PARTICIPANT WORKBOOK

7th Regional Training Course on

MAINSTREAMING DISASTER RISK REDUCTION INTO NATIONAL DEVELOPMENT PROCESSES

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adpc

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This document is the Participant's Workbook for the 7th Regional Training Course on Mainstreaming Disaster Risk Reduction into National Development Processes. The document describes the workshop curriculum and the workshop modules along with each of the sessions. The document is purely for educational purposes and not intended for re-sale.

CONTENT

SECTION 1: COURSE CURRICUM

- Introduction to the course
- Background to the course
- Course content
- Target participants
- Teaching and learing methodologies

SECTION 2: COURSE MODULE

- Module 1: Understaning Disaster Risk Reduction
  - Introduction to Disaster Risk Reduction
  - Linking Disasters with Development
  - Risk Reduction Strategies: Risk Treatment Options
- Module 2: Mainstreaming DRR into Development
  - Mainstreaming DRR in the Development Process
  - Mainstreaming DRR into Policy and Planning
  - Mainstreaming DRR in the Project Cycle
  - DRR Sectoral Mainstreaming: Agriculture
  - DRR Sectoral Mainstreaming: Livelihood
  - DRR Sectoral Mainstreaming: Health
  - DRR Sectoral Mainstreaming: Education
- Module 3: Enabling Environment for Mainstreaming DRR into Development
  - Advocacy and Partnership for Mainstreaming DRR into Development
  - The Use of Media for Promoting Resilient Development
  - Financing DRR and Resource Mobilization

SECTION 1

COURSE CURRICULUM

INTRODUCTION TO THE COURSE

"DEVELOPMENT MUST BE REDEFINED TO BE SENSITIVE TO DISASTER AND CLIMATE RISKS" (GAR, 2011)

- Disasters set back development, undermine efforts to achieve the Millennium Development Goals, and impact the economy, livelihoods and communities. Further, the impact of disasters on societies and economies has increased considerably over the last two decades and is likely to increase further as a result of two complementary trends:
  - Firstly, climate change is expected to increase the intensity and frequency of major weather-related events.
  - Secondly, the economic severity of natural catastrophes is growing due to a rise in both population and economic activity in areas with high exposure to natural hazards.

- The main findings of the last two Global Assessment Report on Disaster Risk Reduction (2011 and 2013) has revealed that:
  - Economic loss risk continues to increase across all regions-and seriously threatens the economies of low-income countries
  - Extensive disaster risk mirrors economic development pathways
  - The extensive risk of today can become the intensive risk of tomorrow
  - Disaster risks are becoming a growing global challenge to business and country competitiveness, sustainability and resilience.

- Development can also unwittingly create new forms of vulnerability or exacerbate existing ones, impeding efforts to reduce poverty and promote growth, sometimes with tragic consequences.

  Thus it is essential that the process of development planning identifies and analyzes the underlying causes of risk and possible impacts, and factors in measures to reduce the risk. This is best achieved by mainstreaming disaster risk reduction within the development framework; from public policy making, socio- economic and physical planning (at all levels and across all sectors), the allocation of public resources, and in the design and implementation of all development projects in hazard-prone countries.

TURN RISK REDUCTION INTO PRACTICE

- In order to ensure disaster risk reduction becomes a fundamental feature of development decision making, it is essential that the day-to-day work of all officials working in different government agencies (and development organizations) take risk reduction into consideration. This requires the appreciation of the relevance of disaster risk reduction to sustainable development and having in place the appropriate policies, strategies and institutional commitments to take action. The availability of tools to assess the risk (current and future) faced by each of the development sectors, and the 'know how' to choose measures for risk reduction and to evaluate and share the lessons learned is essential.

- In this process, capacity building forms an important step. It is required at all levels in the system

and across the spectrum of development. Enhancing understanding and skills on 'how to' mainstream disaster risk reduction is essential both from national to sub-national level and across all sectors.

TOWARDS A COMMON UNDERSTANDING

It is recognized that there is no blueprint for successful integration of disaster risk reduction into development; each country needs to identify the current and future risk from natural hazards and take actions to reduce it. However, it is possible to have a common understanding of the broad development framework followed in most of the countries in the region and how disaster risk reduction can be factored into that framework.

- Once the entry points for mainstreaming DRR are identified at different levels and across sectors, actions are to be taken. Subsequently for each action a certain set of skills are required as well as corresponding capacity.

- The purpose of this course is to bring officials working in government agencies responsible for development planning (at the central level), and agencies involved in disaster risk reduction, together and through discussions, showcase of achievements and exchange of ideas, develop common understanding and identify approaches for mainstreaming disaster risk (current and future) concerns within development planning processes at national level.

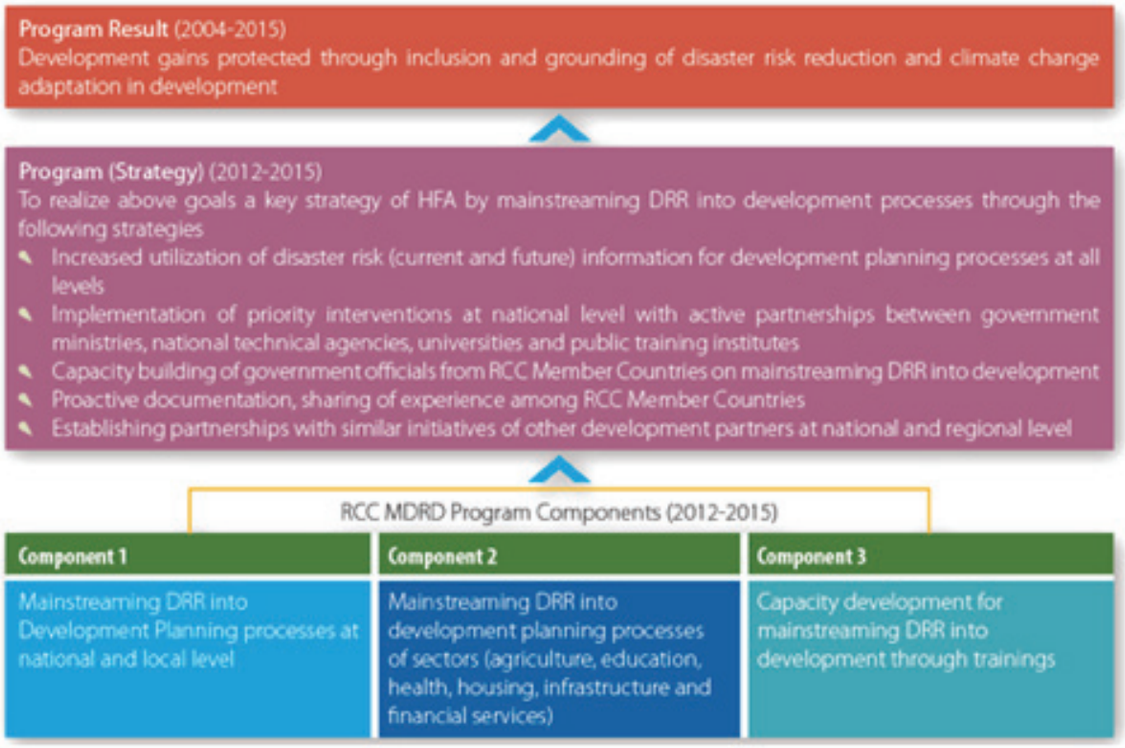
BACKGROUND TO THE COURSE

- Mainstreaming disaster risk reduction into development has been prioritized by the 26 member countries of the Regional Consultative Committee (RCC) on Disaster Management, to which ADPC acts as the secretariat. Accordingly, the RCC since 2004 has been implementing the MDRD Program aiming at the partnerships for safe development and good governance.

- Now in its 3rd phase, the program aims at mainstreaming disaster risk reduction into national development planning processes, as well as in priority sectors such as agriculture, education, health, housing and roads (see diagram for Program Framework below). The program is cognizant of the potential changing frequency and intensity of natural hazards with the change in global climate, and accordingly seeks to ensure current and future risk related issues are considered within development planning decision making processes.

- Being implemented by the governments under the regional mechanism of RCC, the program recognizes capacity building as a key component; and this course has therefore been developed by the RCC with technical support from ADPC and funding from AusAID to advance implementation of the 3rd component of the phase 3 of the RCC Program which focuses on 'Capacity development for mainstreaming DRR into development through trainings' (see diagram for Program Framework below).

RCC MDRD PHASE III PROGRAM FRAMEWORK



COURSE OBJECTIVES

The goal of the course is to enhance understanding among participants from the RCC member countries on mainstreaming disaster risk reduction (DRR) in the development planning process, in order to build the capacities of government officials and other key stakeholders to implement disaster resilient development. The specific objectives of the course include:

1. To increase awareness among participants on the need to mainstream DRR into development planning processes,
2. To enhance the capacity of participants on 'how to' mainstream DRR concerns into the national development planning processes,
3. To provide a platform for experience sharing, discussion and interactive professional exchange amongst government officials of MDRD practice and experiences between RCC countries.

COURSE CONTENT

The course is divided into 4 modules as follows:

MODULE 1: UNDERSTANING DISASTER RISK REDUCTION (MERGED WITH REVISITING DISASTER AND DEVELOPMENT MODULE)

The module reviews development context in the Asia and Pacific to appreciate evolving development concepts, agendas, regional development directions and challenges faced. Current development practices and trends will be discussed from disaster risk perspectives to understand the negative (and positive) consequences of disasters and climate risk on development interventions, and vice versa. The module will also revisit conceptual framework of Disaster Risk Management (DRM) and Disaster Risk Reduction (DRR) with examples of frameworks adopted at different levels. The multi-pronged relationship between disaster and development will be emphasized to support the argument for Mainstreaming Disaster Risk Reduction into Development as an effective approach to address challenges due to disaster and climate risks, which forms the overall rational of the learning workshop.

- **Session 1: Introduction to Disaster Risk Reduction (DRR)** – The session would give a detailed understanding of what constitutes a disaster, emphasizing that a disaster is not an inevitable outcome of a natural hazard event. This is followed by an overview of natural hazards in the Asia-Pacific region and their causes and an outline of potential changes of the frequency and intensity of hydro-meteorological hazards as a result of climate change. In addition, the session also discusses the DRR terminologies, the concepts of hazard, vulnerability and exposure, DRM/DRR framework (local/regional/global), and a brief overview of integrating DRR into development.
- **Session 2: Linking Disasters with Development** – Participants would be introduced to the principals and concepts of sustainable development, green growth, become familiar with global, regional and national strategies towards development, and understand how disasters and climate change are one of the main challenges towards achieving sustainable development goals. In addition, the session also highlights the linkages between disaster and development, the impacts and interventions to minimize negative impacts and ensure development sustainability and resilient to future disaster and climate risk.
- **Session 3: Risk Reduction Strategies: Risk Treatment Options** - The session provides an overview of the risk treatment measures that can be taken to reduce and manage risk. It discusses measures, such as, risk retain/accept, avoid the risk, reduce the risk, and risk transfer. Finally, the session also demonstrates some of the examples for risk reduction strategies from the region.

MODULE 2: UNDERSTANDING DISASTER RISK REDUCTION

This module focuses on the discussion of the concept disaster risk reduction (DRR) mainly focusing on the risk assessment process and the identification of strategies for disaster risk reduction

- **Session 1: Mainstreaming DRR in the Development Process** – This session introduces the DRR Mainstreaming as an approach to effectively reduce risks and build a more resilient community. The session further guides the participants in the DRR Mainstreaming process by discussing a general framework for development planning and linking it to the DRR/DRM process discussed in the previous module. The concepts outlined in this session will provide the foundation for the subsequent sessions.
- **Session 2: Mainstreaming DRR into Policy and Planning** - The session aims to discuss the need for mainstreaming DRR in planning and policy, and identify different ways to main-

stream DRR into planning and policy.

- **Session 3: Mainstreaming DRR in the Project Cycle** – With programs and projects being the vehicle to understake development initiatives, this session would look into mainstreaming DRR into the project management cycle with an objective to identify, assess and reduce/ manage risk associated with natural hazards that might affect both project performance and beneficiary groups.
- **Session 4: DRR Sectoral Mainstreaming: Agriculture** - This session introduces mainstreaming DRR into the Agriculture sector. The aim of the session is to explain why it is important to mainstream DRR as well as climate change adaptation (CCA) into the agriculture sector. The participants will then be shown how ADPC's mainstreaming framework can be used to build the resilience of their agriculture sectors.
- **Session 5: DRR Sectoral Mainstreaming: Livelihood**
  This session introduces mainstreaming DRR into the Livelihoods sector. The aim of the session is to explain the importance of mainstreaming disaster risk reduction and climate change adaptation into the livelihoods sector. The participants will then be shown how ADPC's mainstreaming framework can be used to build the resilience of the livelihoods sectors.
- **Session 6: DRR Sectoral Mainstreaming: Health**
  This session introduces mainstreaming DRR into the Health sector. The aim of the session is to explain why it is important to integrate disaster risk reduction (DRR) and climate change adaptation (CCA) into the planning, projects and functions of the health sector. The participants will then be shown examples of disaster risk- inclusive health sector inititives to build the resilience of the sector.
- **Session 7: DRR Sectoral Mainstreaming: Education**
  This session introduces mainstreaming DRR into the Education sector. The aim of the session is to explain the importance of mainstreaming disaster risk reduction and climate change adaptation into the Education sector. The participants will then be shown the Comprehensive Safe Schools Framework.

MODULE 3: ENABLING ENVIRONMENT FOR MDRD INTO DEVELOPMENT

This module explores into the different factors that contribute to or enable disaster risk reduction mainstreaming into different development planning processes and other governance functions. It introduces the approaches required to initiate and sustain the process of mainstreaming DRR into development by highlighting strategies such as partnerships, financing, and other programmatic approaches for mainstreaming DRR into development planning, drawing from experiences from different countries.

- **Session 1: Advocacy and Partnership for Mainstreaming DRR into Development -** This session provides the participants with a common understanding on the concept of "partnership." It guides the participants in assessing partnership readiness for DRR mainstreaming by examining and analyzing the coordination among different government offices and the collaboration between and among different actors in DRR.
- **Session 2: The Use of Media for Promoting Resilient Development –**The session touches upon various ways in which media could sensitize, promote, and enhance mainstreaming DRR. The session explores good practices that highlight engagement of the media as an active agent for resilience development through DRR integration.

- **Session 3: Financing DRR and Public Resource Allocation –** This session provides an overview of the impact of disasters on public finance, the need to mainstreaming DRR into budget and investment programs, and suggests options for financing DRR. The session draws upon examples of DRR financing mechanisms adopted by some countries in the region.
- **Wrap-Up, Next Steps and Reflections -** This session provides a synthesis of the emerging issues and trends in mainstreaming disaster risk reduction into development in the region. As a wrap-up, this session will also guide the participants in identifying programmatic approaches and initiatives mainstreaming DRR in each of their respective countries.

TARGET PARTICIPANTS

The target participants for this course are the following:

- Government officials from national agencies responsible for socio-economic development planning, physical and land use planning and finance
- Government officials from national disaster management offices
- Development partners working closely with governments to support processes related to mainstreaming DRR into development

TEACHING AND LEARNING METHODOLOGIES

This course draws upon the rich repository of knowledge, experience, tools and case studies from the various RCC member countries, experiences of the RCC Program on Mainstreaming DRR into Development, as well as various regional and global development partners. The basic principles of adult education guide the design and delivery of the course. The sessions are designed to encourage the participants to think creatively, facilitate discussions, participate in group work, share ideas as well as learn from the experiences of other countries in the region. The sharing of experience by guest speakers forms an important part of the teaching methodology, which will enable the participants to hear first-hand experiences of practitioners working on mainstreaming DRR into development.

COURSE KIT

The course kit consists of the following, which will be distributed to the course participants:

Course material: The file on course material contains the course program, information such as participant's brief, course administrative matters and profile of resource persons.

Participant's Workbook: The participant's workbook is a compilation of handouts which form the base of the sessions and attempt to summarize the information which would be delivered by the facilitator in the session. It is to be noted that the concepts are explained within the boundary of this training course and do not attempt to provide a comprehensive explanation on the said subject as a whole. In this context, it is to be emphasized that the content of the sessions are largely adopted from existing literature, studies and experiences from various countries in the region, and is aimed to be used for purely educational purposes. In addition, wherever applicable case studies are provided to elaborate the key concepts that the session aims to convey to the

participants. An attempt has been made to capture case studies from RCC member countries for the sake of familiarity of the participants.

Course Flash Drive: The Course Flash Drive contains soft copies of the Participants Workbook as well as a copy of the power point presentations. In addition, the related reading materials and references cited in the Participants Workbook are given on the flash drive. The documents compiled include theory, research and case studies. The purpose of the compilation is purely educational.

SECTION 2

COURSE MODULES

MODULE 1: UNDERSTANING DISASTER RISK REDUCTION

SESSION 1: INTRODUCTION TO DISASTER RISK REDUCTION

Session Overview
Total time of session: 1 hour 30 minutes

Session Objectives:
By the end of this session, participant will be able to:

- Define what is a hazard, vulnerability, exposure and capacity
- Explain the concept of disaster risk
- Outline the steps in the disaster management process

SECTION 1: UNDERSTANDING OF DISASTERS - HAZARD

1.1 WHAT IS A DISASTER?

The United Nations Office for Disaster Risk Reduction (UNISDR, 2009) defines a disaster as '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'.

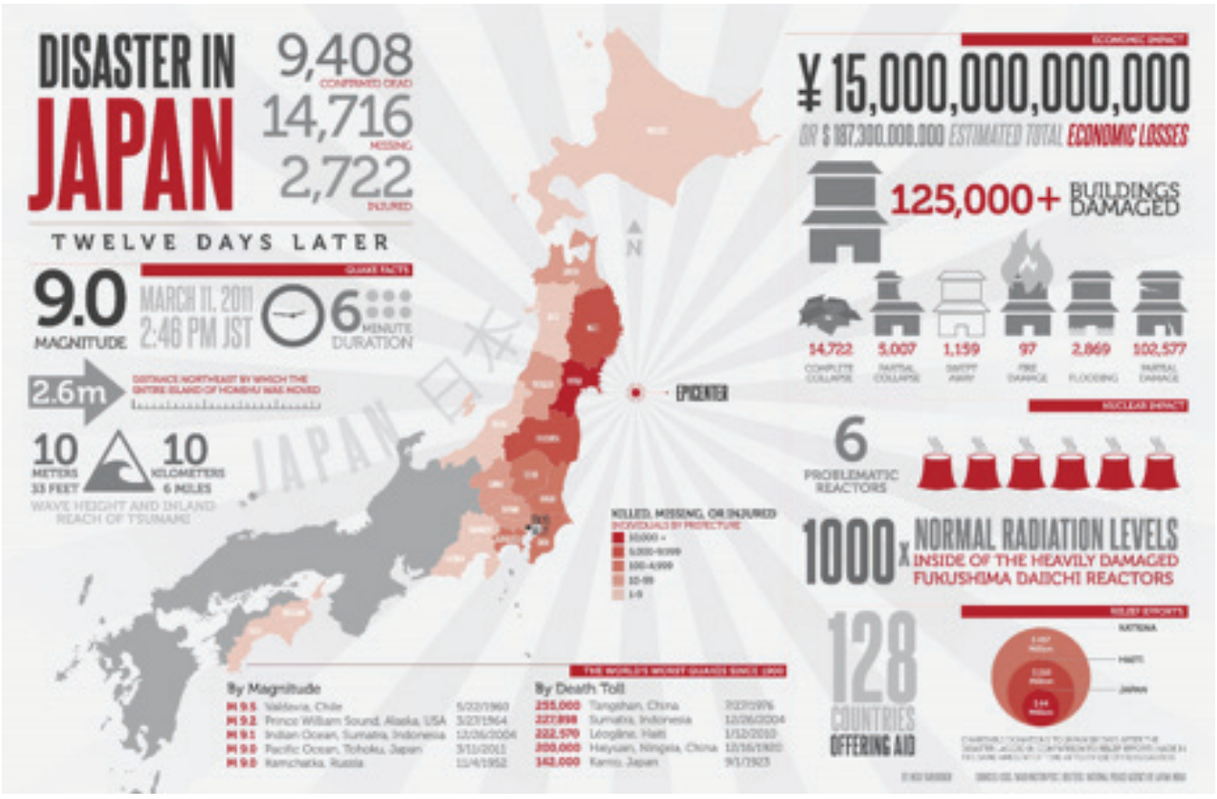
In line with this definition it can be said that a disaster takes place when the following three conditions occur at the same time:

- When people live in hazardous places like, for example, close to an active volcano, on unstable slopes where landslides are likely to happen, or close to rivers which could flood.
- When a hazardous phenomenon occurs, be it natural or human-made.
- When the phenomenon also causes a lot of damage, especially where no preventive measures have been taken.

Disasters could also be classified into two main categories considering the frequency and scale of the impacts as follows:

Intensive disasters: These are the infrequent but highly destructive disasters that are responsible for the vast majority of global mortality and direct economic loss. The 2009 Global Assessment Report noted that between 1975 and 2008, 0.26 percent of the disasters recorded in the EM-DAT database accounted for 78.2 percent of all the recorded mortality (UNISDR, 2009).

Frequent or recurring disasters: These are slowly evolving disasters, which tend to manifest themselves frequently, the effects of which are felt cumulatively. These localized events may account for only a small proportion of overall disaster mortality but, closely mirroring development processes (UNISDR, 2009), they are responsible for significant damage to housing, crops, livestock and local infrastructure, and particularly affect low-income households and communities.



The above infographic clearly depicts the picture of intensive damage due to natural disaster. On March 11, 2011, a 9.0 magnitude with an epicenter approximately 130km east of Sendai, Japan generated a Tsunami which reached heights of up to 40.5 m and in the Sendai area traveled up to 10km inland (NOAA 2011).

1.2. WHAT IS A HAZARD?

Hazard is defined in Hyogo Framework for Action (HFA), as; potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. Hazards can include latent conditions that may represent future threats and can have different origins:

Geophysical - Events originating from solid earth (rock and soil movements etc.)

Meteorological - Events caused by short-lived/small to meso-scale atmospheric processes (in the spectrum from minutes to days)

Hydrological - Events caused by deviations in the normal water cycle and/or overflow of bodies of water caused by wind set-up

Climatological - Events caused by long-lived/meso-to macro-scale processes (in the spectrum from intra-seasonal to multi-decadal climate variability)

Biological - Caused by the exposure of living organisms to germs and toxic substances

Biological	Geophysical	Hydro-meteorological	
		Hydrological	Meteorological
Epidemic	**Earthquake**	**Flood**	**Tropical cyclone**
Viral infectious disease	**Volcano**	General flood	Extra-tropical cyclone
Bacterial infectious disease	**Mass movement (dry)**	Storm surge/coastal flood	Local storm
Parasitic infectious	Rock fall	**Mass movement (Wet)**	**Climatological**
Fungal infectious	Landslide	Rock fall	Extreme
Prion infectious	Avalanche	Landslide	Heat wave
Insect infestation	Subsidence	Avalanche	Cold Wave
Animal stampede		Subsidence	Extreme Winter
			Drought/Wildfire
			Forest fire
			Land fire

1.3 COMMON HAZARDS IN ASIA & PACIFIC

The Asia-Pacific region is known as one of the most hazard prone regions in the world and many countries in the region will experience one or more of these hazard events every year. The following section gives an overview of the most common natural hazards that occur in Asia.[1]

Earthquakes: Earthquakes are caused by the sudden release of slowly accumulated strain energy along a fault in the earth's crust. Earthquakes and volcanoes occur most commonly at the collision zone between tectonic plates. The hazards associated with earthquakes include, ground shaking; faulting or beaches of the surface material, occurs as the separation of bedrock along line of weakness. Landslides occur because of ground shaking in areas having relatively steep topography and poor slope stability.

Tsunamis: According to National Oceanic and Atmospheric Administration (NOAA), a tsunami is a series of ocean waves generated by sudden displacements in the sea floor, landslides, or volcanic activity. In the deep ocean, the tsunami wave may be only a few inches high. The tsunami wave may come gently ashore or may increase in height to become a fast moving wall of turbulent water several meters height. Although a tsunami cannot be prevented, the impact of a tsunami can be mitigated through community preparedness, timely warnings and effective response.

1 The descriptions given here are sourced from the Organization of American States report on Disaster, Planning and Development: Managing Natural Hazards to Reduce Loss. This useful resource is available electronically at http://www.oas.org/dsd/publications/Unit/oea54e/begin.htm#Contents

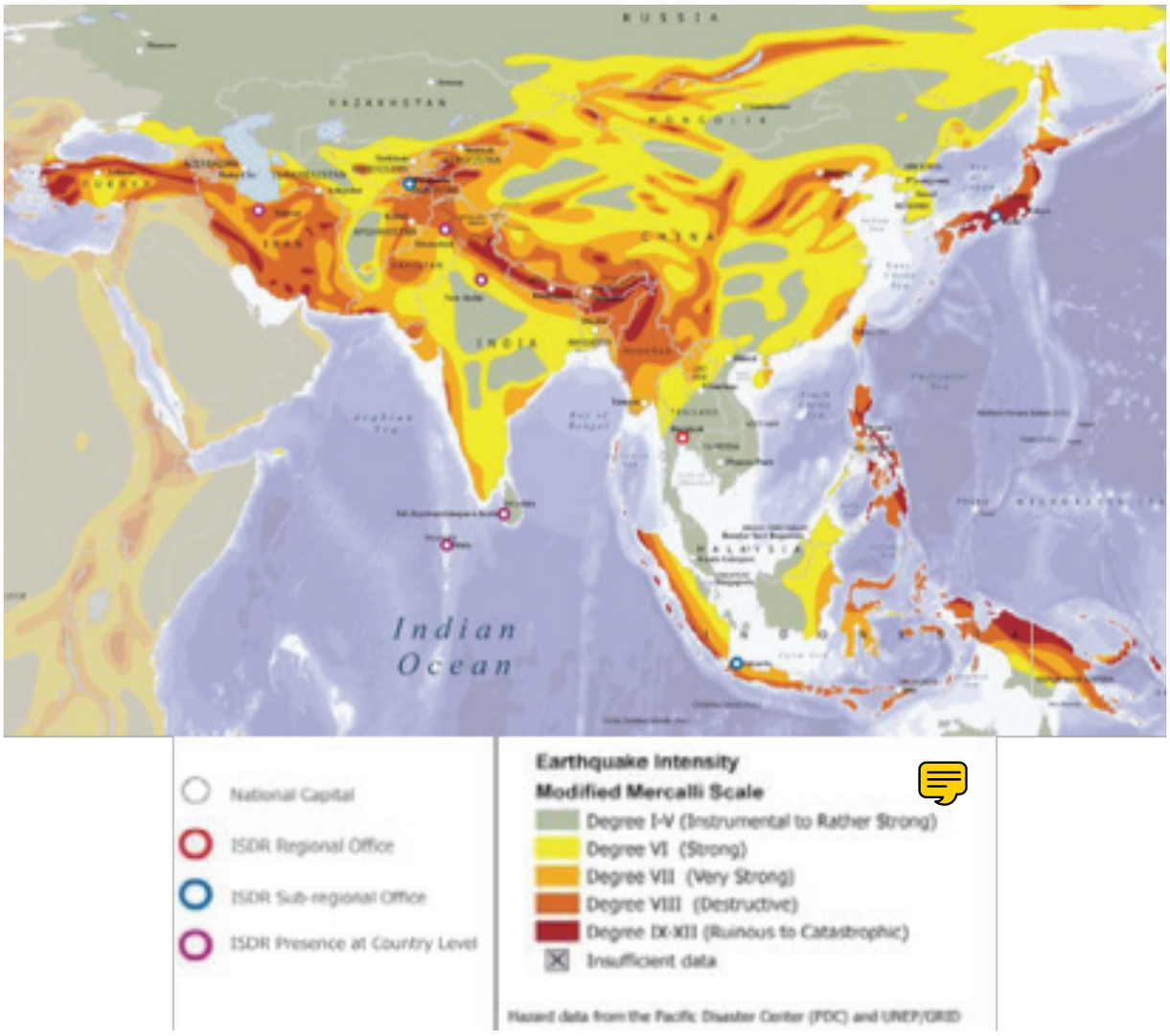


Figure 1.2.1. Composite Earthquake hazard map, developed by UNOCHA

Landslide: A landslide is the movement of rock, debris or earth down a slope. They result from the failure of the materials which make up the hill slope and are driven by the force of gravity. Landslides are known as landslips, slumps or slope failures. The movement of landslide material can vary from abrupt collapses to slow gradual slides and at rates which range from almost undetectable to extremely rapid. Sudden and rapid events are the most dangerous because of lack of warning and the speed at which material can travel down the slopes. Extremely slow landslides might move only millimeters or centimeters a year and can be active over many years. Although this type of landslide is not a threat to a people they can cause considerable damage to property.

Classes of landslide include:

- Rock falls, which are characterized by free-falling rocks from overlying cliffs. These often collect at the cliff base in the form of talus slopes.
- Slides and avalanches, a displacement of overburden due to shear failure along a structural

feature. If the displacement occurs in surface material without total deformation it is called a slump.

- Flows and lateral spreads, which occur in recent unconsolidated material associated with a shallow water table. Although associated with gentle topography, these liquefaction phenomena can travel significant distances from their origin.

The impact of these events depends on the specific nature of the landslide. Rock falls in general pose only a localized threat due to their limited areal influence. In contrast, slides, avalanches, flows, and lateral spreads, often having great areal extent. Mudflows, associated with volcanic eruptions, can travel at great speed from their point of origin and are one of the most destructive volcanic hazards.

Flooding: Two types of flooding can be distinguished: (a) sea-borne floods, or coastal flooding, caused by storm surges, often exacerbated by storm run-off from the upper, and (b) watershed land-borne floods, or river flooding, caused by excessive run-off brought on by heavy rains.

a) **Coastal flooding:** Storm surges are an abnormal rise in sea water level associated with hurricanes and other storms at sea. Surges result from strong on-shore winds and/or intense low pressure cells and ocean storms. Water level is controlled by wind, atmospheric pressure, existing astronomical tide, waves and swell, local coastal topography, and the storm's proximity to the coast. Most often, destruction by storm surge is attributable to:

    - Wave impact and the physical shock on objects associated with the passing of the wave front.
    - Hydrostatic/dynamic forces and the effects of water lifting and carrying objects. The most significant damage often results from the direct impact of waves on fixed structures.

Flooding of deltas and other low-lying coastal areas is exacerbated by the influence of tidal action, storm waves, and frequent channel shifts.

b) **River flooding:** Land-borne floods occur when the capacity of stream channels to conduct water is exceeded and water overflows banks. Floods are natural phenomena, and may be expected to occur at irregular intervals on all stream and rivers.

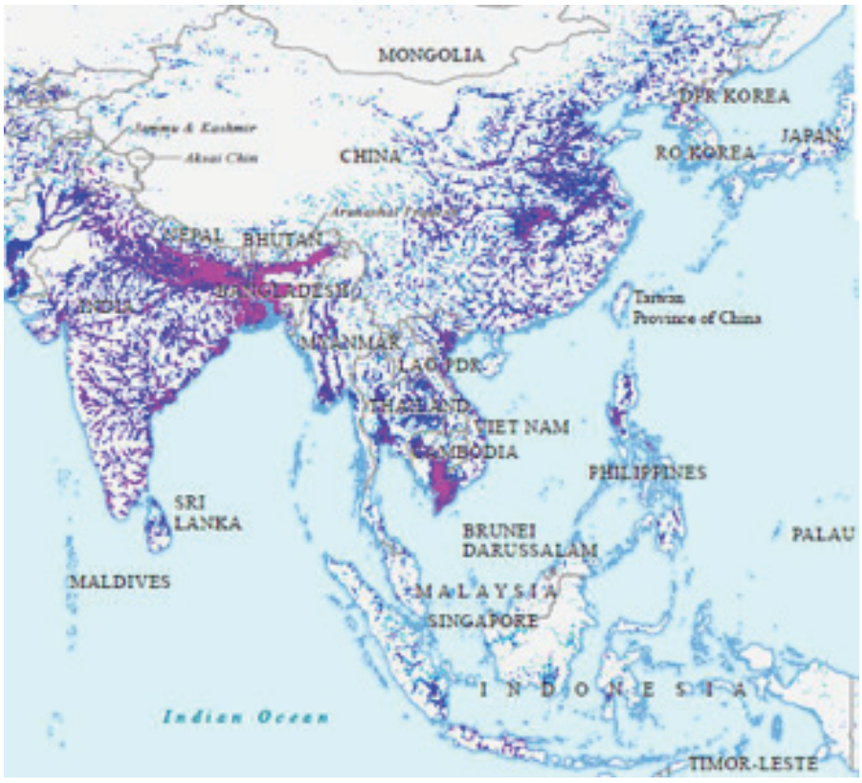
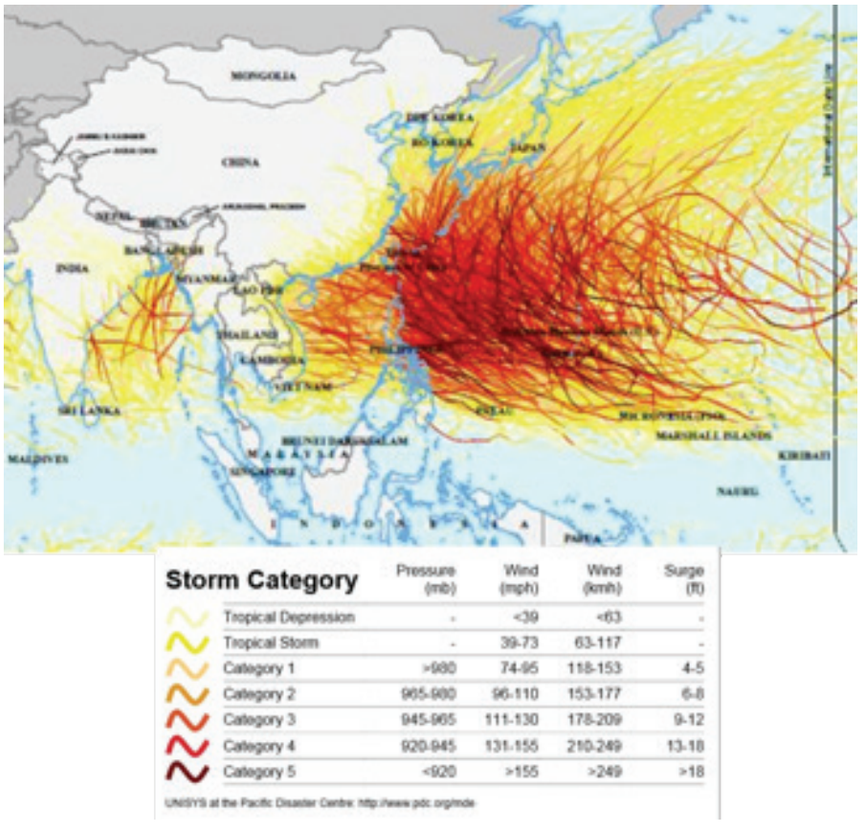


Figure 1.2.2: Composite flood hazard map, developed by UNOCHA



Storm Category	Pressure (mb)	Wind (mph)	Wind (kmh)	Surge (ft)
Tropical Depression	-	<39	<63	-
Tropical Storm	-	39-73	63-117	-
Category 1	>980	74-95	118-153	4-5
Category 2	965-980	96-110	153-177	6-8
Category 3	945-965	111-130	178-209	9-12
Category 4	920-945	131-155	210-249	13-18
Category 5	<920	>155	>249	>18

UNISYS at the Pacific Disaster Centre: http://www.pdc.org/mde

Figure 1.2.3: Composite cyclone hazard map, developed by UNOCHA

1.4 CHANGING HAZARDS

1.4.1 HUMAN INFLUENCE ON NATURAL HAZARDS

In most cases humans can do little to change the frequency or intensity of natural hazards. Earthquakes and tsunamis are the most obvious examples as the natural geological processes that drive these phenomena happen on such a huge physical scale that any human activities are inconsequential.

It is important to understand, however that in many cases human intervention can increase the frequency and severity of natural hazards, such as, when human intervention reduces the mitigating effect of natural ecosystems. For example, the destruction of coral reefs, which removes the shore's first line of defense against ocean currents and storm surges, diminishes the ability of an ecosystem to protect itself. An extreme case of destructive human intervention into an ecosystem is desertification, which, by its very definition, is a human-induced "natural" hazard (Organization of American States (OAS).

1.4.2 CLIMATE CHANGE

The IPCC describe climate change as a change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties that persists for an extended period, typically decades or longer. Climate change may be due to natural processes, or to persistent anthropogenic changes in the composition of the atmosphere or in land use.[2]

Box 1.2.1: Changing Regional Climate

Climate modelling indicates temperature increases in the Asia-Pacific region on the order of 0.5 2°C by 2030 and 1–7°C by 2070. Temperatures are likely to warm more quickly in the arid areas of northern Pakistan and India and western China. In addition, models indicate increasing rainfall throughout much of the region in the decades ahead, including greater rainfall during the important summer monsoon. Yet the potential for changes in monsoon variability as well as for drying of monsoon rains from atmospheric aerosols leave the benefits of such rainfall changes in doubt. Furthermore, winter rainfall is projected to decline in South and Southeast Asia, suggesting increased aridity from the winter monsoon. The region will be affected by a rise in global sea level of approximately 3–16 cm by 2030.

Climate change is predicted to affect natural hazards through increasing the frequency and intensity of hydro-meteorological events. The large majority of disasters in 2012 were the result of natural hazards that were hydro-meteorological in nature with a particularly high percentage of loss events from storms. It is not easy to ascribe reasons for annual changes in natural hazards as many weather

2 The Intergovernmental Panel on Climate Change (IPCC) is a scientific body under the auspices of the United Nations (UN). It reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change. http://www.ipcc.ch/index.htm#.Uabx3UB0zw0

and climate extremes are the result of natural climate variability (including phenomena such as El Niño). In recent years, though, these natural decadal or multi- decadal variations have been intensified by a globally warming climate which is changing precipitation and weather patterns, making certain kinds of extreme events and disasters more likely (London School of Economics 2012, 20)

1.4.3 OBSERVED CHANGES IN CLIMATE RELATED HAZARDS AND EXTREME WEATHER EVENTS

The recent IPCC Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX)[3] outlines some of the predicted changes in frequency and intensity of hydro-meteorological hazards.

It is very likely that mean sea level rise will contribute to upward trends in extreme coastal high water levels in the future. There is high confidence that locations currently experiencing adverse impacts such as coastal erosion and inundation will continue to do so in the future due to increasing sea levels, all other contributing factors being equal.

Models project substantial warming in temperature extremes by the end of the 21st century. It is virtually certain that increases in the frequency and magnitude of warm daily temperature extremes and decreases in cold extremes will occur through the 21st century at the global scale. It is very likely that the length, frequency, and/or intensity of warm spells or heat waves will increase over most land areas.

It is likely that the frequency of heavy precipitation or the proportion of total rainfall from heavy falls will increase in the 21st century over many areas of the globe. This is particularly the case in the high latitudes and tropical regions and in winter in the northern mid-latitudes. Heavy rainfalls associated with tropical cyclones are likely to increase with continued warming.

Average tropical cyclone maximum wind speed is likely to increase, although increases may not occur in all ocean basins. It is likely that the global frequency of tropical cyclones will either decrease or remain essentially unchanged, meaning that there may be potentially fewer tropical cyclones but when they do occur they may be more intense.

Key Message from section 1: Natural hazards are the result of natural processes governed by the earth's environmental systems. The effects of climate change have the potential to increase the frequency and intensity of hydro-meteorological hazards, which could result in more disaster events, but without interaction with society, natural hazards will not inevitably result in disaster.

Physical hazards are increasingly well understood; the escalating losses associated with them indicate that contemporary societies still find it difficult to prevent hazards from becoming disasters (GAR 2011).

3 The SREX approaches the topic by assessing the scientific literature on issues that range from the relationship between climate change and extreme weather and climate events ("climate extremes") to the implications of these events for society and sustainable development. The assessment concerns the interaction of climatic, environmental, and human factors that can lead to impacts and disasters.

Section 1 looked at natural hazard as one of the components that can create a disaster event, but to fully understand disasters we must also examine the other factors that create risk. Thus, the following section looked at exposure and vulnerability as components of risk.

SECTION 2: UNDERSTANING OF DISASTER: EXPOSURE AND VULNERABILITY

2.1 EXPOSURE

"Exposure characterizes the people, property, systems, or other elements present in hazard zones that are thereby subject to potential losses" (UNISDR, 2009). Measures of exposure can include the number of people or types of assets in an area. These can be combined with the specific vulnerability of the exposed elements to any particular hazard to estimate the quantitative risks associated with that hazard in the area of interest. Development practices could contribute to increase exposure of people and built environment to natural hazards. When there is a lack of understanding of the frequency and intensity of likely hazards at a specified location, development activities often encroach on marginal lands that are highly likely to experience hazard events. Additionally, development activities can exacerbate the frequency or intensity of the hazard events themselves, resulting in a larger degree of exposure for a larger segment of the population.

The societal characteristics of exposure have their roots in development decisions that are not sensitive to the potential effects of hazards events. This is a result of an insufficient understanding of the ability of development activities to increase exposure, combined with the absence of disaster risk information being used throughout development decision making.

2.2 VULNERABILITY

"Vulnerability is defined as the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard" (UNISDR, 2009). 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.

Vulnerable elements include the people, households, houses, property, crops, livelihoods, community facilities, environment, systems, public and private infrastructure and other assets which may be damaged by the hazard.

On a social level, unsustainable development can lead to increased vulnerability in many ways. A lack of social infrastructure, such as adequate health and education systems, results in a low coping capacity for disasters. A population that is under nourished and unhealthy would be likely to contract diseases in the aftermath of a hazard event. Equally, non-educated people would have less hazard awareness and knowledge of what to do during a disaster. Unequal distribution of wealth is common in developing nations and this regularly results in a disproportionately high level of poor people compared to the rich. Poor communities are the most vulnerable because of their lack of access to resources.

2.3 COPING CAPACITY

Coping capacity, which can be defined as the ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters (UNISDR, 2009). Capacity depends on the resources available to individuals, households and communities to cope with a threat or to resist the impact of a hazard. Such resources can be physical or material, but they can also be found in the way a community is organized or in the skills or attributes of individuals and/or organizations (IFRC, 2008).

The capacity to cope requires continuing awareness, resources and good management, both in normal times as well as during crises or adverse conditions. Increasing coping capacities contribute to the reducing vulnerability to hazard events.

In summary, social characteristics are as much of a determining factor in disaster impacts as natural hazards are. Society's characteristics of vulnerability and exposure have the potential to convert hazards into disasters. Vulnerabilities determine the extent to which society will be negatively affected by a hazard, but if there is no hazard exposure, there will be no disaster. Both exposure and vulnerability are largely determined by the social systems and processes, and thus the development decisions and investments taken by a society.

SECTION 3: UNDERSTANDING DISASTER RISK AND DISASTER RISKS ASSESSMENT

3.1 WHAT IS DISASTER RISK?

Disaster risk is defined as "the potential disaster losses in lives, health status, livelihoods, assets and services, which could occur to a particular community or society over some specified future time period (UN/ISDR, 2009).

As noted in the previous session, a disaster requires certain conditions and components – the hazard, vulnerable communities and exposure. A disaster happens when a hazard hits exposed and vulnerable communities or assets. It is very important to understand these components to understand risks. If we know the degree of vulnerability that a community has, its level of exposure, including the type and nature of the hazard to which the community is exposed, we can get a good idea of the amount of loss that the community is likely to suffer if there is a hazard event (such as an earthquake or flood etc.). The amount of loss, when calculated in advance, is the risk. In this way, when considering disaster risk, using the conditions and components of a disaster, which we have already examined, we can understand disaster risk as:

Disaster risk = Hazard x Exposure x Vulnerability

If the community is exposed to the hazard but is not at all vulnerable, then there is no or low risk. Disaster risk needs to be assessed in order to identify the risk, as well as to determine the extent, likelihood and consequences of the risk. Risk assessment is a crucial step to evaluate and prioritize the risk before selecting the effective options for risk treatment.

SECTION 4: UNDERSTANDING THE DRR/DRM FRAMEWORK

4.1 DISASTER MANAGEMENT

Before we fully understand the concept of Disaster Risk Management, it is important to have an overview of the concept of Disaster Management, as the two are interlinked and are often used interchangeably when they, in fact, have distinct definitions.

Disaster Management is a progressive strategy for managing disasters to ensure that loss of life and property is reduced in a disaster event. It is the body of policy and administrative decisions and operational activities which pertain to the various stages of a disaster at all levels (UNUG/DHA, 1992).

4.1.1 PHASES OF DISASTER MANAGEMENT

The modern disaster management is basically comprised of four (4) components or phases. These phases or components are shown in figure 1.2.1 and as follows:

Figure 1.2.4 Disaster Management Cycle

PREVENTION AND MITIGATION

Prevention refers to activities that provide outright avoidance of the adverse impact of hazards and

means to minimize related disasters. Mitigation, on the other hand, refers to structural and nonstructural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards (UNISDR, 2009). For example, dams or embankments that eliminate flood risks, land-use regulations that regulate settlements in high- risk zones, and seismic engineering designs that ensure the survival and function of a critical building in likely earthquake.

The common structural mitigation measures for disaster risk reduction include dams, flood levees, ocean wave barriers, earthquake-resistant construction, and evacuation shelters. Non-structural mitigation measures include building codes, land use planning laws and their enforcement, research and assessment, information resources, and public awareness programs.

PREPAREDNESS

Preparedness refers to activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary evacuation of people and property from threatened locations (UNISDR, 2009).

The goal of disaster preparedness is to achieve a satisfactory level of readiness to respond to any emergency situations by strengthening the technical and managerial capacity of governments, organizations, and communities. Preparedness can also take the form of ensuring that reserves of food, equipment, water, medicines and other essentials are maintained in case of disaster.

Preparedness is based on a sound analysis of disaster risks and good linkages with early warning, the development of arrangements for coordination, evacuation and public information, and associated training and field exercises. In order to have a more robust and sustained preparedness activities, these must be supported by formal institutional, legal and budgetary capacities.

RESPONSE AND RELIEF

The provision of assistance or intervention during or immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected. It can be of an immediate, short term, or protracted duration. Response and relief include activities such as search and rescue, first aid, firefighting and distribution of relief items.

RECOVERY AND REHABILITATION

Recovery and Rehabilitation are decisions and actions taken after a disaster with a view to restoring or improving the pre-disaster living conditions of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk. Recovery and rehabilitation include reconstruction of the damaged and destroyed elements to their conditions before the disasters. Additional features could be included in the recovery and reconstruction to make the elements withstand the future hazard better than the current conditions.

The process aimed at assisting affected people, livelihoods, damaged facilities and structures, system failures (such as transportation system, communication system, etc.) and other affected elements to

resume their normalcy and ensure resilience for potential disasters in the future.
The recovery phase commonly begins after the immediate relief and response phase has ended. This phase can generally last for months or even years.

4.1.2 COMMON DISASTER MANAGEMENT MODELS

The traditional approach to disaster management has been to regard it as a number of phased sequences of action or a continuum. This model of Disaster Management which is usually represented as a cycle shows one phase implemented after another. The model illustrates that after the disaster event, rescue and response, followed by recovery and reconstruction are conducted. Prior to the disaster, preparedness as well as prevention and mitigation measures are usually conducted.

This disaster management approach focuses heavily on providing immediate humanitarian aid (usually rescue teams, materials and medical services) as quickly as possible after the onset of a disaster. Although these efforts are crucial and important, many disaster management practitioners recognize that this approach is too reactive and do not necessarily reduce the occurrence of other disasters.

Over the last few decades, there has been a shift in the perspective of disaster management from a reactive to a more proactive and preventive approach. It was recognized worldwide that it is much more cost-efficient to do pre-disaster initiatives such as preparedness, prevention and mitigation instead of a costly recovery and reconstruction.

With the growing body of literature on disaster risks, confusion remains as to the exact distinction of Disaster Risk Reduction (DRR) and Disaster Risk Management (DRM). Often, these two terms are used to connote similar actions; processes or frameworks, which, even the proposed definition of the UNISDR has not clearly distinguished. Other definitions however, have identified the distinction indicating that DRM describes the process while DRR describes actions.

For this particular training, we will be referring to Disaster Risk Reduction as a set of actions, strategies, measures that reduces risks by "treating" them, through avoidance, mitigation, prevention, and sharing. Disaster Risk Management, on the other hand, will be referred to as a general programme or set of actions or strategy for reducing risks either by treating, avoiding, transferring or accepting the risks. In short, DRM is a much larger entity, which encompass DRR.

4.2 DISASTER RISK MANAGEMENT

Disaster Risk Management (DRM) aims to avoid, reduce, or transfer the adverse impacts of hazards on people, property and the environment through activities and measures for prevention, reduction and preparedness. It involves undertaking a logical and sequential process for the judicious design, implementation and evaluation of strategies, policies and measures that aim to:

- understand disaster risk, considering hazards, exposure and vulnerabilities;
- reduce disaster risk through measures that aim to protect lives and assets;
- promote disaster preparedness, response and recovery practices; and thus
- facilitate and advance sustainable development

Firstly, DRM seeks to reduce disaster risk wherever possible or feasible using specific risk reduction measures. Given that some risk remains in all situations, i.e. it is impossible to completely prevent risk, the second goal of DRM is to manage remaining risk (also called residual risk) using risk transfer measures such as insurance.

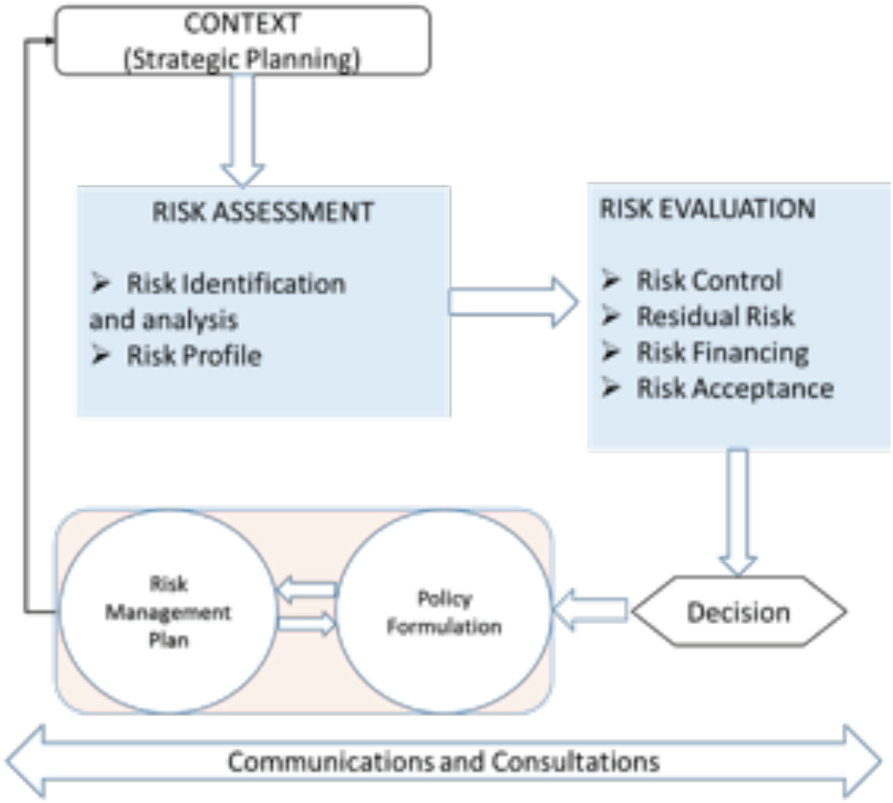


Figure 1.2.5 ADRC and the UN-OCHA - Kobe's Total Disaster Risk Management (TDRM)

4.3 DISASTER RISK REDUCTION

DRR is 'the concept and practice of reducing disaster risks through systematic efforts to analyze 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' (UNISDR, 2009).

4.3.1 COMPONENTS OF THE DRR PROCESS

There are two major components of the DRR process: Risk Assessment and Risk Treatment.

Risk assessment is an initial step, which aims to understand risk, and build specific knowledge and profound understanding of risks within a specific geographical boundary, for particular population or physical asset and their environment over a specific time period. Outcomes of risk assessment will provide the required risk information that can be used to identify measures for Risk Treatment. In other words, risk assessment helps identify the issues and risk treatment, the solutions.

Figure 1.2.6. The DRR Process

Risk Assessment and Risk Treatment shall be implemented in the consultative and participative manners with possible stakeholders to ensure concerns and suggestions are well addressed and incorporated where possible throughout all stages involved. Monitoring and review of the outcomes as well as emerging risks have to be taken into account and considering modification of the processes to accommodate the changing conditions.

Decisions made on how to manage disaster risk will have to take into account various forces and trends within the social, economic and environmental context. This includes a societal perception of risk and how much of a priority risk reduction is, local existing capacities to manage risk, willingness from economic sectors to invest in risk management measures, allocation of budget for the purpose of treating the risk, environmental concerns on whether certain risk management measures could have implications on environment services, etc. This reflects the nature of DRM as not a standalone discipline, but a cross cutting issue.

4.3.2 MEASURES FOR REDUCING AND MANAGING RISKS

The following are possible risk management strategies:

AVOID RISK (ELIMINATE/AVOID)

- Relocation of settlements away from hazard prone areas

- Regulation of the use of specific land area
- Zoning
- Proper implementation of spatial plans
- Strengthening DRM institutions

REDUCE RISKS (OPTIMIZE/MITIGATE)

- Retrofitting/strengthening physical structures to withstand the ground shaking
- Building of levees, floodgates, dams, etc.
- Construction of safe shelter for harsh weather
- Enforcement of appropriate building codes
- Training and capacity building on coping with disasters
- Early warning and monitoring

SHARE RISKS (TRANSFER)

- Risk Financing
- Risk insurance
- CAT Bonds

ACCEPT RISKS (RETENTION)

- Self-insurance
- Captive finance
- Building resilience
- Preparedness

SECTION 4.4: LINKING DRM/DRR WITH CLIMATE CHANGE ADAPTATION

4.4.1 CLIMATE CHANGE AS DRIVER OF DISASTER RISK

As already noted, climate change is influencing natural hazards, in terms of their frequency, intensity and duration. Climate change and environmental degradation are also increasing people's vulnerability by changing livelihoods and reducing the effectiveness of hazard-regulating ecosystems services. Due to the impact of climate change on hazards and vulnerability, it is not surprising that efforts to adapt to climate change (climate change adaptation, CCA) and efforts to manage disaster risk have much in common. CCA is the adjustment in natural and human systems in response to actual or expected climatic stimuli and their effects.

4.4.2 CLIMATE CHANGE ADAPTATION

The goal of adaptation is to moderate the harm or exploit beneficial opportunities of climate change (IPCC, 2010). Both DRM and CCA are policy level efforts which are implemented primarily on the ground at program action level – both DRM and CCA have different origins and objectives at policy level, but when the work is implemented on the ground they both undertake very similar projects. In this way, there is significant room for sharing of resources between DRM and CCA, and projects and policies should look to foster collaboration in order to more efficiently and effectively accomplish DRM and CCA goals. Figure 1.1.10 indicates common approaches and objectives used by both DRM

and CCA to implement work.

4.4.3 LINKING DISASTER RISK MANAGEMENT WITH CLIMATE CHANGE ADAPTATION

Disaster risk is the potential loss suffered by a specific entity over a specific time period due to it being exposed and vulnerable to hazard. Vulnerability and exposure are increasing across the Asia- Pacific due to development unable to adequately address hazard issues, development taking place in hazard-prone areas, and in ways which can reduce the capacity of communities and assets to respond to and withstand hazards. In this way, much of current development is exacerbating disaster risk. Disaster risk management seeks to systematically reduce and control the vulnerability of an asset or community and/or the asset's or community's exposure to a hazard.

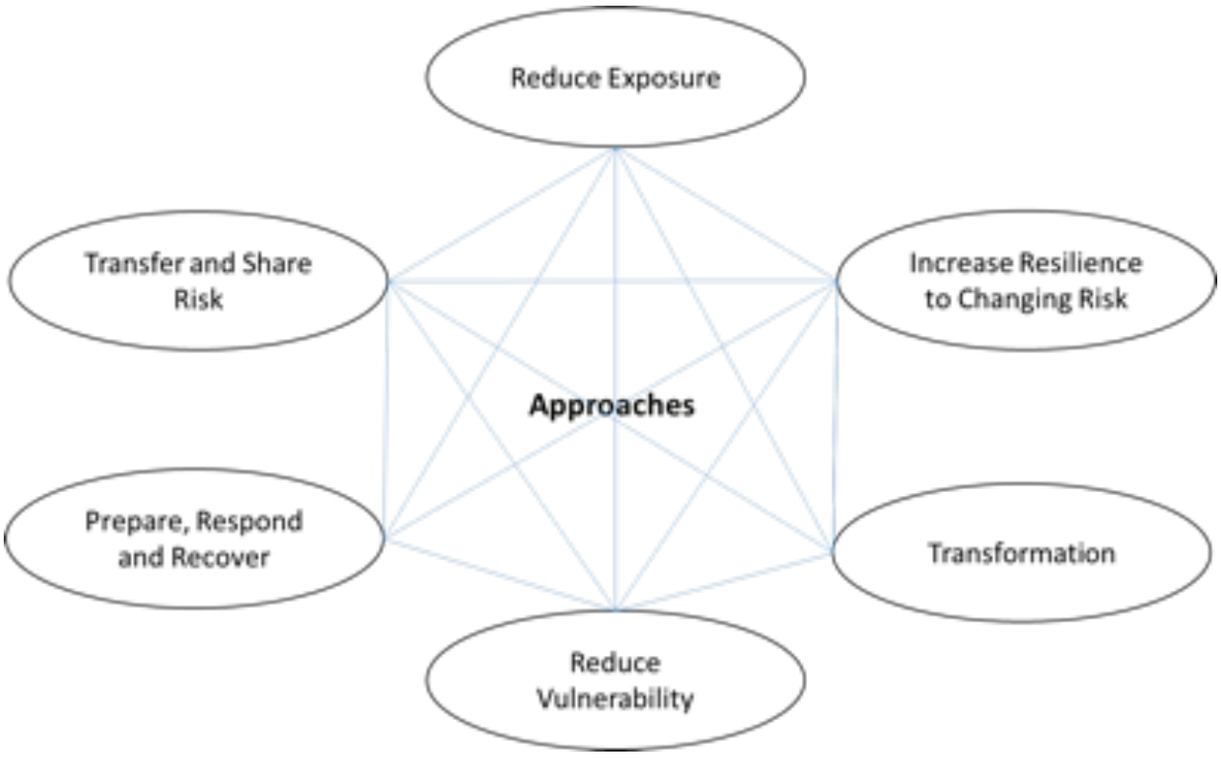


Figure 1.2.7. Common approaches to both managing disaster risk and adapting to climate change

SECTION 4.5: DRM/DRR FRAMEWORK

4.5.1 HYOGO FRAMEWORK FOR ACTION: GLOBAL FRAMEWORK FOR DRR

In 2005, ten years after the adoption of the Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation (1994), the Second World Conference on Disaster Reduction in Kobe, Hyogo, Japan. During this conference, the Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters, was agreed and adopted by 168 countries (UN/ISDR, 2005).

This framework recognizes the paradigm shift in the disaster management arena from a reactive

post-disaster response to a more comprehensive and proactive focus on prevention and preparedness. As the first framework to explain and describe the work that is required from all different sectors and actors to reduce disaster losses, the HFA has identified five priority areas for action. Among these are:

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, and
5. Strengthen disaster preparedness for effective response at all levels.

4.5.2 SENDAI FRAMEWORK FOR ACTION 2015-2030

The third UN World Conference on Disaster Risk Reduction (WCDRR) took place 14 – 18 March in Sendai, Japan. Participants discussed and adopted the successor to the HFA 2005-2015, an internationally agreed plan to make the world safer from natural hazards.
The seven global targets are:

1. Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020-2030 compared to 2005-2015.
2. Substantially reduce the number of affected people globally by 2030, aiming to lower average global figure per 100,000 between 2020-2030 compared to 2005-2015.
3. Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030.
4. Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.
5. Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.
6. Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030.
7. Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.

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NOTE

MODULE 1: UNDERSTANING DISASTER RISK REDUCTION

SESSION 2: LINKING DISASTERS WITH DEVELOPMENT

Session Overview
Total time of session: 1 hour 30 minutes

Session Objectives:
By the end of this session, participant will be able to:

- Explain the concepts and components of sustainable development
- Explain development strategies and frameworks
- Discuss the impacts of disasters as challenges to sustainable development
- Appreciate the links between disasters and development

SECTION 1: WHAT IS SUSTAINABLE DEVELOPMENT?

1.1. THE CONCEPT OF SUSTAINABLE DEVELOPMENT

The term sustainable development was defined by the World Commission on Environment and Development (WCED) or Brundtland Commission[1] in 1987 as "development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs".

The International Institute for Sustainable Development (IISD) goes further, breaking down the concept of sustainable development into two key concepts:

- The concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given; and
- The idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

According to the IISD, sustainable development requires the world to be viewed as a system – a system that connects space and a system that connects time. Viewing the world as a system over space, it can be understood that air pollution from North America affects air quality in Asia, and that pesticides sprayed in Argentina could harm fish stocks off the coast of Australia. When the world is viewed as a system over time, we start to realize that the decisions past generations have made about how to farm the land continue to affect agricultural practice today, and the economic policies we endorse today will

1 The World Commission on Environment and Development, chaired by former Norwegian Prime Minister, Gro Harlem Brundtland, alerted the world twenty years ago to the urgency of making progress toward economic development that could be sustained without depleting natural resources or harming the environment. Written by an international group of politicians, civil servants and experts on the environment and development, "the Brundtland Report changed sustainable development from a physical notion based on the concept of sustainable yield in forestry and fisheries to a much broader concept that linked economic and ecological policies in an integrated framework," says Desai (UNCSD, 2007) http://www.un.org/esa/sustdev/csd/csd15/media/backgrounder_brundtland.pdf

have an impact on urban poverty of future generations

1.2 THE COMPONENTS OF SUSTAINABLE DEVELOPMENT

The conceptual framework of sustainable development is centered on three basic pillars; Economy, Society and Environment.

Economy: Economic development policies typically seek to increase gross national product (GDP), and produce more efficient production and consumption of goods and services. Unrestrained economic growth, however is unsustainable. Research and experience is showing that sustainable economic growth must include both environment and social safeguards.

Society: Sustainable social development relies on reducing vulnerability and increasing capacity to withstand shocks to social systems. This can be achieved by improving and maintaining healthy values, systems and institutions of society.

Environment: Human welfare relies on ecological services. The natural and managed environment provides food, energy and shelter as well as many other resources. For development to be sustainable the management of these systems must be adhered to so that ecological limits are not exceeded and sacrificed for short term financial gain.

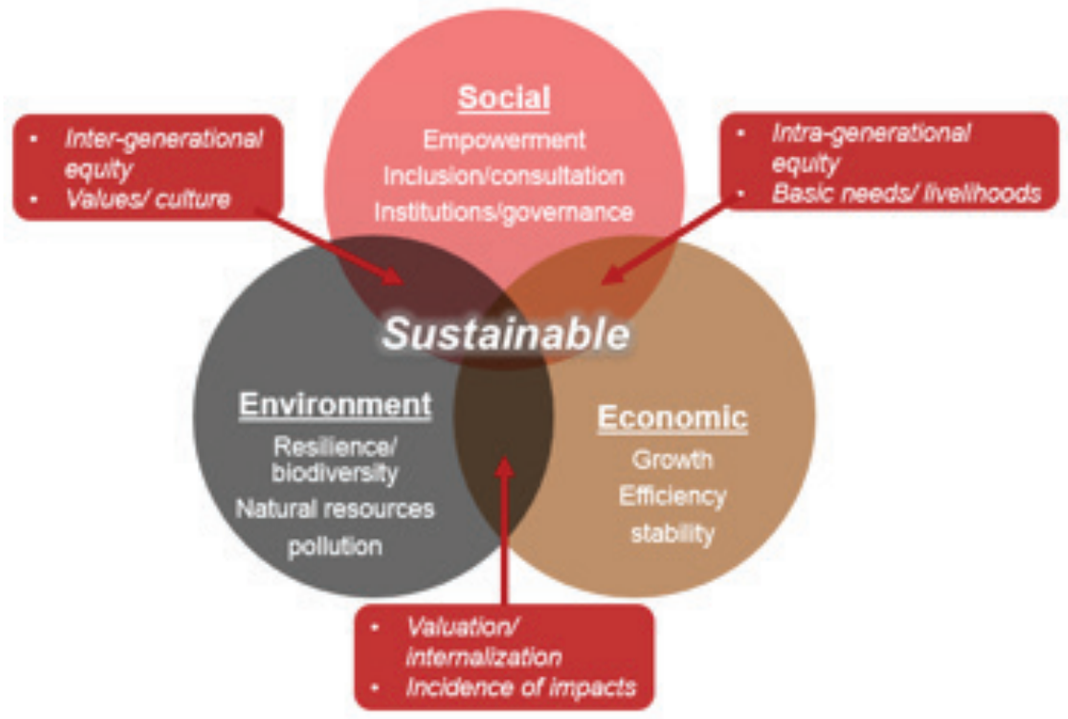

Figure 1.1.1: Sustainable Development Triangle[2]

2 The sustainable development triangle was propagated by Prof Mohan Munasinghe in 1992.

SECTION 2: HOW DOES SUSTAINABLE DEVELOPMENT TAKE PLACE IN ASIA?

2.1 GLOBAL DEVELOPMENT CONTEXT

In September 2000, understanding the necessity to address some of the fundamental development needs, world leaders came together to adopt the United Nations Millennium Declaration, committing their nations to a new global partnership to reduce extreme poverty, setting out a series of time-bound targets - with a deadline of 2015 - that have become known as the Millennium Development Goals (MDGs).

The MDGs are the most broadly supported, comprehensive and specific development goals the world has ever agreed upon. These eight time-bound goals provide concrete, numerical benchmarks for tackling extreme poverty in its many dimensions. The MDGs are both global and local, tailored by each country to suit specific development needs. They provide a framework for the entire international community to work together towards a common end - making sure that human development reaches everyone, everywhere (UNDP 2012).

Figure 1.1.2: The MDGs indicate eight ambitious goals for tackling poverty alleviation to be achieved by 2015. It's a globally agreed framework for monitoring human development and the achievement of time-bound and measurable targets. The MDGs focus on the universally agreed fundamental dimensions of development with 8 specific targets.

The MDGs target timeline will end in 2015, with varying levels of accomplishment achieved in different countries and regions.

In June 2012, United Nations Conference on Sustainable Development (UNCSD) or Rio +20, was organized in Rio de Janeiro, Brazil, with the objective to reinvigorate commitment for sustainable development and launched a process to develop a set of the Sustainable Development Goals. With an inclusive approach and a series of consultations, the Sustainable Development Goals (SDGs), the precise goals and actions towards achieving sustainable development, have been defined gearing towards a holistic approach to balance socio-economic growth with responsible environmental oriented value. Comprising 17 goals, it was considered that the SDGs should complement and strengthen the MDGs in the development agenda for the post-2015 period, upon the adoption

in September 2015.

Figure 1.1.3 Sustainable Development Goals (Source: Sustainable Development Knowledge Platform, United Nations Department of Economic and Social Affairs)

2.2 THE REGIONAL DEVELOPMENT PERSPECTIVE

Regional entities develop and adopt regional development frameworks and strategies as policy tools for regional collaboration, commitment and partnership on socio-economic development.

South Asian Association for Regional Cooperation (SAARC): SAARC is an association established in 1985, which aims to enhance regional cooperation among seven countries Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.

The objectives of the ASSOCIATION shall be: (Article 1)

a) To promote the welfare of the peoples of SOUTH ASIA and to improve their quality of life;
b) To accelerate economic growth, social progress and cultural development in the region and
c) To provide all individuals the opportunity to live in dignity and to realize their full potentials;
d) To promote and strengthen collective self-reliance among the countries of SOUTH ASIA;
e) To contribute to mutual trust, understanding and appreciation of one another's problems;
f) To promote active collaboration and mutual assistance in the economic, social, cultural, technical and scientific fields;
g) To strengthen cooperation with other developing countries;
h) To strengthen cooperation among themselves in international forums on matters of common interests; and
j) To cooperate with international and regional organizations with similar aims and purposes.

(Source: http://www.saarc-sec.org/SAARC-Charter/5/

The SAARC Charter highlights the association's objectives; principles; meetings of the heads of state or government; councils of ministers; standing, technical and action committee; secretariat; financial

arrangements; and general provisions. In 2010, the sixteenth SAARC summit took place in Thimphu, Bhutan, with the theme "towards a green and happy South Asia", where leaders from SAARC nations expressed their satisfaction on achieving important milestones with the completion of twenty five years of its establishment. The sixteenth summit identified the strong need to address critical issues such as poverty elevation, climate change, environmental degradation, increasing frequency and intensity of natural disasters, gender equity, food insecurity & poverty and energy conservation, among others.

The 'Thimphu Silver Jubilee Declaration-Towards a Green and Happy South Asia' emphasized the importance of people-centric development, climate resilience and environmental well-being to enhance poverty eradication in a sustainable manner. New initiatives were proposed by member countries, such as effective communications and public diplomacy to reach different sections of the South Asian community, especially civil society, think tanks, media, and private sector.

The Leaders emphasized on a greater focus to pursue people-centric development with due emphasis on socio-cultural progress and upholding traditions and values and in that regard noted the concept of Gross National Happiness (GNH) pursued by Bhutan, inter alia, in ensuring people-centric development, culture, preservation of environment, better governance. They further noted that other Member States might consider Bhutan's experience with the concept and welcomed Bhutan's offer to host a SAARC Workshop on GNH in 2010.

(Source: SAARC Charter)

The summit also focused on enhancing the scope and substance of cooperation between SAARC members, for example, leaders emphasized that several initiatives could not benefit the people, as the partnership could not translate into meaningful results. Therefore, efforts are required to make SAARC truly action oriented through fulfilling commitments, operationalizing instruments, implementing declarations, and living up to the hopes of society.

ASSOCIATION OF SOUTH EAST ASIAN NATIONS (ASEAN):

ASEAN is a political and economic organization of ten Southeast Asian countries: Indonesia, Malaysia, The Philippines, Singapore, Thailand, Brunei, Cambodia, Laos, Myanmar and Vietnam. It was formed on 8 August 1967. The ASEAN Economic Community (AEC) by 2015 will trigger self-adaptation for the ASEAN countries to fit the new economic environment. Under the AEC, the ASEAN governments envision a region of free movement of goods, services, investment, skilled labor, and freer flow of capital.

Characteristics and Elements of AEC (Article 8)

Based on the above and taking into consideration the importance of external trade to ASEAN and the need for the ASEAN Community as a whole to remain outward looking, the AEC envisages the following key characteristics: (a) a single market and production base, (b) a highly competitive economic region, (c) a region of equitable economic development, and (d) a region fully integrated into the global economy. These characteristics are inter-related and mutually reinforcing. Incorporating the required elements of each characteristic in one Blueprint shall ensure the consistency and coherence of these elements as well as their implementation and proper coordination among relevant stakeholders.

(Source: ASEAN Community Economic Blueprint, 2008)

The comparative advantage of the AEC Blueprint is the economic diversity of the region seen as complementary and would mutually support the whole region and each member country to fulfil their economic endeavor, i.e. expanding market, flow of good/products, labor mobility, etc. However, the economic integration may have social and environmental implications in the same way economic development has impacts on society and environment at the domestic level.

SECTION 3: CHALLENGES TO SUSTAINABLE DEVELOPMENT?

3.1 GLOBAL AND REGIONAL CHALLENGES TO SUSTAINABLE DEVELOPMENT[3]

Since 2000, when the Millennium Declaration was adopted, there has been strong economic growth in many parts of the world, lifting millions out of poverty. A number of developing countries, mostly in Asia, have been narrowing the gap in living standards through assistance from developed countries. However, progress in human development has been uneven, leaving many behind and widening inequalities.

With a few exceptions, income and wealth inequalities within both high- and low-income countries have increased since the early 1980s. Inequalities in access to land and other productive assets, as well as in social outcomes and service access, also remain widespread. In developing countries, nutritious food, safe drinking water, improved sanitation, basic education coverage and learning outcomes are much worse for low-income and rural families.

In 2012 the United Nations System Task Team on the Post-2015 Development Agenda developed a report for the UN Secretary General on Realizing the Future We Want for All. Based on experiences over the last decade of MDG implementation the report outlines some of regional trends and challenges that face sustainable development progress. Some of the key challenges outlined include:

- The Knowledge challenge: The worldwide spread of the Internet and ICT has massively expanded opportunities for the creation, transmission and dissemination of information. Yet, inequalities in access to ICT networks, education and technological progress and to innovation systems remain vast, within and among countries. Rapid loss of traditional knowledge and its non- formal channels of transmission is further widening the gap. Limited access to knowledge hampers progress towards inclusive growth and employment creation, technological progress for sustainable development and health improvements. Greater knowledge sharing will be critical to induce the transformative changes needed to achieve food, nutrition and energy security in sustainable ways and to reduce the threat of climate change.
- Shifting Demographics: Over the past quarter century, world population increased by two billion. Currently, approximately 78 million people are added to the world's population every year. This means that, by 2050, the global economy would need to be able to provide a decent

3 Following on the outcome of the 2010 High-level Plenary Meeting of the General Assembly on the Millennium Development Goals, the United Nations Secretary- General established the UN System Task Team in September 2011 to support UN system-wide preparations for the post-2015 UN development agenda, in consultation with all stakeholders. The Task Team is co-chaired by the Department of Economic and Social Affairs and the United Nations Development Programme and brings together senior experts from over 50 UN entities and international organizations to provide system-wide support to the post-2015 consultation process, including analytical input, expertise and outreach. In 2012 the team produced a report to the secretary general called realizing the future we want which, among other thing outlines the global trends and challenges for development.

living for more than 9 billion people, of whom 85% will be living in what are now developing countries.

- Inequalities and access to sufficient and nutritious food, education and basic social and health services, including reproductive health services, are key determinants of both higher mortality and fertility rates among the poor and in low-income regions.
- By 2050, 70 per cent of the world's population is projected to live in urban areas. Rapid urban growth is mainly occurring in countries least able to cope with the demand for decent jobs, adequate housing and urban basic services. Close to one billion people, or 33 per cent of the urban population in developing countries live in slums, in inequitable and often life threatening conditions. If left unaddressed, these trends may become sources of social and political instability. Larger urban populations will influence food and land-use patterns, with potentially vast implications. Rising incomes and continued population growth have not only raised food demand, but also altered dietary patterns. This is reflected in per capita meat consumption, which has risen by about a quarter over the past decade. While meat is an important source of protein, under existing production conditions, higher demand can lead to land use shifts and further deforestation, higher energy use, rising food prices and regional food shortages. Global agricultural production will have to almost double in developing countries to feed a growing population by 2050.
- Governance and accountability: Effective governance is central to the systemic transformations of economies in ways that support rights-based, equitable and sustainable development. In order to provide an environment that is conducive for development to take place, governance within a country must be based on the rule of law, including compliance with international laws, and principles of inclusion and participation. National and local institutions must strive to be transparent, accountable, responsive and competent.
- A lack of effective governance capacities at national, local and municipal levels, in many countries in the region has resulted in varying degrees of failure to implement legal frameworks, unequal distribution of power and democratic deficits. This lack of political commitment and leadership and the legal and economic empowerment of people, especially those most excluded, to participate effectively in national and local decision making, can facilitate corruption and substantially hinder inclusive and sustainable development.

3.2. DISASTERS AS A DEVELOPMENT CHALLENGES

Disasters impact communities and nations on a variety of different levels and the immediate impact is often traumatic with loss of human life, physical assets and livelihoods. In order to examine the impact that disasters have on development, we can look at the direct, indirect, and secondary impacts on the economy and society.

ECONOMIC IMPACTS[4]

Economic damage from natural disasters is linked intimately with development, poverty and economic growth. In low-income countries especially, damages to assets, public infrastructure and long-term

4 The Overseas Development Institute (ODI) released a report in March 2013 on Incorporating Disaster Risk Management in Post-2015 Sustainable Development Goals. With chapters written by various experts in the field, Disasters and their economic impacts: Disaster Resilience and Post-2015 Development Goals: The Options for Economics Targets and Indicators was contributed by Nicola Ranger and Swenja Surminski of the Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science.

productivity as a result of disasters can set back development and erode gains in poverty alleviation.

In the short term, natural hazards damage and destroy property, assets (including crops, livestock and natural capital like forests), infrastructure and livelihoods, and disrupt economic activity. In poorer communities, this immediate loss of income and assets can force people into poverty and threaten human security. For poorer communities, the impacts can also be longer lived as community recovery is slower, and the cost of rehabilitation tends to divert resources away from more productive investments. This is seen at all levels of organization. For example, at the household level, investments may be diverted away from new equipment and educating children, reducing the long-term prospects for escaping poverty.

At the regional and national scales, investments in improved public services (health, education and utilities), sectoral development and infrastructure (roads, ICT and energy) may be foregone. The result is a long-term decrease in productivity and economic growth.

SOCIAL IMPACTS

Similar to the economic impacts, disaster's pervasive influence on society comes about because impacts are felt both directly (for example through the loss of lives, livelihoods and infrastructure) and indirectly (for example through the diversion of funds from development to emergency relief and reconstruction or wider effects on economy and society). This means that disasters threaten not only social elements such as poverty, hunger, health and environmental status but also those pushing for improved gender equality and wider access to education for example (DFID, 2004).

It is important to discuss in more depth the link between disasters and poverty, which are interrelated in a perpetual cycle. Low household incomes often cause people to live in marginal areas, have limited water security or safe sanitation, and have limited education. For example, in Asia, 60% of the poor live in marginal areas. These factors make people more vulnerable to disasters.

In turn, disasters increase the number of people in poverty as well as people's current poverty status through the loss of assets, livelihoods and health status, and due to a lack of financial assets to respond, recover and rehabilitate quickly following a disaster. For example, while the impact of Cyclone Sidr, 2007 in Bangladesh, was relatively moderate when measured by impact on overall Gross Domestic Product (GDP) (estimated to be equivalent to 2.8 percent of Bangladesh's GDP), the effects of the storm were highly concentrated by district. These districts also suffer from high population density and higher poverty rates than the national average. Thus the impact was borne primarily by the poor (Damage, Loss and Needs Assessment, 2008). Figure 1.1.2 highlights the cyclical process in more detail.

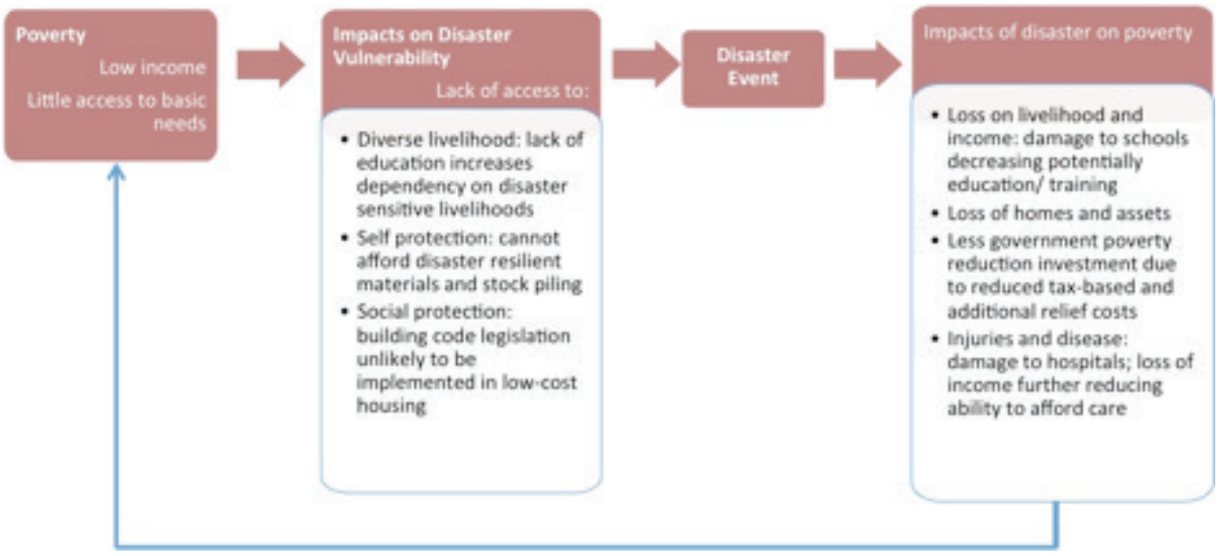

Figure 1.1.4. Disaster-Poverty Cycle

It is important to note that variations exist within these subsectors of society. For example, some women may have certain opportunities and social ties that reduce their vulnerability whilst other women, such as self-dependent or pregnant women, can be even more vulnerable to the impacts of disasters due to their fragile economic condition and physical health issues.

3.3. DISASTER RISK REDUCTION AND MANAGEMENT AS A GOAL FOR SUSTAINABLE DEVELOPMENT

Recognizing the significant interrelationship between disasters and sustainable development, and the increasing general support for greater political attention to DRR within the context of sustainable development, improved disaster resilience and disaster preparedness was identified as a focus for priority attention in the development of SDGs. This includes resilient physical structures, safe settlement and city development, urgency to address climate change, promoting sustainable agriculture, and protecting and restoring ecosystems to enhance services.

The report on Incorporating Disaster Risk Management in Post-2015 Sustainable Development Goals by the Overseas Development Institute (see footnote 5 above) outlines three scenarios on how disaster risk issues could be addressed within the broader development context:

1. As a standalone goal on disasters to target reducing mortality, economic losses, preventing impoverishment, etc.
2. As a target on disasters within a goal on 'resilience', 'security' or 'tackling obstacles to development'
3. As a target integrated into other goals, highlighting how DRM could be included in poverty reduction and education goals.

SUMMARY (SECTION 1, 2, & 3)

Sustainable development relies on the equal and managed advancement of all three key pillars of development: economic, social and environmental. The way in which the economy, society and environment

are managed are a direct result of decisions made by a society and its governing authorities. Disasters are among the many challenges that impact the ability of a country or government to achieve its development goals and are well known to impact on sustainable development in the short, medium and long term.

SECTION 4: DISASTER AND DEVELOPMENT MODEL

Development and disasters are very closely linked as development is not risk neutral (i.e. development either reduces risk or increases risk). It is important that development is risk sensitive, so that development gains are not affected by disasters. Therefore, to ensure development sustainability, the intricate link between disasters and development must be analyzed.

Figure 1.1.3 shows the positive and negative links between disasters and development. Effective DRR strategies would result in disasters and development being in the positive realm.

Figure 1.1.5. Disaster and Development

4.1 DISASTER CAN SET BACK DEVELOPMENT

Disasters impact communities and nations on a variety of different levels and the immediate impact is often traumatic with loss of housing and human life. However over a longer time scale the impact can be equally disruptive because of the complex link between disasters and development.

MACROECONOMIC IMPACTS OF DISASTERS

Natural disasters not only have severe short-term macroeconomic impacts but also appear to have negative consequences for economic growth, development and poverty reduction, although these are more difficult to measure. Disasters exacerbate poverty through a range of macroeconomic mechanisms. Added to direct effects of destruction of assets and loss of income, the poor are disproportionately affected by fiscal impacts involving cuts in social spending and by post-disaster inflation, especially in food prices following droughts and floods2 (DFID, 2004).

DISASTER IMPACT ON COMMUNITIES AND LIVELIHOODS:

The role of natural hazards in shaping the multiple and changing risks to communities and livelihoods is as difficult to isolate as their macroeconomic impacts, perhaps more so given the wide diversity of livelihoods in most countries and their social and environmental determinants. When households are exposed to repeated shocks with insufficient time for assets to fully recover in the intervening periods, there is a 'ratchet effect' leading to exhaustion of available coping strategies, including those involving resources and institutions in the community which might provide forms of social protection.

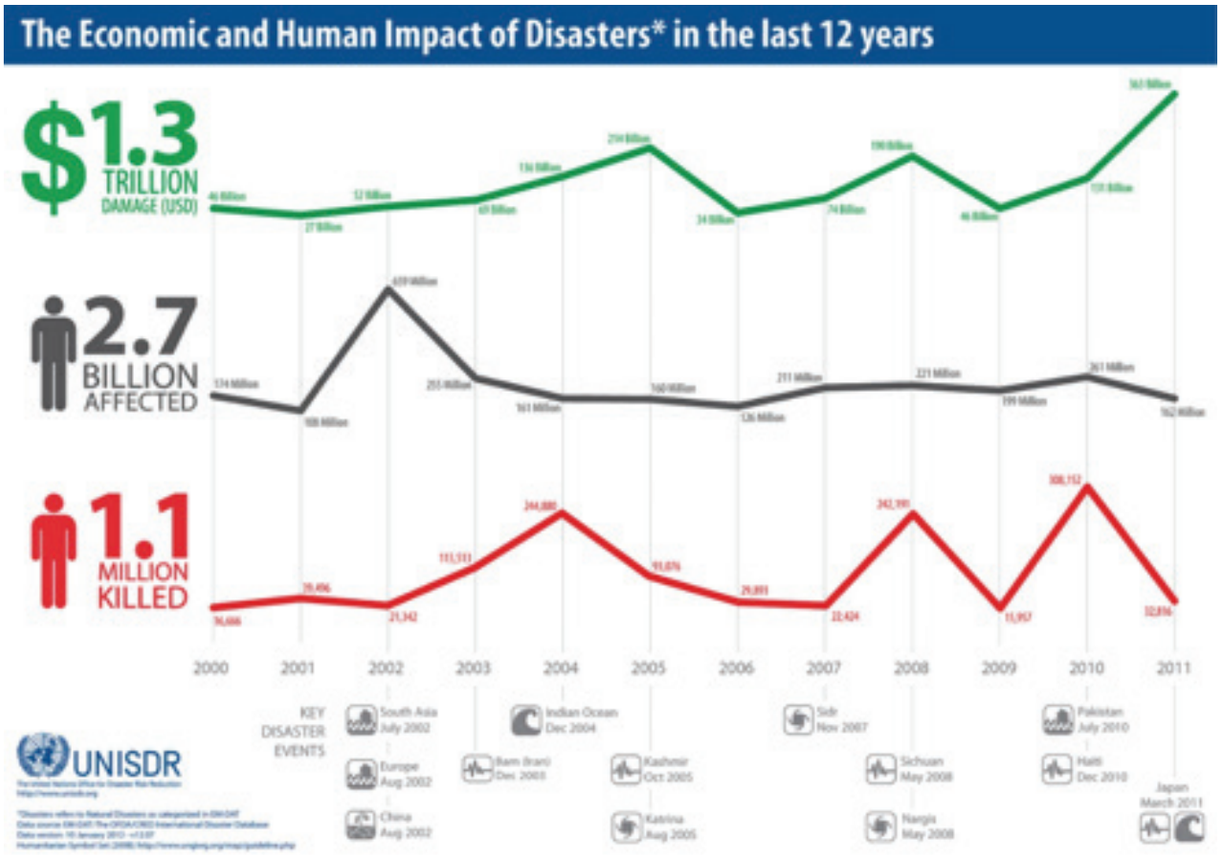

Figure 1.1.7: Economic and Human Impact of Disasters from 2000-2011

4.2 DISASTERS CAN PROVIDE DEVELOPMENT OPPORTUNITIES

Disasters can provide a specific window of opportunity for all areas of development, social, economic and environmental. Although many disasters bring large scale economic losses, environmental damage and human suffering, the recovery and reconstruction phases of a disaster can be used to reduce vulnerability to similar future events and also introduce more sustainable development plans.

Economy: Economic growth can raise the basic level of human development, and if the distribution of wealth is proportionate this can enable even the poorest to overcome vulnerability. Available financial resources would enable the investment and implementation of risk reduction activities, which would subsequently reduce the impact of hazard events. An advanced economy will also have greater available resources to cope with and recover from disasters compared with a fragile economy.

Society: Social assets are important elements of sustainable development. Education, literacy, health care, and social services make the society more resilient to potential impact of hazards. Community members having necessary skills to prepare for, respond to, and recover from disasters will contribute to reduce casualties and losses in disasters. Communities that are well nourished, and vaccinated against the many diseases that often take hold in the aftermath of a disaster, are more likely to endure the effects of a natural hazard event. A stable political system and strong community networks are also factors that increase social capacity and are associated with development.

Environment: The natural environment provides a great deal of protection from natural hazards in a variety of ways, including as a provider of valuable resources to meet people's basic needs or as a physical mitigation measure. For example, the availability and access to food and drinking water that is associated with development can increase coping capacity and resilience to natural hazards. Environmental management that preserves ecological services and proper use of the natural resources and assets such as management of forests, vegetation, water resource and wetland could significantly reduce or eliminate risks from landslides or flooding. Sand dunes and mangroves can also provide significant defense to coastal populations from cyclone storm surge and tsunami inundation.

4.3 DEVELOPMENT CAN INCREASE VULNERABILITY

On a social level unsustainable development can lead to increased vulnerability in a multitude of ways. A lack of social infrastructure such as adequate health care and education systems means that coping capacity to disasters is low. A population that is under nourished and unhealthy would be likely to contract diseases in the aftermath of a hazard event. Equally non-educated people would have less hazard awareness and risk perception that increase their vulnerability. Unequal distribution of wealth is common in developing nations and this regularly results in a disproportionately high level of poor people compared to the rich. Poor communities are traditionally seen as the most vulnerable.

Vulnerability can also be increased as a result of environmental mismanagement that is often associated with unsustainable development. Common factors that can increase vulnerability through environmental mismanagement include:

Deforestation due to the increased need for building materials resulting in increased risk from hazards such as landslides and flooding (example: land degradation linked to national policies that favor export-oriented production, such as in many parts of South Asia, has led to vast deforestation in much of the region, which also increases disaster risk. Natural forests areas left intact are miniscule in comparison to land area (less than 10 percent overall) planted forests are also valued more for commercial benefit than the essential eco-system services such soil regeneration, water shed protection they offer[5].)

Lack of agricultural diversity and food production resulting in an inability to cope with a disruption to normal practices.

Water resource management projects such as dams and irrigation systems that a disruption to normal practices.

Water resource management projects such as dams and irrigation systems that increase risks of flooding, dam failure or force the relocation of displaced people to more hazardous areas?

Figure 1.1.6. Impacts of disasters on Economic Social and Environment

A common example of how vulnerability can be increased through unsustainable development is that rapid urban development frequently leads to the migration of relatively low-income groups to urban areas. Due to poor land use planning, these groups construct large scale, high density settlements, which generally consist of poor quality housing with little or no infrastructure. The settlements, due to poor development planning, are frequently situated on marginal land in hazardous areas such as flood plains or earthquake faults (Stephenson & DuFrane, 2002).

4.4 ISSUES AND CHALLENGES IN LINKING DISASTERS WITH DEVELOPMENT

Some of the common challenges in linking disasters and development can be summarized as follows:

- Conceptual and perceptual issues, misguided perceptions that disasters are simply an 'act of god' and cannot be stopped are common. The concept that a disaster is not simply a result of a natural hazard but a complex process involving various other natural, social and economic

5 At Risk. Piers Blaikie, Terry Cannon, Ian Davies and Ben Wisner, 2001

processes needs to be implicit so that the link between disasters and development can be better understood.

- Incentives are stacked against DRR. It is a long-term, low-visibility process, with no guarantee of tangible rewards in the short term, either for politicians in affected countries or for donors
- Disaster risk reduction falls into the gap between donor's humanitarian and development wings
- Assumptions such as poverty-focused developed will automatically reduce disaster risk
- Inadequate exposure to and information on disaster issues, lack of understanding of what risk reduction entails as a key constraints, shortcomings in disaster data, lack of analysis on whether disaster risk reduction 'pays'

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NOTE

MODULE 1: UNDERSTANING DISASTER RISK REDUCTION

SESSION 3: RISK REDUCTION STRATEGIES: RISK TREATMENT OPTIONS

Session Overview
Total time of session: 1 hour 30 minutes

Session Objectives:
By the end of this session, participant will be able to:

- Describe the concepts of Disaster Risk Reduction (DRR)
- Apply DRR initiatives into the development process

SECTION 1: DISASTER RISK REDUCTION STRATEGIES

1.1. WHAT IS RISK TREATMENT?

Risk treatment is a risk modification process, which involves selecting and implementing one or more measures or options to treat the identified risk. Once treatment has been implemented, it becomes a control or it modifies existing controls (ISO 310000, 2009). Evaluating and understanding risk (the problem) for a given area allows us to identify ways to treat the risk (the solution). This requires a process whereby we move from risk identification to risk treatment. Based on the results of the risk assessment, it is necessary to design measures, actions, interventions to address the identified risk. Typically Risk Treatment involves identifying risk treatment measures, selecting range of options, assessing those options, preparing risk treatment plans and implementing them.

1.2 OPTIONS FOR RISK TREATMENT

Options available for risk treatment include:

- To retain/accept the risk – if the risk is deemed acceptable, the risk can be retained.
- To avoid the risk: to decide not to proceed with the activity likely to exaggerate the existing risk.
- To reduce the risk: done by applying mitigation measures to achieve risk likelihood or risk consequence reduction or in terms known as disaster preparedness measures.

STRUCTURAL MEASURES

Any physical construction to reduce or avoid possible impacts of hazards, or application of engineering techniques achieve hazard- resistance and resilience in structures or systems. The process involves engineering, construction, consultation and other mechanical changes that aimed at reducing the existing risk.

Common structural measures for disaster risk reduction includes dams, flood levees, ocean wave barriers, earthquake resistant construction, and evacuation shelters (UNISDR, 2009). The implementation of structural measures includes a full range of regulation, compliance, enforcement, inspection, maintenance

and renewal issues. Although a distinctive set of structural mitigation measures may be applied to each hazard, due to the unique nature of each hazard, measures may be grouped across some general categories (Coppola 2007).

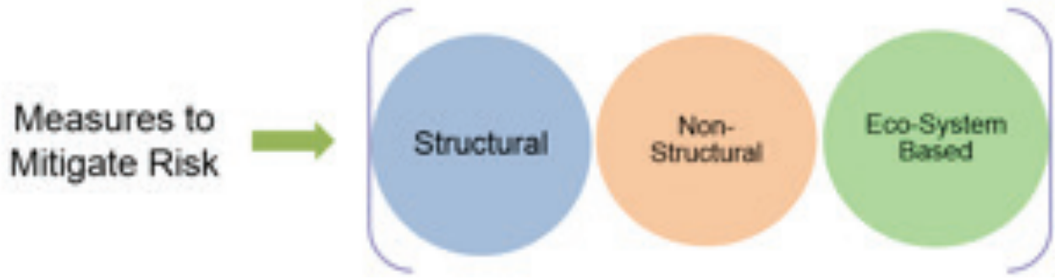

Figure 2.1.1 Measures to mitigate risk

Table 2.1.1: Common Structural Measures	
Construction of Barriers	A blocking device to stop or to control force such as sea walls against tsunami, embankment against flood, retention systems to lessen hazard impact.
Safe building design and hazard-resistant construction	Structural elevation beyond flood level, seismic force resistant building
Retrofitting also known as Structural modification	It is more prevalent for earthquake preparedness initiatives. The modification will make existing vulnerable structures more resistant to seismic activity, ground motion, liquefaction, soil failures and strong wind gust.
Physical Modification	It is a group of mitigation measures that alters the physical landscape in such a manner that reduced the likelihood of hazard. The process can be performed through simple landscaping attaining engineering devises.
Reconstruction	Reconstruction comes active under post disaster phase. It provides opportunity for rethinking development with priority consideration of mitigate disaster risk and reduce loss of lives and livelihoods.

Ecosystem based disaster risk reduction (Eco-DRR) Is the sustainable, conservation and restoration of ecosystems to reduce disaster risk, with the aim to achieve sustainable and resilient development (Estrella and Saalisma, 2013). The measures entails combining of natural resource management approaches or the sustainable management of ecosystems with disaster risk reduction methods such as early warning systems and emergency planning in order to have effective disaster prevention, reduce the impact of disasters on people and communities, and support disaster recovery.

Ecosystem based disaster risk reduction is the "sustainable management, conservation and restoration of ecosystems to reduce disaster risk, with the aim of achieving sustainable and resilient development. Well managed ecosystems, such as wetlands, forests and coastal systems, act as natural infrastructure, reducing physical exposure to many hazards and increasing socio-economic resilience of people and communities by sustaining local livelihoods and providing essential natural resources such as food,

water and building materials (Sudmeier-Rieux and Ash, 2009, Nehren et al. 2014a). Ecosystem based DRR, provides an opportunity to strengthen natural infrastructure and human resilience against hazard impacts, also it generates a range of social, economic and environmental benefits for multiple stakeholders, which turns feedback to reduced risk.

NONSTRUCTURAL MITIGATION

Measures involves 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. Common non-structural measures includes building codes, land use planning laws and their enforcement, research and assessment, information resources, and public awareness programmes.

The process involves measures through modifications in human behavior or natural processes, without using physical engineering practices, therefore non-structural mitigation measures are often considered mechanisms where, 'man adapts to nature'. Regulations can be applied to all manners of daily life, and are often imposed when it is determined that such action is required for the common good of the society.

Table 2.1.2 Showcase land use planning as a means of structural mitigation	
Land use planning and zonation enforcement	These are legally imposed restrictions on how land may be used. This applies to specific geographic designations, such as coastal zone management, hillside or slope management or floodplain development restrictions
Urban Planning	This entails designing of city, expansion of city and allocated areas for specific activities associated with cities such as sewage, water way, drainage system, critical facilities etc.
Density control	Regulating the number of people who may reside in an area of know or estimated risk, it is possible to limit vulnerability
Livelihood diversification	Adopting multiple means for livelihoods, diversifying them, will eventually reduce the likelihoods of impacts.

Table 2.1.3 Preparedness			
Early Warning Systems/ Public Awareness	**Preparedness for Immediate Response**	**Preparedness Planning**	**Social Cohesion/ Volunteerism**
Setting up Early Warning Systems	Evacuation drill	Contingency Planning	
Risk Communications and public awareness	Simulation exercises	Strengthening coordination and institutional arrangements	Strengthening social ties
	Training on volunteers		Change of attitudes and improve personal skills

	Training on search and rescue		

To better cope with the impacts, options such as Risk Transfer (or risk sharing) could be employed. This involves another party bearing or sharing some part of the risk by the use of insurance, micro-credit, micro-saving, catastrophic bond, etc. Households affected by disasters can have an applied mechanism to share the risk such as relying on family or neighbor support, remittance or liquidity of assets. Local saving group or micro-credit such as emergency loan is another resort for household to cope with emergency situation.

Figure 2.1.2 Measures to Improve Preparedness

Formal risk transfer options are such as:

- Index-based insurance schemes whereby insurance compensation be claimed when weather derivatives index reaches a certain measures, regardless of actual losses,
- Catastrophic insurance pool such as The Turkish Catastrophe Insurance Pool (TCIP), a compulsory earthquake insurance pool for all residential buildings that fall within municipal boundaries.

Box 2.1.1 Earthquake experience from Turkey

Before 2000, earthquake insurance in Turkey was provided mostly as an additional peril insured on fire and engineering policies. The coverage rate was also quite low, especially for residential buildings (5 percent). Impacts of such disasters and the low level of insurance coverage led the government to initiate studies to promote disaster insurance and establish a widespread and effective earthquake insurance system. Efforts of the Undersecretary of the Treasury intensified following the Adana earthquake in June 1998. As a result, the political momentum created by the Marmara earthquake and recognition by the public and the insurance industry that action is needed, the government introduced a compulsory earthquake insurance scheme in 2000.

Under legislative provision of the country, earthquake insurance was made compulsory starting September 27, 2000 for all residential buildings that fall within municipal boundaries. The Turkish Catastrophe Insurance Pool (TCIP) was created to offer this insurance. Moreover, the obligation of the government to extend credit and construct dwellings for the public in the event of an earthquake (a requirement of the Disaster Law) was abolished (from March 27, 2001). The new insurance scheme has effectively replaced a significant portion of government obligations under the Disaster Law.

The Turkish Catastrophe Insurance Pool (TCIP) was established under the supervision of the Undersecretary of the Treasury to offer insurance at reasonable premiums. The compulsory earthquake insurance scheme aims to limit the financial burden earthquakes place on the government budget, ensure risk-sharing by residents, encourage standard building practices, and establish long-term reserves to finance future earthquake losses. The compulsory earthquake insurance scheme provides compensation to homeowners without reverting to the government budget. This effectively maintains social solidarity and risk-sharing by the payment of affordable insurance premiums. Meanwhile, a significant portion of the risk is ceded to international reinsurance markets until sufficient financial resources are accumulated within TCIP.

(Source: The Turkish Catastrophe Insurance Pool (TCIP) and the Compulsory Earthquake Insurance Scheme. Selamet Yazici)

1.3 ASSESSING AND SELECTING MITIGATION OPTIONS

Once a comprehensive risk assessment has been completed and risk mitigation options have been generated for prioritized hazards, development planners and all key stakeholders can begin assessing their options. Each hazard may have several risk mitigation options to choose from. Each option will cause different impacts upon society. Several factors must be considered when assessing each identified risk mitigation action, including:

- The expected impact that each risk mitigation option will have on reducing the identified hazard risk and vulnerabilities
- The probability that each action will be implemented
- Mechanisms for funding and leveraging of resources necessary to implement each option
- Combination of options that complement each other for more effectiveness
- Cost effectiveness

The most critical issue in assessing a risk mitigation option is determining its impact on reducing the identified risk or vulnerability in the community. Several factors must be considered when assessing the risk reduction to be accomplished through individual mitigation options or groups of mitigation options. These factors include:

- Reduced number of deaths and injuries
- Reduced property damage
- Reduced economic loss

Planners should look at new development projects as opportunities for mitigation implementation. Exposure to hazards and the risks of disastrous consequences must be considered in all development planning. In all foreign funded programmes, these must be considered at an early stage of project formulation and design.

Post-disaster rehabilitation usually proceeds without any measures to reduce similar impact if the hazard takes place again. Therefore rehabilitation and reconstruction must be considered as an opportunity for introducing mitigation measures. In fact this is the most opportune time for implementing mitigation. Public awareness of the problems posed by hazards is high and the political will to act may also be at its peak. The opportunity must be taken before other development priorities come to the forefront.

1.4 THE S.T.A.P.L.E.E METHOD OF ASSESSING MITIGATION OPTIONS

In the market, there are quite a lot of methods and framework which practitioners use to assess the mitigation options. One particular method that has been developed by the USA Federal Emergency Management Agency (FEMA), called the S.T.A.P.L.E.E method:

Social. A mitigation option will only be viable if it is implemented. Extensive public engagement from the start such as round of public hearing, and public negotiation and compromising to attain supportive actions on a proposed mitigation option is essential. This will bring different angles of public opinion, pros and cons, comparative benefits and unavoidable negative consequence on particular population groups. Without public support, the taken action may face resistant or fail.

Technical. If the proposed action is investigated and found not technically feasible, it is probably not a good option. It is also important to investigate, when looking into the technical feasibility of each option, whether it will help to reduce losses in the long term and whether it has any secondary effects that could cancel out its benefits.

Administrative: This is to investigate whether the community or concerned authorities have capabilities to adopt, implement, monitor, and maintain the mitigation options, specifically in terms of skills, staffing, funding and maintenance. Some options might be implemented using own resource and existing capacity, while other options will require (often significant) outside assistance.

Political: Mitigation actions tend to be highly political. Like most government actions, they tend to entail the spending of local funds and the use of local services, require permits and permissions, involve some

alteration to the fabric of the community, may involve some use of public lands, and involve a certain amount of risk for the political leaders who authorized the actions. The political nature of each option will likewise be an influential decision-making factor when options are being chosen for implementation.

Legal: Many mitigation options will require actions to be taken that need legal authority in order to be lawfully conducted. It must be determined whether it will be possible to establish legal authority at the national, provincial, state, or local levels to implement the proposed mitigation actions. Also to be considered includes provision of legislative or regulations to accommodate the needs of the mitigation measure and the process of delegated authority to grant or deny the permission to undertake the actions necessary to implement the mitigation action.

Economic: Like all community projects, mitigation options must prove to be cost effective before they are viable for implementation. The mitigation measures must be affordable to those who will be funding the project. Mitigation projects often require maintenance long after the project is completed, at the expense of the community or jurisdictional authority where it is implemented. For this reason, affordability means many things, including being fundable without restricting local budgets, fundable but with some budget restructuring required, fundable but requiring external loans, etc.

Environmental: Many mitigation measures affect the natural environment, either positively or negatively (and occasionally both positively and negatively to some degree). These effects must be considered, as their actions could have long-term effects, and could negate any positive gains of the mitigation action. Benefits to the environment that arise from the implementation of mitigation measures must be considered in the choosing of options as additional advantage of such measures. Floodplain buyout programs, for instance, which include acquisition and relocation of structures out of identified floodplains, help to restore the natural function of the floodplain. Vegetation management, which is often performed to control the wildfire hazard risk to humans and property, also provides the same protection to the environment.

With increase intensity of the hazards, and uncertainty of hydro-meteorological conditions influenced by change climate, typical risk reduction options that have worked well before might need to be reviewed. Local risk coping strategies of the communities might have helped them survive in the past, but not in the present conditions. Hence, the more innovative, experimenting and integrated measures customized for specific context and existing conditions will need to be thought through. Different measures could be implemented to complement one another to effectively address prioritized risk.

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MODULE 2: MAINSTREAMING DRR INTO DEVELOPMENT

SESSION 1: MAINSTREAMING DRR INTO THE DEVELOPMENT PROCESS

Session Overview
Total time of session: 1 hour 30 minutes

Session Objectives:
By the end of this session, participant will be able to:

- Explain the concept of mainstreaming
- Understand and explain the basic processes involved in development planning and implementation
- Identify entry points for mainstreaming DRR into the development framework
- Use examples to show how to mainstream DRR into development

SECTION 1: WHAT IS MAINSTREAMING?

1.1. THE DEFINITION OF MAINSTREAMING

In the last 10 years, and particularly since the conception of the Hyogo Framework for Action in 2005 and the Sendai Framework for DRR 2015-2030, there has been increasing recognition of the need to 'mainstream' DRR into development. That is, 'to consider and address risks emanating from natural hazards in medium-term strategic frameworks and institutional structures, in country and sectoral strategies and policies and in the design of individual projects in hazard-prone countries' (Benson & Twigg, 2004).

Mainstreaming disaster risk management into development means significantly expanding and enhancing DRR so that it becomes normal practice, and fully institutionalized within the national, sector and local development agenda of nations at risk from natural hazards (Trobe & Davies, 2005).

Box 3.1.1: Definition of Mainstream (verb)

"To bring into the ideas attitudes, or activities that are shared by most people and regarded as normal or conventional; to bring into the dominant trend in opinion.

Source: Oxford English Dictionary

"Mainstreaming risk reduction should result in appropriate measures being taken to reduce disaster risk and ensure that development plans and programs do not create new forms of vulnerability" (Prevention Consortium, 2009). Mainstreaming is not however an end in itself but an approach or a means to achieve the overall objective of reducing risks to natural disaster (OSAGI 2009).

In development, "mainstreaming" refers to one strategy for dealing with any kind of crosscutting issue;

it is a technique for normalizing the crosscutting issues as part of development activities. Mainstreaming is not the end itself, but rather a cyclical process that can be continually used to further normalize one process as part of another.

Mainstreaming DRR into development is a continuous process aiming to significantly reduce disaster risk through reduction of exposure and vulnerability. By achieving this, development gains will be protected, public investment/programs/projects will yield optimal benefits to the country, and the people at possible risk as a result of development actions could be minimized.

1.2 SYNONYMS FOR MAINSTREAMING

There are a number of words that are often used interchangeably and as synonyms for 'mainstreaming'. Some of the most common synonyms and their definitions are listed below:

INTEGRATING
Combining with another to form a whole; bringing into equal participation and giving equal consideration to.

INSTITUTIONALIZING
Establishing a practice or activity as a convention or norm in an organization or culture.

EMBEDDING
Implanting something within something else so that it becomes an ingrained or essential characteristic of it.

SECTION 2: WHY MAINSTREAM DISASTER RISK REDUCTION INTO DEVELOPMENT?

Trobe & Davies (2005) outline three key purposes of mainstreaming DRR:

- To make certain that all national, sector and local development programs and projects are designed with evident consideration for potential disaster risk and to resist hazard impact.
- To make certain that all national, sector and local development programs and projects do not inadvertently increase vulnerability to disaster in all sectors: technical, social, financial, economic and environmental.
- To make certain that all national, sector and local development programs and projects are designed to contribute to developmental aims and to reduce future disaster risk.

SECTION 3: HOW TO MAINSTREAM DISASTER RISK REDUCTION INTO DEVELOPMENT

Mainstreaming DRR into development requires institutions to change familiar procedures and modes of planning. These changes require time and sensitive process facilitation.

Mainstreaming follows a stepwise approach that values and recognizes the different interests, needs and positions of the stakeholders involved. Strong leadership helps in implementing the envisaged changes (GTZ, 2011).

A framework for mainstreaming will seek to embed each stage of the DRR process into each stage of the relevant processes for managing development. Mainstreaming involves drawing upon DRR perspective, tools, skills, experience, knowledge, and the DRR process.

3.1. MANAGING DISASTER RISK: A REFRESHER

The International Organization for Standardization has developed the ISO 31000 Risk Management: Principles and guidelines on implementation, an internationally recognized and followed process for comprehensively and systematically managing risk.

The process consists of the following five stages:

CONSULTATION AND COMMUNICATION

A continual discussion with communities and public officials carries on throughout the DRR process. Generally, it ensures that all stakeholders both understand and contribute to the conversation regarding disaster risk.

ESTABLISHING THE CONTEXT

In this stage, the social, cultural, political and economic environment within which DRR will be implemented is defined. This includes understanding: the roles and responsibilities of all stakeholders (public and private) and how decisions are made. During this context analysis, the criteria are set for determining acceptable levels of risk, or the amount of risk a particular society is willing to allow.

RISK ASSESSMENT

The overall technical, economic and social process of risk identification, risk analysis and risk evaluation. It involves technical professionals (social scientists, engineers, economists, urban planners etc.), as well as representatives of affected sectors and communities. Risk assessments identify historical and potential future hazards; study past impacts and the underlying drivers of risk; examine social, economic and environmental vulnerability as well as the exposure of people and assets to the hazards; consider the capacity of the society to deal with potential impacts; analyze the potential frequency and intensity of future consequences; and evaluate whether the existing level of risk meets the criteria for what is acceptable. The information generated through risk assessments is crucial to ensuring quality DRR. The more accurate the risk information, the more adequately the risk can be addressed and treated.

A crucial step in risk assessment is risk evaluation, in which the outcomes of the assessment and the levels of risk are appraised, and determined if the risk should be treated.

RISK TREATMENT

Specific measures to reduce or manage risk are identified and implemented during the risk treatment stage. This is a cyclical process of: deciding on the treatment type (whether to reduce existing risk or manage residual risk); identifying the measure; assessing its suitability through testing tools such as computer modeling, pilot projects, drills and simulations; evaluating the effectiveness of the treatment; and modifying or generating new risk treatment until a consensus is reached on the level of acceptable risk.

MONITORING AND REVIEW

As the risks from natural hazards are continually changing, the DRR process is undertaken so that continual improvements can be made at all stages. The purpose is to analyze and learn lessons from hazard events, observe changes and trends; to detect changes in the context including changes to the risk itself, which can require revision of risk treatments and priorities; ensure that the risk control and treatment measures are effective in both design and operation; and identify potential emerging risks.

3.2. MANAGING DEVELOPMENT: WHAT IS THE PROCESS?

Development takes place within a framework of national and international demands and trends; it is a complex affair. Many actors are involved, including CSOs, local and national government agencies, international aid agencies, national and international private sector organizations and the communities themselves. Public and private agencies often find themselves competing against each other for financial and other resources, as well as power and prestige.

Managing development within this context is a continually challenging task. Government institutions have a particularly vital role to play in guiding and prioritizing a country's development trajectory via a number of interlinking processes that stem from political will and strategic planning and lead through to tangible implementation.

Figure 3.1.2 The Development Planning Process in the Philippines, below shows an example of the framework of the national development process of the Philippines for the National Economic and Development Authority (NEDA). Many countries within the region use a similar framework on which the details of each component can be built upon to form the development process as a whole.

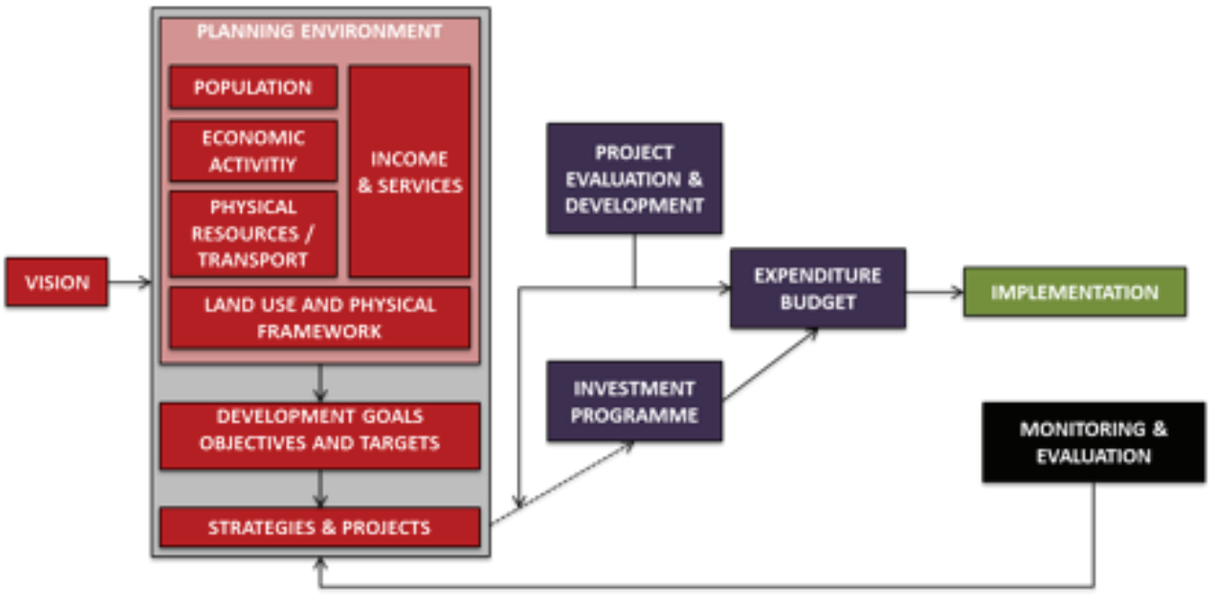

Figure 3.1.2. Example: The Development Planning Process in the Philippines (Source: NEDA, 2008)

The importance of sound management for securing long-term sustainable development is critically important. A great diversity of tools exists for the public management of development. Countries throughout Asia and the Pacific have mobilized development frameworks, composed of a series of such tools, to regulate development and guide public investment.

Development frameworks are complex and multi-faceted, encompassing a range of processes and tools that make up development as a whole. Development is not a linear process; it is achieved through a range of interlocking and overlapping cyclical processes. A solid framework for mainstreaming will seek to integrate DRR into each area of the development framework.

The development framework can be split into four areas: policy making, planning, budgeting and implementation (Figure 3.1.3: The Development Framework). Policymaking and development planning have a medium to long-term scope: anywhere from 3 to 30 years. Budgeting and project implementation, on the other hand, have much shorter recurrence periods, often occurring annually, or in some countries, multi-annually.

Within each of these areas, there are a number of different kinds of tools and instruments that may be utilized. Each tool typically follows a particular procedure for its development and implementation.

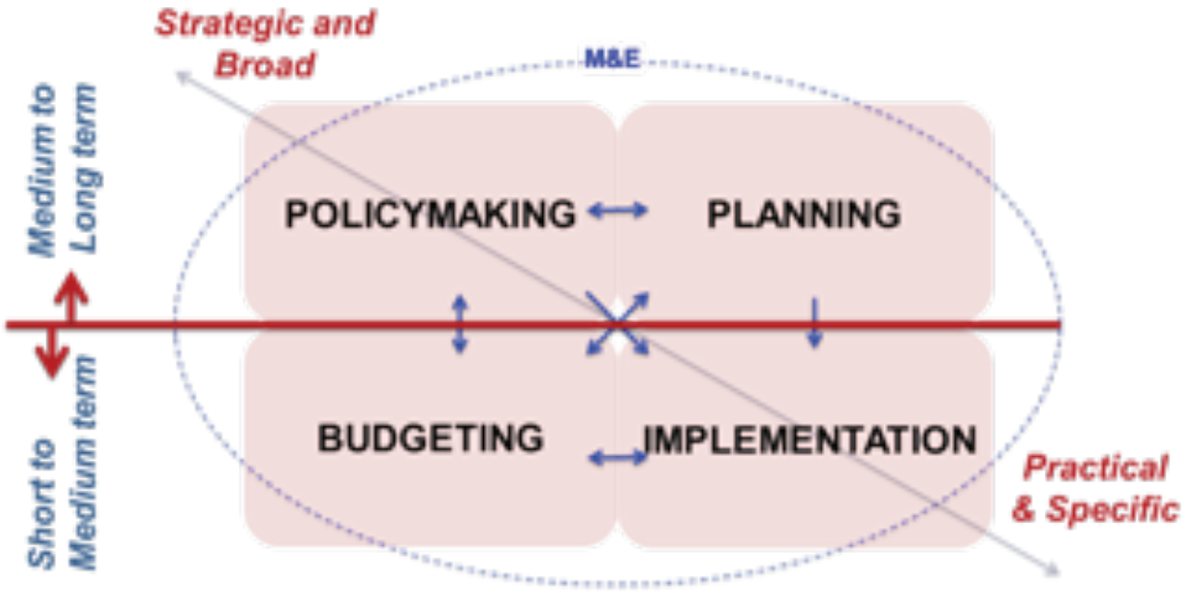

Figure 3.1.3. The Development Framework

3.3. COMMON DEVELOPMENT TOOLS IN ASIA AND THE PACIFIC

Common development tools in Asia and the Pacific include the following:

- Policies are key instruments used by governments to officially address societal problems and steer the development of a country. They are often the result of a political process where public recognition of a problem results in action being taken. Policies can be broad overarching frameworks that set the goals, objectives and guiding principles for public action in an entire sector, such as healthcare policy or a crosscutting theme such as gender equality. Alternatively, they can be focused on a particular regulatory issue, such as building construction quality.
- Land Use Plan often cover a medium to long-term period. They attempt to regulate the spatial distribution of systems and activities and to ensure the equitable and sustainable use of land and resources. While most land use plans are developed at the decentralized level (city or district), in some countries, national land-use plans are utilized (e.g. Sri Lanka). The biggest challenge in land use planning is the government's ability to ensure enforcement and compliance.
- Socio-Economic Development Plans cover anywhere from 3-5 years for medium term plans to 30 years for development visions. They set a vision for the development trajectory of the country and seek to regulate the overall progress, prioritizing among sectors and objectives in order to attain equitable and sustainable development. The level of detail and the types of issues addressed in development plans are the prerogative of government. Some plans are short strategic documents, while others are quite comprehensive documents that detail the program and projects to be undertaken.
- Budget, typically prepared by governments each year, allocate resources for both capital and recurrent purposes over the forthcoming fiscal year, revising and rolling over medium-term expenditure plans to achieve their goals and objectives. As government resources are finite, budgets distribute resources among the many competing demands.

- Projects are the mechanism by which government manages capital investments for the tangible implementation of the goals, objectives and priorities laid out in policies and plans. A project may be housed with one government body, or it may involve multi-agency implementation. Each project has specific objectives to meet within a defined time period and budget.

NOTE

MODULE 2: MAINSTREAMING DRR INTO DEVELOPMENT

SESSION 2: MAINSTREAMING DRR INTO POLICY AND PLANNING

Session Overview
Total time of session: 1 hour 15 minutes

Session Objectives:
By the end of this session, participant will be able to:

- Explain mainstreaming DRR into policy and planning
- Identify entry points for mainstreaming DRR into policy and planning
- Discuss key steps for mainstreaming DRR in the process of formulation of development plans
- Appreciate the importance of mainstreaming DRR into policy and planning
- Explore examples/case studies on various ways in which DRR can be integrated in the content of the Development Plans

SECTION 1 DEVELOPMENT PLANNING PROCESS: FOUNDATION FOR DRR MAINSTREAMING

The development planning process provides the backdrop for mainstreaming DRR into development. The development planning process covers range of regulatory process and mechanisms on development policy formulation, planning, investment programming/ budgeting, programmes/project appraisal, approval, implementation, monitoring and evaluation (Fig. 2.1). These are public management functions designed to achieve common development results. In order for risk reduction to be part of the development goals, priority programs and projects allocated with budgets; information on hazards, vulnerability and risks should become part of this planning process.

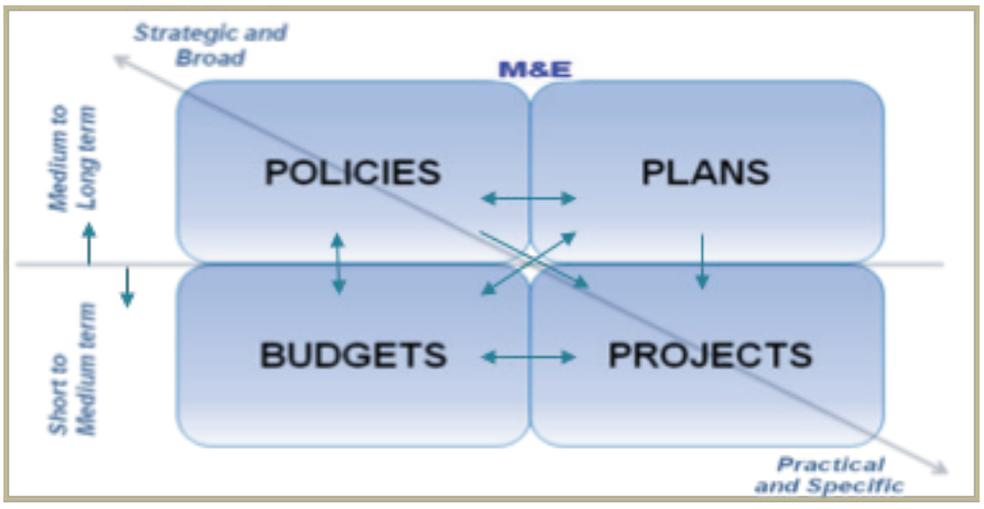

Figure 2.1 Development Planning Processes

SECTION 2: FRAMEWORK FOR MAINSTREAMING DRR INTO DEVELOPMENT

The most effective way of mainstreaming DRR is to embed the DRR process into the different layers of processes and tools that make up the development framework as shown in Figure 3.1.4.

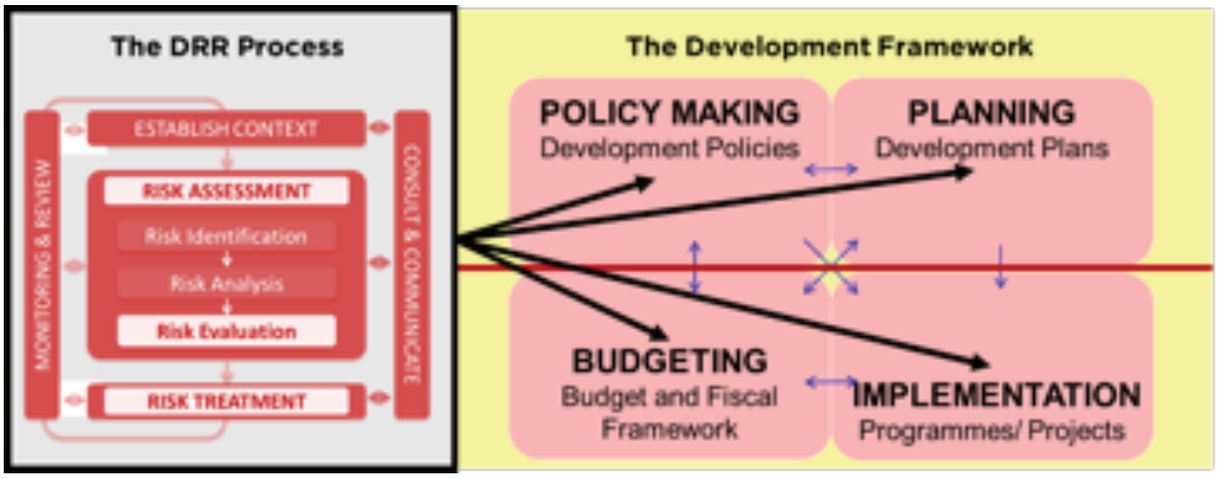

Figure 3.1.4. Embedding the DRR process into Development

Figure 3.1.5. Steps to embed the DRR process into Development

Figure 3.1.5. Steps to embed the DRR process into Development

STEP 1:

List the elements of the national development framework followed in the country. For example:

- Development policy (macro-economic policies, sector policies, local development policies)
- Socio-economic development plans (national, province, district) (national, sector) (medium term, short-term)
- Physical plans/Land use plans/Spatial Plans
- Annual Investment Plans and Budgets
- Development programs and projects
- Monitoring and evaluation of plans and programs

STEP 2:

Choose each of the above in turn and determine the process or procedure that is undertaken to utilize that tool.

For example:
Typically, project cycle management consists of the following stages: Programming, Identification, Appraisal, Formulation, Budgeting, Implementation, Monitoring and Evaluation.

STEP 3:

Try and align the various stages of the DRR process with the relevant stages of the development process in question. Be sure to pay careful attention to the best time for risk to be assessed, for decisions to be made on whether and how to treat the risk, and for risk treatment measures to be implemented. To aid in this process, it may be helpful to list out the elements of the national DRR framework in the country:

- Legislations related to DRR
- Strategies related to DRR
- Natural hazard risk profile (at various scale) / Climate Projections
- DRR Programs and Projects

Box 3.1.3. Pre-disaster central governments have a number of mechanisms available to them for mainstreaming including:

- 5 Year National plans, Annual Budgets, CCA's and UNDAFs. Additional planning tools include Contingency Plans, Risk Assessments, Strategic Environmental Assessments, Cost Benefit Analysis
- Project planning tools include: Programme and Project Implementation Guidelines, Monitoring and Evaluation Guidelines, Environmental Impact Assessments (EIAs)
- Local Governments, with national support, can take more direct action through land-use planning. A range of planning tools are available including: Zoning, Building Standards and Building Codes, Watershed Management, Environmental Master Plans and Hazard Maps
- Awareness Raising Campaigns are also an important element of sensitizing populations to disasters and can involve strategic partnerships with local and international media groups (Reuters)
- Post Disaster Planning Tools: Once a disaster strikes a different set of opportunities emerge. These include: (i) Flash appeals, (ii) DALA assessments, (iii) Recovery, and (iv) Reconstruction activities.

Source: Asia-Pacific Gateway for Disaster Risk Management & Development (n.d.) Mainstreaming DRR. http://www.drrgateway.net/content/mainstreaming-drr

The development planning process begins with the analysis of the existing situation, identification of challenge and trend, and review the gaps from the previous development phases. This forms specific context where strategic development policy is formulated (Fig. 2.1). The development policy is formalized as legislation and developed by government officials and agencies. It could cover certain time span (long or immediate) and address overall socio-economic and environment situations. Moreover, sector specific policy is also developed for sectoral developmental, for example, industrialized policy, forestry policy, environmental policy, etc.

Plans (Fig. 2.1) articulate targets/goals of desired state or conditions or what to be achieved within timeframe. The plans normally outline and prioritize specific objectives and key areas of interventions, and responsibilities and accountabilities of actors. Socio-Economic Development Plans (SEDPs) are among significant national plans that express socio-economic target such as attaining GDP at so and so level, poverty eradication of rural population by certain percentage or expanding exports/or manufacturing to certain level. SEDPs also states specific actions towards achieving the set targets such as promote market economy, create welfare services and livelihood diversification, or technical support to promote skilled-labor, etc. Similarly, sector plan articulates the targets and goals of targetted sectors such as Infrastructure Development Plan, Public Health Promotion plans, Basic Education development plans, City Development Plan, Taluka Development plans. The plans identify resource, budget and channel for fund mobilization to finance the activities outlined. The plans form the planning phase which set the framework for programs and projects cycle.

Projects/programs (Fig. 2.1) are developed to translate the plans into operationalization so as to realize certain outcomes that contribute to achieve the broad target of the plans. The programs and projects, indicated or detailed out in the plan, serve as the main inputs into the investment programming phase. Based on a predetermined set of criteria, programmes/project will be screened and ranked. The multiyear investment program will be broken down into annual investment program as per annual expenditure requirement determined and budget allocation will be approved for individual programmes/projects. Implementation of the programmes/project will be undertaken in the time frame with monitoring and evaluation.

All these constitute the development process in which entry points for DRR integration are identified. The next section will mainly focus on the policies and plans and indentifies the entry points for main-streaming DRR.

SECTION 3 MAINSTREAMING DRR INTO POLICY AND STRATEGY

Policy is necessary to meet the vision and to identify challenges of the present and the perceived threats and opportunities of the future. It guides identification of goals, objectives, targets, strategies and projects and programs which is detailed out in the development plan. For example, the national physical framework is a broad policy for determining the spatial feature of proposed development in terms of settlement, services, infrastructure, production and protection of land use, etc. The physical framework in turn helps in identifying the socio-economic goals, objectives, targets and ultimately leading to programs and projects. Thus, as a first step, it is essential to put together the physical framework of the target area and its risk profile, and understand "what is at risk" and "what could create further risk" if development is to be undertaken in the said area. Once this level of understanding is achieved, the

next step would be to make sure "hazard resilience" is factored into each of the components of the development plan and action related to risk reduction is prioritized in form of programs and projects.

3.1 How to mainstream DRR into policy instruments?

The development factors, including society, economics and environment are ever changing aspects of daily life and developmental growth. So the formulation and implementation of policy must evolve to make sure that it does not become outdated. In general, the decision makers and policy developers often use a cyclical process with clearly defined steps to ensure policy does not become outdated. The steps include (Figure 2.2):

- Select / Define Issue
- Set objectives
- Forecasting
- Develop options
- Options analysis
- Policy decision
- Monitor and review
- Iteration

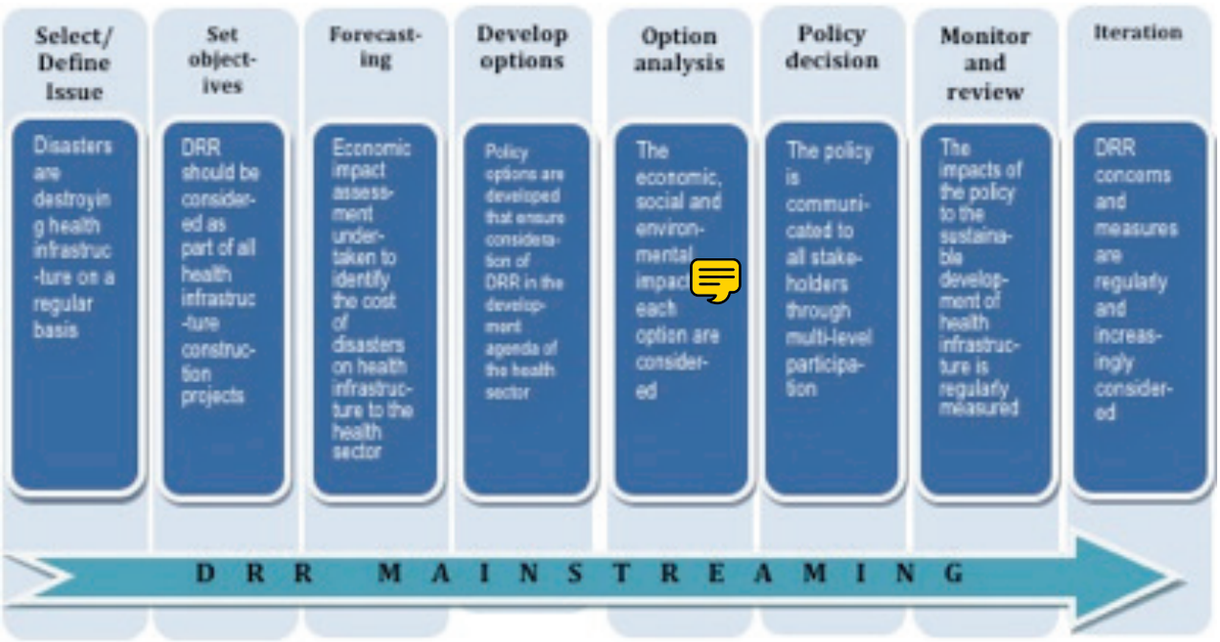

Fig 2.2 Illustration of Mainstreaming DRR into health sector Policy (example only)

The formulation and implementation of policy (both at a macro level as well as the level of each sector) offers a starting point for mainstreaming DRR. The macro as well as sectoral policies feed into the development plan, which identifies specific programs and projects for implementation. Before understanding the process of mainstreaming of DRR into plan, projects and programmes; it is essential to understand how DRR is mainstreamed into policies and legislative act or rules that are designed to accomplish the sectoral goals.

3.2 Examples of Mainstreaming DRR into policy and strategy

The following section discusses example of mainstreaming DRR into policy instruments from the regions.

3.2.1 Nepal – Environment protection act, 1997: The act was enacted in 1997 and in the last 15 years there is an improved understanding of disaster, climate and environment linkages. Also, there has been increased appreciation of a holistic approach to environmental management and the inter-linkages with other themes, such as disaster and climate which are crosscutting issues. This Act or its accompanying document can include the following provision or use the following provisions for DRR:

The act has a mandatory provision of Initial Environmental Examination or Environmental Impact Assessment along with the project proposal. The Disaster and climate risk aspects should be included in the current IEE and EIA processes and guidelines.

- The section 7 of the Act, which mentions 'prevention and control of pollution so as not to cause adverse impact on environment' can be used for disaster and climate risk management considerations.
- The section 23 and 24 of the Act provide authority to frame guidelines and rules in the area of environment protection and this provision can be used for DRM/CRM considerations related guidelines and orders.

3.2.2 Nepal – Climate change policy, 2011: The climate change policy is very comprehensive and it has several provisions related to disaster risk management and environment issues, which can be applied in different sectors.

- Formulating and implementing integrated programmes taking into consideration the objectives and the provisions of the conventions related to climate change, desertification and biodiversity
- Formulating and implementing the necessary strategies, guidelines and working procedures to support socio-economic development that is climate-friendly and resilient
- Formulating and implementing design standards for climate resilient construction of bridges, dams, river flood control and other infrastructure
- Carrying out regular research and monitoring of risks related to climate change impacts
- Identifying, developing and utilizing agricultural varieties/species that can tolerate drought (too little water) and floods (too much water)
- Introducing agriculture and disaster insurance in climate change-affected areas

3.2.3 India – Gujarat Integerated Township Policy 2007: The Government of Gujarat aims to facilitate investment in knowledge based economic activities that bring benefit to the state. The Integrated Township Policy 2007 aims to provide a framework for ensuring that the townships are developed and have access to reliable trunk infrastructure. Considering this aim, the Government of Gujarat overall approach is to act as a facilitator and will support and facilitate the market operations and regulations to realize public policy investment. Moreover, mature industries supported by government can respond to the demand of developing a high quality built environment in the state. In response to the need of the industry, the state government will support in the five areas, namely; i) support through making provision of trunk infrastructure in the areas where this policy will be applied; ii) support in the procurement

of land for development of integrated township; iii) support through establishment of Green Channel, helps in the statutory clearance related to land, development permissions and environment clearances, such others; iv) support through special benefits under the policy; and v) support by a system of rating developers (CRA) and projects, mandated by the state government.

The Integrated Township Policy 2007 also incorporates some DRM/CRM components and supports risk reduction measures (Box 2.1), making townships resilient to disasters. Some of the examples here show the incorporation of risk reduction components in this policy.

Box no. 2.1 Some of the Risk Reduction Measures in the Integrated Township Policy 2007

Key elements of the policy that incorporate risk reduction
I) Objectives: The main objectives of the Township Policy are:

1. To promote economic development
2. To facilitate the creation of efficient, equitable, sustainable urban settlements
3. To facilitate public private partnerships in urban development
4. To facilitate capacity building in the private sector and in Government for urban development

II) To ensure creation of sustainable urban development by a strict adherence to a high degree of risk mitigation measures

III) Section 3.2. Developers' role and obligations
The developer plays a central role in the realization of the objectives of the Township Policy. While the policy facilitates the township development process and simplifies procedures, it also provides a framework of norms to ensure that public policy objectives are met and high quality townships are created. The developer's role is detailed out in the policy under the following six heads:

1. Town planning norms
2. Mitigation of vulnerability
3. On-site physical and social infrastructure norms
4. Disclosure Norms
5. Performance standards for operation and maintenance
6. Provision for informal service providers

VI) 5.2.1. Preconditions for safety and sustainability
The permitted Townships in this area must comply with the relevant IS Codes / National Building Codes. The permitted Townships in this area must also comply with pre and post natural hazard mitigation measures.

In the case of areas where development is restricted by legislation, regulations or notification by the Government of India or Government of Gujarat, the norms specified by the respective laws, regulations and notifications have to be complied with. A detailed feasibility study as well as Social and Environmental Impact Assessment will be required to be carried out for undertaking such projects.

Plans for infrastructure augmentation, mitigation measures of Environmental and Social Impact as well as detailed Financial Management Plan, Asset Management Plan which includes Operation and Management will also be required.

Source: Adopted from "Gujarat Integrated Township Policy 2007"

Section 4 Mainstreaming DRR into Development Planning

National/State development plans (NDPs/SDPs) are generally concerned about the overall advancement

and well-being of the country as a whole and which are laid out in broad policies and strategies and tied up to targets within a set timeframe. NDPs are driven by strategies that will attain sustainable development and alleviate poverty within the limited available resources. Policies, objectives, strategies and targets of SDPs/NDPs are also influenced to a large degree by the any country's commitment to international agreements such as the Millennium Development Goals (MDGs).

4.1 Why mainstreaming DRR into development plan?

The various development plans that national and state governments prepare are instruments which communicate the actions that government intend to take in order to improve the socio-economic conditions of the population and promote the development of key economic strategies; address specific challenges (e.g. poverty, unmanaged urbanization); and manage and use of human, physical and natural resources in a sustainable manner. As governments and development partners jointly push for aid effectiveness, public sector management aims for unified actions toward achieving common development results. The goals, objectives and targets are measured by indicators of development results (e.g., the Millennium Development Goals) that are defined in the plans and carried through phases of development planning.

Helps to highlight long-term concerns: Mainstreaming DRR in the medium-term national/state planning process helps to ensure that longer-term concerns such as risk reduction are not overshadowed by more immediately pressing issues, which implies the potential ability to sustain long-term programs and initiatives. (Benson, 2009).

It guides country development: Typically the national/state development plan provides the link between the social, economic and institutional agenda and the spatial development agenda; and it acts as the blueprint for development of the country over a specified period of time. It provides an opportunity to apply the lessons learned from the past and provide strategies for growth. For example, the tenth five-year plan (2002-2007) in India looks disasters from development perspective because relief provisions cannot mitigate the impact of disasters. Thus, the development plan set out the institutional and financial arrangements for disaster management.

Get consensus for a shared vision of the future: The national/state development plan also reflects a shared vision of the region/country in the future as a whole and attempts to be inclusive. For example, it is recognized at the end of the Tenth Five Year Plan of India that the disadvantaged groups, especially the scheduled castes and scheduled tribes and the minorities in India have less benefited. Thus, the Eleventh plan of the Government of India stressed on removing such deficiencies by seeking to accelerate the pace of inclusive growth. Furthermore, the objective of inclusiveness is reflected in the adoption of 26 monitoring indicators, such as, income and poverty, education, health, women and children, infrastructure and environment.

Provide a basis for the monitoring and performance of a country's development and implement corrective measures as necessary: Equally important is the fact that the national/state development plan provides a basis for monitoring the performance of a region/country's development as the focus. For example, the Tenth Five Year Plan of the Government of Bhutan has set specific quantification targets for achievement over the plan period by keeping in mind the pace required to attain the

Bhutan Vision 2020 targets, the Millennium Development Goals (MDGs) and the SAARC Development Goals. Similarly, the Seventh National Development Plan of the Maldives establishes four priority development areas, and sets 12 specific goals and 88 targets that will guide decision-making and investment over the five years period of the plan.

Institutionalize participation of all sectors: The plan also highlights the sectoral priorities and crosscutting themes, such as, decentralized governance, women in development and environmental issues.

4.2 What is a development plan?

A development plan is a document that contains and embodies the aspirations, vision and hopes of the people for the future. Its preparation undergoes a process that varies according to the thinking, beliefs and ideology of the government or people preparing the plan. There is no prescribed form or template for development plans but usually it contains following elements:

Goals, objectives and targets: They are usually expressed as the desired state or condition such as improved quality of life; a tiger economy; a safe and secure society; etc. Targets are individual, observable achievements directly related to a goal. Baselines are important to be set before targets are defined in order to have a clear measurement of performance. Targets are normally expressed in terms of quantitative and qualitative indicators like State Gross Domestic Product (SGDP); Gross State/National Product (GSP/GNP); Mortality and Morbidity Rates; Unemployment; Poverty Incidence; Crime Incidence; State of the Environment; presence of effective and efficient institutions; etc. Moreover, the goals and targets are based on certain assumptions, which the country may not have control over it, such as, global economic crisis; climate change; etc.

Policies and strategies to be adopted to achieve the goals and objectives: Policies are broader tools to effect the achievement of the objectives. Examples of policies are opening the economy to foreign investors; government borrowing; declaration of certain areas as protected; partnering with the private sector; peace talks with political or armed groups; etc. Strategies are details of how the policies will be put into action. Examples are labor-intensive construction method to generate employment; build-operate transfer schemes with the private sector; building more ports and airports; easier access to visa for tourists; taxation; regulations; etc.

Implementation/management arrangements: They are the responsibilities and accountabilities of the actors or stakeholders in relation to the activities identified. Activities that need multi-agency or multi-stakeholder work are highlighted in this section. Oftentimes procurement procedures, auditing and accounting procedures, monitoring and evaluation, advocacy work, among others, are stated here.

Sources of financing: Taxes and revenues, international loans, foreign grants, etc., are identified as sources of the budget that will finance the programs and projects of the development plan.

Time frame: A development plan has a time frame usually tied to the terms of political administration or terms of elected officials. The plan can be classified into three time frames: Short-term (1-2 years), Medium-term (3-10 years), and Long-term (10 and above). Achievement of the goals, however, may be expressed in terms of annual accomplishment or mid-term of the administration.

4.3 How to mainstream DRR into Development Plan?

Identifying entry points in the planning process: It is necessary to understand the existing state of the population, economy, physical resources and access to services and projecting the development path based on vision, needs and available resources.

The following steps (Table 2.1) outline a general development planning process to follow for the formulation and implementation of national development plans.

Table 2.1 General Development Planning Process

Assessment of Development Achievements and Challenges	The agency responsible for coordinating the formulation of the national comprehensive development plan, often the national planning agency begins by assessing development in the country, highlighting particular achievements and challenges, and identifying the internal and external factors that are affecting performance.
Goal and Objective Setting	Once an analysis of the current situation is complete, goals for the country's development and sector objectives for the coming plan period are set. This is usually done by national planning agency, in consultation with other government agencies. Sometimes other stakeholders are also consulted.
Plan Formulation	Formulation of the plan involves identifying the strategies, initiatives and responsible parties to achieve the objectives and goals. In this stage, targets and indicators to monitor the plan's effective implementation are identified.
Plan Adoption	Once the draft is finalized, depending on the structure of the government, the plan undergoes a final review or national approval process by government and civil society representatives. For implementation to begin, the government must endorse the plan.
Implementation, Evaluation and Feedback	The plans are implemented by the sector agencies through projects that are programmed into annual or multi- annual budgets. The plan will usually have a review schedule, which calls for one or multiple mid-term reviews to assess implementation and effectiveness, and identify the challenges impeding achievement of goals and objectives. The results of this review feedback

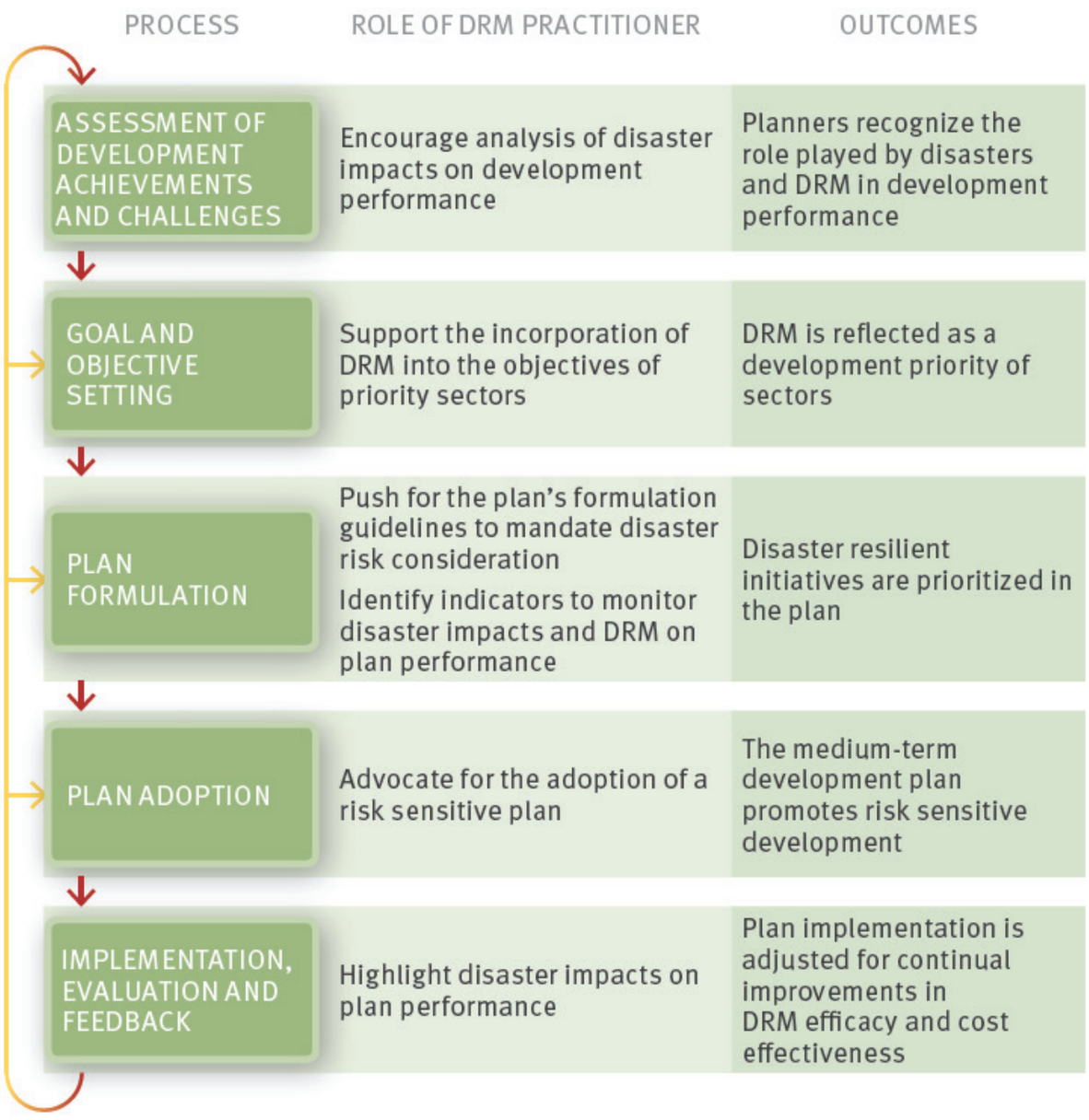

Fig. 2.3 Linking DRR with the Development Planning Process

Integrating the DRR process within the Development Planning Process: Through breaking down the steps of the development planning process and the DRR process, it is possible to understand how the key steps in risk management (risk assessment and risk treatment) can be undertaken as part of the development planning process as shown in Figure 2.4.

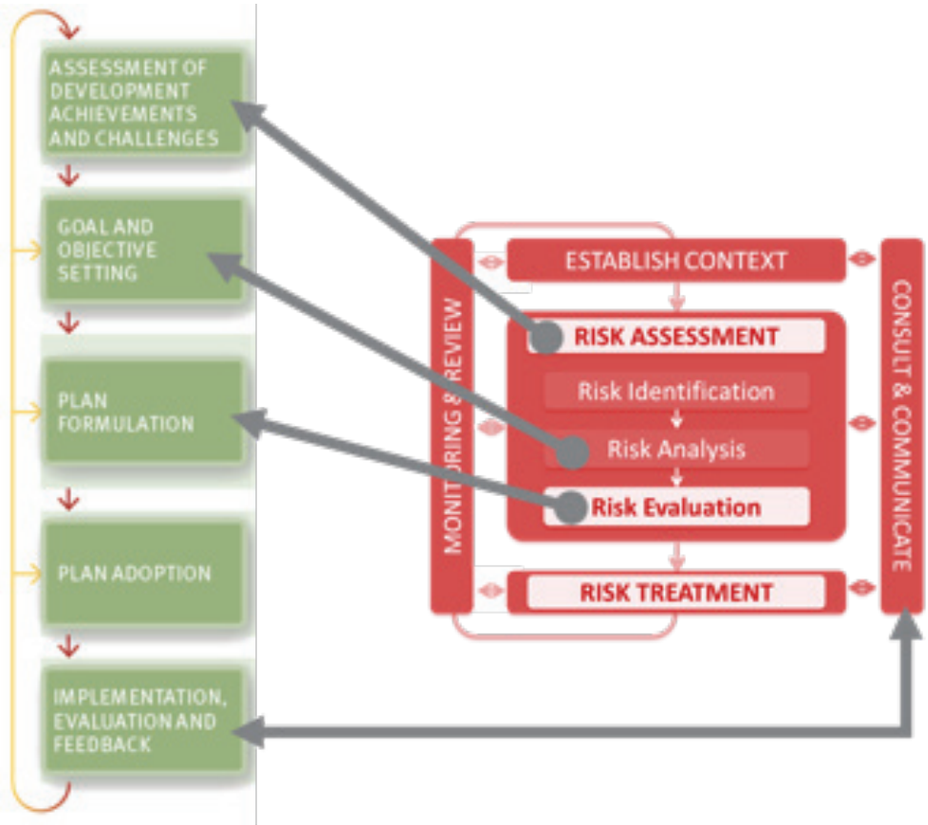

Fig. 2.4 Linking DRR with the Development Planning Process

It is important to make the risk information available so that issues or concerns can be considered when formulating future.

Assessment of Development Achievements And Challenges: The agency responsible for coordinating the formulation of the development plan, often the national planning agency, begins by assessing development in the country, highlighting particular achievements and challenges, and identifying the internal and external factors that are affecting performance. This involves reviewing many aspects of the country's development, including past plan performance, progress towards international development targets, economic performance, poverty reduction, the state of the environment, and public sector governance, such as human development reports, household surveys, socio-economic analyses and may even include consultation with the general public.

It is important to encourage that the disaster risk analysis be undertaken as part of the sector assessments, so that disaster risk considerations are built into the aforementioned analysis rather than treated as a separate assessment. The DRM practitioner can help provide relevant background material for undertaking the assessment.

Goal and Objective Setting: Once the planning environment has been assessed and understood, the goals and objectives for the short, medium or long term are formulated in order to capitalize on opportunities and overcome development challenges over the plan period. The goals and objectives

reflect the choices of the government and society on what are considered priorities for development. Decision makers will have to evaluate the disaster risk information and decide what are the goals and objectives for reducing or managing these risks.

Disaster Risk can be addressed in two ways:

- Specific goals and objectives related to DRR: These goals and objectives would guide the overall DRR approach and should reflect the importance of DRR for reducing loss of lives, properties, livelihoods etc. As an example, the vision statement may include some phrases about having safe, prepared and resilient communities against natural hazards.
- Incorporating DRR considerations into sector specific goals and objectives: In addition to having specific DRR goals and objectives, all sectors should factor in DRR considerations within their sector specific goals and objectives. An example for the education sector would be ensuring school buildings are resilient during disasters to allow continuous education for children. Similarly, specific actions/interventions to reduce the risk based on the results of the risk assessment could be integrated into the sector development plans to ensure the goals and objectives would be achieved.

Plan Formulation: Formulation is often a consultative process, where development of the plan at provincial and local levels feeds into national and sector level initiatives and vice versa. At the end of the process a final draft of the socio-economic and sectoral plan should be complete. The strategies identified in this phase are the ways or means of implementation for achieving the identified goals, objectives and targets. Once the significance and priority of the risks are ascertained, the manner by which they should be responded to elaborate by the goals, objectives and targets, the next step is to identify the corresponding DRR measures and intervention approaches that will need to be undertaken in order to treat or control these disaster risks.

This is the risk treatment stage, which addresses how we treat the identified risk in order to achieve the specific and integrated DRR goals, objectives and targets. At the end of the plan formulation process the development framework matrix which has been developed should be enhanced by ensuring DRR concepts and principles are integrated. The enhancement could be achieved by making sure the strategies, programs and projects contribute in increasing resilience of the vulnerable population, or are implemented in hazard-free areas and at the same time proposed investment does not contribute to risk.

Undertaking extensive consultation is a key process for plan formulation. It provides an opportunity for adopting a participatory approach to development and thus taking into account key concerns of various stakeholders. Key non-governmental organizations, individual experts from the academia and the private sector, community leaders involved in DRR work may be invited to provide feedback on the priorities.

Plan Adoption, Implementation, Evaluation and Feedback: Once the plans are adopted they are implemented by the sector agencies through projects that are programmed into annual or multi-annual budgets. The plan will usually have a review schedule, which calls for one or multiple mid-term reviews to assess implementation and effectiveness, and identify the challenges impeding achievement of goals and objectives. The results of this review feedback to influence implementation.

Generally, development plans have identified implementing agencies to carry out the tasks and responsibilities contained therein. Ministries under a certain sector prepare operational plans based on the principles, objectives and targets embodied in the national development plan. However, there are instances where a multi-agency cooperation or multi-stakeholder implementation arrangements are necessary. For instance, the participation of local people for environmental conservation projects is the generally acceptable and effective way of doing the project. On the other hand, build-operate-transfer schemes in infrastructure require the participation of the private sector. Under such arrangements, accountability and responsibility are clearly delineated.

The monitoring and evaluation of the achievements of the plan's targets are based on the performance of the agencies and bodies or groups tasked to perform and implement the programs and projects. Tools usually used are public expenditure and results-based management systems where major final outputs are used as the basis of the performance of an implementing agency. The indicators identified for each sector can be in the form of physical and financial accomplishments. It must be noted that indicators vary in accordance with the expected outcome of the activities in terms of time frame. For example, increasing agricultural productivity and the income of farmers can be achieved by the construction of irrigation facilities. In the early stages of implementation, what can be monitored is the rate of completion of irrigation canals; their location; capacity; etc. Improved agricultural productivity and the increase of farmers' income can be measured more accurately after the construction phase of the facilities. The same applies to certain objectives in the health and education sectors where results or effects are realized after a longer duration. An example from Vietnam shows the Ministry of Planning and Investment has issued a Monitoring – Evaluation Framework for implementing the 5 year plan for the 2006-2010 period, with focus on outcomes/impacts (with technical support from international organizations). In the 32 Monitoring - Evaluation Framework, there are some criteria directly related to natural disaster prevention, response and mitigation, such as "number of people and areas that are suffered from flood and drought" "total material losses" and "rate of people who can access social welfare benefits".

The rate of accomplishment and performance of implementation are usually evaluated vis-à-vis the completion schedule; costs; quality; etc. Recently, evaluation methods have incorporated other factors like gender impact; environmental sustainability; effects on indigenous peoples; etc. The accomplishments and evaluation/assessments of implementation are normally contained in reports which are forwarded to the higher level of decision makers and other major stakeholders.

Some important factors in monitoring are:

- **Effectiveness:** A monitoring system should link ministry/agency activities with their expected final outputs and desired outcomes through their outreach to target beneficiaries.
- **Efficiency:** Monitoring systems that can check whether or not the programs and projects undertaken are within cost and whether they are achieved within the timeframe allocated.

A better monitoring system should lead to better plan implementation and can link indicators with financing and budget requirements.

Box 2.2 Integrating DRR in Planning Guidelines

The lead planning agency in a country normally provides guidelines for the preparation of specific plans. The purpose of these guidelines is to provide a broad policy framework for the formulation of the upcoming plan by the agencies at national and sub-national levels. Possible ways of integrating DRR can be made part of these guidelines.

The Planning Commission of Bhutan issued the 'Guidelines for preparation of the Tenth Plan (2007-2012) in March 2006. In this case the guideline is broadly structured into four parts namely:

Part I Strategic Planning Framework
Part II Sector Policy and Framework and Targets
Part III Dzongkhag and Gewog Plan Preparation Process and Format
Part IV Coordination Mechanism for Plan Formulation and tentative schedule

Similarly, the Planning Commission of India issues guidelines and formats for the development of Five Year Plans as well as Annual Plans. Since, these documents provides guidance on the priorities to be identified under the upcoming plan and based on which resources would need to be allocated, these document act the essential stepping stone for integration of DRR. A closer look at the 'Guidelines for preparation of the Tenth Plan (2007- 2012)' of Bhutan shows that under the section on 'other considerations for selection of strategies and programmes; Section 2.3, page 9, the document emphasized disaster risk reduction as 'In view of the fact that there is a direct link between disasters and the situation of poverty, measures for prevention and mitigation of disasters should be included in all plans, wherever possible'. Further in the Part II of the document; Sector Policy Framework and Targets, the targets set for 'Construction' identifies among others; 'Earthquake management and awareness created'. Highlighting DRR considerations in the Section on 'Review of previous plan' Typically all development plans includes a specific chapter/section on the performance of the previous plan or challenges which have been hindering the process of development in the country. This analysis covers all the major sectors, individual sub-sector plans, the parameters and/or indicators by which they were based on, as well as internal and external developments that may have affected the implementation of the plan. The analysis normally includes:

- Actual accomplishments vs. Targets – macro-economic statistics; sectoral performance, etc.
- Actual performance vs. international/SAARC benchmarks – country performance vis- countries with similar resources and economy
- Institutional failures and/or policy mistakes – bureaucratic over-regulation; over deregulation; open market vs. protectionism; subsidies extended, etc.

In this context it is important that plan (wherever applicable) must identify disasters as a factor potentially hindering the achievement of economic and development goals and hence the need to treat risk reduction as an integrated cross-sectoral objective.

Moreover, if the country has been impacted by large scale disaster/s during the implementation period of the previous plan, the impact of the disaster on the respective sectors and overall performance of the economy should be detailed out in this section of the Plan. For example, the section Challenges the Seventh National Development Plan of the Maldives, identifies the impacts of the Indian Ocean tsunami of 2004 as a key challenge to sustainable development.

3.4 Examples of DRR into Development Policy/Plan from Region

12th Five-Year Plan (2012-2017), India: In this plan, Chapter 5 on 'Sustainable Management of Natural Resources' has a specific section on 'Climate Change' (Fig. 2.5). It mentions that the 12th Plan strategy will be so designed that there are significant co-benefits from climate along with inclusive sustainable growth; actions for specific sectors namely Power, Transport, Industry, Buildings, and Forestry; adapting agricultural practices; State (Province) Action Plan for Climate Change; Land use policy, ground water, etc., have also been identified.

Seventh National Development Plan (2006-2010), Maldives: Seventh NDP identifies 12 goals for achieving the vision of the Plan (Fig. 2.5). One of the goals (Goal 5) under Spatial Development is to 'Protect the natural environment and make people and property safer'. Goal identifies 'Disaster preparedness and disaster risk reduction' as a key priority with four policies and specific strategies:

- **Policy 1:** Institutionalise disaster management and mitigation and enhance national disaster management capacity
- **Policy 2:** Make Maldivians safe and secure from natural disasters through information dissemination and, planning and coordination of national response actions
- **Policy 3:** Alleviate and eliminate risks to life and property from natural or manmade hazardous events
- **Policy 4:** Deliver prompt and efficient relief and support in the event of a hazard

Five-Year Socio-Economic Development Plan 2006-2010, Vietnam: The Plan acknowledges natural disasters as hindrance to poverty alleviation, but does not explicitly consider DRR in its major strategies. Its notable strategy has touched on the role of insurance in relation to disasters (Fig. 2.5).

12th Five-Year Plan (2012-2017), India

Seventh National Development Plan (2006-2010), Maldives

Five-Year Socio-Economic Development Plan 2006-2010, Vietnam

Fig. 2.5 Examples of DRR into Development Policy/Plan from Region

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MODULE 2: MAINSTREAMING DRR INTO DEVELOPMENT

SESSION 3: MAINSTREAMING DRR INTO THE PROJECT CYCLE

Session Overview
Total time of session: 1 hour

Session Objectives:
By the end of this session, participant will be able to:

- Understand what is project cycle management and why DRR should be mainstreamed into development projects
- Be able to identify entry points for mainstreaming DRR into the project cycle
- Understand how to integrate DRR concerns into tools for project appraisal

As discussed in earlier sessions, it is understood that socio-economic development plans, as well as physical plans, would provide a list of prioritized programs and projects for implementation in order to achieve their goals. Since projects have specific objectives to meet within a defined time period and budget, it should be ensured that factors having negative impacts on the project outcomes are as reduced as possible. This includes, among others, risks emanating from natural hazards. Thus DRR should be integrated in all development projects. This would ensure that all development projects:

- Adopt measures to reduce the risk for hazards and climate change and variability
- Do not exacerbate existing levels of vulnerability in the project area

The best way to achieve this is by ensuring that each component of the management cycle of the project, especially the initial planning stages (issue identification and appraisal), factors in risk from natural hazards and climate change variability, and necessary measures to reduce it. This session therefore outlines how to mainstream DRR into the project management cycle, with a specific focus on issue identification and tools for project appraisal.

Section 1: What is a Development Project?

1.1 Defining Development Projects

A project is "a series of activities aimed at bringing about clearly specified objectives within a defined time-period, and with a defined budget" (European Commission, 2004; ProVention Consortium, 2007). The development strategies identified by the socio- economic development plans and physical plans (see Module 2), are operationalized through projects. These projects vary in scope, size, and duration and are implemented across different sectors and on cross-cutting issues.

Public investment projects are normally shaped through a number of parallel and interconnected planning processes that include land use planning and management, development planning, and sector

investment planning. Ideally, these would occur in a sequential order with one building on the other, but in reality this is rarely the case. (UNISDR 2011, Global Assessment Report for DRR) (This is also the logic of proceeding from session 2.2 to 2.5). However each project will follow a cycle and it is essential to understand the different phases of the cycle for DRR to be integrated in it.

1.2 Project Cycle Management

The 'project cycle' is a way of viewing the main elements that projects have in common, and how they relate to each other in sequence (see figure 3.5.1).

Figure 3.5.1 Project Cycle Management

The precise formulation of the cycle and its phases varies from one agency to another, but the basic components are more or less similar and include:

1.2.1 Issue Identification

Project identification often overlaps the planning and budgeting phases of the development process. Governments usually identify development projects based on an assessment of the problems, needs and interests of national stakeholders. These potential projects are screened and prioritized based on the targets and indicators outlined in national development plans. The aim of this identification process is to determine projects eligible for public funding.

1.2.2 Appraisal

Following project identification, all significant aspects of the project concept are studied, taking into account stakeholders' views, relevance to national development objectives, feasibility and other issues. The outcome is a decision on whether or not to take the project forward.

1.2.3 Formulation

Once a project is approved for implementation, detailed design and planning is undertaken. Work plans, logical frameworks and schedules for implementation are developed, and the required resources (e.g. human and financial resources, materials) are calculated.

1.2.4 Implementation

The implementation phase sees the use of the agreed resources to carry out the planned project activities and thereby achieve project objectives. Progress is assessed through monitoring to enable adjustment to changing circumstances.

1.2.5 Evaluation and feedback

The assessment of the project's relevance and success is based upon an examination of the efficiency, effectiveness, impact and sustainability of the project measured against the project objectives. The conclusions of this evaluation are taken into account when planning and implementing similar projects in the future.

The phases of the project cycle may vary from one country to another, and also from national to local level, however, the basic components are more or less similar. The different phases in the project cycle are not separate but part of a process of planning, action and reflection that, in an ideal world, feeds lessons from one project into others (Benson and Twigg, 2004). (Figure 3.5.2 below shows the project cycle followed by the Government of Sri Lanka for small and large-scale projects)

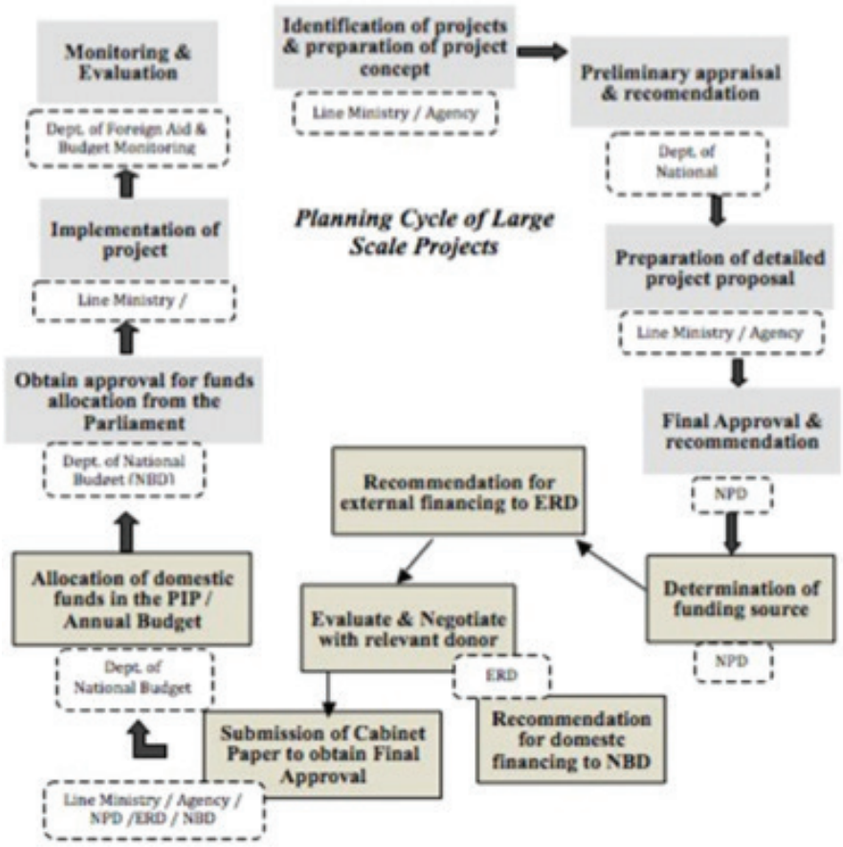

Figure 3.5.2 Project Planning Cycle, Government of Sri Lanka

Project management is planning, organizing and managing resources to bring about the successful completion of specific project goals and objectives. It is the application of knowledge skills, tools, and techniques to project activities in order to meet or exceed stakeholder needs and expectations from a project. The primary challenge of project management is to achieve all of the project goals and objectives while giving due consideration to the project constraints such as time and budget.

Section 2: Why mainstream DRR into development projects?

If we look at the government supported projects, the decisions to evaluate disaster risk internalized in public investments, and to ensure that cost-effective measures to reduce risk are included in all projects, has huge implications from whether the stock of risk goes up or down. Thus if public investment becomes a vehicle for disaster risk management, not only is the quality and sustainability of public spending enhanced, but disaster- related losses and costs are also reduced and social and economic development stimulated. (UNISDR 2011, Global Assessment Report for DRR)

It is essential to integrate the natural disaster aspect into all development projects. This is especially important in the form of preventive measures for physical infrastructure projects such as buildings, roads bridges etc, in order to ensure that the projects will survive and withstand natural hazard events when they occur. Infrastructure and support systems for human settlements should be invulnerable as much as possible, and must be recognised as priority elements in reconstruction projects following a disaster. Therefore, such facilities must be adequately designed to be least vulnerable. (The Attachment A presents a collection of tables which details "the potential impacts of natural hazards on specific physical infrastructure and possible mitigation measures for reducing the risks" (Extracted from Megacities: Reducing Vulnerability to Natural Disasters – Institution of Civil Engineers, 1995).

Section 3: How do we mainstream DRR into development projects?

Figure 3.5.3 demonstrates that in order to mainstream DRR into project cycle management, we must look at all the phases of the project cycle, and identify how the DRR process can be infused and become part of this cycle.

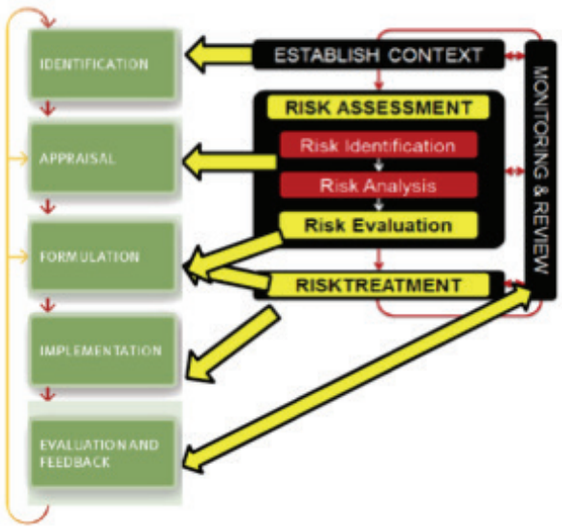

Figure 3.5.3: Linking disaster risk reduction and project cycle management steps

3.1 Identification

Projects are typically identified by line agencies or local government based on broad policies and strategies of the government, which are described in socio-economic development plans (see session 3.2). In this initial step of project cycle, some countries may require the sector ministries to submit a concept paper or prefeasibility report to national planning agency for preliminary appraisal. Level of detailed to be captured in this project identification stage may differ from country to country. For example in the case of India, the report should focus on analysis of the existing situation, nature and magnitude of the problems to be addressed, the need and justification for the project in the context of national priorities, alternative strategies, initial environmental and social impact analysis, preliminary site investigations, stake holder commitment, and risk factors.

Templates used for preparing such concepts can include brief description of issues related to disaster risk. Box 3.5.1 describes the template issued by the Department of National Planning of Sri Lanka for detailing initial project concept. As per the template, the concept paper is expected to provide a brief description on potential environmental impacts of the project, and can be suitably modified to capture explicitly potential impacts of natural hazards on the proposed project and possible impacts of the project in increasing vulnerability. Natural hazards related information can also be highlighted in the section on project location and environmental impacts.

Box 3.5.1: Template of Project Concept Paper used in Sri Lanka

All development projects proposed by the line agencies in Sri Lanka are required to develop a concept paper, as per the template below, for preliminary appraisal by the National Planning Department. The concept paper is required to include the following information:

- Project Title:
- Sector:
- Project Location:
- Rationale of Project:
- Expected Project Outputs:
- Project Budget:
- Financing Plan:
- Environmental Impacts on Physical, Biological, Socio-Cultural or Aesthetic Status:
- Gender Perspectives:
- Implementation Arrangements:
- taff Availability for implementation of the proposed project:

Source: National Planning Department, Government of Sri Lanka

Projects are not identified in isolation, broad programmatic areas are identified based on the priorities in the development plan and as discussed in earlier sessions if disaster risk assessment is integrated in the entire process of plan formulation, it could be anticipated the programmes would take into consideration risk reduction. In this context it is to be remembered a lot of development activities are also funded through international development organisations. Typically such organisations apply some form of programming framework which are in line with the development priorities of the country,

and identify thematic priority areas for support. It is essential that DRR is integrated in these country programmes, because if not, related projects cannot be undertaken.

Table 3.5.1 Key considerations for integrating DRR into project identification process

Entry Points	Actions
Preparatory studies	In the terms of reference for undertaking preparatory and pre- feasibility studies, include questions such as the following: • Are natural hazards capable of creating disaster relevant factors in this project? Which ones, and why? • Could the project increase risk? • What risks could have a direct impact on the project? • What could be the potential impact of the project in preventing disasters? • Ensure consultations with relevant organizations • Include risk management and reduction as a specific point in donors' key issues and guidelines
Participatory planning workshops	• Ensure relevant information (studies, data, etc) is available • Ensure that participation and consultation with stakeholders includes organizations and individuals with knowledge on risk management • Check that the problem analysis includes attention to matters relation to management of risk reduction and how problems are defined • Analyse if interventions are specifically directed towards management of risk reduction (activities and assumptions) • Examine socio-cultural and institutional policies, management capacity and economic and financial viability against sustainable criteria • Develop and revise indicators
Draft proposals	Ensure that issues relation to the management and reduction of risk are covered in the draft of the financing proposal, in the following important sections: • Problem identification • Documentation available • Activities • Assumptions • Risks • Sustainability factors

Source: RUTA Guidelines for risk management in rural development projects, Unidad Regional de Asistancia Tecnica (RUTA), 2001

3.2 Appraisal

The purpose of the appraisal stage is to understand whether the project should be implemented.

Broadly, the appraisal process looks into the sustainability of the project, social desirability, environmental acceptability and economic and financial viability. Different tools are used to study the various aspects of the project feasibility (economic, social, environmental). Consultations are undertaken with stakeholders, and logical frameworks, activities and implementation schedules are detailed and required inputs are calculated (Benson and Twigg, 2007). Natural hazards and related risks should be assessed as part of the appraisal process of all projects, by integrating as an explicit component of existing appraisal tools.

The detail and scope of project appraisal may differ from country to country and from national to local levels, on types of projects, and accordingly the use of tools. The project planning guidelines issued by national planning and finance ministries clearly define the details to be followed for project appraisal. For example in the case of India, once the National Planning Commission approves the prefeasibility report (the project identification stage), the Detailed Project Report (DPR) is required to be developed by the line agency. Standard template for DPR is issued by Department of Expenditure, Ministry of Finance, which requires among others undertaking environmental impact assessments and economic analysis of the proposed project. It also includes a section on risk analysis; identification and assessment of project risk primarily from the view of project management related risk and environmental and economic risk.

Since vulnerability to natural hazards is complex and multi-faceted, and thus requires considerations from all angles-environmental, social, and economic as well as in broader planning tools such as logical framework. The following paragraphs describe briefly the most commonly used project appraisal tools; purpose of the tool, need for mainstreaming disaster risk related issue in the tool and provides a simple checklist on how to do it. (The guidance in this section is adapted from work undertaken by Provention Consortium on Tools for Mainstreaming Disaster Risk Reduction, Guidance Notes for Development Organisations.)

3.2.1 Environmental Assessments

Purpose: Environmental assessments of projects are undertaken in order to examine the potential environmental consequences (both positive and negative), of the proposed project, and to ensure that they are factored in the project's design. The scope of the environmental assessment may vary depending on need of the project, however, in most cases an Initial Environmental Examination (IEE) is required at prefeasibility stages, followed by a detailed Environmental Impact Assessment (EIA) in the feasibility stage of the project. For example, in case of Lao PDR, for all category 1 (small scale investment) projects with likely minor environmental and social impacts, IEE is undertaken, and for all category 2 (large scale investment) projects, EIA is required.

Why mainstream natural hazard related issues: The state of the environment is a major factor determining vulnerability to natural hazards (e.g. deforestation leading to increase in floods, poor land use management leading to rising incidence to drought) and thus it is essential that environmental assessments cover natural hazards. Also, the environmental assessment is also the natural place in the project appraisal process to collate data on natural types of hazards faced, magnitude and probabilities of occurrence –in the project area to feed into other forms of appraisals and engineering design as relevant (Benson and Twigg, 2004).

How to mainstream disaster risk related issues: The agency responsible for environmental clearance in the country issues standard guidelines describing the types of activities and project for which environmental

clearances are required, stages to be followed for undertaking the environmental assessment and the standard template for the final assessment report.

In order to mainstream disaster risk related issues these guidelines would need to be changed in order to ensure:

- Proposed stages for undertaking the assessment emphasizes the importance of collecting hazard and vulnerability related data and undertaking necessary assessments and selecting suitable mitigation measures box 3.5.2.
- Terms of Reference (ToR) proposed for undertaking environmental assessment should emphasize data and assessment related to hazard and vulnerability, and necessary skills required.
- Proposed template for final assessment report should have a dedicated section on results of hazard and vulnerability assessment.

Box 3.5.2 Key considerations for integrating disaster risk in environmental assessments

- Include hazard related information as well as information that can increases risk from hazards such as location, slopes and drainage, soil etc, in the initial project description.
- Undertake an estimation of frequency or probability of hazard events and severity of impacts on project components. Remember, possible shifts in vulnerability and, due to climate change, the frequency and intensity of hazard events overs the life of the project.
- Undertake hazard and vulnerability assessment, to understand the impacts of natural hazards on the project and the impacts of the environment on the project as part of the screening stage of IEE or EIA
- If disaster risks are significant or the proposed project is likely to have a significant impact on vulnerability to natural hazards, include these topics in the list of issues for investigation.
- Based on the assessment and consultation with stakeholders decide if the potential risk from natural hazards is acceptable and if not, types of mitigation measures required
- Ensure the mitigation measures are incorporated in the project design and the monitoring process captures this.

Source: Adapted from Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisation, Provention Consortium, 2007

3.2.2 Social Impact Assessments

Purpose: Social Impact Assessments (SIA) are undertaken to analyse, monitor and manage the social consequences of projects, explain how a proposed action will change lives of people in communities and propose alternative actions to mitigate harmful changes or implement beneficial ones.

Why mainstream natural hazard related issues: By providing an understanding of the community and its social processes, SIA makes it possible to:

- Identify the direct and indirect social consequences of risk (i.e., the social impacts which could arise from a hazard event)
- Develop appropriate and effective mitigation mechanisms to hazards which harness community resources and recognize community reactions to events

How to mainstream disaster risk related issues: In many countries SIA is undertaken as part of the EIA process and detailed guidelines are issued. Ensure these guidelines are revised to include disaster risk related issues in the stages for undertaking SIA (See Box below), Terms of Reference and template for final report (see Box 3.5.3).

Box: 3.5.3 Key considerations for integrating disaster risk in Social Impact Assessments

- Ensure participation of communities who might be exposed to hazard risk as a result of the project.
- Include data on hazard and vulnerability in the baseline study or while developing the community profiles
- Identify the potential hazards and associated risk that might affect the project and communities at any stage in the project cycle, as well as the impact the project itself might have on disaster risk, and their probable impacts through trend and scenario analysis
- Remember disaster events can change social vulnerability and hence factor in hazardous event and their risk or uncertainty while assessing alternative interventions
- Include disaster mitigation strategies in the implementation plan

Note: While hazards and risk are important features of the SIA process, SIA is not specifically a risk assessment but a means of understanding and measuring human responses to situation that may be risk or threatening. It is more common for a formal risk analysis to be undertaken, either to complement the SIA or within a broader EIA of which SIA is part.

Source: Adapted from Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisation, Provention Consortium, 2007

3.2.3 Economic Analysis

Purpose: Economic analysis of the projects are undertaken to determine the highest return to investment in a project, facilitate a rationale comparison of available options and ensure investment decisions are accountable.

Why mainstream natural hazard related issues: Natural hazards can have potentially serious implications for the economic viability of development projects (see section 1 for direct, indirect and secondary impacts of disasters) and hence integrating disaster risk concerns as part of economic appraisal process will:

- Ensure development gains in hazard-prone areas are sustainable
- Highlight the potentially high returns to DRR investments in hazard prone areas through the disaster-proofing of all development projects. Such investments can also have significant additional indirect benefits for the broader economy and sustainable development.

How to mainstream disaster risk related issues: In most countries, the national planning agency has standard guidelines for economic analysis, these guidelines should be revised to ensure economic analysis process integrates risk from natural hazards (see Box 3.5.4).

Box 3.5.4 Key considerations for integrating disaster risk in Economic Analyses

- For projects being undertaken in hazard-prone areas, consider disaster-related issues in examining all possible alternative approaches, in terms of both the vulnerability of the project to natural hazards and the impact of the project on disaster risk.
- Remember stakeholder analysis undertaken, as part of the analysis of alternatives should capture concerns related to potential impact of project alternatives on the vulnerability of the various groupings to natural hazards.
- Remember estimation of disaster risk-related costs is normally straightforward, however estimation of benefits is complicated as they are necessarily probabilistic, with the actual level of benefits realized dependent on the degree of severity of hazards and events-if any occurring over the life of project. The benefits are typically related to the direct and indirect losses that will not ensue should the related hazard event occur over the life of the project, benefits can change with change in levels of forms of vulnerability and some benefits are intangible. Depending on the level of availability of hazard information, choose appropriate method for undertaking cost benefit analysis.
- Natural hazards being potentially a source of uncertainty, check of inclusion of natural hazards in the list of identified variables to which the project may be sensitive.
- Ensure selection of preferred project alternative should take into account both of cost- efficiency findings and also of rights to safety and protection, levels of risk aversion and other technical, social and environmental factors.
- Ensure the integrating of DRR measures in the project design and in the evaluation process.

Note: Economic analysis may be undertaken just as a means for calculating net present values and economic rate of return to satisfy project approval requirements, rather than a comprehensive tool for designing project.

Source: Adapted from Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisation, Provention Consortium, 2007

3.2.4 Logical Frameworks

Purpose: Logical Frameworks as a popular tool for project design and management provides a structured approach to determine the project priorities, design, and budget and to identify related results and targets. It also acts as an iterative management tool for project implementation, monitoring and evaluation.

Why mainstream natural hazards related issues: Logical frameworks, as a project- planning tool, is a natural choice for incorporating risk emanating from natural hazards and climate variability (Benson and Twigg, 2007):

- It includes an analysis of risk and assumptions as an integral part of the framework
- It includes an analysis of alternatives, facilitating the exploration of ways of addressing disaster risk and strengthening a project's hazard resilience and sustainability, in the context of both disaster risk reduction and more general development projects.
- It is a living documents, providing a framework through which to examine such impacts
- It is a participatory tool and provides a structure for consulting and integrating various stakeholder

interests and concerns, including those relating to disaster risk, into design.

How to mainstream disaster risk related issues: Since natural hazards and climate change and variability can pose risk at all levels of activity in a logical framework matrix, ensure that disaster-related concerns be considered at every stage of analysis (see Box 3.5.5), not just in the analysis of risk and assumptions.

Box: 3.5.5 Key considerations for integrating DRR in different stages of log frame analysis

- Consider risk from natural hazards and climate change and variability in the initial situational analysis. If the analysis reveals disaster-related issues have direct relevance to the success of the particular development project, make sure it is considered at all stages of log frame;
- Integrate the concerns related to natural hazards and climate variability, expressed during the stakeholder consultations, in the project design. Make sure the hazard-vulnerable groups located in the project area are part of the stakeholder consultations.
- Consider the impacts of past disasters and behavioral influence of anticipated future ones while identifying the central problem of the project.
- Factor in disaster-related issues in determining the strategic objective, goal, project development objectives, outcomes and intermediate objectives. Remember, in high-risk areas, DRR could directly contribute towards achievements of other strategic objectives, and as a result a DRR project could be decided upon. Such a project would have a specific disaster-related development objective. In other development projects, DRR could be selected as an intermediate objective directly contributing towards achievement of the project development objective.
- Make sure the strategies are measured and compared against criteria such as feasibility of the project given the probability of natural hazards and related risk and also the impact of the project on vulnerability to natural hazards.
- Select SMART indicators for each disaster-related project development objective and intermediate objective.
- State hazard-related assumptions as precisely as possible, specifying orders of magnitude, and if relevant areas affected.
- Choose appropriate disaster risk management options (depending on available resources and severity of risk) to reduce the risk. Remember there could be a need to adjust project objectives.
- Monitor and evaluate the performance of DRR project components during implementation

Source: Adapted from Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisation, Provention Consortium, 2007

It is to be noted that in practice, the significance of different appraisal tools within the overall appraisal varies widely, according to:

- The nature and scale of the project being undertaken.
- The resources available, which may limit the range of issues that can be taken into account and how thoroughly they can be assessed.
- The responsible agency's overarching objectives
- The type of project (for example, large-scale infrastructural development usually requires extensive

environmental and social impact analysis, whereas social development projects may focus on community participation in project design).

The above recommendations are of integrating DRR in all types of development projects. However, if the project is being implemented in a hazard prone area, specific steps should be undertaken in the feasibility stage.

When appointing a consultant to carry out the feasibility study, a carefully prepared TOR with the scope of the consultancy must be given. In addition to the normal TOR, this should include criteria pertaining to the hazard context and precautionary measures in different aspects. This is described in box 3.5.6:

Box 3.5.6 Guidance on Terms of Reference of feasibility studies of projects in hazard prone areas

The general introductory section and other sections can include, as appropriate, statements such as the following:

- The outcome should have an initial environmental assessment including vulnerability from natural disasters prevalent in the project location.
- Perform field reconnaissance of the project area with regards to any visible impacts from natural disasters in the recent past
- Identify alternative improvement including any recovery or restoration of disaster affected areas, such as stabilization of slopes, erosion control etc.
- Potential environmental impact of the project on natural and socio-cultural setting including possible triggering of any hazards not prevailing at present, and hazards that could impact on the project
- Initiate and conduct the necessary field investigations including topographic and geo- technical investigations
- Investigation on potential/existing risks to natural disasters to know optimum design period
- Investigate the availability of suitable construction materials appropriate for minimizing damage to the project by impacts of any prevailing disasters

Carry out detailed investigations with regard to disaster risk assessment of the proposed project from impacts of a potential disaster as identified at the feasibility stage. Identify DRR measures and in case of physical infrastructure projects carry out designs appropriately adopting guidelines/codes applicable for the given hazards, and also material specifications as required considering the DRR measures. The tables in Attachment A would be useful in identifying the potential effects of natural hazards on physical infrastructure and considerations for mitigation measures for reducing the risks.

3.3 Project Implementation

Contractor/s must be competent enough and have the required knowledge of hazard context and DRR measures to the necessary level. These can be assured by the following actions:

- Tender documents should adequately elaborate on the hazard context, possible impacts of

hazard/s and mitigation measures

- Insist on activity programmes in conformity with the site conditions/ hazard context. E.g., In a road project in hilly areas, vertical cuts for retaining walls should avoid the rainy season, or else before construction of retaining wall the earth bund may collapse
- Tender documents should insist on project staff conversant with disaster aspect to be proposed by the contractor for selected work components.
- In the evaluation and selecting the contractor, these aspects should be considered adequately

On award of the contract the contractor should be requested to submit a detailed implementation programme in conformity with the site conditions/ hazard context, avoiding activities that are not conducive to the hazard context in the site.

Any specific sub projects where adverse work conditions are expected should be identified and included; and implementation details for such activities should be shown in the programmes.
Even in the process of selection of project managers and other consultants, it should be seen that the Project manager and other consultants must have the required knowledge of hazard context and DRR measures to the necessary level.

3.4 Project Evaluation and Feedback

Special attention should be given to the quality aspects of project components that are specially designed to withstand the disasters. In addition an effective monitoring and control, system must be adopted by the client/project manager.

Section 4: Supporting the process of mainstreaming DRR into Development Projects

To support the process of integrating DRR into project cycle, the following is required:

- Availability of information related to hazard, vulnerability and exposure: Availability of basic hazard data for the project locality for use in determining whether or not it is necessary to consider potential disaster risks at all as part of the project formulation. The data can be presented in form of maps that describes the location, probable severity and likelihood of occurrence of hazard in the project areas. The data is usually available with the national agencies responsible for research on hazards such as geological surveys, meteorological offices, space investigation institutes etc.
- Information on vulnerability of population and exposure of assets in the project locality. Some of the data may be available from national surveys such as census, household survey, and local administrative offices or even from stakeholders such as NGOs and communities.
- Understanding, on relevance of disaster risk, among the project preparation and implementation team: Sensitization, on DRR, among the technical team from various departments in ministries and at local level, involved in project preparation and implementation. The team should have a clear understanding on the importance of considering risk from natural hazards and climate change and variability in each phase of project cycle, how the various tools used for project

appraisal can be used to integrate disaster and climate risk issues and selecting measures to reduce the impacts of risk.

- Recognition of DRR in appropriate policies and strategies: Since identification and design of projects are based on development priorities identified by the national, sector or local government, it is important that appropriate sector and local development policies recognizes the importance of disaster risk for achieving its objectives and accordingly identifies strategies to reduce risk through all programmes and projects.

Critical factors for success

In applying tools of any type to help incorporate DRR into project cycle management, the following points should kept in mind:

- Broad coverage of key issues is essential: tools must not miss important stages in project planning or components of projects; nor should they leave out important aspects of risk and the factors that create it.
- Agency responsible for the project must make its own decisions about how much research is required to identify relevant issues or answer questions for effective decision-making and integration of DRR into the project cycle. This is likely to depend on its capacities and existing ways of working (i.e., the degree of rigour already required for project design and appraisal) but should be consistent with them.
- Agencies can choose to adapt their existing methods and planning tools, or adopt new purpose-designed tools. However, the chosen method must be capable of fitting within the organisation's project cycle management systems and approaches. Avoid situations where different appraisal tools or checklists used to assess different issues are not linked to each other or integrated within the overall project management process.
- Agencies must be clear to their staff about whether tools are voluntary or compulsory, about their purpose and about when and where to use them. Some may be designed for use at specific stages in project design, while others are linked explicitly to certain types of project document.
- Agencies should be aware that their staff may be reluctant to use additional checklists and guidelines, particularly where the project appraisal process is already extremely lengthy and costly, or where staff are overworked. The risk that they may pay only lip service to this or any other new issue should be acknowledged. There may, therefore, be a need for internal advocacy about the benefits of adopting a disaster risk reduction approach.
- Staff must be trained to use planning tools effectively, whether they are new or adapted ones.

Source: Adapted from Tools for mainstreaming DRR: Guidance notes for development organizations, Provention Consortium, 2007

Further the 2011 Global Assessment Report emphasizes overcoming three additional challenges in order to maximise the potential from integrating DRR in public investment projects:

- First, although disaster risks are evaluated in the design of public investment projects, there is no analogous process earlier in the planning sequence. As a consequence, higher-level planning decisions, or a lack thereof, may actually create risks that are not evaluated and addressed until

the project stage.

- Second, the evaluation of risks in public investments, and of the costs and benefits of reducing risks, require detailed comprehensive probabilistic risk assessments.
- Third, new mechanisms for planning and budgeting at the local level, as well as stronger partnerships with civil society and local governments, are essential if public investments is to be effective, sustainable and relevant to local needs. (UNISDR 2011, Global Assessment Report for DRR).

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NOTE

MODULE 2: MAINSTREAMING DRR INTO DEVELOPMENT

SESSION 4: DRR SECTORAL MAINSTREAMING: AGRICULTURE

Session Overview
Total time of session: 1 hour 30 minutes

Session Objectives:
This session introduces mainstreaming DRR into the Agriculture sector. The aim of the session is to explain why it is important to mainstream DRR as well as climate change adaptation (CCA) into the agriculture sector. The participants will then be shown how ADPC's mainstreaming framework can be used to build the resilience of their agriculture sectors.

Learning Outcome:
By the end of the session participants will:

- Be able to reason why there is a need for mainstreaming DRR into agriculture plans, processes and policies
- Be able to identify entry points for mainstreaming DRR into agriculture
- Be able to discuss the key gaps, challenges, and concerns in mainstreaming DRR into the agriculture sector

SECTION 1: WHY MAINSTREAM DRR INTO THE AGRICULTURE SECTOR?

Agriculture is an important industry in many countries in Asia, both in terms of livelihoods and poverty alleviation, food security and national economic growth. The sector typically includes crops, livestock and fisheries, depending on the climate, geography and production modes of the country. Importantly, 22 per cent of all damages inflicted by natural hazards are registered within the agriculture sector.

Integrating DRR into the agriculture and food security sector aims to enhance the resilience of agricultural systems, including crops, livestock and fisheries to natural hazards by:

- Protecting investments in agricultural assets and production
- Ensuring that farmers, herder and other small-scale agriculturalists whose livelihood depends on the sector are adequately prepared; and
- Enhancing the capacity of scientists and other stakeholders to resilient agricultural research and applications.

This sector is particularly vulnerable to the effects of natural hazards, as well as climate change. Common hazards affecting the sector include floods, erosion and drought, all of which can bring varying degrees of damage and loss, from disruption to devastation. Owing to sectoral vulnerabilities, there is growing interest in mainstreaming DRR into the sector. However, while interest and awareness is rising, there has been little concrete action; across the region few policies and plans have been produced for resilient agriculture and in countries where they have been, there is often limited implementation.

Increasingly, countries are investigating and using hazard-resistant varies of staple crops (such as rice). In some countries, livestock dominates the sector; in Mongolia for example, 90 per cent of the agricultural sector's contribution to gross domestic product (GDP) is derived from livestock. In these countries, there is increasing interest in developing DRR initiatives to protect grazing lands, herds and herders.

However, there is often limited understanding amongst policymakers and planners of the options and strategies available for addressing disaster risk throughout the sector. As such, a key component of any sectoral strategy should involve awareness raising and capacity building for strategic and operational interventions for resilient agriculture.

SECTION 2: HOW TO MAINSTREAM DRR INTO AGRICULTURE?

When mainstreaming DRR into agriculture, there are numerous entry points for building resilience. What is the priority action depends very much on what actions have previously been carried out however the following list of actions will improve substantially the resilience of any agriculture sector in a country:

1. **Undertake Agriculture disaster risk assessments and disaster impact studies**
   The first step before any activity to treat risks is first to carry out disaster and climate risk assessments to understand what the current hazards are, what is exposed to these hazards and how vulnerable they are. Once this is understood, treatments can be identified to treat the risks.

2. **Integrate DRR into Agricultural policies, plans, and guidelines**
   Once the disaster and climate risks are understood through the assessment, government's and over stakeholders can either adapt current agriculture policies, plan and guidelines to include disaster and climate risk considerations or create new policies, plans and guidelines to address these risks. This can be done through a simple analysis of the current policies, plans and guidelines to see whether there are opportunities for treating the current and future risks.

3. **Establish a focal point within the Ministry of Agriculture and/or departments (Department of Livestock, Department of Fisheries etc.).**
   Appointing a focal point within a ministry greatly improves the resilience of a sector as it creates a person within the ministry/department who:

   - Have a deep understanding of both the agriculture sector as well as DRR and CCA.
   - Are a resource for persons within the ministry/department who want to carry out DRR and CCA
   - Are a contact point for the national disaster management office within government to gain and share information quickly with the agriculture sector.

   These DRR focal points may require training and capacity building on DRR and CCA, perhaps with support from the national disaster management office.

4. **Deliver trainings and capacity building to farming institutes and schools on the subject of DRR and CCA.**

It is important to build the capacity of not only government stakeholders but also civil society organisations and academia. Universities and research institutes particularly can be key partners in finding solutions to reducing disaster and climate risk which are appropriate for the specific country context.

5. **Implement awareness raising campaigns and public outreach on the subject of DRR and CCA amongst farming and herding communities.**
   Building the awareness and understanding of the farming and herding communities on why it is important to build the resilience of the agriculture sector is a key part of mainstreaming DRR and CCA. Once this is carried out these communities will be key actors to leverage action at the local level. These communities are also a pool of knowledge for traditional knowledge and methods for addressing disaster risk.

6. **Allocate sectoral budget specifically for DRR- and CCA-related activities.**
   This step is one of the more challenging of the steps but can have significant impact of the resilience of Agriculture. This may require support from the Ministry of Finance or the Treasury, depending on the nature of budget disbursement in countries.

7. **Develop incentives to encourage private sector investment in risk sensitive agriculture and livestock development.**
   One aspect of building resilience that has been overlooked during the decade of the HFA is the Private sector, including in Agriculture. It is important to build the understanding of private sector actors on the impacts of disaster and climate risks. There is also substantial knowledge and expertise within private sector organisations which can find innovative solutions to reducing disaster and climate change impacts.

CASE STUDY: MAINSTREAMING DISASTER RISK REDUCTION INTO AGRICULTURE: A CASE STUDY FROM BICOL REGION, PHILIPPINES

The following case study outlines an example from the Bicol region in the Philippines.

Background

The Philippines is one of the most disaster-prone countries in the world. It experiences an average of 20 typhoons annually, which trigger landslides, flash floods, mudslides and widespread flooding, resulting in the destruction of and damage to homes, public infrastructures and the agriculture sector. In 2006 alone, the loss of investment caused Typhoon Reming was estimated at PHP 817.42 million, not including the lives of more than one thousand individuals.

Within the Philippines, Bicol Region is impacted substantially more than other areas due to its geographical location. The natural hazards in Bicol Region, mainly storms and floods, put the lives of vulnerable households at risk as well their livelihoods which is predominantly agriculture.

Objective and Conceptual Framework

The objective of the project was to develop the capacity for proactive DRR in the agricultural sector in Bicol Region. Specifically, the immediate project were to:

a) Enhance the institutional and technical capacities within Department of Agriculture (DA), the Philippines Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) and local institutions to better manage climate related risks and promote local preparedness against recurrent natural hazards such as typhoons, floods and droughts;
b) Improve the livelihood resilience and food security of the farmers and fisher folk who are highly vulnerable to the frequent occurrence of extreme climatic events.

The project was implemented from September 2009 to December 2011 in three provinces in Bicol Region (Albay, Camarines Sur and Sorsogon), covering the municipalities of Guinobatan, Buhi and Gubat in each province, respectively, and three barangays per municipality. The DA was the main implementing agency, with technical assistance provided by Bicol University, Central Bicol State University of Agriculture (CBSUA) and PAGASA.

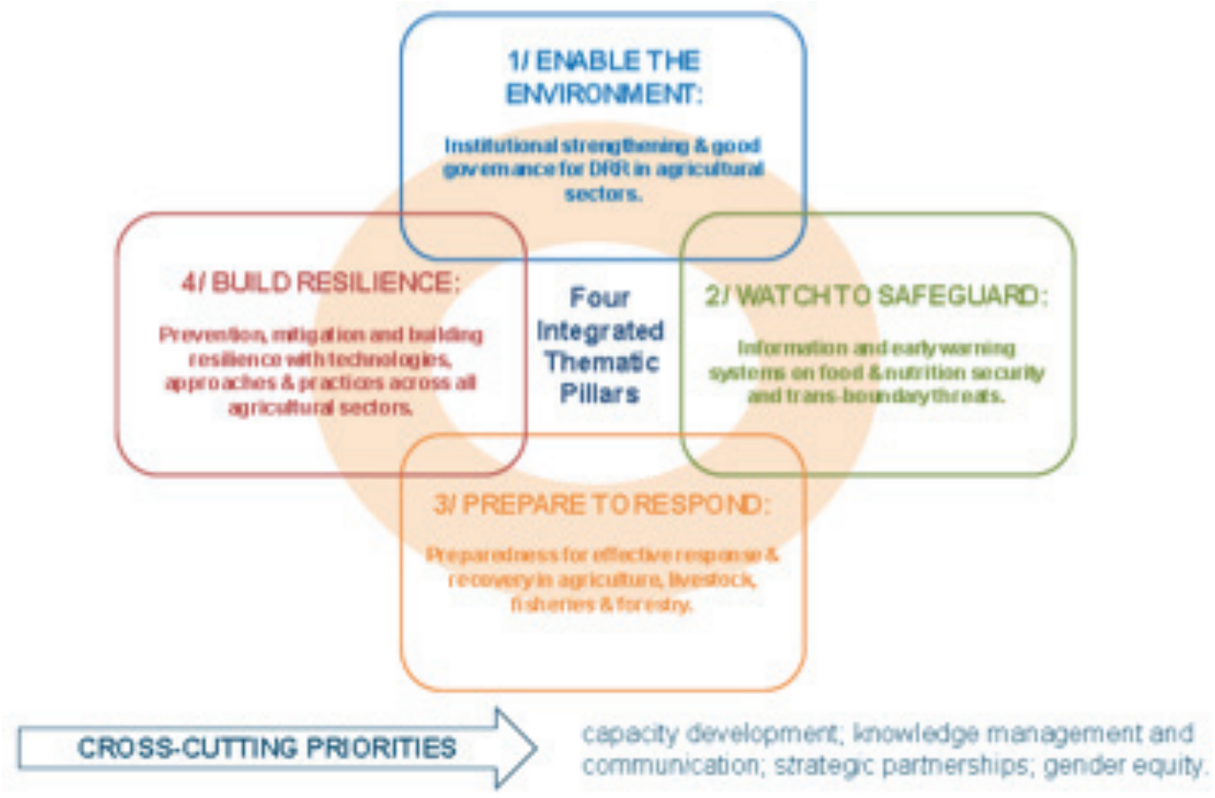

Figure 1 Food and Nutrition Security Framework

The project was designed in accordance with the HFA and in-line with FAO's Disaster Risk Reduction for Food and Nutrition Security (DRR for FNS) Framework Programme (as seen in the figure to the left. Under the DRR for FNS framework, there are four thematic pillars, with each pillar having a specific

objective and making a direct contribution to one of the priorities for action of the HFA.

Corresponding to the four integrated pillars of the DRR for FNS Framework Programme, this Technical Cooperation Programme project delivered six interrelated and mutually supportive outputs:

a) improved capacity of provincial authorities in Albay, Camarines Sur and Sorsogon in the use of climate information, EWS and PAGASA forecasts for disaster preparedness in the agriculture sector;
b) strengthened capacity of PAGASA for the provision of site-specific, short- and long-term forecasts/outlooks;
c) capacity of the DA-RFU V and other concerned LGUs strengthened to undertake timely and accurate post-disaster damage assessments in the agriculture and fishery sectors;
d) CBDRM plans developed and implemented in selected municipalities;
e) Climate risk management/preparedness practices for vulnerable livelihood groups identified, pilot tested and disseminated through the Department of Agriculture and Local Government Unit Extension Services
f) Developed and shared policy recommendations with major stakeholders for follow-up activities in the selected pilot sites and to ensure replication of successful practices in other disaster-prone areas in the country.

Outcome/impact of the project

The project promoted PAGASA and the DA to jointly prepared enhanced climate information and early warning services tailored to the needs of agriculture. PAGASA had provided six types of forecasts catered to the agriculture sector (including tropical cyclone warning, flood warning, gale warning, El Nino/La Nina advisory, monthly weather forecasts/outlooks and ten day weather forecast). An innovation triggered by the project was the provision of three monthly forecasts delivered at the beginning of each cropping cycle to facilitate strategic crop choices of farmers before each cropping season.

The DA translated these climate forecasts into concrete agricultural advice and information bulletins.

Furthermore, the project promoted community participation as a critical element of sustainable disaster risk management (DRM). In line with the new government act Republic Act 10121 (concerning local DRR planning) and with locally perceived needs to implement the act, the project assisted in the development of integrated barangay DRR/M action plans, which specifically focus of DRR/M in agriculture. The CBDRM plans promote a bottom up approach in the planning and implementation of DRM activities. The process provided communities with an opportunity to evaluate and analyze their own hazardous conditions, vulnerabilities and capacities.

In addition, the existing damage and needs assessment methodology used was reviewed and finally yielded an improved version of the methodology in the form of detailed guidance notes including baseline, manual and Web Based application software to further facilitate the implementation of the agriculture specific, post disaster needs assessment (PDNA) methodology. A database was built up with the three pilot LGUs. The improved PDNA will allow a more comprehensive assessment of the impacts of natural disasters on agriculture and can also be used to predict the potential production

losses. The barangays (villages) will be the basic political units from which the data will be gathered and analyzed. Two types of information was gathered, damage, loss and needs assessments: pre disaster baseline information and post disaster information on damage and losses.

Action research based pilot testing of selected GPOs for DRR was undertaken during the three cropping seasons. The pilot-tested GPOs were identified from various sources, including research and extension centers, the DA, academic and local knowledge from the pilot communities and the internet. Final technical evaluation of the technologies was done by the technical working group before endorsing them to the project steering committee for approval. Those which passed the evaluation process were implemented by selected farmer cooperators.

Lesson Learned

The project was implemented for more than two years, starting in September 2009 until December 2011. The implementation of the project over three cropping seasons opened up the possibility of a continuous learning process. Findings from the first cropping season was integrated into the planning activities for the upcoming season, which allowed for effective improvement throughout the project duration. The lesson learned from this process and the results of the project could offer practical advice on how to mainstream CCA/DRR in agriculture. However, while the project framework and process could be replicated, the types of crop, cropping patterns and other associated factors for success could be considered in the local context where such activities are conducted.

Key Take Away

Integrating DRR into the agriculture and food security sector aims to enhance the resilience of agricultural systems, including crops, livestock and fisheries to natural hazards by:

- Protecting investments in agricultural assets and production
- Ensuring that farmers, herder and other small-scale agriculturalists whose livelihood depends on the sector are adequately prepared; and
- Enhancing the capacity of scientists and other stakeholders to resilient agricultural research and applications.

Actions which improve substantially the resilience of any agriculture sector in a country are:

1. Undertake Agriculture disaster risk assessments and disaster impact studies
2. Integrate DRR into Agricultural policies, plans, and guidelines
3. Establish a focal point within the Ministry of Agriculture and/or departments (Department of Livestock, Department of Fisheries etc.).
4. Deliver trainings and capacity building to farming institutes and schools on the subject of DRR and CCA.
5. Implement awareness raising campaigns and public outreach on the subject of DRR and CCA amongst farming and herding communities.
6. Allocate sectoral budget specifically for DRR- and CCA-related activities.
7. Develop incentives to encourage private sector investment in risk sensitive agriculture and livestock development.

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NOTE

MODULE 2: MAINSTREAMING DRR INTO DEVELOPMENT

SESSION 5: DRR SECTORAL MAINSTREAMING: LIVELIHOOD

Session Overview
Total time of session: 1 hour 30 minutes

Session Objectives:
This session introduces mainstreaming DRR into the Livelihoods sector. The aim of the session is to explain the importance of mainstreaming disaster risk reduction and climate change adaptation into the livelihoods sector. The participants will then be shown how ADPC's mainstreaming framework can be used to build the resilience of the livelihoods sectors.

Learning Outcome:
By the end of the session participants will:

- Be able to reason why there is a need for mainstreaming DRR into ~~agriculture~~ plans, processes and policies
- Be able to identify entry points for mainstreaming DRR into livelihoods
- Be able to discuss the key gaps, challenges, and concerns in mainstreaming DRR into the livelihoods sector

SECTION 1: WHY MAINSTREAM DRR INTO THE ~~A~~GRICULTURE SECTOR?

A livelihood is a way of making a living and the term encompasses people's capabilities and capacities, assets, income and activities needed to earn an income for basic provisions. Members of households combine their capabilities, skills and knowledge with different resources to achieve the best livelihood possible for themselves and the household. If people are able to cope with and recover from shocks and stresses affecting their livelihood and enhance their well-being without undermining the natural environment, their livelihood can be described as sustainable.

Examples of livelihood activities[1]
• Agricultural production (crops, vegetables, livestock, fish) for home consumption or for sale • Non-agricultural home production (tailoring, pottery, food processing, etc) • Waged employment (local or through migration to other areas). • Harvesting forest products (for fuel and firewood, food, or non-timber forest products, etc.)

Many livelihoods are exposed to hazards that may escalate to disasters, especially when the capacity of the at-risk population is low. Even small shocks that are not considered as disasters can have profoundly negative effects on at-risk populations, especially when they re-occur over a number of years. When combined with stresses brought about by climate change, this can make it harder for communities to

1 Source: Pasteur, K. (2011). From Vulnerability to Resilience: A Framework for Analysis and action to build community resilience. UK Practical Action Publishing

recover from shocks, and find themselves in a cycle of emergency and recovery which erodes resilience over time.

The impacts of hazards and climate change effects can cause:

- Sudden or temporary loss of access to one of more key assets or resources
- Undermining of the sustainability of current agriculture-dependent rural livelihoods and urban livelihoods that depend on rural supply chains;
- Stress on already depleted natural resources; and
- Increasing frequency and intensity of hazards that can lead to climate-related disasters

Livelihood assets

The members of a household combine their capabilities, skills and knowledge with the different resources at their disposal to create activities that will enable them to achieve the best possible livelihood for themselves and the household as a whole. Everything that goes towards creating that livelihood can be thought of as a livelihood asset. These assets can be divided into the five different "types" shown in the figure below.

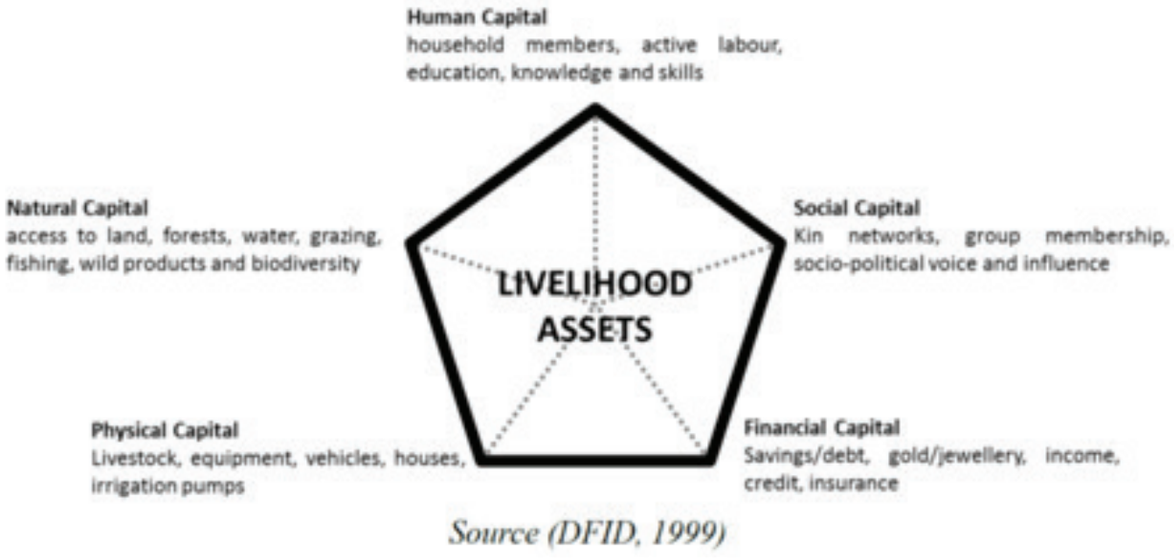

Figure 1: The Asset Pentagon

This asset pentagon can provide a useful starting point for household livelihood analysis, as it encourages investigators to take into account all the different kinds of assets and resources that are likely to play a role in household livelihoods. In the past, development workers often tended to focus very much on the physical capital (by providing new technology and infrastructure), the financial capital (by providing credit) and the human capital (by providing skills and training). But very often people's access to natural capital and the key role of the social capital of households has not been properly taken into account. Using this pentagon as a guide can help investigators to get a more complete picture of the household and its livelihood assets.

Sustainable Livelihoods Approach

A sustainable livelihoods approach (SLA) shown in the figure below, is an accepted methodology for improving the understanding of livelihoods and supporting people to build their capacity and resilience in the face of disasters and climate change risks. It draws on the main factor that affects people's livelihoods and the typical relationships between these factors. It can be used in planning new development activities and in accessing the contribution that existing activities have made to sustaining livelihoods.

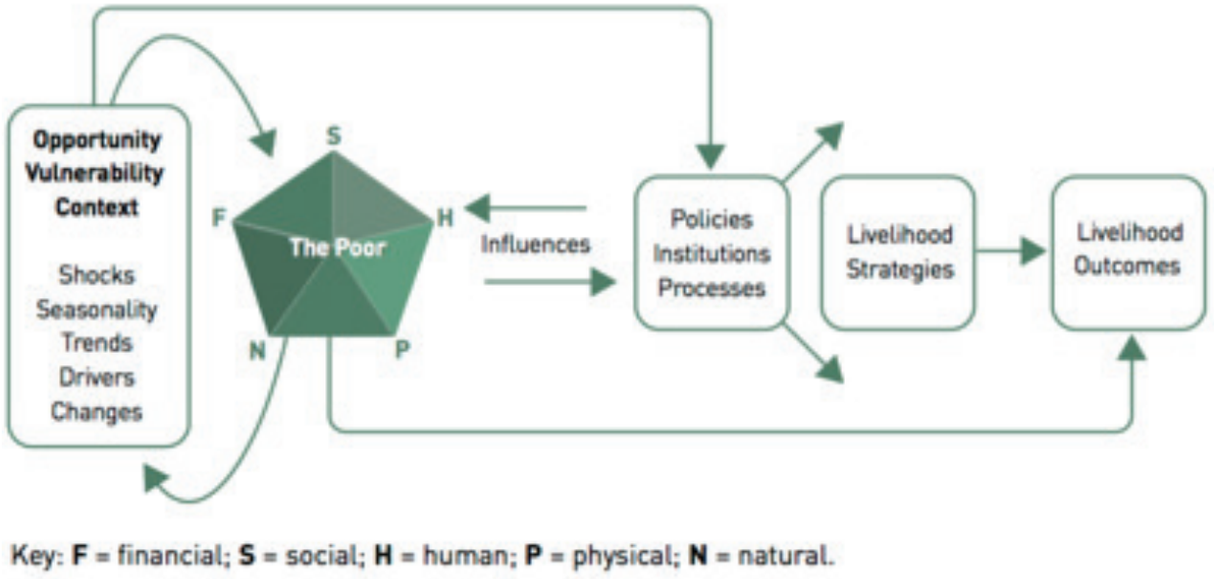

Figure 2: The Sustainable Livelihoods Approach: Source: IFAD, 2015

The sustainable livelihood approach was conceived to highlight key factors that affect livelihoods and the interplay of these factors, allowing development planners to create policies and plans that consider all aspects of promoting sustainable livelihoods . The approach, prioritizes people, particularly the rural poor, to understand how livelihoods are affected by internal and external influences. Focus is also given to the accessibility of resources and livelihood assets in order to support livelihoods, these include, but are not limited to: natural resources, technologies, their skills, knowledge and capacity, their health, access to education, sources of credit, or their networks of social support. The extent of a person's access to these assets depends largely on their vulnerability context: economic, political, technological trends, shocks and seasonality. Access is also influenced by the prevailing social, institutional and political environment and the combination of these.

SECTION 2: HOW TO MAINSTREAM DRR INTO LIVELIHOODS?

1. Disaster, Climate Risk Assessments

   Increase the understanding of the hazard and climate change context by compiling information on known hazards and the projected effects of climate change in the community and the wider geographical context – which includes production/manufacturing areas, commercial centers, supply

and distribution chains, and markets, on which the target population's livelihoods is highly dependent on.

2. Livelihood Impact Assessments

Increase the understanding of exposure, vulnerability and capacity by assessing to what extent assets in the value chains of the target population's livelihoods are exposed to identified hazards and the impacts of climate change. Conduct participatory approaches for analyzing capacity and vulnerability of different livelihood groups, and to understand the extent to which the asset is exposed to. Conducting capacity assessments for the target population's livelihoods which includes knowledge, skills, organizations and networks, as well as physical and economic assets, and how these might be developed to build resilience.

3. Capacity Building

Increase the knowledge, understanding, and participation of at-risk populations by conducting trainings to relevant government agencies, the community, business enterprises, and other relevant stakeholders on disaster risk reduction, climate change adaptation, and the need to integrate these practices into livelihoods.

Support the strengthening of mechanisms of (1) early warning systems which disseminates climate forecasts and hazard updates, and (2) support the development and access of market information systems (price, quality standards, products) at the district and local levels to enable producers to make informed decisions.

Support producers to assess the risk and benefits associated with traditional and new techniques/ technology options that may help to reduce disaster risks, and build resilience to climate change and variability.

4. Develop livelihood project activities

The analysis of disasters, climate change, livelihood impact assessment, and capacity assessments leads to three main types of project activities (not exclusive):

Livelihoods promotion where activities are produced to improve household resilience such as savings, credit programmes, crop diversification and marketing improved health care.

Livelihoods protection, where activities to prevent the decline in household livelihood security, particularly in periods of stress such as early warning systems, cash/food for work, providing seeds and tools, and hazard mitigation

Livelihood provisioning, direct provision of essential needs (food, water, shelter – which are usually done in emergencies)

5. Advocacy

Advocate for economic development policies based on the analysis disaster and climate risk assessments, and for investments in infrastructure and technology options that may help build resilience.

Engage all relevant government departments/ministries with a role in livelihoods in national platforms and forums on DRR and CCA.

Advocate for the involvement of the private sector in local, district and national risk assessment and contingency planning, process, and for incentives to be made available to them for contributing to resilience through measures such as retrofitting of workplaces, local hazard mitigation works, and employee loans for housing improvements.

6. Foster synergy between multiple levels

Support the participation of representatives of local and district government representatives and organizations in the development of national policy discussions/revisions which integrates DRR and CCA.

7. Strengthen structures and processes

Develop resilient livelihood policies to protect livelihood assets from hazards. Use participatory methods to identify suitable practices for different livelihoods group and build them into the design of livelihood projects and programs.

CASE STUDY: PRACTICAL ACTION'S MAINSTREAMING LIVELIHOOD CENTERED APPROACH TO DISASTER RISK REDUCTION IN NEPAL

Background:

Practical Action Nepal has been implementing the project in Nawal parasi and in Chitwan Districts. The project intends to build on the resilient capacities of the local communities to reduce the risk of disasters through preventive measures and preparedness, reducing the losses from disasters by effective response and relief measures, and mitigate the impacts of disasters by increasing the livelihood capacities of households. Through multi-stakeholder partnership and integrated approaches of community based planning and implementation, project aims to build on the capacities of local communities and political bodies, village development committees (VDCs) and District Development Committees in particular, to disaster risk reduction to achieve the goal to contribute to national poverty reduction.

Hazards and vulnerabilities

Floods, landslides, droughts (shortages of water for irrigation and, in some years when more severe drought occurs particularly for upstream community of Baulaha Khola in between March and May, for drinking), wildlife intrusion, winter fog, invasive weeds, new pests and diseases in agriculture crops and forests are the major hazards that affect livelihood assets individually and collectively. Many hazards are linked to impacts of climate change directly or indirectly and entirely or partially. The impacts spread through different channels; sometimes resulting cumulative effects into different assets of livelihoods. While wildlife intrusion is associated largely with proximity of the communities to the national park, increase in intrusion despite decrease in wildlife population is linked to invasion of inedible exotic weeds inside the park and community forests. Wildlife is badly affected due to the shortage of food and water due invasive species and the drought. This forced them to intrude community area more frequently where both wildlife and community and their assets are at risk of casualties. Furthermore, droughts enhance likelihood of fire in the forests and settlements.

Seasonality of stresses

Different hazards impact at different times of the year. Flash floods occur during the monsoon between June and October, dry spells usually occur between November and May which has become more frequent, longer, intense and severe in the recent decade. Lately the rainfall pattern has been changing creating water shortage for growing crops even during monsoon period. Winter fog covers in the mornings during December and January and in recent years it is more frequent, dense and lasts for longer (whole day) and expands up to second week of February. New disease and pests attack crops of different seasons, but lately winter crops are more prone to viruses. Usually wildlife intruded year round but between November and May, when food is scarce in the Park, growing crops were more prone to invasion. But now intrusion is anytime else due to invasive weeds inside the parks.

Sensitivity

Different families are differently and uniformly exposed to different hazards. Landslides and flood affect in two ways i.e. cutting down of agriculture land and damaging crop at the bank of rivers and sometimes inundating whole village in the downstream particularly in Chitwan. Cutting of land is almost annual event while inundation has taken place in 8 to 10 years interval. Upstream hill slopes are prone to landslides. Weather pattern has been experienced changed that disturbs usual crop calendar. Winter fog (known as sheet lahar) often affects winter crops such as mustard and lentils. Invasive weeds have invaded grasslands, under storey and ground cover in the park and community forests decreasing availability of fodder for both wildlife and livestock. Wildlife damages crops, homes and cattle sheds, attacks livestock, sometimes claiming human life. Winter fog, increased wildlife intrusion, obnoxious weeds and shortage of water for irrigation have discouraged farmers in recent years sowing winter crops. Drought affects agricultural crops and forests for their growth and production. It stimulates forest fire particularly between February and May. It is more probable to catch fire by houses and cattle sheds in this season.

Impacts

While different hazards have specific effects, the ultimate impact of each hazard on livelihood outcomes is similar: each reduces livelihood assets, the access to the remaining assets, peoples' capacities and their rights. Indigenous knowledge and coping mechanisms have not been sufficient to deal with the compounded impacts of multiple hazards. Prevailing poverty and low level of awareness, limited skills and thus options for livelihoods (and the preparedness) are major constraint to build on the resilience. In future vulnerability to these hazards can be predicted to be exacerbated by increasing human population, unsustainable agricultural practices in catchments of rivers, changing vegetation composition (inside the park), limited options for livelihoods, slow development processes and the adverse impacts of climate change. Communities on the ground are more aware on the events that appear suddenly, are physically visible and damage assets faster. Precaution on the slow onset and creeping hazards such as drought, invasive species and loss of habitat for wildlife is less although loss from these hazard was higher to sudden onset hazards.

Project Strategies

Project has devised and adopted community based practical strategies to reduce the stresses and impacts of different hazards and their contributing factors. These strategies include both structural measures such as defending wildlife by erecting electric wire fence around villages, improving resources and access to existing water resources such as by building shallow tube wells and water collection wetlands and improvement of irrigation channels, improving spillways and strengthening embankments along the river, and non-structural measures such as raising awareness and improving breeds and rearing practices in livestock and varieties and farming skills on agriculture, introducing on-farm and off-farm income generating options such as vegetable growing, bee keeping, house wiring training, and candle preparation.

Disaster risk reduction initiatives have been introduced through flood warning mechanisms, formation of disaster management committee and encouragement of emergency fund within local governments, preparedness for seasonal hazards and promotion of watershed conservation. Both strategies include short-term and long-term activities along with accessory institutions and functional.

Implementation Modality

Local communities, their organizations and governments have taken the role of hub in the process of identification, prioritization and implementation of initiatives and specific agencies take lead in the respective ground. For example, community identified shallow tube well boring site for the needy group of farmers, users to each tube well, project provided financial support to purchase pipes and pumping machines and technical support to bore shallow tube-wells, benefiting households contributed labour,VDC recommended to provide access to electricity and electricity authority provided tariff-subsidized electricity. Management of such tube wells has been taken by the user groups who decide on the levy considering electricity tariff, maintenance and replacement of pumping machine. The multilateral benefits of better access to water resources include timely seeding and transplantation, opportunity for additional crop, reduced cost of irrigation for those who used to rent pump and buy diesel, increased choice of crops and social harmony.

Similarly, national park provided resources and permissions to erect electric fencing around the villages to prevent wildlife intrusion inside the community territory. Forest user groups provided timber for poles, and project provided financial support to purchase wire and materials not available to the locality. Community raised fund by collecting levies from each benefiting family and contributed labour. The overall environment was enabled by the respective VDCs and buffer zone council creating the environment of trust among stakeholders. As the result, intrusion of the wild animals into the community territory was prevented which saved up to 75% of crop alone. The process also provided opportunity to raise awareness among villagers on the DRR and earn support to biodiversity conservation.

The skills and capacities on agriculture, livestock rearing, group management, planning and implementation are enhanced through field based practical trainings and demonstrations such as farmers' field schools, livestock health camps, training village agriculture and animal health worker. Alternative means of employment and livelihoods such as vegetable growing, candle preparation, bee keeping and skill based entrepreneurships like house wiring, mobile repairing have been promoted such that pressure on the natural resources is reduced and sensitivities to shocks and stresses are minimized.

Three years intensive work with flexible mechanism of partnerships and cooperation has produced some tangible and intangible outputs. Improvement of 3 irrigation channels have improved irrigation services to over 273 households in Nawalparasi while 14 shallow tube wells and a dig well connected irrigation scheme provide opportunities for timely irrigation and an additional batch of crop to 289 households in both districts. The wetland with raised and strengthened dam provides home for certain wildlife, longer water availability for around 28 families and potential for tourist destination in addition to environmental services. However, community capacities need further strengthening for the sustainable management without external supports and their self-reliance in future.

Irrigation channels are exposed to landslides and floods which need preventive measures. Vulnerability to wildlife intrusion has been reduced by supporting local initiatives on electric fencing. Project support in fencing directly benefits to 1235 households in Chitwan and 1238 in Nawalparasi, larger population than expected in the early stages of project implementation.

Lessons

Recurring hazards though less striking in single event weaken the capacity of the community to sustain their livelihoods. Traditional focus of the government and other organizations were only to rescue and relief operations with respect to larger onset disasters. But the loss and impact is more severe and wide ranging posed by the stresses particularly brought about by the creeping hazards in association with mal (socio-economic) practices which are often neglected, if not, overlooked.

Long term cooperative actions are necessary in an integrated way to safeguard livelihoods of vulnerable people thereby reducing the risk of disasters and improving the resilience capacity. Most severe hazard and most affected asset of livelihood can be the starting point. A challenge and also opportunity for the project was to create common understanding among different political ideologies in viewing the disaster in different context.

Disasters were not viewed from the perspective of victims and failed to incorporate the needs of

vulnerable communities on the ground. However, a range of discussions, trainings, workshops and exposures between vulnerable communities, government line agencies, development organizations and political party representatives helped to establish common understanding on hazards, vulnerabilities and their consequences. This has helped to create synergy to integrated and cooperative actions from different stakeholders in DRR though slow in pace. Communities need to be more aware on new disease and pest risks and impacts of climate change which is likely to raise the risk in future beyond past experiences.

Early lessons of the project can be summarized as; recurring hazards though less striking in single event weaken the capacity of the community to sustain their livelihoods. Traditional focus of the government and other organizations were only to rescue and relief operations with respect to larger onset disasters. But the loss and impact is more severe and wide ranging posed by the stresses particularly brought about by the creeping hazards in association with mal (socio-economic) practices which are often neglected, if not, overlooked. Long term cooperative actions are necessary in an integrated way to safeguard livelihoods of vulnerable people thereby reducing the risk of disasters and improving the resilience capacity. Most severe hazard and most affected asset of livelihood can be the starting point. A challenge and also opportunity for the project was to create common understanding among different political ideologies in viewing the disaster in different context. Disaster was not viewed from the perspective of victims and failed to incorporate the needs of vulnerable communities on the ground. However, a range of discussions, trainings, workshops and exposures between vulnerable communities, government line agencies, development organizations and political party representatives helped to establish common understanding on hazards, vulnerabilities and their consequences. This has helped to create synergy to integrated and cooperative actions from different stakeholders in DRR though slow in pace. Communities need to be more aware on new disease and pest risks and impacts of climate change which is likely to raise the risk in future beyond past experiences.

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NOTE

MODULE 2: MAINSTREAMING DRR INTO DEVELOPMENT

SESSION 6: DRR SECTORAL MAINSTREAMING: HEALTH

Session Overview
Total time of session: 1 hour 30 minutes

Session Objectives:
This session introduces mainstreaming DRR into the Health sector. The aim of the session is to explain why it is important to integrate disaster risk reduction (DRR) and climate change adaptation (CCA) into the planning, projects and functions of the health sector. The participants will then be shown examples of disaster risk- inclusive health sector inititives to build the resilience of the sector.

Learning Outcome:
By the end of the session participants will:

- Be able to reason why there is a need for mainstreaming DRR into health sector development and interventions
- Be able to identify entry points for mainstreaming DRR into health sector
- Be able to discuss the key gaps, challenges, and concerns in mainstreaming DRR into the health sector

Section 1: Why mainstream DRR into the health sector?

The health sector has primary responsibility to provide basic necessities for the people to have physical well-being and healthy living. The health sector is responsible to deliver health care services, medical treatment and health promotion schemes which are accessible and affordable. This includes provision of health care facilities, medical devices, health care personnel and medical professionals as well as public health management systems. Across a country, there are several types of health facilities from hospitals, clinics, basic health care centers, maternal health units, etc. Each has varying capacity for medical services delivery.

Role of the Health Sector:

The sector has direct role in biological hazard monitoring and control, especially for epidemic such as seasonal infectious diseases and pandemic of global concerns such as Avian Influenza, MERS, Zika, etc. The health sector is also responsible for emergency response. During emergency period, delivery of medical treatment and services to affected people, often involved mass casualty and serious injuries of the victims, in timely and effective manner are among the key functions that significantly support emergency operations. Emergency situations range from occurrences of hazards of natural original (i.e. earthquake, flood, haze, landslides), manmade hazards (i.e. riot, unrest, terrorist act), and technological hazards (i.e. chemical leakage, toxic spill, fires). Moreover, health risk related to environmental pollution is increasingly important in the context of urban growth. The hazards caused different injuries and

health impacts that needs professionals of different specialty. Health sector also has an important roles in providing psycho-social support, nutrition promotion especially for infants and lactate women, hygiene and sanitation, especially in the aftermath of hazard events.

Disaster Risk from Health-Sector Perspective

As health sector performs ranges of important functions, it is crucial to ensure that the sector is safe from disaster risk and could provide continued services. The following are among disaster risk issues of health sector's concerns:

- **Health care facilities** – Health care facilities with vulnerable structure could suffer destructive impacts of hazards such as earthquake. Location of hospital in close proximity to hazards such as coastal flooding areas landslides prone zone is in high risk. Heath facilities constructed in flood affected areas will make the access difficult. Besides, critical life lines such as power and water supplies and medical equipment, essential to run health care services, are sensitive to hazard impacts and could be damaged, hence interrupting the functions of the whole system. Other related-facilities for management and disposal of toxic waste and infectious waste could also cause contaminants in flood water and nearby water bodies.
- **Inpatients, professional and support staff** - Human-related vulnerable aspects of health care system includes the inpatient, medical professionals and support staff. With physical weakness or mental sickness, the inpatients are mostly dependent on assistance and hence, are highly vulnerable. Lack of knowledge and practical skills to prepare for, respond to and cope with hazard situations make medical professionals and support staff susceptible to adverse effect of hazards.
- **Hospital operations and public health services** – Hospital 24-hour operation would require effective management systems and enough manpower to run the services. In normal time, the staff on duty is planned proportionately with the tasks. However, in case of emergency when medical service is demanded in remote area or when there is a number of cases to be attended, the whole service might face serious challenges and could be disrupted, if there is no proper planning for hospital in emergency.
- **Effects of climate change** – Changes in infectious disease transmission patterns are a likely major consequence of climate change. Vectors, pathogens and hosts each survive and reproduce within a range of optimal climatic conditions: temperature and precipitation are the most important, while sea level elevation, wind, and daylight duration are also important. It is a crucial need for the health sector to learn more about the underlying complex causal relationships, and apply this information to the prediction of future impacts, using more complete, better validated, integrated, models. (WHO). Effects of climate change on populations will depend on the public health system in place e.g. some public health systems will be resilient and some will be overburdened. Public health systems will need to adapt and change to changing climate by identifying vulnerability, increasing monitoring of the health of vulnerable populations, and investigating changing health problems.

SECTION 2: HOW TO MAINSTREAM DRR INTO AGRICULTURE?

The aim of integrating DRR into health sector is threefold:

- Reduce the vulnerability of the health sector to the impact of disasters (Mitigation);
- Be prepared to support the national response to any disasters in matters relating to health (Preparedness); and,
- Be prepared to lead the national response to health disaster, e.g. a pandemic (Preparedness). (Health Sector Self-Assessment Tool for Disaster Risk Reduction, 2010)

Health policy makers and planners in various countries have included DRR considerations as part of the sector policy, planning, and programme that contribute to fulfil the sector aims. When mainstreaming DRR into health, there are numerous entry points for building resilience. What is the priority action depends very much on country-specific gaps and needs of the health sector in addressing disaster risk and contribute to the broader DRR priorities and targets of the country.

However, the following list of actions will improve substantially the resilience of health sector and enhance the sector performances in a country:

1. **Undertake disaster risk assessments on hospital facilities**

   Disaster risk assessment on hospital facilities shall be undertaken to identify structural vulnerability of the facilities as well as other supporting soft-systems and equipment to run the medical services. The assessment should be made compulsory for hospital and health care centers in hazard prone areas whereby potential impacts of hazard on health facilities are anticipated. The assessment shall also include identification of critical systems and essential functions of hospitals during and after hazard incident. The outcome of the assessment will be used to make decision on health facilities retrofitting, renovation or relocation to safer areas and effective ways to improve the functions.

2. **Apply structural and non-structural mitigation measures to reduce physical vulnerabilities**

   Programme on health facilities upgrading, renovation, construction and re-construction shall include hazard-resilient design and structure. This helps ensure that all system components will be secured, water and power supplies are sufficient to service medical operations, fire systems and emergency lighting systems are functional and impacts on the buildings, wards and other structures will be minimized. This shall also include set-up back up system for all critical facilities and develop a system for regular maintenance.

3. **Development plans for emergency preparedness and response specific to the health sector**

Emergency Plan is an agreed set of arrangements for responding to, and recovering from emergencies. Planning process shall be inclusive, requiring input and agreement from many stakeholders and suit the context. The plan shall be based on risk assessment including the anticipated scenarios that require actions of the health sector.

Developing the plan should consider: what might happen, when it might happen, where it might occur, how big /how serious it might be, what effect it might have, how long will it might last. The plan shall indicate operating procedures and allocate tasks before any event occurs in order for role clarity of concerned staff/agencies as well as to maximise good coordination. The plan should address internal emergencies (in the organization) and external emergencies. Emergency preparedness plans should be subject to periodic reviews and updates.

4. **Establish Coordinating Unit for Health Sector at national and sub-national level**

The coordinating unit responsible for medical care and public health functions in an emergency (under Ministry of Public Heath) shall be set-up as focal point for coordination with other concerned agencies such as National Disaster Management Agency, Emergency Operations Center, Red Cross and Red Crescent Societies, Hospitals, and Civil Organizations that support emergency response operations. The coordination mechanisms shall be established for health alert network, multi-agency search and rescue teams, surveillance and control of communicable diseases, and request for international assistance.

5. **Undertake capacity assessment of the health care system and professionals**

Health effects from hazards could be varied and requires different skills to attend. Hence, institutional and individual capacity shall be assessed as initial step to identify gaps and needs for capacity building. The technical areas with capacity lagging behind may include disease and epidemic control and prevention, surveillance and monitoring systems, mass casualty management, search and rescue, triage, medical evacuation, and stress management.

6. **Capacity building for medical professionals on emergency medicines**

This entails trainings, skill building and knowledge transfer activities to strengthen the capacity in public health management in emergency. This encompasses wide range of technical expertise and skilled for various actors in health sector and services providers from medical professionals, health care officers, and support staff, volunteer to policy makers and management level. The technical areas for capacity building include:

- Public Health in Complex Emergencies: to build capacity of health managers to deal with health-related issues in humanitarian crises or conflict conditions. Working with refugees and internally displaced populations is, for example, one of the challenges facing health professionals in complex emergencies.
- Hospital Emergency Preparedness and Response: to develop the knowledge and skills of health care personnel to prepare their facilities to respond effectively, to ensure continuous operations during or even after disasters, and to recover for better from the impacts of disasters.
- Basic emergency response for First Responders: to equip community volunteers and local authorities/or emergency operation staff with skills to attend the unexpected incidents relating health emergencies through technical and practical exercises.

- Mental Health and Psychosocial Support: to enhance the capacity of mental health professionals to manage identified mentally pathologic cases during disaster and to strengthen capacity of the community and health care staff at various levels on Psychological First Aid and managing victims suffering psychosocial impacts in post-disaster
- Epidemic and Pandemic Preparedness: to enhance capacities to anticipate, prepare for, and manage the risks of zoonotic diseases in emergencies and share knowledge and experiences in the management of epidemic and pandemic diseases by human health, animal health and other sectors.
- Nutrition in Emergencies: to enable health emergency managers to better aware of nutritional needs among population affected by the disasters.
- Inter-regional and National Public Health Emergency Management: to improve capacity in management and coordination among health emergency managers in disaster-prone countries in the region.

7. Conduct simulation exercises for emergency response

It is important that knowledge and skilled developed as well as system in place for heath sector and hospital emergency response shall be tested regularly to enhance efficiency and identify the flaws for improvement. Simulation exercises shall be conducted on regular basis. The exercises shall be designed for individual hazards, or complex emergency situations that trigger mass injuries and promptness of medical operations. The exercises shall be developed at macro-scale that involves key actors in health system at national level or for individual hospital or health care center involving medical professional, hospital staff as well as other concerned local agencies. The simulation exercise might include evacuation of patients, setting up field hospital, patient referral in hazard affected areas, etc.

8. Implement awareness raising campaigns and public health promotion

Some hazard impacts to health could be minimized by effective awareness raising programmes. Good practices on personal health care and desired individual health behaviors shall be developed to reduce serious cases of injuries and illness due to hazard impacts as well as reduce the burden of hospitals and medical professionals. Awareness raising programmers and key messages on precautionary measures, simple and step-by-step self-diagnose, and hygiene practices such as sanitation, could be delivered through various channels repeatedly for reinforcement, using various effective communication strategy, in pre and during disaster events serve as a hub for community activity, but other local structures can also serve as venues for education.

CASE STUDY: MAINSTREAMING DISASTER RISK REDUCTION INTO HEALTH

The following cases study outlines an example for mainstreaming DRR into Health:

Program for Enhancement of Emergency Response (PEER)

Program for Enhancement of Emergency Response (PEER) is a regional program ~~that aim~~ to increase capacity to manage and prepare for disasters through good training. Training courses and curriculums

have been developed under PEER for Hospital Preparedness for Emergencies (HOPE) and Community Action for Disaster Response (CADRE).

ADPC has worked with Ministry of Public Health, Red Cross Society, concerned government counterparts and key agencies in the health sector in various countries in Asia including Thailand and Nepal for programme implementation.

Case 1: Thailand

PEER Programmes had coordinated with Ministry of Public Health, Emergency Medical Institute of Thailand Department of Disaster Prevention and Mitigation, and Bangkok Metropolitan Administration to conduct national capacity on Hospital Preparedness for Emergencies (HOPE). HOPE improves the capacity of hospitals and healthcare facilities to be prepared to manage emergencies and mass casualty events. The HOPE training program is designed for administrative and medical healthcare personnel, to prepare healthcare facilities to respond effectively to community emergencies involving large numbers of casualties. This will enable hospitals and healthcare facilities in Thailand to develop well-designed, facility-specific plans for effective emergency response.

Representatives who are medical professionals and hospital staff from Ayutthaya, Pathumthani and Nakhonsawan provinces and the capital city of Bangkok, badly hit during the severe flooding in 2011 participated in a series of training courses. The participants would be equipped with technical skills essential for vulnerability assessment of the hospital by the end of the course.

Overall assessment among Thai hospitals in flood-prone areas in 3 provinces affected by Thailand Great Flood in 2011 was conducted by groups of trained instructors of Hospital Preparedness for Emergencies (HOPE) training courses. The evaluation process aimed at improving capacity of hospital and health care facilities for emergencies and mass casualty events. The evaluation looks into four key components -structural, non-structural, functional and human resource management-crucial for effectively running hospitals services particularly during emergencies.

The results of the assessment would enable health care providers to put a policy on hospital safety into practice. It would also enable hospital team to come up with an integrated operational plan at the hospital. The assessment could be a model for ministerial evaluation on hospitals as a whole on an annual basis. Hospitals in such flood-hit areas as Pathumthani, Ayutthaya, Nakhonsawan provinces and the capital city of Bangkok would also learn pros and cons, leading to better development of hospital disaster plan and response.

Another key components of the PEER programme is Community Action for Disaster response (CAD-

RE). CADRE could be attended by anyone (local non-professional, community-based responders) to learn how to prepare for disasters in their community. With this training, any member of a vulnerable community in Thailand can be better prepared to deal with disasters and emergencies. Since communities are at the 'front line' of any disaster, better prepared ad resilient communities mean people have a better chance of surviving disasters. CADRE aims to build stronger, more disaster prepared communities in Thailand, by establishing and maintaining systems and processes for enhanced community-level first responder capacity in 16 sub-districts from four provinces.

CASE 2: Nepal

Before HOPE implementation in 2004, only two hospitals – including Tribhuvan Teaching Hospital – had emergency plans. The disaster management plans were comparatively poor and not well developed for the health sector.

The implementation of the HOPE program has been pivotal in the development of emergency planning in hospitals. Since 2004, approximately two HOPE courses have been conducted each year and eleven hospitals now have a disaster plan. Furthermore, needs has been expressed on the course for hospitals and health care professionals in the country.

Not only in major hazard events, hospital preparedness and hospital emergency plan help to management daily risk such as minor road accidents which is a common issues for local Nepalese emergency medical capabilities. Learnings from HOPE has been very important in efficiently dealing with these incidents.

Medical responders are able to quickly set up a triage system whereby casualties are classified by the severity of their injuries. Triage allows for the efficient use of medical facilities through the prioritization of care for casualties. Medical responders use red, yellow and green ribbons to denote the severity of injuries. Red indicates the highest level of severity whereas green denotes the lowest level of severity.

Boasting 444 beds the Tribhuvan Teaching Hospital is the largest hospital in Nepal. It greatly improved its emergency plan in 2004 as a result of the HOPE training.

When hospitals know how to plan for an emergency situation and use their existing resources effectively, emergency situations can be handled efficiently. The importance of non-structural measures to tackle emergency planning in hospitals is often overlooked. Non-structural measures such as increasing the basic knowledge of disaster planning is often more effective than costly structural measures. This is because in a mass casualty incident, institutional capacities are often tested. Priority shifts from being able to provide individual patients with the best care available, to being able to provide care for the largest amount of patients with existing resources. This often requires quick and creative thinking on part of health care providers.

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MODULE 2: MAINSTREAMING DRR INTO DEVELOPMENT

SESSION 7: DRR SECTORAL MAINSTREAMING: EDUCATION

Session Overview
Total time of session: 1 hour 30 minutes

Session Objectives:
This session introduces mainstreaming DRR into the Education sector. The aim of the session is to explain the importance of mainstreaming disaster risk reduction ~~and climate change adaptation~~ into the Education sector. The participants will then be shown the Comprehensive Safe Schools Framework.

Learning Outcome:
By the end of the session participants will:

- Be able to reason why there is a need for mainstreaming DRR into education plans, processes and policies
- ~~Be able to identify entry points for mainstreaming DRR into education~~
- ~~Be able to discuss the key gaps, challenges, and concerns in mainstreaming DRR into the education sector~~

SECTION 1: WHY MAINSTREAM DRR INTO THE EDUCATION SECTOR?

The education sector consists of the structural, functional and pedagogical aspect of an education system and each of the components has a vital roles to ~~plan~~ in order to reduce risks from natural disasters.

Education can take many forms, from formal schooling and technical or vocational training, to mentoring of children and youth by family members and community elders. A right in itself, education is regarded as the foundation for individual and societal development. As a service, education needs to be resilient, to provide continuity of benefits, as well as stability and protection of children in times of crisis.

Educational environments themselves may be at risk from natural hazards and other impacts of climate change. Following an earthquake, for example, education may be interrupted because facilities are damaged or destroyed, or because they are inhabited by people who have lost their homes. If buildings used for schools and training purposes are physically vulnerable, they endanger the lives of the children and adults who study in them. Disruption of formal education in post-disaster situations and other types of crises can contribute to social instability and jeopardize recovery processes. In the short term, children who cannot attend school are more likely to be exposed to other risks, such as exploitation or abuse; in the longer term, missing out on education perpetuates the cycle of poverty and vulnerability. To ensure that education services are resilient to hazards and the effects of climate change, and to reduce disaster and climate change risk, education can be harnessed as a tool for change to build at-risk populations' capacity to address risk. Schools are an ideal setting for learning to take place as they

serve as a hub for community activity, but other local structures can also serve as venues for education about disaster and climate change risk.

SECTION 2: THE COMPREHENSIVE SCHOOL SAFETY FRAMEWORK

School Safety denotes safety in school premise against negative impacts and consequences of natural and man-made hazards. To attain the 'safety', schools are used as a base to advocate, plan, undertake, implement, promote, support, and facilitate range of activities that could protect school communities (including student, teachers, staff, as well as the built environment and facilities) from catastrophic impacts and strengthen their capacity to address and cope with them.

However, 'school safety' covers spheres broader than school. It also encompasses the aspects of school and education sector having capacity to maintain its function ensuring continuity of education services as well as using education as a mean to ingrain and equip learners with knowledge considered necessary for them to face challenges and uncertainty brought by hazards and climate change impacts. Hence 'school safety' involves education policy, planning and practices as well as linkages to DRR policy, planning and practices (of DRR and DRM agencies) at different layers (national, sub-national, local and school level) to address disaster risk at school level and for education sector as a whole in a more comprehensive and harmonized manner.

This Comprehensive School Safety Framework provides a comprehensive approach to reducing risks from all hazards to the education sector. The past decade has brought children's advocates together:

- To promote disaster risk reduction (Hyogo Framework for Action 2005-2015) throughout the education sector along with education for sustainable development (International Decade for Education for Sustainable Development)
- To assure universal access to quality basic education in a safe environment (Millennium Development Goals, Education for All, Global Partnership for Education, Education First, Global Coalition to Prevent Education from Attack).
- To incorporate risk reduction into Millennium Development Goals for education.

At the core of these child-centered, child-participatory, and evidence-based efforts is the recognition of children's rights to survival and protection as well as to education and participation. The purpose of this Comprehensive School Safety Framework is to bring these efforts into a clear and unified focus in order for education sector partners to work more effectively, and to link with similar efforts in all other sectors at the global, regional, national and local levels.

The Goals of Comprehensive School Safety

- To protect learners and education workers from death, injury, and harm in schools
- To plan for educational continuity in the face of all expected hazards and threats
- To safeguard education sector investments
- To strengthen risk reduction and resilience through education

The Three Pillars of Comprehensive School Safety

~~Comprehensive school safety is addressed by education policy and practices aligned with disaster management at the national, regional, district and local school site levels. It rests on three pillars:~~

1. ~~Safe Learning Facilities~~
2. ~~School Disaster Management~~
3. ~~Risk Reduction and Resilient Education~~

Multi-hazard risk assessment is the foundation for comprehensive school safety. Ideally, this should be part of the educational management information systems (EMIS) at the national, subnational, and local levels. It is part of a broader analysis of education sector policy and management in order to provide the evidence base of planning and action.

~~Three Pillars of Comprehensive School Safety~~

1. **Safe Learning Facilities** - involves education authorities, planners, architects, engineers, builders, and school community members in safe site selection, design, construction and maintenance (including safe and continuous access to the facility). The key responsibilities for both public and private schools are to:

- Select safe school sites and implement disaster-resilient design and construction to make every new school a safe school.
- Implement prioritization schema for retrofitting and replacement (eg. including relocation of unsafe schools).
- Minimize structural, non-structural and infrastructural risks to make buildings and facilities for survival and evacuation.
- Incorporate access and safety for people with disabilities in design and construction of school facilities.
- If schools are planned as temporary community shelters, design them to meet these needs, and be sure to plan for suitable alternate facilities for educational continuity.
- Ensure that children's access to schools is free from physical risks (eg. pedestrian paths, road and river crossings)
- Adapt water and sanitation facilities to potential risks (eg. rain-fed and lined latrines)
- Implement climate-smart interventions to enhance water, energy and food security (eg. rainwater harvesting, solar panels, renewable energy, school gardens)
- Plan for continuous monitoring, financing, and oversight for ongoing facilities maintenance and safety

2. **School Disaster Management** - established via national and sub-national education authorities and local school communities (including children and parents), working in collaboration with their disaster management counterparts at each jurisdiction, in order to maintain safe learning environments and plan for educational continuity, conforming to international standards. The key responsibilities are to:

    - Establish national and/or sub-national level committee and fulltime focal point(s) leading comprehensive school safety efforts.
    - Provide policies, guidance at sub-national and school-site levels for ongoing site-based assessment and planning, risk reduction, and response preparedness as part of normal school management and improvement.
    - Develop, train, institutionalize, monitor and evaluate school committees. These should be empowered to lead identification and mapping of all hazards inside and outside school and community and action-planning for ongoing risk reduction and preparedness activities. Encourage participation of staff, students, parents and community stakeholders in this work.
    - Adapt standard operating procedures as needed, for hazards with and without warnings, including: drop cover and hold, building evacuation, evacuation to safe haven, shelter-in-place and lockdown, and safe family reunification
    - Engage schools in making early warning and early action systems meaningful and effective.
    - Establish national and sub-national contingency plans, based on the Interagency Network for Education in Emergencies (INEE) Minimum Standards (2010), to support educational continuity, including plans and criteria to limit the temporary use of schools as temporary shelters.
    - Identify alternate locations for temporary learning spaces and alternate modes of instruction
    - Incorporate the needs of pre-school and out-of-school children, children with disabilities, and both girls and boys.
    - Link education sector and disaster management sector, and public safety policies and plans

at each level of social organization (national, sub-national levels, and local and schoolsite level) and establish communication and coordination linkages across sectors.
- Practice, critically evaluate, and improve on response preparedness, with regular school-wide and community-linked simulation drills. Adapt standard operating procedures to specific context of each school.

3. **Risk Reduction and Resilient Education** – Should be designed to develop a culture of safety and resilient communities. Key responsibilities are to:

    - Develop consensus-based key messages for reducing household and community vulnerabilities, and for preparing for and responding to hazard impacts as a foundation for formal and non-formal education.
    - Engage students and staff in real-life school and community disaster management activities, including school drills for fire (and other hazards, where applicable).
    - Develop scope and sequence for teaching about critical thinking for all hazards.
    - Infuse risk reduction throughout the curriculum and provide guidelines for integration of risk reduction and resilience into carrier subjects.
    - Develop quality teaching and learning materials for students and teachers. Address all dimensions of climate-smart risk reduction education: disaster mechanisms, key messages for safety and preparedness, understanding risk drivers and mitigating the consequences of disasters, building community risk reduction capacity and a culture of safety and resilience, and learning to live together
    - Provide teacher training for both teachers and teacher trainees on risk reduction curriculum materials and methodologies
    - Develop strategies to scale-up teacher involvement for effective integration of these topics into formal curriculum as well as non-formal and extra-curricular approaches with local communities.

CASE STUDY: THE ASEAN COMMON FRAMEWORK FOR COMPREHENSIVE SCHOOL SAFETY

The ASEAN Common Framework for Comprehensive School Safety (ACFCSS) presents the conceptual framework to enhance school safety against the adverse impacts of natural and man-made hazards for the ASEAN nations. It seeks to bring the national education authorities and the National Disaster Management Offices (NDMOs) together, with the common goal to establish an enabling environment to align sectoral policies along with disaster management policies at the national, sub-regional and local levels.

The ASEAN Common Framework for Comprehensive School Safety is proposed to support operationalising the CSS Framework into workable plans and programs incorporating ASEAN perspectives and contextualising the efforts and initiatives taken within the ASEAN region. It elaborates the CSS framework to enhance upscaling school safety interventions in member states.

It incorporates inputs from national education authorities and disaster management agencies during series of forum and purposive consultations, whose common goal is to establish an enabling environment for

the alignment of education sector policies and plans with those of disaster management, at national, sub-national and local levels. Central to the framework is an all-hazards, child-centred risk assessment of the threats to the education sector. Like the CSSF, the ASEAN Common Framework for Comprehensive School Safety presents "pillars of intervention," a comprehensive set of activities in different levels (regional, national, sub-national and school levels), within the three overlapping spheres of school safety intervention, namely: Safe Learning Facilities, School Disaster Management, and Risk Reduction & Resilient Education, each with different sets of main actors.

The ASEAN Common Framework for Comprehensive School Safety has the following key features:

- It presents the conceptual framework to enhance school safety against the adverse impacts of natural and man-made hazards in the context of the ASEAN region;
- It seeks to bring national education authorities and NDMOs together with the common goal to establish an enabling environment to align sectoral policies along with disaster management policies at the national, sub-national/local levels and the school levels; and
- It uses the comprehensive set of activities under the three pillars of: Safe Learning Facilities, School Disaster Management, and Risk Reduction & Resilient Education.
- Provide targets and indicators for measuring progress towards the goals of safety, educational continuity, and protection of education sector investments.

Priority Activities at the Regional and National-level

Applying the school safety framework in the country is a concern of many agencies and stakeholders at different levels. Vertical coordination among different levels and horizontal collaboration at the corresponding levels within the same agency or among different stakeholders is beneficial for mutual support and complementarity on technical knowledge and implementation of school safety activities.

In the education sector, national level education authorities, sub-national education management offices, including local administrative units (in charge of school management) and school communities are primary stakeholders. However, stakeholders from other disciplines also have different roles to play which can complement initiatives on school safety. School safety practice is multi-disciplinary in nature, including risk assessment, risk reduction, education sector management, school management, curriculum & pedagogical development, engineering & architecture, etc., hence, stakeholders' involvement on school safety interventions should be expanded to professionals, specialized experts, academic institutions, social affiliations, private sector, non-government agencies, technical institutions, civil society organisations, media, etc. Specific leadership and stakeholders for each pillar should be identified and engaged in achieving the specific benchmarks associated with each pillar.

In applying the framework at national level, education ministry and concerned agencies can come up with elaborated set of activities, based on country's needs, with identified actors and supporters. Table 3 provides details on activities and indicates leading agencies, and stakeholders for potential engagement. At the same time, the following section breaks down in greater details the activities under the three pillars, as well as highlights the stakeholders for implementation.

Prior to implementation of the detailed activities clustered under Pillars 1, 2, or 3, Education Authorized

Agencies at the National, Sub-national, and School levels, including the National level DRM/DRR Agencies, in coordination with International agencies and experts in CSS, School DRM focal points and School Management Committees, must ensure the following:

- Identification of education authority focal points for DRR at national, sub-national and school level. This includes establishment of a staffed national office for disaster risk management at the national level, within the education authority.
- Identification of disaster management agency focal points for the education sector at national and sub-national levels.
- Implementation of tools for comprehensive school safety self-assessment and integration with Education Management Information System (EMIS)
- Conduct comprehensive school safety self- assessment on risks and on all three pillars (esp. to triage prior to technical assessment)

TABLE 2 IMPLEMENTABLE ACTIVITIES IN THE 3 PILLARS AND AREAS OF CONFLUENCE IN THE ASEAN COMMON FRAMEWORK FOR COMPREHENSIVE SCHOOL SAFETY

CONTEXT (FOR ADOPTION AND OPERATIONALISATION OF THE FRAMEWORK AT COUNTRY LEVEL)		INTEGRATED INTO EDUCATION SECTOR POLICIES & PLANS	ALIGNED TO NATIONAL, SUB-NATIONAL AND LOCAL DISASTER MANAGEMENT PLANS	
Pillar	**Description**	**Key Activities**		**Areas of Confluence**
ENABLING ENVIRONMENT (EXTERNAL)	Access of education authorities to national and sub-national level risk information affecting schools	• Education and DRM Legal Frameworks • Multi-layer collaboration and coordination between education & DRR agencies at all levels	• Close partnership with non-government stakeholders • Regional cooperation, experience and knowledge sharing	
CORE ACTIVITIES		• Multi-hazard participatory risk assessment at school level • Developing risk information for school and education sector	• Child-focus (inclusive) planning • Monitoring and evaluation	P1 P2 P3 The core activities that support decision making, design and implementation of school safety activities.
	Making schools safer place for...			P1 P3
PILLAR 1 SAFE LEARNING FACILITIES	A place for learning to safeguard school communities from death and injuries due to structural collapse, damages, or malfunctions and minimise losses to school facilities investments	• Identifying hazard, assessing likely structural impacts of existing schools & facilities, and access to schools, especially in hazard-prone areas • Implementing structural and non-structural mitigation measures to improve structural safety (including retrofitting & re-modelling e.g. expanding area for fire exit, and securing tanks, equipment and furnishings in earthquake and cyclone-prone areas) • Safe site selection for construction of new schools	• Strict compliance of school construction to existing national building codes and other building regulations and standards • Ensuring school buildings and facilities design able to withstand hazard impacts, including localised small-scale hazards • Ensuring construction supervision and quality controls are handled by officials/personnel with sound technical competence on structural safety from hazard aspects and building standards • Training on DRR considerations to relevant entities involved in school construction	Training and sensitisation for local building/ contractors on safe construction for school facilities
PILLAR 2 SCHOOL DISASTER MANAGEMENT	Ensuring school community (and education sector as a whole) able to assess risks, plan for mitigation, prepare for response to, cope with and recover from disaster events; and have capacity to act effectively and in a timely manner	• Assessment of existing capacity on disaster management (at school, sub-national and national level) • Developing guidelines for school disaster management on participatory DM activities • Engaging school management in integrating risk assessment, risk reduction, response preparedness, and educational continuity planning • Identifying and training school-based DM focal points to engage school-based management in ongoing DM activities including linked to community-based efforts • Implementing mitigation and response-preparedness measures at school which minimise both large-scale and small scale hazards and risks	• Conducting emergency response and drills on regular basis and prepositioning necessary provision for effective school DM • Linking school DM Plan with local DM planning and practices • Establishing mechanisms for education sector coordination on disaster management and recovery (including impact assessment & reporting, school rehabilitation & reconstruction, psychosocial support, financial assistance to schools, individual students and staff, etc.) • Developing education continuity plan for education management units/areas and for individual schools including temporary learning shelters and spaces, alternative delivery modes and prepositioning learning materials	P1 P2 Combination of structural and non-structural measures that contribute to safe facilities and school disaster management such as maintenance of school facilities, applying structural mitigation measures
PILLAR 3 RISK REDUCTION AND RESILIENCE EDUCATION	Enhancing knowledge, attitudes and skills imparting on disaster risk reduction to students and general public to develop a culture of safety	• Integrating risk reduction (including climate change and climate change adaptation) topics or subjects in formal educational curriculum and experiential learning • Developing exemplars, pedagogy and learning materials for DRR inclusive curriculum • Teacher training and school staff development • Integrating risk reduction and resilience-education into guides, scouts and other youth volunteers trainings and activities	• Promoting risk reduction knowledge and skills through extra-curricular activities based on local context • Convey nationally-identified consensus-based key messages on risk reduction for public education • Establishment of disaster management-related degrees and professional training courses to create a pool of competent professionals on risk reduction	P2 P3 Interventions that contribute to risk reduction and resilience education and disaster management such as awareness raising activities for the school and the general public, building culture of safety by using school DM activities to enhance family preparedness.

MODULE 3: ENABLING ENVIRONMENT FOR MAINSTREAMING DRR IN DEVELOPMENT

SESSION 1: PARTNERSHIP AND ADVOCACY FOR MAINSTREAMING DRR INTO DEVELOPMENT

Session Overview
Total time of session: 1 hour 15 minutes

Session Objectives:
By the end of the session participants will:

- Identify partners at global, national and regional level needed to mainstream DRR
- Understand how different partners can support in different aspects
- Identify the challenges of forging partnerships and how they can be addressed

~~SECTION 1: ADVOCACY: WHY?~~

1.1. WHY DO WE NEED ADVOCACY FOR MAINSTREAMING DRR?

Mainstreaming DRR into the development processes requires changes in government policies, institutional frameworks, legal arrangements and development planning processes. Furthermore, as a result of the multi-sectoral nature of DRR, the changes are required across all development sectors and at various levels. However, due to the competing development priorities faced by many developing countries together with the long-term, low-visible nature of DRR and with no guarantee of tangible rewards, the objectives of mainstreaming DRR becomes even more difficult and calls for a comprehensive solution oriented strategy with a specific call to action. In short it requires having in place a strong advocacy strategy.

SECTION ~~2~~: HOW TO ADVOCATE FOR MAINSTREAMING DRR

2.1 WHAT IS ADVOCACY?

Advocacy is about influencing people, policies, structures and systems in order to bring about change. It is about influencing those in power to act in more equitable ways.
In essence advocacy is:

- An action directed at changing the policies, positions or programs of any type of institution
- Presenting, defending or recommending an idea before other people
- Speaking up and drawing attention to an important issue and directing decision makers towards a solution
- A strategy to influence policy makers as they make laws that affect people's lives

2.2 EFFECTIVE ADVOCACY ACTIONS & STRATEGIES

Advocacy is also working with other people and organizations to make a difference. It means putting a problem on the agenda, providing a solution to that problem and building support for acting on a problem and solution. Anyone can undertake advocacy work. It does not need to be left to professionals or experts. Advocacy work includes many different activities such as lobby, mobilization, education, research and networking.

Advocacy takes place in many ways and at many levels, through various approaches and methods. However, the basic steps are common to all advocacy whether it is at the national, district or local level. The following are essential steps for advocacy activities[1]:

- Identifying advocacy issues: The first step for advocacy is to identify the issue you want to advocate for. In the context of mainstreaming the issue is twofold: Reduce impacts of disasters on development and development should not create new disaster risk or exacerbate the existing one.
- Understanding the issues and collecting evidence: Evidence and information needs to be acquired through research and analysis to form evidence-based arguments on the comparative benefit of mainstreaming DRR, with past successes and lesson learned.
- Identifying your targets: It's important to identify who you should be speaking to and working with. These people are commonly referred to as stakeholders because they have an interest or 'stake' in the issue.
- Clarifying your vision: In this step, clear visions on the specific changes required are determined. For mainstreaming DRR, the clear vision could be resilient urban development that considers local risk issues and urban growth.
- Tailoring the message for the target audience: Advocacy messages need to be customized and contextualized for different stakeholders.
- Delivering your message: This includes selecting appropriate activities, methods, channels, medium, etc. that can be used to carry out advocacy. This will be determined by the message, target audience, skills and resources. Common advocacy activities are networking, lobbying, education and awareness raising.
- Monitoring and evaluation: There is a need for periodic evaluation of any advocacy initiative to see whether the objectives are being achieved, and whether any changes need to be made to the advocacy strategy.

The following provide example advocacy strategies for mainstreaming DRR[2]:

- Emphasize the fact that disaster risk reduction is everybody's business
- Use the words such as 'safer development', 'resilient communities/cities (to denote disaster risk sensitive development practices) rather than other words which are often recognized with emergency management and response
- Use positive phrasing: for example, highlight what progress has been made and choices at hand

1 (Adapted from Disaster risk reduction: a global advocacy guide, IFRC, 2012)

2 (Adapted from the Blue Book, a hands-on approach to advocating for the millennium development goals, UNDP, 2004)

that could make a difference.

- Make it relevant: Relate the message to your audience as an individual and contextualize the message by using real life examples in order for the audience to be empathetic.
- It's about them: Emphasize how DRR can be useful for the particular organization to advance its existing mandate and work.
- Keep it local: Highlight what is happening in communities and the way in which communities could contribute to reduce the risk through adopting DRR into local practices (i.e. local livelihoods, resource management, environmental conservation, etc.)

Box 4.1.1 Global Advocacy for Safe Schools and Hospitals: the One Million Safe Schools and Hospitals initiative

The One Million Safe Schools and Hospitals initiative encourages people, organizations, companies and governments to pledge to make a school or hospital safe and resilient to disasters. When schools are damaged, learning opportunities are disrupted, and the quality of education drops. When hospitals and health facilities are destroyed, the treatment of the sick is hampered and saving of victims during a catastrophe becomes difficult.

UNISDR in collaboration with WHO, UNESCO, UNICEF, World Bank, ADB and other partners aim to raise public awareness and create a demand for safe schools, hospitals and health facilities. The objectives of the initiative are to protect the lives of school children and the sick by ensuring that proper safety measures are installed, to ensure the continuity of hospital functions in treating the sick and safe school zones, to improve the risk reduction capacity of all school and hospital stakeholders. This initiative is part of the Resilient Cities Global Campaign of UNISDR for 2010 and 2011, and builds upon the 2006-2007 Global Campaign on Safe Schools, and the 2008-2009 Global Campaign on Safe Hospitals.

Link: www.safe-schools-hospitals.net
(Source: UNISDR, 2011)

SECTION 3: DEFINITION AND TYPES OF PARTNERSHIP

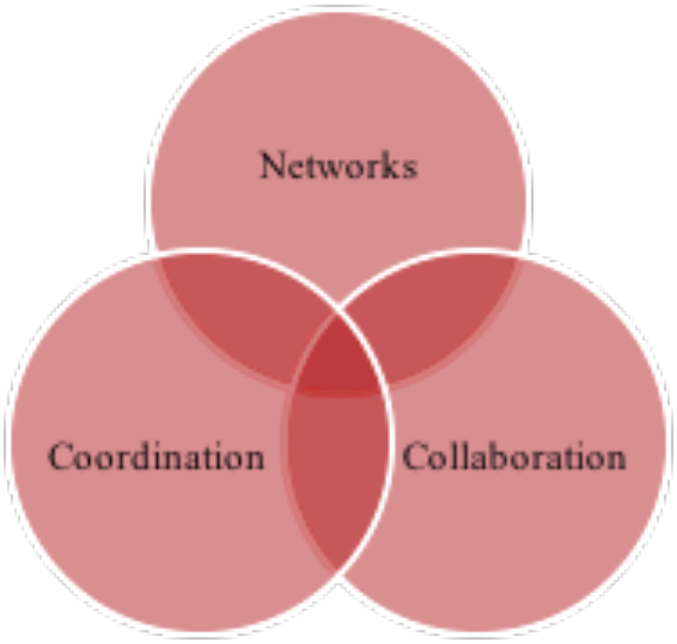
3.1. WHAT IS PARTNERSHIP?

Partnership aims to combine problem solving, resource exchange, cooperation, coordination, alliance, and human resources in the form of skills, experience and ideas to address common concerns and shared goals. The vast and complex challenges of human and financial resources in the field of mainstreaming DRR requires that stakeholders forge partnerships and work together to ensure safer development, towards a common goal: the reduction of losses and lives lost.

3.2. TYPES OF PARTNERSHIP

Networks – Networks are needed to exchange information among members and share experiences within their activities.
Coordination – Relationships between members are more closely linked; definition of specific tasks

among organizations requires resources beyond information sharing
Collaboration – Relationships between members are strong with more diverse actions



SECTION 4: ESTABLISHING ~~PARTNERSHIP~~ FOR MAINSTREAMING DRR

To establish mainstreaming DRR as part of normal practices/steps in development planning processes at different levels, partnership and multi-departmental coordination are crucial factors. Mainstreaming DRR requires multi-departmental coordination at all levels. With development planning as a backdrop for mainstreaming DRR, it's essential that concerned development agencies take effort in harmonized manners. The partnership could be established within:

4.1 VERTICAL INTEGRATION

DRR mainstreaming needs to be addressed at all levels of government, from the national to the local level. The knowledge of communities and local governments on the hazards and risks they face, which usually form part of the local development plan, should be integrated into higher level planning documents. As such, there is a need for coherent planning processes at various levels of government. This requires government ministries and agencies from the national down to the local to coordinate closely with each other in order to align the integration of DRR in their planning, implementation, and monitoring and evaluation of their policies and projects.

This vertical integration has implications on establishing sustained mechanisms for the alignment of goals, strategies, and programmes and projects of ministries and agencies from the national and local levels. Vertical integration is particularly challenging in decentralized governments.

4.2 HORIZONTAL INTEGRATION

As DRR involves not only the disaster management office but also the different ministries and local governments, it is imperative that a horizontal integration of DRR mainstreaming should be in place. The issues of disasters are closely linked to land use planning, environmental degradation, unsafe infrastructures, etc. These areas are managed by various ministries and local governments in a country. Thus, the need to bring together different ministries and local governments to coordinate with each other in terms of sharing information, technologies, and ensuring that their plans do not contradict each other, i.e. that one ministry's plans and implementation increases risks.

Horizontal integration is a complex process of joint problem solving which seeks to understand the interrelations of societal goals embodied in the mandate of each ministry and the strategies and technologies they use to address societal concerns. This is no easy task as decisions and plans made in one ministry or in one local government may increase vulnerability in another area.

If any additional mechanisms, processes, steps for development planning are introduced all concerned agencies should be consulted and informed, to ensure that the modified procedures inclusive of DRR considerations is viable and doable for the implementing agencies.

4.3 COLLABORATION BETWEEN GOVERNMENT AND OTHER STAKEHOLDERS

The crosscutting nature of disaster risk lends itself to the intervention of various stakeholders: private sector, civil society, development partners, and academia.

- Given that the private sector plays significant roles in social and economic development they may be affected by DRR-inclusive public policies, rules, regulation, initiated from the government. Therefore, the way in which they can contribute and support the government should be explored to ensure win-win solutions.
- Public-private partnerships have great potential; corporations or businesses have a lot to offer in times of disasters. The challenge is to bring the one-time and short- lived assistance they are able to provide into sustained collaboration. Corporate social responsibility can be used to establish partnership with government on DRR mainstreaming programmes and projects in the different ministries or sectors..

Box 4.1.2 Public-Private Partnership (PPP) on Reconstruction: The Philippine Experience

In the aftermath of Typhoon Ketsana, Parma, and Mirinae that hit the Philippines, the President issued Executive Order No. 838 on October 22, 2009, creating the Special National Public Reconstruction Commission to spearhead, implement and adopt urgent and effective measures to bring about the reconstruction of affected areas in the country and to address the needs of the affected population. The Public Commission was mandated to tap the resources of the private sector for the reconstruction efforts to address the continuing emergency brought about by the recent calamities. Hence, the Philippine Disaster Recovery Foundation (PDRF) was born. The PDRF consists of corporate/business institutions, NGOs (mostly local), and church/faith based organizations.

On October 23, 2009, a cooperation agreement was drawn up between the Public Commission and PDRF to tap the resources of the private sector and to enhance and facilitate the cooperation and coordination between the Philippine Government and the private sector in formulating and implementing a reconstruction strategy that can be implemented.

This public-private partnership could well be extended to cover integration of DRR in programmes and projects that could be jointly undertaken by government, business, and NGOs. In addition, a sustained joint mechanism for accessing information between public-private entities doing development work could be established. Much could be done if government systematically taps corporate social responsibility of business to contribute to DRR mainstreaming in the country. Private corporations do not only bring in financial resources but technological and technical resources which certainly augment government capacities.

- **Civil society broadly includes non-government organizations.** NGOs are among those who play many roles in development. They have in fact brought the significance of human rights, child rights, and gender sensitivity, among others, as crucial elements of development. Many NGOs engaged in humanitarian efforts have also embarked on promoting and implementing DRR mainstreaming in development.
- **Together with NGOs, it is critical to engage Peoples' Organizations (POs),** such as faith-based organizations, self-help groups, social movements, and coalition and advocacy groups, and communities in local development planning. Local development planning is an important entry point for DRR mainstreaming. As communities are the ones directly affected by development initiatives as well as disasters, it is imperative that local development planning processes create sustained mechanisms for engagement and partnerships with communities. In the Philippines, for instance, the Local Government Code mandates the creation of Special Local Bodies (SLBs) which provides NGOs and POs a representation in the Local Development Council, the body responsible for the local development plan. In the end, the success of any DRR effort lies to a great extent on the level and kind of partnerships that government forges with communities.
- **Another group of stakeholders** are development partners such as UN agencies and donor institutions. These players have a wide array of DRR mainstreaming initiatives which are part of their portfolio. Government partnership with these institutions could either be direct or through an NGO funded by these institutions. In the latter case, the NGO partners with government to co-implement the project.
- **Another rich repository of knowledge and innovation** is the academia. Sustained partnerships

with academic institutions in building knowledge, skills, and technologies to address disaster risk concerns are often lacking. The convergence of theory and practice to inform development in a more coherent and sustainable manner has yet to be institutionalized.

- **Universities may be tapped to study areas of DRR in specific locations of the country as part of their thesis and on-the-job training.** Urban planning students in different universities can be consistently utilized by government to conduct studies on urbanization and land use planning within specific geographical zones, e.g. municipality, province, region. Those in the science arena can likewise form part of the studies, bringing in the contribution of climate change. Students who are studying Science and Computer Technology could be good sources for GIS mapping.

SECTION 5: PARTNERING PROCESS

As stakeholders are diverse, even those doing similar works, the government should collaborate with those aligned with their objectives. This is true when partnering with other civil society groups and development partners such as UN agencies and business groups.

A systematic way of understanding the different players/stakeholders in the country and in the region may help government to identify the levels of collaboration it wants to establish with each. In this case, the government is able to tailor its communication to fit the different partnership levels it forges with various stakeholders such as NGOs.

The following is a partnering process adapted by The Foundation for Development Cooperation and Citi Foundation from the Partnership Broker's Accreditation Scheme (see Figure 4.1.1).

Figure 4.1.1: Adapted from "Partnership Broker's Accreditation Scheme" ODI/IBLF

Partnership Exploration	Partnership Building	Partnership Maintenance
Resource Mapping	Negotiating agreements	
• What can each partners bring to the table and who does what? • How can these be combined • What are the underlying interests of the partners	• What should be included in the partnership agreement	• Building trust, transparency, mutuality, solidarity and accountability • Building capacities to enable co-implementation • Building mechanisms and communication strategies for continued relations

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MODULE 3: ENABLING ENVIRONMENT FOR MAINSTREAMING DRR IN DEVELOPMENT

SESSION 2: THE USE OF MEDIA FOR PROMOTING RESILIENT DEVELOPMENT

Session Overview
Total time of session: 1 hour 15 minutes

Session Objectives:
By the end of the session participants will:

- Identify the different actors within the media
- Use the media to increase the overall awareness of public
- Use the media to put DRR on the public agenda
- Explain why it is necessary to get public support

SECTION 1: THE ROLE OF MEDIA FOR SAFER DEVELOPMENT

1.1. WHAT IS THE MEDIA AND THEIR FUNCTION?

Mass media or simply "media" are channels of communication through which messages flow, produced for popular consumption and relayed through the print (e.g. newspaper, magazines) or electronic (e.g. radio, television, internet) media. It also refers to the organized means of dissemination of facts, opinions, and analysis, through a wider variety of other media.

Media's great potential and capacity to influence has taken on roles that hold society together and serve as a forum for public and community interaction. As societal processes become more and more complicated, its dependence on the media for information has increased.

The media has also evolved and developed more unique functions. One of these functions relates to disaster risk reduction and safer development, whereby the media plays a pivotal role in awareness raising, advocating, creating mutual understanding of stakeholders, as well as promoting safer development practices.

1.2. DISASTER RISK COMMUNICATION AND MEDIA

The media's convergence with safer development derives from the need to inform, educate and empower communities and different stakeholders with relevant knowledge for influencing public action and policy towards disaster preparedness and mitigation. Through disaster risk communication, the media has been given an important role which contributes to reducing the loss to life and assets arising from disasters.

Disaster risk communication refers to the dialogue process through which multiple stakeholders (government officials, NGOs, UN, private sector and communities), identify and analyze risks, and implement

solutions to reduce those risks. All disaster risk reduction actions including risk identification, risk analysis, risk prioritization, risk treatment and monitoring and evaluation, involves communication among multiple stakeholders.

Various stakeholders have different opinions about the nature of risks, the proposed solutions and their implementation. This means discussing risks, the sources, vulnerabilities, measures for vulnerability reduction, and costs and implementation arrangements. Through this process these stakeholders are able to share their concerns and opinions, understand each other's perspectives and identify commonly agreed solutions, which are acceptable to everybody. This communication is referred to as "disaster risk communication".

One important strategy in disaster risk communication is informing at-risk populations or communities about risks to increase their awareness and mobilize them to take action to reduce their exposure and vulnerability to hazards. Such communication is popularly known as 'public awareness'.

Public awareness activities aim to foster changes in behavior leading to a culture of safety. This involves public information, dissemination, education, broadcasts through television and radio, use of printed media, as well as the establishment of information centers and networks, and forums for community participation.

1.3. MEDIA AS A MEANS FOR RISK COMMUNICATION AND NETWORKING

The communication amongst various stakeholders happens through different means. They include formally organized face-to-face meetings, workshops, conferences, seminars etc. Communication among stakeholders often occurs informally through news items, analysis published in the media, coverage of disaster events and coverage of forums on disaster risk management. The media therefore, has a very important role facilitating communication among stakeholders and influencing the opinions of different stakeholders for disaster risk reduction.

Box 4.2.1 How Social media can help in Community Resilience Building?

By further developing the disaster resilience-building framework, the value of social media can be explored. The three fields that media can work in to reduce disaster risks are:

Disaster Risk Reduction
Goal: Minimization of residual risk

- Informing others of disaster risks
- Discussing and planning ways to minimize risk
- Coordinating and managing tasks
- Conducting post-event learning

Emergency Management

- Goal: Safe communities through shared responsibility
- Providing emergency intelligence through crowdsourcing
- Helping people prepare for disasters
- Communicating warnings to others
- Coordinating community response and recovery

Community Development

- Goal: Formation of social capital for disasters
- Increasing and improving social networks, leadership and support systems
- Providing support to people during and after a disaster
- Conducting post event learning to improve.

SECTION 2: CREATING AN ENABLING ENVIRONMENT FOR MAINSTREAMING DRR ~~BY~~ THE MEDIA

Disaster risk communication is essential to mainstreaming DRR, as it promotes and supports the establishment of disaster risk reduction as a public agenda. Media could be used to sensitize common concerns over risk reduction issues and challenges for the general public and stakeholders i.e. public sector, private sector, social-organized group, vulnerable population, etc.

As a result of its multi-disciplinary nature, mainstreaming DRR requires people from different professional areas to work together. Media can be an effective tool to open the horizon among DRR practitioners, planners, risk assessment specialists, public and private sector, etc. This, in a way, contributes to changing the mindset and perspectives of potential actors on mainstreaming DRR, enhances better understanding on the expertise and experience of those from other disciplines, and hence, helps in exploring partnership and collaboration.

In order to create an enabling environment for mainstreaming disaster risk reduction into development, the media employ specific approaches:

1. Organizing expert dialogues – dialogue among experts on the causes of disasters, risks and vulnerabilities, and on the identification of appropriate solutions should play an important role

in facilitating communication among stakeholders on disaster problems and also in raising people's awareness. Therefore the media must consider holding forums among representatives of scientific organizations, e.g. meteorological department, National Disaster Management Office (NDMO) and development agencies in the regional and international level.

2. Research broadcast and articles: Media professionals can conduct research on specific issues such as risk generating factors in the community and publish them in newspapers or broadcasts through radio and TV.
3. Interviews: the media can organize interviews with DRR policy makers, development planning authorities, civil organizations, donors, etc. This can highlight prevailing risk and the need for concerted action to address the risk in harmonized manners. It will also optimize the impacts on risk reduction and ensure that disaster risk considerations are seriously thought through in the development process.
4. Field visits: media professionals can cover success stories in order to advocate for mainstreaming disaster risk reduction. Comparison of the before and after, i.e. vulnerable condition in the past, as appose to condition with risk is treated and significantly minimized by appropriate mitigation and preparedness measures, could highlight the compatible benefit of the mainstreaming approach.
5. Public forums: The media can hold a conference or forum to bring together all stakeholders, e.g. authorities, NGOs, donors, UN and community members to facilitate dialogues around certain issues.
6. Broadcast and publish warning and preparedness actions: When the hazard season or potential hazard (e.g. typhoon) is approaching, the media can publish and broadcast warning and preparedness messages to inform the general public about the risks and possible disasters they may face and the actions they can take to avoid or minimize their loss of life and property.
7. Broadcast response actions: Following a disaster, the media can broadcast information regarding to keeping assets and people safe, i.e. from diseases or looting etc. Disasters that can have after-affects such as earthquakes (aftershocks) or more long-term disasters (floods, droughts) the media can provide ongoing up-to-date information e.g. weather forecasts.

Box 4.2.2 Thai PBS takes part in promoting disaster risk reduction

Established in 2008 under the Thai Public Broadcasting Service Act, Thai Public Broadcasting Service (Thai PBS) is the first and only public media in the country. Since its inception, Thai PBS has been committed to promote active and informed citizenry with its diverse information and edutainment programs.

Thai PBS has been significantly active in promoting DRR and safer development through knowledge building, risk information sharing, and enhancing public participation. Disaster-related news and information programs of Thai PBS aim to increase public awareness on various types of disasters in order for the people to be better equipped with knowledge on how to reduce the risk of disasters, and to know how to protect their lives and property when they do. This includes:

DRR Program- Thai PBS presents a weekly news-based information program on disasters and early warning systems. Its objective is to increase understanding of the public and promote popular participation in drawing and implementing project on disasters prevention and reduction. The program features news reports from areas affected by disasters, supported by background information, views and opinions from various parties concerned, and in-depth analysis by specialists.

News and Current Affairs Programs -Programs in this category focus on reporting and updating information to citizens on current situations and breaking news.

Information Analysis Program - Thai PBS presents in-depth information programs along with academic analysis to inform the audience of current situations, problems, preparations and guidelines for disaster risk reduction in the future.

Public Participation Program - This is an open forum where citizens can raise problems, and share recommendations and lessons learnt from disasters. Thai PBS has the potential to be a center for integration and coordination between citizens, government officials, individuals and other networks.

(Adapted from Thai PBS, 2011)

SECTION 3: SOCIAL MEDIA

Social media is a general term that covers blogs, forums, audio-photo-video-sharing, wikis, social book-marking, social networking and other digital tools and applications that facilitate interactive communication and content exchange among and between individuals, audiences, publics, organizations. On the one hand, these may serve as direct means of information and communication. On the other hand, these may serve to monitor issues and environments for authorities to obtain a coherent picture of the situation (UN, 2015).

Citizens' groups, researchers, and environmental organizations are increasingly optimizing the use of social media and smart phone applications to document changes in the natural world and to mobilize support for taking action. The usage of social media is still relatively new and, in some countries, limited,

due to legal, political and development related constraints. Nonetheless its practice is growing significantly with more and more users favoring its interactive nature, indicating the growing awareness and concerns over these topics and the people's desire to be heard.

The websites of international and national agencies, and online networks and partnerships (e.g. EMA, FEMA, Gender and Disaster Network, GFDRR, ProAct network, UNFCCC, UNEP) have links to blogs, Facebook, Twitter, Yahoo Group and Google+ to stimulate discussions and to expand their reach.

Efforts to discuss key concepts can take many forms from chat rooms, forums, debates and discussions (on Facebook, Yahoo Group, etc.; sometimes organized or overseen by agencies, personalized blogs and twitter messages, special video reports on YouTube, etc.

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MODULE 3: ENABLING ENVIRONMENT FOR MAINSTREAMING DRR IN DEVELOPMENT

SESSION 3: FINANCING DRR AND RESOURCE MOBILIZATION

Session Overview
Total time of session: 1 hour 30 minutes

Session Objectives:
By the end of the session participants will:

- Explain the processes and tools for public resource allocation
- Discuss why it is necessary to allocate public resources to DRR
- Identify entry points to mainstreaming DRR into budgeting and investment

SECTION 1: IMPACT OF DISASTERS ON PUBLIC FINANCE

1.1. POST-DISASTER RESPONSE AND RECOVERY INCREASE PUBLIC EXPENDITURE AND BUDGET REALLOCATION

As a common practice in many countries, the disaster-related budgetary allocation is from annually appropriated national and local government calamity funds. This is in most cases available only for post disaster relief, response and rehabilitation i.e. when the calamity has already struck. Disbursement of the fund is tied to the declaration of the state of emergency in an area.

When a disaster strikes, especially if it is a large scale disaster, the calamity fund often falls short and this results in reallocation of government budgetary resources for recovery and sometimes even for relief and rehabilitation, taking the resource away from on-going and planned development activities. Though in some cases, finance through appeals are largely worked through the humanitarian financing system such as Common Humanitarian Funds (CHFs) and Emergency Response Funds (ERFs).

Besides the public expenditure for relief and rehabilitation, disasters can result in a decline in government earnings as the lower level of economic activity reduces direct and indirect tax revenue. Costs incurred by the government budget include expense to support private rebuilding effort and boosting the economy and domestic market.

Moreover, this responsibility of the public sector to rebuild after a disaster is not necessarily restricted to rebuilding of public infrastructure alone. Governments may also be expected to support private rebuilding efforts depending on the level of insurance penetration (which is usually very low in developing countries), and in smaller developing countries with fewer financial resources a large scale disaster can results in higher public deficits and debts.

1.2 BUDGET FOR RISK REDUCTION ACTIVITIES NOT YET FACTORED INTO PUBLIC BUDGETING

In most cases, there is no separate budget for reducing disaster risk before a hazard occurs. Depending on the national legislation, line agencies and local government are usually responsible for implementing DRR within their own areas of responsibilities; however they are no mandatory requirements for expenditure on risk reduction. Normally, budget for DRR is allocated for disaster risk management agencies at national and sub-national levels. Such budget has not yet channeled through sectoral agencies (such as agriculture, health, education, environment, social welfare, trade and commerce, industry, etc.) or local governments, who also have DRR in their mandates.

The argument, hence, is to embed disaster risk reduction and management within public investment and budgeting processes that will adequately provide financial provision for risk reduction activities across ministries, departments and local governance.

1.3 ADDRESSING DRR IMPACTS ON PUBLIC FINANCE

Considering the above shortfall of public finance to address financial resource needed for relief and recovery and DRR activities, the government budgeting shall include disaster risk concerns for two primary reasons:

- To have sufficient resources for risk reduction related expenditure – that have in place sufficient financial resource for risk assessment, mitigation and preparedness activities
- To have adequate financial arrangements to manage the residual risk – that is to have budgetary provision in advance to utilize for response operations, and recovery & reconstruction (to avoid reallocation of already committed resources for development work)

SECTION 2: WHAT IS PUBLIC RESOURCE ALLOCATION?

2.1. BUDGETING AND INVESTMENT PROGRAMMING

The allocation of public resources begins during planning, when priorities between activities are determined, and it continues in the national budgeting and investment programming processes. Typically the plan formulation stage ends with the list of programs and projects that address the development challenges and meet the development goals, objectives and targets.

An investment program may be viewed as the instrument that translates the plan into programs and projects if this has not been done in the plan formulation stage, or the output that prioritizes the programs and projects identified in the plan based on plan objectives and targets and available resources needed to implement them.

The national budget, typically prepared by governments each year, allocate resources for both capital and recurrent purposes over the forthcoming fiscal year, revising and rolling over medium-term expenditure plans to achieve their goals and objectives. As government resources are finite, budgets distribute resources

among the many competing demands.

2.2. KNOWLEDGE REQUIREMENTS FOR MAINSTREAMING DRR

Governments require two key types of data to plan their disaster risk financing strategies: contingent liability in the event of a disaster and specific DRR investment requirements.

CONTINGENT LIABILITY

A quantitative assessment of disaster- related contingent liability – that is, of the losses that are the government's responsibility in the event of a disaster – provides a crucial starting point in ascertaining funding requirements. It informs resource needs both for disaster risk reduction to reduce that contingent liability and for disaster relief, early recovery and reconstruction. This quantitative assessment requires a disaster risk assessment, ideally based on probabilistic disaster risk models as well as historical loss data. It also requires clarity on the types of and extent of loss that will be borne by the government to determine its share in total disaster risk.

For this, it is important to maintain comprehensive databases on historical losses, covering high frequency, low impact localized events as well as major ones and by collating existing hazard and disaster risk assessments.

Additionally, detailed records on actual forms and levels of public support in the event of a disaster would help determine assumed government responsibilities. Governments can formalize disaster response and recovery commitments to help define government contingent liability and support the development of sound disaster risk financing strategies. A clear delineation of public and private roles and responsibilities in the event of a disaster is essential in encouraging private commercial and domestic uptake of risk transfer products and investment in risk reduction.

SITE-SPECIFIC HAZARD AND VULNERABILITY DATA

Individual line agencies and local governments require site-specific hazard data to assess the levels of disaster risk associated with their existing investments and to ensure that new investments are disaster resilient. Information on the level of resilience of existing investments is required to help determine any retrofitting needs and, since a considerable element of disaster risk may be created through poor upkeep, maintenance budget requirements.

SECTION 3: HOW TO INTEGRATE DRR INTO PUBLIC BUDGETING PROCESSES

Financing DRR is normally channeled through DRM responsible agencies to implement strand alone activities such as early warning systems, climate and risk monitoring, risk and vulnerability assessment and other prioritized projects under the National Disaster Management Plans/Frameworks. This might also include mega-projects from public investment for DRR purposes such as the construction of dam, or complex flood mitigation structures. However, to further enhance DRR into finance and public budgeting, specific actions need to be taken in stages of the public resource allocation process as follows:

3.1 AT THE START OF NATIONAL BUDGETING

- Include disaster risk information in resource projections for the revenue assessment – Disasters can have an impact on reducing public revenue and hence the overall budgetary resources. Thus disaster risk information (especially climate related) should be factored in while estimating revenue. Analysis of impacts of disasters on the level of growth of the various sectors (especially the production sector) should be reflected in the formulation of assumptions in estimating revenues for the coming year/s.
- Including DRR in initial resource allocations - Advocacy should be undertaken to highlight potential scenarios or disaster impacts when estimating resource needs. Priority should be given to those sectors and localities with particularly high levels of risk.

3.2 AT THE START OF SECTOR AND LOCAL INVESTMENT PROGRAMMING

- Include DRR in the Investment Program's Project List - The activities proposed for inclusion in the investment program should be adopted DRR perspectives in the project planning and formulation. Criteria for budget allocation should be given preference to projects or investment program with DRR features such as disaster risk sensitive land use planning, transport infrastructure, water resource, planning, retrofitting schools and hospitals. There could also be need to have DRR specific projects, such as building of a dyke to prevent from flooding in highly prone area.

3.3 WHEN BUDGETING AND INVESTMENT PROGRAMMING INTERSECT

- Advocacy for DRR at the budget approval stage - Budget approval rests with the legislative body at the national and local levels. In the course of deliberating individual agency's budgets, it is still possible for new budget line items to be added, or for conditions on how certain funds will be utilized to be altered. Advocacy should be undertaken for greater allocation for DRR-related activities by providing a good analysis of the expenditure report submitted by government.
- Mobilize additional resources for the Implementation of DRR - Not all projects in the annual investment programme will be provided with resources from the government's budget, and not all projects of line agencies will be funded. It is therefore important to mobilize resources through other mechanisms such as public-private partnerships (PPPs), and development assistance for implementing priority DRR-integrated projects.

While addressing disaster risk through public investment and budget processes, the Ministry of Finance plays a crucial role by ensuring proper fiscal management of disaster risks, optimal allocation of resources for DRM, and addressing financial vulnerabilities within the economy (Box 4.3.1).

Box 4.3.1 Responsibilities of Ministries of Finance for Disaster Risk Management

- Finance Ministries and other relevant financial authorities play a pivotal role in DRM strategies given their responsibilities for economic, financial, fiscal and budget policymaking, planning of public investment and coordinating public expenditures. These responsibilities include:
- Ensuring that financial vulnerabilities within the economy are addressed through private markets, government-backed schemes or other instruments in order to promote financial resilience, and ensuring the availability and efficiency of compensation mechanisms, whether private or public
- Ensuring proper fiscal management of disaster risks by anticipating potential budgetary impacts and planning ahead to ensure adequate financial capacity and rapid release of funds, thus enabling emergency response, reconstruction of public assets and infrastructure, and targeted financial assistance
- Ensuring that clear rules regarding post-disaster financial compensation are established to enable rapid compensation, demonstrate solidarity and clarify the allocation of disaster costs, thereby promoting public confidence in country financial strategies while aligning incentives and reducing moral hazard
- Ensuring the soundness and resilience of the financial sector with respect to disaster risks, including through proper regulation, business continuity planning, and stress testing
- Ensuring the optimal allocation of resources for DRM, including assessment of the cost effectiveness of major public financial investments in disaster risk reduction projects

SECTION 4: FINANCING FOR POST-DISASTER RELIEF, RECOVERY AND RECONSTRUCTION

4.1 RISK FINANCING

Catastrophe risk financing refers to the combination of all methods used to pay for financial losses incurred during a disaster. This has, in the past in developing countries, focused on post-disaster aid and lending. It is clear, however, that such "ex-post" strategies are not efficient or sufficient. Risk financing now stresses "ex-ante" (before the disaster) measures such as risk transfer and sharing. While use of ex-ante risk financing methods is increasing, during most disasters in developing countries some degree of ex-post support will always be needed.

4.2 RISK RETENTION

As mentioned in the previous section, in most countries the government budgets for contingency calamity funds at national and local levels are for post-disaster relief, recovery and reconstruction. However, contingency funds may be exhausted by the cost of extensive disasters. The implication is that countries have to divert development resources to cover recovery and reconstruction costs, or transfer losses and impacts to affected households and communities. In both cases, the development deficit increases (UNISDR, 2011). This calls for the need of putting in place systems for risk transfer as described in the next section.

4.3 RISK TRANSFER

As discussed earlier, traditionally the public sector has adopted a post-event approach to manage risk. This includes increasing taxes, reallocating funds from other budget items, accessing domestic and international credit and borrowing from multi-lateral finance institutions. Many developing countries also rely on assistance from international aid. There is significant value in shifting the traditional 'disaster relief' approach – raising scarce funds after the event hits – to an approach that accumulates funds and funding sources before a disaster occurs.

With the recent increase in the magnitude and frequency of disasters it is also recognized that more actors are needed to share the risk. Large natural catastrophes can only be borne by a broader community, by sharing risks between communities of practice, by sharing risk between many individuals and corporate policyholders, the domestic insurance industry, the global reinsurance industry and the capital markets.

Risk transfer is defined as shifting the responsibility or burden for disaster loss to another party through legislation, contract, insurance or other means. It can play a key role in helping to manage natural hazard risk and mitigate or minimize disaster losses.

Recent developments in this field include the use of a range of risk transfer mechanisms such as catastrophe bonds, catastrophe pools, index-based insurance and micro- insurance schemes. Social protection programs such as safety nets and calamity funds can also provide effective financial instruments for managing risk and dealing with natural disaster shocks.

Box 4.3.2 Disaster risk financing and insurance tools

Disaster Risk Financing and Insurance (DRFI) can be broadly defined as the tools and strategies to increase resilience against the financial impacts of natural disasters. DRFI strategies, tailored to the diverse and unique needs of the country, can ensure access to post-disaster financing before an event strikes and thereby helps countries increase the financial resilience of governments, businesses, households, small and medium enterprises farmers, and pastoralists, and low-income populations against the economic burden of disasters.

These innovative financial solutions help governments shift from post-disaster assistance to proactive ex ante budget planning. By ensuring access to post-disaster financing before an event strikes, DRFI tools provide immediate liquidity in the aftermath of a natural disaster. For governments, these funds enable an effective response effort by providing crucial bridge financing while other post-disaster funding sources are being mobilized.

GFDRR supports developing countries in incorporating DRFI as part of their national DRM strategies by providing capacity building and technical assistance for the design and implementation of affordable and cost-effective DRFI programs.

Several DRFI tools are designed to meet different needs of particular groups.

(Adapted from World Bank & GFDRR, 2014)

A new generation of sovereign insurance ('macro-insurance') instruments can make it easier for local and national governments to cope with disasters. In parallel, innovative micro-solutions can protect previously uninsured individuals and small enterprises from the catastrophic financial consequences of weather-related risks. Such products can help governments and individuals in a number of ways, by:

- Ensuring that funds are in place for recovery and rebuilding efforts as well as to compensate victims of catastrophic events, particularly in developing countries or in rural areas of developed countries with no insurance access.
- Protecting their budgets and reducing financial volatility, with potentially positive implications on debt levels, sovereign ratings and foreign exchange fluctuations
- Reducing income volatility for individuals in developing countries, thus providing greater financial security in the face of changing economic circumstances, reducing distress and conflict, and providing access to credit for farmers with little income diversification (by allowing them to borrow against insurance as collateral)

Box 4.3.3 Philippines Micro-insurance for low-income informal sectors and Micro-and-Small Enterprises (MSEs)

The risk coping mechanisms of poor Filipinos rely on the social capital in the community, turning to relatives, friends and neighbors for support. This is however limited in coverage especially if the crisis, like a typhoon, affects the entire community. Cooperatives are using social capital to organize community-based risk funds called "damayan" (mutual help) which are informal schemes.

In January 2009, GIZ MIPSS (Microinsurance Innovations Program for Social Security) has kicked off to respond to the problem on lack of insurance access of the poor. For two years MIPSS has been working with the Department of Finance (DoF), the Insurance Commission (IC), the Philippine Health Insurance Corporation (PhilHealth), private insurance associations and other public and private stakeholders in ensuring that a National Strategy and a Regulatory Framework for Microinsurance (MI) are established and approved by the government. MIPSS cooperates with the Asian Development Bank (ADB) Microinsurance Development Project wherein both use the same steering committee led by the DoF, share resources and implement common strategies.

In January 2010, a Memorandum Circular (MC) 01-2010 that defines government's policy on informal insurance activities was signed. This circular is a crucial step towards consumer protection. Another Insurance Memorandum Circular (IMC) 01-2010 that outlines regulations for the provision of MI products and services which effectively opened up the insurance market and provides incentives to serve low-income sector was also signed. The Bangko Sentral ng Pilipinas through the Circular 683-2010 is allowing banks to act as MI agents which broadens possibilities for MI products distribution. In June 2010, another MC 02-2010 was signed defining the formalization guidelines of informal insurance activities like Damayan.

MIPSS is also in the front line of product innovations (meso-level solutions). GIZ has a public-private partnership (PPP) agreement with Munich Re (a leading global reinsurance company) to develop a weather-index insurance product that protects the loan portfolios of cooperatives against perils of typhoons in the Philippines. Branded as "Weather Protect" by CLIMBS (the primary insurer), IC has approved the product in November 2010 and launched to the public during the Philippine Cooperative Summit and also during the 6th International Microinsurance Conference in Manila. MIPSS is supporting capacity building of CLIMBS and its 1,700 member-coops to ensure that insurance payout will benefit the members. "Weather Protect" is believed to be the first-ofits-kind in the world that targets coops and uses satellite image data in defining intensities of wind speed and rainfall as triggers of insurance payout. This innovation makes insurance claims process very transparent and efficient.

Further to innovations, MIPSS supported the development of a MI prototype product to protect the lives, dwellings and livelihoods of the poor (a 3-in-1 product) from risks of accident, fire, lightning, typhoon, flood and earthquake. This is the first product that uses a one page Filipino policy wording which makes it easy for the poor to read and understand what they will be signing.

(Source: GIZ, 2011)

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