the nearest safe place • Try to take your disaster/emergency bag! • If you cannot run away to a safe place, climb a tree, you may be safe • Stay at the safe area for several hours and remember that more waves may come! • Do not stay in a car near the sea because it can be carried away by waves! <p>If you are on a boat out at sea</p> <ul style="list-style-type: none"> • Do not return to the coast; stay out in the open sea until the waves have ceased! <p>If you are in a boat at a harbour and there is no time to take it out to the sea</p> <ul style="list-style-type: none"> • Leave the boat and run to a safe place! <p>If you are caught by a tsunami wave</p> <ul style="list-style-type: none"> • Swim as strongly as you can! • Find something that floats and hang on to it! 	<ul style="list-style-type: none"> • Help the people injured or trapped in building and if possible to give First Aid to those injured and find the nearest medical help • Help neighbours and relatives who need specific help, e.g. with babies, young children, pregnant women, elderly and disabled people • Once the condition is safe, go home and check if any damage has affected your house • Check food and drinking water stock. Food affected by flood water is unusable because it is probably contaminated and will be a risk for your health • Participate in cleaning up the environment, restoring daily life and livelihoods activities • Participate in rebuilding houses and public buildings

ANNEXES CHAPTER 6

Annex VI.1: Suggested questions for a risk assessment

A comprehensive assessment of a village or commune (depending upon the size and number of people in the team) will take several days. The following questions need to be addressed during any risk assessment process:

General information about the community

- Name of the community
- Location of the community
- Total land area
- Area for agricultural cultivation
- Area for living
- Access to the community
- Population of the community
- Total number of households
- Number of poor households
- Number of children (under 5 and from 5 to 16)
- Number of women
- Number of men
- Gender ratio (men and women)
- Literacy rate
- Population growth rate
- Main hazards identified by the community
- High risk areas of each hazard within the community
- Population number and % living in high-risk areas
- The main economic activities of the community
- Existing community infrastructure
- Existing community resources
- Existing community based organizations
- Vulnerable people/groups who need special help and their location within the community
- Main problem(s) in the community

Hazard assessment

- What hazards (natural/man-made) occur?
- How often do they occur? (e.g. twice a year, every year, once in 3 years, etc.)
- Which ones occur most frequently?

- Are hazards occurring more or less frequently (re. climate change)
- Where do they occur most often? At which time of the year?
- What are their warning signs or signals (indigenous and those based upon scientific knowledge)?
- How long is it from the warning time until the hazard occurs?
- How long does each hazard last?
- How long do impacts last?
- What are the causes of the hazards?
- What is the history of disasters that have affected the community?

Vulnerability and capacity assessment

Answers to these questions will help identify if the community has high level of vulnerability or capacity:

- Is there an early warning system (EWS) in the community? Is this system linked to the government EWS?
- Who is responsible for receiving and passing on the early warning (EW) messages to community people? How and from where were the messages received and sent?
- How do people understand the EW messages? Do they receive any advice on what to do with the EW messages?
- How are the warnings passed on to people in the community?

Annex VI.2: An index of participatory assessment tools

- A. Secondary data review
- B. Direct observation
- C. Semi-structured interviews (SSI)
- D. Historical profile
- E. Mapping
- F. Transect walk
- G. Seasonal calendar
- H. Gendered resource mapping
- I. Institutional and social network analysis
- J. Health and nutritional assessment
- K. Livelihood/coping strategies analysis
- L. Problem tree
- M. Pair-wise ranking
- N. Assessing the capacity of a community-based organization

A. Secondary data review

There is always information available about a community that we can study to have a general understanding before going there to work.

The existing data and information on the community can be in the form of reports, records, baseline data, census, research findings and other documentation about the place, people or problems.

Why: From the existing information, we can get an overview of the situation and context of the community. This will help us to save time, to learn from experiences elsewhere and to avoid repeating work done by others. This will also help us to identify sub-topics and to prepare the main questions for the assessment.

Who: First, the assessment team should collect the information and later, together with community members, the information can be checked to see whether it is still valid.

When: This exercise can be undertaken during the planning period and at the initial stage of working with the community.

How: Team members try to find a variety of sources – the local authorities, institutes, universities, government offices, NGOs, libraries, etc. - then contact them to look for information.

Developing a community profile

The basic information to work on is as follows:

- Name of the community
- Location of the community
- The main economic activities of the community
- Access to the community
- Community infrastructure
- Population of the community
- Community resources

B. Direct observation

When working with the community, the team should realise that people cannot always express exactly their opinions or give the facts, therefore, a systematic observation of objects, people's behaviour, events, processes, relationships, participation, and a record of these observations should be undertaken.

Why: Direct observation can help us to get a better picture of the situation, especially of things that are difficult to verbalize. It is a good way to cross-check information provided by people. Also through observation, unexpected and other things that might be relevant to the programme can be noted.

Who: All assessment team members observe and share their observations.

When: During the whole process of working with community.

How: This is similar to a transect walk (see F), where the team will divide up and walk through the local area. A checklist about the things to look for during an observation can be drawn

up and used. Team members can also participate in different activities with the community people. Notes taken by team members about the same things can be compared to find out any differences and the reasons for the differences.

The checklist of the points that the team will have to identify, include:

- The social environment of the community: activities of local people at temples, pagodas, churches, sports fields, shopping areas, restaurants, main areas of concentration (children, adolescents, adults)
- The physical environment: characteristics of housing construction, roads and streets, drainage, lifeline services, low and high land areas, signs or marks of previous hazards or disasters, etc.
- Neighbouring communities: How close is the neighbouring community? Does the neighbouring community have any influence in the selected community you are working with? For example, does garbage from community A affect community B? Or does the water tank in one community affect the water flow to another?
- Look for existing capacities and resources in the community

Direct observation: The collection and systematizing of information and facts based on observing the reality. Later on, the information will need to be verified with interviews. If the Team wants to take pictures or record audio, request permission from the community members first.

Participant observation: Community member perceptions of day-to-day community processes. This process can take time.

C. Semi-structured interviews

Semi-structured interviews (SSI) are discussions in an informal and conversational way. SSI does not use a formal questionnaire but a checklist of questions related to each topic of interest as a flexible guide. Questions can be added or omitted appropriately. The context in which the interview is undertaken (who is involved, how it is conducted, where and when it is done) determines the quality of information gathered. In SSI, both interviewee and interviewer can ask questions

There are four types of SSI:

1. Group interview
2. Focus group discussion
3. Individual interview
4. Key-informant interview

Each type of SSI has its specific purpose:

- **Group interview:** is used to obtain information from several people at one time, to have access to a large body of knowledge, to find out how people think and act as a group, to identify problems and find solutions. This also allows cross-checking of information from other members of the group. However, it is not useful for sensitive issues. Groups should not have more than 25 people. In this type of interview, the facilitator needs to prepare very well in advance

- **Individual interview:** is used to obtain representative, personal information. Different people can be interviewed on the same topic. It may reveal differences in attitudes, opinions, behaviour and conflicts within community. People from different groups in the community should be selected for interviewing to avoid biases. More personal views can be provided
- **Key-informant interview:** is used to obtain special knowledge about a particular topic. Interviewees are those who are specialists in the topics we are interested in, or can give an objective view about how things work in a community, e.g. you interview a nurse if you want to know more about epidemics, a farmer about cropping practices, village leaders about procedures and policies
- **Focus group discussion (FGD):** is used to discuss about specific topics in detail with a small group of persons who have knowledge or are interested in a particular topic. People can also be grouped according to gender, age, and owners of resources. The group can have from 6 to 12 people

The discussion should be held in a comfortable place with an informal atmosphere so that people can share their opinions without any threat

Why: Interviewing sensitively, is the heart of participatory methodology. From good interviews, we can get general and specific information about the community, can analyse its problems, vulnerabilities, capacities and perceptions, and can discuss plans, etc.

Who: Assessment teams with 2 - 4 members

How: The interview is carried out with the prior permission of the interviewee. He/she will decide if they want to be interviewed or not and will determine when and how. In this kind of interview, it is important to ensure the interviewee knows the reason why the interview has been requested. Another important point to take into consideration is that it is not necessary to have a structured questionnaire. A checklist with 10 or 15 main questions will help. Consider elements such as: problems, vulnerabilities, capacities, main disasters, people's perception about disasters, main organizations within the community, etc. A standard interview will not exceed one hour in duration and a focus group should not exceed 90 minutes.

Factors to be considered in SSI

- Prepare the team to conduct the interview. Ensure that the interviews are undertaken with the presence of two members. One member will be responsible for conducting the interview while the second takes notes on the responses given
- Avoid interviews during working hours as this could create a sense of anxiety and inappropriately speed up the process
- Ask questions in an open-ended way - what, why, who, when, how, what do you mean, anything else? Look for: the relation between production for subsistence and commercial production, access to resources, family composition and size.
- Ask for concrete information and examples
- Try to involve different people (if present, interview a range of people: children, adolescents, the elderly, women, men, etc.)
- Ask new questions, arising from the answers given

- Make notes in a discreet way
- Be aware of bias and self interest

D. Historical profile

Historical profile is a tool for gathering information about what happened in the past. Information for historical profile can be collected by using other tools such as SSI and transect walk.

Why:

- To get an insight into the past hazards, changes in the nature of their intensity and behaviour;
- To understand the present situation in the community (the casual link between hazards and vulnerabilities)
- To make people aware of changes

When: At the initial phase.

How: Make a checklist of the points that you should identify, including:

- Plan a group discussion and ensure that key-informants (old people, leaders, teachers, etc.) are present. Invite as many people as possible, especially young people so that they have the opportunity to hear the history of their community

There are three main issues:

Major events

Ask people if they can recall major events in the community such as:

- o major hazards and their effects
- o changes in land use (crops, forest cover, houses etc.)
- o changes in land tenure
- o changes in food security and nutrition
- o changes in administration and organization
- o major political events
- The facilitator can write the stories down on a blackboard or large sheets of paper in chronological order

Life histories

- Another method is to ask individual informants to give a detailed account of their life or of a specific issue from a historical perspective

History tracing

- Ask individuals or groups to begin with current experiences and to go back in time. The purpose is to find causes, which have contributed to the occurrence of a certain experience

E. Mapping

What:

- Draw a spatial overview of the main features in the area:
 - o identify all the hazards/risks in the map
 - o show local resources and capacities as well as gender differences in access to, and control over, resources

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

- Spatial arrangement of houses, fields, roads, rivers, and other land uses (graphic)
- Hazard maps that show elements at risk, safe areas, etc. This will help the community to analyze potential problems as well as their frequency. Some hazards/risks occur principally during specific times of the year. Some hazards/risks are unpredictable (earthquakes) and therefore it is necessary to evaluate these events from when they last happened (hurricanes, landslides).
- Resource maps, showing local capacities. These help to identify available local capacities and resources that people rely on during times of disasters as well as to identify which resources are easily impacted by disasters. It also helps to identify resources that are accessible and owned by the community or individuals.
- Mobility maps show the movements of different groups in the community

When: During the initial phase when you enter the community and during community disaster risk assessment

Who: Red Cross with community members (selected individual households belonging to different income groups)

How:

- Decide what kind of map will be drawn
- Find men and women who know the area and are willing to share their experiences.
- Choose a suitable place (ground, floor, paper) and medium (sticks, stones, seeds, pencils, chalk, flipcharts, markers, etc.) for the map
- Help the people get started but let them draw the map by themselves
- Ask people to draw a map of their household and the resources/capacities on which they depend for their livelihood/survival (remember material/physical, social/organizational, motivational/attitudinal capacities)
- Identify the hazard/risk focal points jointly with the community incorporating their feedback
- Identify hazards/risks based on potential disasters: natural, man-made, etc.
- Always include social problems that are potential hazards/risks (violence, increase of HIV/AIDS, sexual abuse, etc.)
- Ask household member(s) how they contribute to/support other households, the community and the larger economic/social environment

- Ask people to use arrows to indicate the flow of resources to and from households.
- Ask household member(s) who uses and controls resources (consider gender, class, ethnicity, religion, age)
- Ask questions to accompany the drawing of the maps and put the answers on the map

F. Transect walk

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

Why: A transect walk:

- Visualizes interactions between physical environment and human activities over space and time;
- Identifies danger zones, evacuation sites, local resources used during emergency periods, land use zones, etc. and
- Seeks problems and opportunities

When: During the initial phase when you enter the community and during community risk assessment

Who: Team with six (6) to ten (10) community members representing the cross-section of the area

How: Based on the map, select a transect line (can be more than one):

- Select a group of six to ten people who represent a cross-section of the community and explain the purpose of the exercise
- During the walk, take time for brief and informal interviews at different places throughout the transect
- Focus on issues such as land use, risk of particular disasters, land tenure, and even changes in the environment in order to draw a historical transect

G. Seasonal calendar

What: Making a calendar showing different events (flood, strong wind, landslides), experiences (lack of food, migration), activities (festival, harvest), conditions (social, economic) throughout the annual cycle

Why:

- Identify periods of stress, hazards, diseases, hunger, debt, vulnerability, etc.
- Identify what people do in these periods, how they diversify resources of livelihood, when do they have savings, when do they have time for community activities, what are their coping strategies and
- Identify gender specific division of work, in times of disasters and in normal times

Who: Team and community members; have separate sessions for men and women

When: During the initial phases

How:

- Use a 'blackboard' or large sheets of paper. Mark off the months of the year on the horizontal axis. Ask people to list sources of livelihood, events, hazard occurrence, conditions, etc., and arrange these along the vertical axis
- Ask people to plot all the work they do (e.g. ploughing, planting, tourism, fishing, etc.) for each of their sources of livelihood/income by marking months and duration, adding gender and age
- Facilitate an analysis by linking the different aspects of the calendar: how do disasters affect their sources of livelihood? When is their workload heaviest? Ask for seasonal food intake, period of food shortage, out-migration, etc.
- You can continue the discussion on coping strategies, changes in gender roles and responsibilities during times of disasters or other issues you think are relevant

H. Gendered resource mapping

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

Why:

- Identify available local capacities and resources people rely on in times of disasters
- Identify which resources are easily affected by disasters

Who: Team and selected individual households belonging to different income groups

When: During the latter half of the assessment process when a certain level of trust and rapport has been built with the people in the community

How:

- Ask persons to draw a map of their households and resources/capacities on which they depend for their livelihood/survival (remember material/physical, social/organisational, motivational/attitudinal capacities)
- Ask households how they contribute to/support other households, community, and larger economic, social environment
- Ask people to use arrows to indicate flow of resources to and from households
- Ask household member(s) who uses and controls resources (consider gender, class, ethnicity, religion, age)
- Ask questions to accompany the making of the maps and put answers on the map.

I. Institutional and social network analysis

What: Making a diagram that shows the main organizations, groups and individuals in a community and the nature of the relationships and the level of importance

Why:

- Identify organizations (local and outside), their role/importance and perceptions that people have about them
- Identify stakeholders in community-based disaster management

Who: Team and community members

When: During the analysis stage of the assessment

How:

- Become familiar with the names of the organizations in advance.
- Ask people to develop a set of criteria for determining the importance of an organization and to rank them according to these criteria.
- Ask people to what extent organizations are linked to each other and note the kind of relationship between organizations.
- Draw circles to represent each organization or group. The size of the circle indicates importance. Distance between circles indicates the strength of the relationship.
- Continue focus group discussion on the history of the organizations, activities they have undertaken in the community, how well they function, how good is the coordination, which organizations, groups, individuals are important in times of disasters and in community level decision making mechanisms, etc.

J. Health and nutritional assessment

Why: Get insight in the health and nutrition conditions of men, women, children and babies

Who: This is a technical assessment and will require trained nutritionists or health professionals to participate on the team and may include community health workers, midwives, health centre staff, and community members.

When: During the analysis stage of the assessment

How: Conduct focus group discussions, key informant interview and individual household interview, look into the following aspects:

- Nutritional status of men, women and children
- Coping strategies to deal with food shortages
- Available health services
- Sanitation
- Common diseases
- Prevention measures
- Women's health condition
- Caring capacity
- Traditional medicine/ healing

K. Livelihood/coping strategies analysis

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

Why: To understand livelihood strategies, behaviour, decisions and perceptions of risk, capacities and vulnerabilities of households from different socioeconomic background

Who: The team can split up into smaller teams to conduct individual household interviews simultaneously

When: During the analysis stage of the assessment

How:

- Review the hazard map, seasonal calendar and resource map in order to determine criteria to select households belonging to different socio-economic groups (sample should not be at random).
- Decide how many and which particular households you will interview.
- Conduct the interview (1 hour); introduce yourself and give the reason for the interview.
- Start with getting to know household members, composition, age, gender, followed by questions about livelihood and coping strategies.
- Draw block or pie diagrams to facilitate discussion on livelihood sources.
- Continue discussion on how the household copes in times of stress (material, social, motivational).

L. Problem tree

What: Flow diagram showing relations between different aspects

Why: Identify local major problems/vulnerabilities as well as root causes and effects

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

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

How:

- From the information gathered using other tools and interviews, various concerns and problems have already been identified
- Give participants small pieces of paper and ask them to write down one major problem on each piece of paper and then tape these on the wall (people can draw problems in case they do not know how to write and read)
- Ask two or three volunteers to group the problems according to similarity or interrelationship
- Now the drawing of the 'problem tree' can start: the trunk represents the problems; the roots are the causes; the leaves are the effects:
 - √ Ask why issues on the cards are problems. Ask "but why?" after each explanation to arrive at the root causes
 - √ To arrive at the effects, ask for the consequences of each problem

M. Pairwise Ranking

What: Tool to facilitate prioritizing issues and concerns

Why: Problems, risks, solutions, and concerns might not be common for the entire community. Perceptions differ according to class, gender, religion, ethnicity, etc.

Who: Team facilitates community meeting (ranking can be done in groups)

When: During the later part of the assessment

How:

- Make a matrix listing the most important issues/problems/risks that were raised in former discussion and interviews. Ask the people to give each issues a letter or a symbol
- Ask the group to compare issue 'A' on the horizontal axis with issues 'B, C, D, E, F' on the vertical axis. Write in the box the letter/symbol that corresponds to the preferred one
- If all boxes are filled up, count the times each letter or symbol appears in the matrix. The more times it appears, the higher its urgency or priority
- Ask the (sub)-group(s) to choose someone to present the ranked priorities to the larger group. Discuss similarities and differences among groups
- Discuss reasons/criteria why people ranked the issues as shown in the final matrix. This will give us insight in their perceptions

Note: This is only one method of ranking.

N. Assessing the capacity of a community-based organization

What: Tool for organizational analysis

Why: To determine the kind of organizational support needed to enable the CBO to address problems and risks, and gradually to build up its management capacity

Who: Team facilitates discussion with community members and leaders

When: During the latter half of the assessment

How:

Conduct a semi-structured interview with guiding questions such as:

- What is the history of the community based organisations? When were they formed and for what purpose?
- How many members are there? Active? Passive? Is this number increasing or decreasing?
Attendance during meetings
- How are decisions made?
- Does the group have a community development plan?
- Are their committees functioning?
- What has the group contributed to the community so far?
- What skills do they have?
- What resources do they have?

Annex VI.3: Main contents of a community disaster risk assessment report

Name and location of community:

Time:

Facilitator(s):

Participant(s):

Purpose of the assessment:

I. Assessment methodologies and processes

How was the assessment undertaken?

II. Assessment results

Background information on the locality: population categories (male, female, children under 5 and from 5 to 15, etc.), socio-economic situation (including livelihoods activities), environment, etc.

- Total population (number of people)
- Population growth rate
- Number of households
- Number of children under 5
- Number of children under 16
- Number of women
- Number of men
- Literacy rate and ratio (men and women)
- Any people/group of people that need special help, e.g. people with disabilities
- The main economic activities of the community
- Total land area
- Area for agricultural cultivation
- Residential area
- Access to the community (road, rail, river, any obstacle)
- Existing community infrastructure
- Existing community resources
- Existing community based organizations
- Main hazards identified by the community
- The history of disasters that have affected the community
- High risk areas within the community
- Population in high-risk areas
- Vulnerable people/groups and their location within the community
- Location of emergency shelters
- Specific community problem/s
- The main economic activities of the community
- Any other relevant information

III. Results of hazard assessment

Hazard and disaster situation: Main hazards identified by the community, the history of disasters that have affected the community, high risk areas within the community.

Hazard assessment matrix

Hazard type	Causes of the hazard	Warning signs (What indicates that a hazard will occur?)	Forewarning (How long is it from warning signs until the hazards really occur?)	Speed of onset (Does the hazard occur suddenly or slowly?)	Frequency (How often does the hazard occur?)	When does the hazard often occur?	Duration (How long does the hazard often last?)

IV. Results of vulnerability assessment

Present results according to material/physical, socio/institutional, attitudinal/motivational vulnerabilities for each hazard. Population of high-risk areas, vulnerable people/groups and their location within the community, specific community problem/s

The following matrix can be used:

Hazard	Risk (or possible impact)	Vulnerability
Hazard 1 <i>e.g. Flood</i>	Risk 1 <i>People drown</i>	Vulnerability 1 <i>People don't know how to swim</i>
	Risk 2 <i>Household items damaged or washed away</i>	Vulnerability 2 <i>There is a lack of awareness of the importance of keeping essential household items in a safe place</i>
	Risk ...	Vulnerability ...
Hazard 2	Risk 1	Vulnerability 1
	Risk 2	Vulnerability 2
	Risk ...	Vulnerability ...

V. Results of capacity assessment

Community capacities (in terms of material/physical, socio/institutional, attitudinal/motivational aspects as individual and collective or communal capacity) to cope with each hazard, (including location of emergency shelters). List down each capacity and explain how it was used in past instances as well as what is available now in the community.

VI. Disaster risk ranking

Overall analysis of community disaster risks and ranking explains why the community puts these risks in such order. In other words, it helps explain how the community perceives their risks.

VII. Identification of specific activities and the organisations involved in the implementation of each activity

This includes activities to transform vulnerabilities into capacities (discussed and ranked by the community).

Indicate whether each activity is short (immediate), medium or longer term.

For each activity, identify whether it can be undertaken entirely by the community or whether there should be technical and/or financial support.

The activities should be put in prioritised order as ranked by the community.

The following table can be used to present discussion and prioritisation exercises undertaken with the community:

Activity to transform vulnerability into capacity	Type of activity (short – medium – long term)	Level of contribution from people/local authorities in the community	Possible or committed contribution from other organisations
Hazard 1 – Vulnerability 1 Activity 1 Activity 2			
Hazard 1 – Vulnerability 2 Activity 1 Activity 2			
Hazard 2 – Vulnerability 1 Activity 1 Activity 2			
Hazard 2 – Vulnerability 2 Activity 1 Activity 2			

VIII. Recommendation

1. Activities for emergency response preparedness plan (for emergency situation): early warning, evacuation (including evacuation place and route), search and rescue and emergency relief
2. Activities for public awareness raising plan, e.g. school DP activities, information, education and communication (IEC) material
3. Activities for disaster risk reduction
4. Follow-up assessment plan

IX. Annexes of the report

Meeting minutes, diagrams and discussion results from information collection activities and photos.

ANNEXES CHAPTER 8

Annex VIII.1: Decision 1002/QĐ-TTg: Community awareness raising and community-based disaster risk management (CBDRM), July 2009

THE PRIME MINISTER

Pursuant to the December 25, 2001 Law on Organization of the Government; Pursuant to the Prime Minister's Decision No. 172/2007/QĐ-TTg of November 16, 2007, approving and issuing the national strategy on natural disaster prevention, combat and mitigation till 2020; At the proposal of the Minister of Agriculture and Rural Development who is also Head of the Central Steering Committee for Flood and Storm Prevention and Control,

DECIDES:

Article 1.- To approve the Scheme on improvement of community awareness and community-based management of natural disaster risks, with the following principal contents:

I. OBJECTIVES OF THE SCHEME

Overall objectives:

To improve community awareness and apply effective models of community-based management of natural disaster risks at all levels and in all sectors, especially among administrations and people of villages and communes, in order to minimize human and property losses, restrict the deterioration of natural resources, the environment and cultural heritages caused by natural disasters, contributing to ensuring national sustainable development, defense and security.

Specific objectives:

- To perfect mechanisms and policies on community-based management of natural disaster risks from central to local levels.
- To improve capacity of local administration officials who are directly involved in natural disaster prevention and combat, ensuring that by 2020 100% of these officials will be trained to improve their capacity and knowledge on natural disaster prevention, combat and mitigation.
- All villages and communes in areas highly prone to natural disasters to have disaster prevention plans, information and communication systems, core forces specializing in natural disaster mitigation, and a contingent of volunteers to guide and assist people in natural disaster prevention, combat and mitigation.
- To disseminate knowledge about flood and storm prevention and control and natural disaster mitigation to 70% of population in communes in natural disaster-frequented areas.
- To include knowledge on natural disaster prevention and mitigation in general schools' curricula.

II. TASKS AND SCALE OF THE SCHEME

To ensure synchronism and maximize investment effectiveness, the Scheme consists of two closely interrelated components, including:

a/ Component 1: Improving capacity of administration officials at all levels to manage and carry out community-based natural disaster management activities.

This component aims at ensuring that 100% of officials at all levels who are directly involved in community-based natural disaster management be trained to improve their community-based natural disaster management capacity and skills. It covers the following activities:

- Formulating legal documents, unifying the management, and guiding and carrying out community-based natural disaster management activities at all levels and in communities.
- Strengthening natural disaster prevention, combat and management apparatuses of specialized agencies at all levels in provinces and centrally run cities.
- Building up systems of training in community-based natural disaster management at all levels.
- Compiling sets of training materials (for both trainers and trainees) on policies, mechanisms and activities of community-based natural disaster management at all levels and in communities.
- Organizing training courses on policies, mechanisms and steps of community-based natural disaster management for local trainers, agencies and officials, and those personally involved in community-based natural disaster management at all levels.
- Incorporating training programs to improve community-based natural disaster management capacity for administrations and professional trainers in annual programs and plans of action on natural disaster prevention, combat and mitigation at all levels, considering this an important activity.
- Equipping agencies and administrations at all levels with instruments in support of flood and storm prevention and control, and professional trainers with teaching aids on community-based natural disaster management.
- Embellishing, upgrading and building offices of provincial-level agencies specializing in flood and storm prevention and control and natural disaster mitigation.

b/ Component 2: Enhancing communication and education, improving the community's capacity of managing natural disaster risks.

This component aims at improving the community's capacity of mitigating natural disasters; disseminating knowledge about flood and storm prevention and control and natural disaster mitigation to over 70% of people in communes in natural disaster-frequented areas. It covers the following principal activities:

- Setting up task forces to carry out community-based natural disaster management activities (whose members are elected by the community).
- Making maps of natural disasters and the vulnerability of each community (the maps will be made by communities themselves based on the guidance of task forces in charge of community-based natural disaster management); making posters, maps and boards of instructions on major steps to prepare, cope with and overcome consequences of natural disasters, at the center of each community.
- Developing manuals on the community's fundamental activities of preparing, responding to and overcoming consequences of natural disasters in each period, pre-, during or post-disaster,

as appropriate to each community's cultural traditions and socio-economic conditions.

- Annually, community members will gather and update information onto maps of natural disasters and vulnerability.
- Annually, each community will work out a plan on natural disaster risk prevention, combat and management, taking into account impacts of climate change.
- Community members will make a community development plan which is integrated with the natural disaster risk prevention, combat and management plan.
- Organizing annual drills on natural disaster prevention, control and mitigation (involving the use of supportive equipment and instruments).
- Establishing a community system of early warning and communication on natural disasters (involving the use of supportive equipment and instruments).
- Establishing a community system of evaluation and surveillance of natural disaster prevention, combat and mitigation activities.
- Regularly reporting on community-based natural disaster management activities via the internet, television, radio, newspapers, posters and leaflets, etc.
- Compiling sets of training materials on natural disaster prevention, combat and mitigation in community (which will cover the process of managing natural disaster risks such as preparing and formulating plans, rescuing activities during natural disasters and post-disaster restoring and rehabilitating activities).
- Annually, organizing within community training classes on separate activities of community-based natural disaster management work (for specific target groups such as men, women, pupils or adults...)
- Organizing art performances on community-based natural disaster prevention, control and mitigation on festive occasions.
- Building small-sized projects on community-based natural disaster prevention, combat and mitigation (roads to avoid floods, schools, infirmaries, clean water facilities...).

The action framework, implementation plan and fund are provided in Appendices I, II and III to this Decision (not printed herein).

III. TIME AND PLACE FOR IMPLEMENTATION OF THE SCHEME

The Scheme will be implemented for 12 years, from 2009 to 2020. in about 6.000 natural disaster-frequented villages and communes nationwide.

IV. TOTAL INVESTMENT

The total investment required for implementation of the Scheme is estimated at VND988.7 billion, to be allocated to the components as follows:

- Component 1: To improve local administration officials' capacity of managing and implementing community-based natural disaster management activities: VND182.9 billion.
- Component 2: To improve the community-based natural disaster management capacity of the community: VND805.8 billion

a/ Financial mechanism:

The total investment required for implementation of the Scheme is expected to be mobilized from the following sources:

- State budget: VND546.9 billion (or 55%)
- People's contributions: VND46.322 billion (or 5%)
- Non-refundable aid from foreign governments and international organizations: VND395.48 billion (or 40%).

b/ Implementation and investment phases:

- Phase 1 (2009- 2010): VND75.4 billion
- Phase 2 (2011- 2015): VND366.4 billion
- Phase 3 (2016- 2020): VND546.9 billion.

Annex VIII.2: Disaster risk reduction action plan

Hazard/risk/vulnerability									
What is the result that we want to achieve?	What we need to do (activities)	How we measure our success?	Who is responsible for the implementation of the activity	Who should participate in the activity	Time frame When has to be done	Which are the resources available in our communities	Can we find ourselves the resources not available?	What are the resources needed? (human, material and financial)	What kind of technical support is needed?
Action 1									
Action 2									

ANNEXES CHAPTER 9

Annex IX.1: The three pillars of climate smart disaster risk management

Pillar one: Tackle changing disaster risk and uncertainties

This supports the priority areas of the HFA, highlighting the importance of collaboration between multiple actors. It calls for integrating information on risks by conducting detailed risk assessments, which recognise the value of multiple sources of knowledge. The importance of increasing access to information by all stakeholders through education, early warning and the media is emphasised while stressing measures to understand and address vulnerability and the conditions creating risks. The CSDRM approach treats climate change as an important consideration and attempts to insert climate change into the most critical, climate-sensitive elements of the HFA (given that climate change did not feature so strongly in the original HFA agreement).

Pillar two: Enhance adaptive capacity

Adaptive capacity refers to our ability to manage change sustainably by strengthening resilience. Promoting adaptive capacity means that institutions and networks learn and use knowledge and experience and create flexibility in problem solving (Scheffer et al. 2000 and Berkes et al. 2003). The main characteristics which enhance adaptive capacity have been identified as: promoting diversity; creating flexible, effective institutions; accepting non-equilibrium; adopting multi-level perspectives; integrating uncertainty; ensuring community involvement; promoting learning; advocating for equity; recognising the importance of social values and structures and working towards preparedness, planning and readiness. Enhancing adaptive capacity is an important strategy for managing increasing uncertainty associated with a changing climate and allows people and organisations to respond to shocks and unexpected events more effectively. The CSDRM approach weaves together many of the characteristics of adaptive capacity highlighted above and attempts to present these in a practical way.

Pillar three: Address poverty, vulnerability and their structural causes

The third pillar is founded on the 'pressure and release' model and longstanding research that attributes the causes of disasters to failures in development (Wisner et al. 2004, Bankoff et al. 2003). The pressure and release model treats root causes, dynamic pressures, unsafe conditions and hazards as all contributing to disaster risk. Root causes underline the importance of access to power, structures and resources. A lack of skills and institutions (markets and press freedom) coupled with macro forces, such as urbanisation and population growth, contribute to vulnerability

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Web links for further information:

The Hyogo Framework for Action 2005-2015: *Building the Resilience of Nations and Communities to Disasters* www.unisdr.org/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf; also the UN/ISDR website at: <http://www.unisdr.org/eng/hfa/hfa.htm>

For further information of the DFID sustainable livelihoods framework, please see: http://www.livelihoods.org/info/info_guidancesheets.html#1

The Millennium Development Goals, see <http://www.un.org/millenniumgoals/>

<http://www.benfieldhrc>

<http://www.ccfsc.gov.vn/KW6F2B34/CatId/G986H8324D/Tong-hop-thiet-hai.aspx>

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