

TRAINING MODULE ON MAINSTREAMING DISASTER RISK REDUCTION INTO SECTORAL PLANNING



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ACRONYMS

ADB	Asian Development Bank
ADPC	Asian Disaster Preparedness Centre
CBSE	Central Board of Secondary Education
CCA	Climate Change Adaptation
CRED	Centre for Research on Epidemiology of Disasters
CSO	Civil Society Organisation
DDMA	District Disaster Management Authority
DOS	Department of Space
DPR	Detailed Project Report
DRM	Disaster Risk Management
EM-DAT	Disaster Risk Reduction
GFDRR	Emergency Database
GLOF	Global Facility for Disaster Risk Reduction
GOI	Glacier Lake Outburst Flood
HFA	Government of India
HRD	Hyogo Framework of Action
IDNDR	Human Resource Development
IPCC	International Decade for Natural Disaster Reduction
ISDR	Intergovernmental Panel on Climate Change
JNNURM	International Strategy for Disaster Reduction
MHA	Jawaharlal Nehru National Urban Renewal Mission
MOA	Ministry of Home Affairs
MOEFCC	Ministry of Environment, Forest, and Climate Change
MOES	Ministry of Earth Sciences
MOWR	Ministry of Water Resources
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
NAPCC	National Action Plan on Climate Change
NCCF	National Calamity Contingency Fund
NDMA	National Disaster Management Authority
NDRF	National Disaster Response Force
NGO	Non-Governmental Organization
NIDM	National Institute of Disaster Management
NRHM	National Rural Health Mission
NREGS	National Rural Employment Guarantee Scheme

OCED	•	Organisation for Economic Cooperation and Development
	•	
PRI	•	Panchayati Raj Institutes
	•	
SFDRR	•	Sendai Framework for Disaster Risk Reduction
	•	
SAARC	•	South Asian Association for Regional Cooperation
	•	
SDMA	•	State Disaster Management Authority
	•	
SDMC	•	SAARC Disaster Management Centre
	•	
SSA	•	Sarva Siksha Abhiyaan
	•	
TSC	•	Total Sanitation Campaign (Swachh Bharat Mission)
	•	
ULB	•	Urban Local Bodies
	•	
UNDP	•	United Nations Development Programme
	•	
UNISDR	•	United Nations for International Strategy for Disaster Reduction
	•	
	•	
	•	

INTRODUCTION TO THE TRAINING MODULE

Background

Over the past several decades, we have witnessed steady increases in the numbers of disasters. Many factors have contributed to this trend: growing populations, increased numbers of people living in hazard-prone areas, environmental degradation, unsustainable development patterns, and rapid and unplanned urbanization, amongst others. Globally, risk reduction initiatives have failed to keep pace with the increase in exposure to natural hazards and higher levels of vulnerabilities. These trends are set to continue and will be compounded by the impact of climate change.

Himachal Pradesh is prone to multiple natural disasters due to its topography, physical features, climate, and active geomorphic changes. Earthquakes, landslides, cloudbursts, flash floods, avalanches, forest fires, and droughts have caused tremendous damage to lives and property. Human activity contributes to, and in some cases, causes disasters. Himachal Pradesh's greatest challenge is conservation, sustenance of the state's ecologically fragile regions, which is becoming further aggravated due to projected increases in number and variety of climate change impacts and environmental degradation.

In light of the state's extreme vulnerability to natural disasters, the Chief Secretary of the State outlined several measures to mitigate risks, such as raising awareness of precautionary measures, preventing fire accidents, adopting earthquake resistant technology in construction of buildings, allocating more funds for structural maintenance of old buildings, undertaking mock drills, and distributing pamphlets in schools and other departments to strengthen response mechanisms and capacity building.

Course Objectives

Disaster risk reduction (DRR) and Climate Change Adaptation (CCA) have emerged as two key development issues in recent times. The boundaries between natural and manmade disasters have blurred and the interconnection between disasters and development has become increasingly pronounced and visible. There are natural hazards such as cyclones, floods, drought, landslides, and earthquakes, but their conversions into disasters are determined by the vulnerabilities and coping capacities of the communities involved, as well as the plans and policies that underpin them.

Building the necessary institutional framework and policy instruments to address climate change and disaster risk management in an integrated fashion requires significant investments, in skilled personnel, empowered communities, and financial resources. The primary objective of this course is to provide guidance and practical knowledge required to operationalise DRR and CCA strategies within existing development frameworks, after critically analysing areas of possible synergy and conflicts.

Target Audience

This training module has been specifically developed as a training tool for senior and middle-level managers and policy makers from different governmental departments at state and district levels, working toward mainstreaming the concepts of Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) into policy making, planning, and implementation processes for the State of Himachal Pradesh.

Training methodology and tools

- The design of this training course is based on participatory exploration and interactive learning, and is delivered across a span of 5 days.
- This course employs presentation, participatory, and experiential learning methodologies.
- Practical tools, relevant frameworks, and references for additional resources will be incorporated into each learning session.
- Key learning points appear in the summation of each session.
- Any visual tools, additional reading, and material relevant to group exercises will be shared in the form of handouts.
- The content and format of the learning sessions within this course can be adapted to specific learning contexts, incorporating the specific training needs of the participants.
- Group exercises on mainstreaming DRR into all developmental activities will be undertaken to develop greater clarity regarding the rationale, methodology, and expected outcomes of incorporating/integrating risk reduction and adaptation measures adopted to ensure the impact of disasters and climate change are minimised. Group exercises will be executed using known National Flagship Programme(s) for select sectors, where the impacts of disaster risks and climate change are known. Within the context of the group exercise, risks will be identified and ranked and the chosen programme will be implemented in a manner where all risks are addressed and reduced systematically. This is the key objective of this training module, as it is for meeting the sectoral/ departmental targets, while reducing existing risks without creating new risks, as a fundamental aspect of ensuring sustainable development. In a later session, the same exercise will be further analysed while incorporating gender dimensions and ensuring community participation. There will be a further group exercises on the last day to incorporate new learnings from the field exercise, but always ensuring that risk reduction and adaptation measures are incorporated into all developmental plans by all departments.

Learning Units

Module-1: Introduction and Concept of Disaster Risk Reduction (DRR) in Development including key concepts, frameworks and terminologies (Sessions 1 -3)

Module-2: Mainstreaming DRR in development planning process with reference to India and Himachal Pradesh: issues and challenges (Sessions 4 - 10)

Module-3: Tools and Processes to mainstream DRR and CCA into developmental planning: financing, incentives and sustainability issues for mainstreaming (Sessions 11 – 17, including 1 day field exercise with 1 selected municipality (ULB) and 1 Panchayat

TRAINING SCHEDULE

Day	Session	Content	Methodology
Day 1	Registration		
	Inaugural Session	<ul style="list-style-type: none"> • Inauguration • Self-Introduction • Introducing the purpose of the training • Exploring expectations and experience sharing 	Open session for self-introduction Lecture and follow-up interactive discussions
	Session 1.1	<p>Understanding and definition of hazards, risks, vulnerabilities, capacities and disasters</p> <ul style="list-style-type: none"> • Classification and categories of disasters • Types of vulnerabilities • Disaster and human misery • Vulnerabilities and disaster risks • Link between risks, vulnerabilities, risk reduction, risk management, capacity building and reducing disaster impact • From relief to preparedness and mitigation • Risk Reduction • Question and Answer Session 	Power Point Open house discussion interactive session
	Session 1.2	<p>Development and Disaster Management</p> <ul style="list-style-type: none"> • Definition and Relationship • Disaster – Development linkages • Climate Change and disasters • Development, sustainable development, climate change and disasters • Question and Answer Session 	Power Point presentation Open house discussion interactive session
	Session 1.3	<p>Overview of Disaster Context in India and Himachal Pradesh</p> <ul style="list-style-type: none"> • Recent major disaster events in India and Himachal Pradesh • Natural Disasters • Human made Disasters • Hazard proneness of Himachal Pradesh – different hazards • Agro-Climatic Zones and Risk Ranking of Himachal Pradesh • Climate Change and Climate induced disasters – trends and impacts 	Power Point presentation Open house discussion interactive session

Day	Session	Content	Methodology
Day 2	Sessions – 2.1 (Two sessions)	<p>Mainstreaming DRR into Sectoral Planning</p> <ul style="list-style-type: none"> • What is mainstreaming? • Why mainstreaming is important? • Multi-stakeholder involvement - why involvement of PRIs/ULBs in planning and implementation should be prioritized and be a part of the planning process • Development, sustainable development and disaster risk reduction • Global initiatives, experiences and debates • Sendai Framework for Disaster Risk Reduction and why and what activities are required for integration of DRR into sectoral developmental plans is cost-effective and ensure sustainable development keeping in mind the increasing disaster risks in the national and State contexts • Approaches for mainstreaming DRR in the developmental planning process • Guidelines for mainstreaming Disaster Risk Reduction in National and State Development Planning • Case study of a selected national flagship programme and how it can be utilized • Tracking public investment on DRR: Case Studies from Asia-Pacific • Groups exercise to analyse risks, their • Ranking, type of investment required for enhancing resilience and risk governance 	<p>Power Point presentation</p> <p>Open house discussion interactive session</p> <p>Plenary for presentation of group exercise</p>
	Session 2.2	<ul style="list-style-type: none"> • Screening of documentary film “Gorakhpur” and follow-up discussion on impact of unplanned urbanisation • Mainstreaming DRR in environment planning and city development plans: case studies and discussion 	
	Session 2.3	<ul style="list-style-type: none"> • Issues related to women, children, elders, marginalised/disadvantaged and underprivileged sections of the society, differently-able, youths in mainstreaming DRR in National and sub-national plans 	
	Session 2.4 (2 sessions)	<ul style="list-style-type: none"> • Climate Change and DRR – need for integration • Screening of documentary “Eastern Himalayas – Ancient Risks, Future Threats” and follow-up discussion on the impact of climate change on communities living in Eastern Himalayas • Integration of DRR and CCA and Mitigation into Development Planning • Why and how • Ecosystem Based Adaptation – Rationale and Process • Need for innovation, pilot projects and strategies for up scaling 	<p>Power Point presentation</p> <p>Open house discussion interactive session</p> <p>Plenary for presentation of group exercise</p>

Day	Session	Content	Methodology
Day 2	Session 2.5 (2 sessions)	<ul style="list-style-type: none"> • Incorporation of DRR and CCA into Sectoral Plans • Linkage between National and State Climate Change Plan of Action and the DM Act, Policy and Plan • Analysing sectoral hazard and risk data and risk ranking • Cost benefit ratio in terms of reduced per capita (unit) expenditure on response and recovery, decreased dependence on borrowings and subsidies and realisation of planned targets • Priority areas/sectors of integration • Types of intervention for ensuring reduction in disaster loss, increasing resilience • Group exercise (one group consisting of 4- 6 participants for (a) Infrastructure Sector – PWD, Irrigation, Transport, Tourism, Electricity, etc.; (b) Productive Sector- Agriculture, Horticulture, Animal Husbandry, etc.; (c) Social Sector - Health, Education, Women and Child Development, etc.; (d) Local Government and Urban Development; and (e) Environment to analyse methodology, planning process and strategy for integrating DRR and CCA and mitigation into sectoral plans • Group exercise to develop plans for each of the sector chosen in the previous group exercise by choosing one different National Flagship Programme for each group 	<p>Power Point presentation</p> <p>Open house discussion interactive session</p> <p>Plenary for presentation of group exercise</p>

Day	Session	Content	Methodology
Day 3	Session 3.1 (2 sessions)	<p>Mainstreaming DRR in development planning: issues and challenges-</p> <ul style="list-style-type: none"> • Mainstreaming DRR into local governance • Mainstreaming DRR in national and sub-national planning national flagship programmes • Group work for incorporating and mainstreaming issues and priorities of women, children, senior citizens, differently abled persons into sectoral plans prepared in the previous session VII by the same group 	<p>Power Point Presentation</p> <p>Open house discussion interactive session</p> <p>Plenary for Group Presentation</p>
	Session 3.2 (2 sessions)	<p>Challenges in mainstreaming DRR in key sectors-</p> <ul style="list-style-type: none"> • Instruments and incentives for mainstreaming DRR in some selected key development sectors • Developing partnerships and advocacy for mainstreaming DRR • Coordination and synergy across sectors and levels, including the national and sub-national level for mainstreaming DRR -a panel discussion • Initiatives and programmatic approaches for mainstreaming DRR – an in-depth analysis of selected national flagship programmes 	<p>Panel discussions by 2 selected representatives from each group of exercise undertaken in Session 3.1</p> <p>Group Presentation at Plenary sessions</p>
	Session 3.3 (2 sessions)	<p>Financing, strategic learning and action planning</p> <ul style="list-style-type: none"> • Management Approach to DRR • Financing options and budgetary allocations for mainstreaming DRR • Hazard specific or multi-hazard mitigation through developmental plans for specific ecosystem/location, communities, local governance and other institutions at different levels and for each government department • Hazard specific or multi-hazard prone mitigation plans specific ecosystem/location, communities, local governance and other institutions at different levels for (a) structural – roads, irrigation, flood embankments, landslide control walls, housing, plantation for soil stabilisation, etc., bio-engineering interventions, etc.; and (b) non-structural – improvement in capacity building, training, incorporation DRR and climate change issues/challenges in education and health programme, advocacy, improved coordination • Monitoring and evaluation as an exercise in strategic learning and action for mainstreaming DRR in development, including development of indicators for measuring outcomes 	<p>Power Point Presentation</p> <p>Open house interactive session</p> <p>Group Work Presentation</p>

Day	Session	Content	Methodology
Day 3		<ul style="list-style-type: none"> • 2 Group exercises based on previous sessions group exercises of developing sector plans linked with selected National Flagship Programme: <ul style="list-style-type: none"> (a) exploring specific opportunities for DRR budget allocation for various Government schemes (b) developing outcome indicators 	
	Session 3.4	<p>Tools to be used for field exercise – Group Exercise</p> <ul style="list-style-type: none"> • Detailing tools like Sectoral Checklists, mapping tools, etc. for integration of DRR/CCA into sectoral plans and schemes • Group Exercises • Group Presentation • Planning for next days' field work - Group discussion 	<p>Power Point presentation</p> <p>Open house discussion interactive session</p> <p>Plenary for presentation of group exercise</p>

Day	Session	Content	Methodology
Day 4	Field Work Training Centre	<ul style="list-style-type: none"> • Completion of full field exercises use planning tools with PRI/ULB for field exercise, participants will be divided into 2 groups, one for urban area and the other for rural area. The participants for each group and each participant will be given the responsibility of one tool ensuring that all planning tools are covered • Inferences and preparation of Plans of Action (to be placed at the PRI/ULB level) including budgets with expected source of finance by community members • Listing of key progress monitoring indicator 	<p>Field Exercise</p> <p>Group work with communities for each tool</p> <p>Community level presentation and feedback</p>

Day	Session	Content	Methodology
Day 5	Training Centre Session 3.5	<ul style="list-style-type: none"> • Plenary Session to highlight the key learnings from the field trip including the relevance of PRI/ULB based of participatory planning and what aspects and methodology should be incorporated in the DRR framework and while integrating DRR into sectoral plans 	Plenary Session Group Presentation and summary of the presentation and its key learnings Plenary Session
	Session 3.6	<ul style="list-style-type: none"> • Group Exercise for Revision and final preparation of the suggested sectoral plans with brief methodology, budgets, source of finance, monitoring indicators and linkages with existing (or proposed) schemes based on field experience <p>Strategic action planning and preparation of road map for mainstreaming DRR Responsibility Sharing Matrix Role of different stakeholders for facilitating and improving upon the efforts to mainstream DRR into sectoral planning</p>	
	Evaluation Session of the Training Programme	<ul style="list-style-type: none"> • Effectiveness and usefulness • Course Content and Materials • Strengths and weaknesses and gaps in the training course and content • Management of the Training • Other suggestions to improve the training and content • Future support and follow-up needs of the participants 	
	Valedictory and Closing Session		Plenary Session

DAY 1

MODULE 1 - Introduction and Concept of Disaster Risk Reduction (DRR)
In Development including key concepts, frameworks and terminologies

Session 1.1 - Understanding and definition of hazards, risks, vulnerabilities,
capacities and disasters

Session 1.2 - Development and Disaster Management

Session 1.3—Overview of Disaster Context in India and Himachal Pradesh

MODULE 1 - Introduction and Concept of Disaster Risk Reduction (DRR) in Development including key concepts, frameworks, and terminologies

SESSION 1.1

Understanding and definition of hazards, risks, vulnerabilities, capacities, and disasters

DURATION

60 Minutes

NOTE FOR THE FACILITATOR

The impact of major disasters on people's lives and livelihoods is enormous, wiping out years of development gains after a single event, and increasing the vulnerability of the poor, who are often unable to recover before another flood, drought, cyclone, or earthquake strikes.

Though most of the participants in this training endeavour may be familiar with the definitions, ideas, arguments, and frameworks related to mainstreaming DRR in development, it is important to re-examine the definitions of hazards, risks, vulnerabilities, disasters, and capacities, as they constitute the fundamentals around which sustainable development is now being defined in the face of increasing disaster impacts and climate change.

OBJECTIVES

- Define the key terms, definitions, and concepts related to disaster risks and climate change
- Develop basic knowledge about the types of vulnerabilities, categories of disasters, and the relationships between vulnerabilities, hazards, exposure, disasters, and capacities
- Develop deeper understanding of the risks, hazards, and disasters that challenge India, and how they impact the country as a whole (see handouts)
- Shift from traditional Disaster Management Cycle to one that focuses on DRR and CCA – prevention, mitigation and preparedness. (see handouts)
- Obtain a broad overview of trends in increasing disasters, climate change impact, and the rationale of mainstreaming DRR and CCA into developmental planning

Key Concepts

- Natural hazards are phenomena or conditions or events, natural or manmade, having potential to cause injury, loss of life, and damage to property, livelihood, or environments.
- Hazards may turn into disasters if vulnerabilities are not properly addressed.
- Disaster risks may be reduced, if not completely eliminated, through various prevention, mitigation, and risk reduction measures.
- To combat the trend of increasing disaster impacts neutralizing developmental gains, all nations, including India, have reached a consensus that achieving sustainable development requires that DRR and CCA be mainstreamed into developmental plans.

Key Definitions

Below are some of the key definitions related to Disaster Risk Reduction:

Hazard is an event or occurrence that has the potential to cause injury, death, and/or damage to property and the environment on which the community depends for its social or economic existence. Hazards occur due to natural or human-made causes. In a majority of cases, these two factors are interrelated. For example, floods generally occur because of rising water levels in rivers due to heavy rain. However, flooding situations are aggravated if the riverbed is silted, often due to deforestation in the upper catchments, or if drainage routes are blocked due to unplanned growth.

Vulnerability is frequently a reflection of poverty and consequently, vulnerability reduction is largely a product of social and economic development. While countries like India and Bangladesh are in geographically vulnerable locations, their main susceptibility to disasters comes from weak social and economic structures. Housing quality, pre-existing health and nutritional status, social welfare infrastructure, and economic resilience determine the magnitude of a disaster's effect and its long-term consequences. Vulnerability is also viewed as a set of prevailing conditions or elements that adversely affects an individual, family, or community's ability to cope with a threatening event or process.

While natural events of devastating magnitude continue to impact differently in different parts of the world, examination of the empirical data shows that vulnerability to disasters has always been extremely high in developing countries. The developing country's poor and certain ethnic groups suffer human and property loss, which is unimaginable to the rest of the world. Their capacity to recover swiftly is limited by the very factors that caused the impact in the first place. It is estimated that 97% of deaths and 99% of people affected by disasters are in developing countries.

Three main categories of Vulnerability

Physical/Material Vulnerability

This vulnerability is due to weak economic status, very few productive assets, and little or no savings. It also includes weak infrastructure – poor roads, communication systems, non-adherence to building and fire codes, zoning laws, etc. For those who already live on the margins, the death of a few or even a single domestic animal during a calamity can drastically reduce their source of livelihood. They also lack education or skills that would enable them to access other economic opportunities. They usually have very little savings and no insurance, inadequate or no health facilities, and poor nutritional status. They live in weak structures such as mud and thatched houses, in areas that are extremely prone to natural calamities and other hazards such as floods, cyclones, and fires. The poor often experience a marked increase in migration, indebtedness, land, and other asset alienation even after a minor disaster.

Social/Organisational Vulnerability

When a disaster hits, people who are less organised socially, economically, or politically become more vulnerable than those who are organised. In an unorganized community, even a small event could trigger a larger crisis situation, such as the outbreak of ethnic or communal conflict, or an epidemic.

Attitudinal or Motivational Vulnerability

Those who periodically face natural hazards or disasters develop, over time, certain coping mechanisms to deal with them. Communities that are more self-reliant and prepared have more confidence to face disaster situations than communities who have a lower awareness level of their situation, are not prepared, and are primarily dependent on external assistance.

DEFINING DISASTERS

Disasters can be broadly defined as any extreme event, whether of natural or human origin, which overwhelms vulnerable populations. They are characterised by some or all of the following:

- They are disruptive to individuals and communities.
- They are not part of the day-to-day experience and are outside normal life expectations.
- They are often unpredictable in occurrence and effects.
- They require a response for which normal local resources may be inadequate.
- They have a wide range of effects and impacts on the human and physical environment.
- There are complex needs to be addressed in dealing with them.
- They can be of sudden onset, like earthquakes.
- They are destructive to human, animal and/or plant life, health, property, and/or the environment.
- They overwhelm normal prudent protective measures.

Capacity: This can be defined as the collective qualities that increase the ability of an individual, family, or community to cope with a threatening event or process.

Emphasis on capacity: With an increase in capacity, the extent of damages in a disaster situation can be reduced. It is important to enhance capacity at every level, from the individual and family level to the community level, on up. The best scenario is where there is sufficient physical/material capacity and social/organisational capacity.

Physical/Material capacity: This implies that the individual or community has access to food, water, medicine, boats or rafts, or other such materials required in an emergency.

Social/Organisational capacity: It may happen that there are adequate material supplies from outside sources, or the community is prepared enough to face an emergency, but if there is no social/organisational capacity, the community may be divided. Such rifts within the community may lead to social unrest and a breakdown of law and order.

Risk: Understanding this term is critical in reducing the effects of natural and other threats.

Theoretically, Risk = Hazard + Vulnerability + Element at Risk

In this context, the example of flooding in Bangladesh is an appropriate one. In Bangladesh, floods are a recurrent annual phenomenon. But as the people are not prepared to face the difficult situations caused by flooding due to economic and social issues, they become more vulnerable: these people are more at risk in flood situations.

Method: Presentation and discussion, interspersed with questions from participants, sharing and clarifications from the facilitator(s), and participatory summation of the session by the facilitator(s).

Training Methods and Materials Required: Presentation, interactive lecture, chart paper and participant handbook

Handouts

The handouts in this session provide information on the topic of the increasing impact of disasters and climate change, how they have become major impediments to sustainable development, and also strengthening the rationale for mainstreaming DRR and CCA.

- Increasing Disaster Impact – Globally & In South East Asia (Page 25)
- DRR Approach Model (Page 41)
- Traditional Disaster Response Model and Disaster Risk Reduction Model (page 42)
- Sustainable Development Context Flow Diagram (Page 44)

Technical Notes

Introduction

The number and severity of disasters are increasing. During the most recent decade, there were more disasters than in any previous decade and the numbers of people affected by disasters have risen many times over. The last 30 years have seen a dramatic increase in the occurrence of both natural and human-made disasters. Climate change impact has further exacerbated the numbers, frequencies, and intensities of climate-related hazards, especially hydro-meteorological disasters. While floods, cyclones, droughts, heat waves, earthquakes, and violent conflicts occur in every region of the world, it is typically the poorest countries that suffer the most. The losses are not only in terms of lives, livelihoods, and assets damaged or destroyed, but also economic, social, and environmental. The impact of major disasters on people's lives and livelihoods is enormous, wiping out years of development gains and increasing the vulnerability of the poor, who are often unable to recover before another flood, drought, cyclone, or earthquake strikes. Hydro-meteorological disasters are the most devastating and commonly occurring disaster throughout the world, comprising more than 2/3rd of all major disasters, justifying the need for integrating DRR and CCA.

While natural events of devastating magnitudes continue to impact differently in various parts of the world, examination of the empirical data shows that vulnerability to disasters has always been extremely high in developing countries. It is estimated that 97% of deaths and 99% of people affected by disasters are in developing countries. The extent of human and property losses suffered by the poor and marginalized ethnic groups in developing countries is unimaginable to the rest of the world, and their capacity to recover swiftly is limited by the very factors that caused the impact in the first place. The vulnerabilities of children, women, senior citizens, differently abled persons, and other marginalised groups and communities make them the most vulnerable to the impacts of disasters and climate change.

The policy objective of anticipating and reducing risk is called disaster risk reduction (DRR). Although often used interchangeably with DRR, Disaster Risk Management (DRM) can be thought of as the implementation of DRR, since it describes the actions that aim to achieve the objective of reducing risk (Adapted from UNISDR Global Assessment Report 2015).

Various terms linked to the activities which we have come to understand as DRR have evolved and been refined over the past 50 years. An overemphasis on disaster and humanitarian relief has made way for contemporary terms such as disaster reduction and disaster risk management. The UNISDR (2009) defines a disaster as: "A serious disruption of the functioning of a community or a society involving widespread human, material, or environmental losses and impacts which exceeds the ability of the affected community to cope using only its own resources."

Disasters are often described as a result of the combination of: exposure to a hazard, existing conditions of vulnerability, and insufficient capacity or measures to reduce or cope with the potential negative consequences. Disaster impacts may include loss of life, injury, disease, and other negative effects on human physical, mental, and social well-being, together with damage to property, destruction of assets, loss of services, social and economic disruption, and environmental degradation.

The term disaster risk therefore refers to potential (not actual and realised) disaster losses, in lives, health status, livelihoods, assets, and services, which could occur in a particular community or society over some specified future time period. Disaster risk is the product of the possible damage caused by a hazard due to the vulnerability within a community. It should be noted that the effect of a hazard (of a particular magnitude) would affect communities differently (Von Kotze, 1999:35). This is true because of the level of the coping mechanisms

within that particular community. Poorer communities are therefore more at risk than communities that do have the capacity to cope.

Risks exist or are created within social systems. The social context in which risk occurs is an important consideration. It should also be noted that people therefore do not share the same perceptions of risk and their underlying causes due to their social circumstances. To determine disaster risk, three aspects need to be present: hazard, vulnerability to the hazard and some form of coping capacity.

Classification and categories of disasters and types of vulnerabilities

Asia has the highest number of disaster events, with India being among the top five most disaster-prone countries in the world. In 2015, India was the third highest disaster affected country. Himachal Pradesh is vulnerable to 25 out of 33 types of hazards identified by the High Powered Committee (HPC) of the Government of India, which are categorised into 5 sub-groups (hydro-meteorological, geological, biological, industrial, and chemical and radiological) plus accident related. Broadly speaking, disasters are either natural or man-made.

Apart from the identified hazards, the state is also confronting increasing threats from climate change and increases in climate-induced disasters. Hazards, both natural and man-made, are of immediate concern to the State of Himachal Pradesh, as it faces the fury of one or the other disaster every year. The fragile ecology and geology of the state, coupled with large variations in physio-climate conditions, render it vulnerable to the vagaries of nature in one way or another. The Himalayan ecosystem is extremely fragile, and as such, is vulnerable to different hazards.

Vulnerabilities have been broadly classified into three categories: (a) physical/material, (b) social/ organisational, and (c) attitudinal or motivational. Another category of disasters which has drawn attention includes man-made situations, such as lack of rational policies to restrict the sale of hazardous and harmful drugs, free sale of tobacco and liquor, use of banned pesticides, and displacement of large numbers of people by development projects. Another aspect is the lack of implementation of existing laws, rules, and codes, resulting in disasters that the same laws, rules, and code seek to mitigate or prevent.

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. Vulnerability is a set of prevailing or consequential conditions arising from various physical, social, economic, and environmental factors which increase the susceptibility of a community to the impact of hazards (UNISDR, 2002:24). It can also comprise physical, socio-economic, and/or political factors that adversely affect the ability of communities to respond to events (Jegillos, 1999). Blaikie, et al. (1994) are of the opinion that vulnerability is constituted by the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist, and recover from the impact of a hazard. Vulnerability can also be expressed as the degree of loss resulting from a potentially damaging phenomenon or hazard. It is, therefore, the extent to which a community will degrade when subjected to a specified set of hazardous conditions. Vulnerability has some distinct underlying causes. The magnitude of each disaster, measured in deaths, damage, or costs (for a given developing country) increases with increased marginalisation of the population. This can be caused by high birth rates, problems of land tenure and economic opportunity, and the misallocation of resources to meet the basic human needs of an expanding population. As the population increases, the best land in both rural and urban areas is taken up, and those seeking land for farming or housing are forced to accept inadequate land. This offers less productivity and a smaller measure of physical or economic safety, thus rendering the community vulnerable.

Coping capacity for disaster risk reduction refers to the ability of people, organisations, and systems, using available skills and resources, to face and manage adverse conditions such as hazards, emergencies, or disasters. Coping capacities contribute to the reduction of disaster risks (UNISDR, 2009).

The UNISDR defines resilience as “the ability of a system, community, or society exposed to hazards to resist, absorb, and accommodate to and recover from, the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions” (UNISDR, 2009). This definition therefore considers the presence of a hazard and not a disaster. Thus once a disaster actually occurs, it would be incorrect to refer to resilience but rather to coping capacity. Resilience and the building of resilience should therefore be seen as an integral part of disaster risk reduction activities. Resilience therefore means the ability to “spring back from” a shock. The resilience of a community in respect of potential hazard events is determined by the degree to which the community has the necessary resources and is capable of organising itself both prior to and during times of need (UNISDR, 2009).

Vulnerabilities and Risks – Disasters and Human Misery

Disasters occur when hazards and threats of hazards, natural and human-made, impact on the vulnerabilities of an area/region and its people.

It is estimated that the loss of GNP from disasters in developing countries is approximately 20 times greater than in industrialised countries. Standards in health, education, and other social sectors deteriorate in affected countries, further polarising social and economic divisions, pushing the poor further into poverty, and increasing the marginalisation of those already discriminated against because of religion, race, gender, class, and other factors. Despite significant disaster assistance and aid in the last decades, disasters increasingly set back both social and economic development. Current disaster management policies and development programmes have been unable to reverse this trend.

Within all the existing parameters, vulnerable groups face greater suffering. Vulnerabilities are essentially a set of prevailing or consequential conditions composed of physical, socio-economic, environmental and/or political factors which increases a community’s susceptibility to calamity or which adversely affects its ability to respond to events.

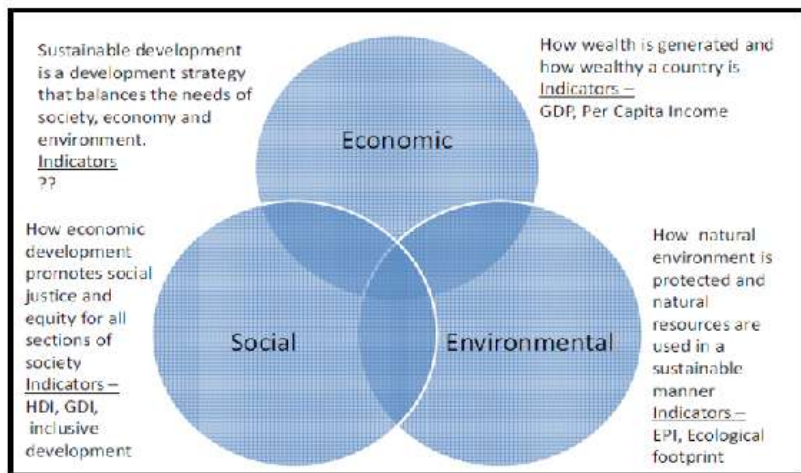
Certain groups of people are more vulnerable to a number of human-made and natural disasters than others. What extends the length and intensity of their sufferings is the degree of vulnerability of the location or the region where they reside and its disaster proneness, as well as their own vulnerability status. The vulnerability of a region is a complex phenomenon: it can be defined as the influence on it by the heterogeneity of social, political, economic, and environmental factors. It is thus imperative that all developmental activity focus on all these factors that render populations susceptible, and examine disasters in specific, as well as in broader socio-economic and political contexts.

The exposure of communities and assets to climate change is also a contributor to disasters. Although technically, this cannot be translated into a mathematical equation, for the purpose of understanding, the relationship between the various components can be represented as:

$$\text{Disaster Risk} = \{h \times v\} \times e \div c$$

Where **h** = hazard, **v** = vulnerability, **e** = exposure, and **c** = capacity.

There is a consensus that in the face of increasing disaster risks, along with climate change impact, sustainable development has to be viewed from the perspective of the three dimensions illustrated below:



To combat the continuing neutralisation of developmental gains by increasing disaster and climate change impacts, the consensus reached in the Sendai Framework for Disaster Risk Reduction 2015 – 30, following the HFA and the Paris Climate Agreement, is that DRR and CCA must be mainstreamed into developmental plans at all levels.

To realise this, there is the need for not only a paradigm shift from:

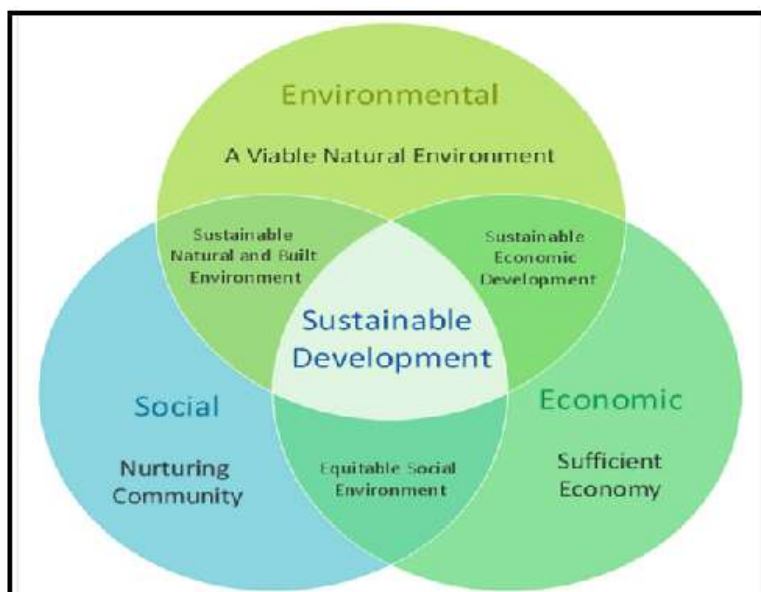
A. A Response and Relief Centric Approach to a Mitigation, Preparedness and Disaster Centric Approach

But also to:

B. A Hazard, Vulnerability, and Environment Centric Approach

A paradigm shift in the development sector – from income poverty to human poverty – has been paralleled in the disaster management sector by a shift from seeing disasters as extreme events created by natural forces, to viewing them as manifestations of unresolved development problems. This has led to increased emphasis on integration of poverty reduction programs with other sectoral issues such as environmental management, gender, and public health.

However, examples of systematic long-term integration of such programs with the disaster management sector are few. Over the past few decades, there has been an exponential



increase in human and material losses from disaster events, though there was no clear evidence that the frequency of extreme hazard events had increased. This indicated that the rise in disasters and their consequences was more closely related to a rise in people’s vulnerability, induced by human-determined paths of development. An evolution in approaches – from relief and response to vulnerability analysis to risk management has started influencing how disaster management programs are now being planned and financed. As it is becoming clear that the nature of people’s vulnerability is complex and varied, linkages between poverty and vulnerability are being explored.

Three approaches to making these paradigm shifts include a livelihood framework from the bilateral development aid context, community-based disaster management from that sector, and risk transfer and finance from multilateral development finance institutions. Poverty reduction and disaster reduction programs can mutually support each other by developing innovative, multi-dimensional, inter-sectoral approaches.

This would entail focusing on an approach to MAINSTREAM DRR AND CCA INTO DEVELOPMENTAL PLANNING at all levels, especially at the sub-national and local levels, and into departmental and sectoral plans.

HANDOUT 1 - Increasing Disaster Impact – Globally & In South East Asia

Global Overview

While there seems to be a global consensus about the need to mainstream disaster risk reduction (DRR) into development, knowledge about how to do it and how to measure its results is still in a nascent stage. This offers both an opportunity and a challenge. The argument that investing in DRR can substantially minimise the damage and loss from disasters is widely accepted. However, it has been difficult to generate evidence to support the argument and build real world planning practices. Nevertheless, the need to mainstream DRR into development is sufficiently well accepted globally.

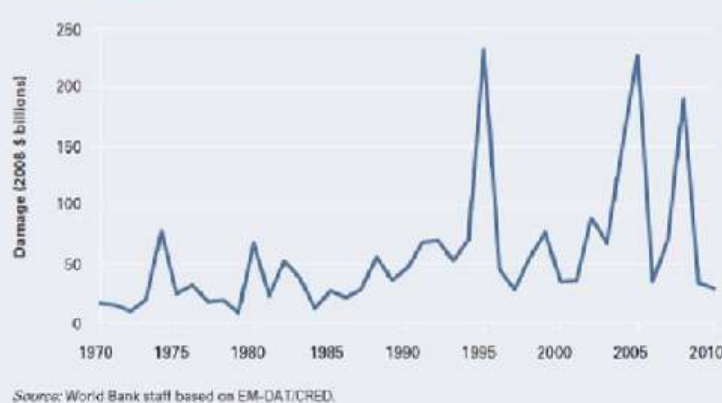
The Sendai Framework for Disaster Risk Reduction (SFDRR), 2015–30, highlights the present global commitment for strengthening Disaster Risk Reduction through all four of the proposed priority actions and reiterated their commitment to disaster risk reduction and the building of resilience to disasters to be addressed with a renewed sense of urgency in the context of sustainable development and poverty eradication and for DRR to be integrated into policies, plans, programmes, and budgets at all levels and considered within relevant frameworks. The SFDRR declaration in 2015, followed the Hyogo Framework for Action (HFA), 2005 – 15, had recognised and places Identification of the underlying causes of disaster risk as one of the five priorities of action. 195 countries, including India, have subscribed to SDFRR and are committed to building the country and community resilience in pursuit of its stated goals.

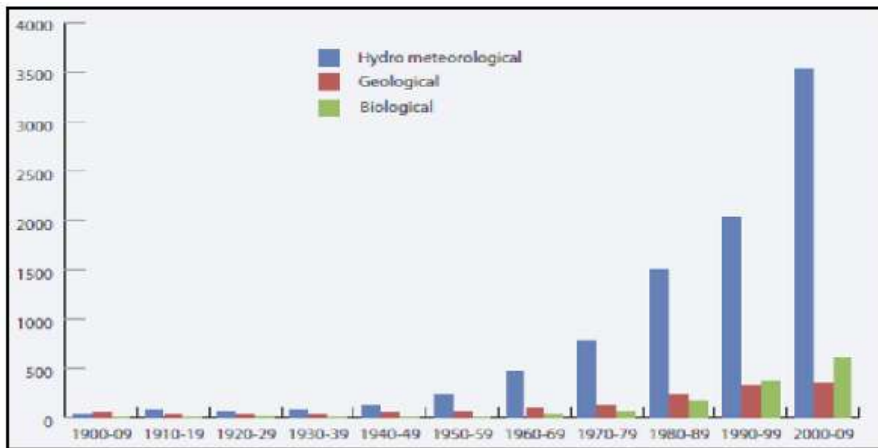
SGDRR: PRIORITIES FOR ACTION

1. Understanding Disaster Risks
2. Strengthening Disaster Risk Governance to manage Disaster Risks
3. Investing in Disaster Risk Reduction Afor Resilience
4. Enhancing Disaster Preparedness for effective Disaster Response and to “Building Back Better” in Recovery, Rehabilitation & Reconstruction

Over the past decade, which coincides with the period of the HFA plan, disasters continued to exact a heavy toll, and as a result the well-being and safety of persons, communities, and countries as a whole, have been adversely affected. Over 700 thousand people lost their lives, over 1.4 million were injured and approximately 23 million were made homeless as a result of disasters. Overall, more than 1.5 billion people were affected by disasters in various ways. Disaster events are increasing exponentially. The number of disaster events occurring from 1900-09, 73, has increased to 4494 during 2000-09. This increase may reflect greater exposure to hazards, or better reporting in recent years, or both.

Figure 1.5 Damage on the rise in the last two decades (global damage from hazards, 1970-2010)





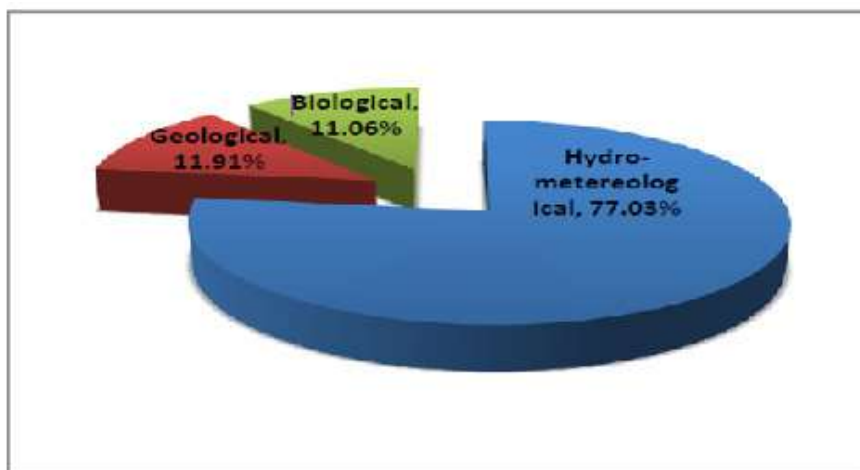
Source: Disaster Management in India, MHA

Disaster events which have occurred globally between 1900 and 2009 can be categorized into three categories viz., hydro-meteorological, geological, and biological disasters.

Trend analysis shows a continuous increase (except in the years 1920-29) in the frequency of occurrence of hydro-meteorological disasters. From the human casualties perspective, too, the highest numbers of casualties have been reported due to hydro-meteorological disasters (47.94%), followed by geological disasters (41.06%), and biological disasters (10.99%) of the total deaths.

In fact, during this period as many as 6,457 weather related disasters occurred.

In recent years, the number of climate related disasters have shown increasing trends in terms of frequencies, intensities, and losses. According to the report from the Centre for Research on Epidemiology of Disasters (CRED), an average of 335 weather-related disasters were recorded per year between 2005 and 2014, an increase of 14% from 1995-2004, and almost twice the level recorded during 1985-1995. Across the globe, over 600,000 lives have been lost – an average of 30,000 per year. Over 4 billion people have been injured, left homeless, or in need of emergency assistance, and 87 million homes damaged or destroyed as a result of weather-related disasters in the last 20 years. While less frequent than floods, storms were found to be the deadliest type of weather-related disaster, accounting for 242,000 deaths or 40% of the global weather-related deaths, with 89% of these deaths occurring in lower-income countries. The total economic loss was more than \$1.3 trillion. In addition, between 2008 and 2012, 144 million people were displaced by disasters.



Women, children, and people in vulnerable situations were disproportionately affected. (Source: Overview of Natural Disasters and their Impacts in Asia and the Pacific, 1970 – 2014, UNESCAP Technical Paper Information and Communications Technology and Disaster Risk Reduction Division, March 2015)

Economic Losses

Weather related disasters accounted for US\$ 1.891 trillion in economic losses. However, the report highlights data gaps. Only 35% of the records include information about economic losses, and that economic losses from weather-related disasters are likely to be much higher than the recorded figure. UNISDR estimates that the true figure on disaster losses – including earthquakes and tsunamis – is between US\$ 250 billion and US\$ 300 billion annually.

Disaster Scenario in South East Asia

In Asia and the Pacific, a significant number of people lost their lives from natural disasters over the past 45 years. As mentioned earlier, the region was hit by around 43 percent of the disasters experienced globally, but the impact of these disasters in terms of lives lost was disproportionately high. Between 1970 and 2014, more than 2 million people died, accounting for 56.6 per cent of the total deaths in the world due to disasters.



Figure 2.1 - Total fatalities and affected from natural disasters (1970 - 2014)

Fatalities(or deaths) in the Overview of Natural Disasters and their Impacts in Asia and the Pacific, 1970 - 2014 March 2015 Disaster Risk Reduction Section ICT and Disaster Risk Reduction Division ESCAP report refers to persons confirmed as dead and persons missing and presumed dead as defined by EM-DAT

Asia bore the brunt of weather-related disasters, with more frequent events and greater numbers of people killed and affected than any other continent. This is due mainly to Asia's large and varied landmass, including multiple river basins, flood plains, and other zones, located in high risk areas for natural hazards, compounded by high population densities in disaster-prone regions. In total, 2,495 weather-related disasters struck Asia between 1995 and 2015, affecting 3.7 billion people and killing 332,000 individuals.

The year 2010-11 saw many disaster events in South Asia, with India experiencing the highest number of disaster events, compared to Bangladesh, Pakistan, etc. A total of 37% of disasters struck India, causing widespread damage across different parts of the country. In the light of the increasing risks due to the increasing number of disasters in the last two decades, it is essential to invest in effective risk reduction measures at all the levels, from programme design to implementation.

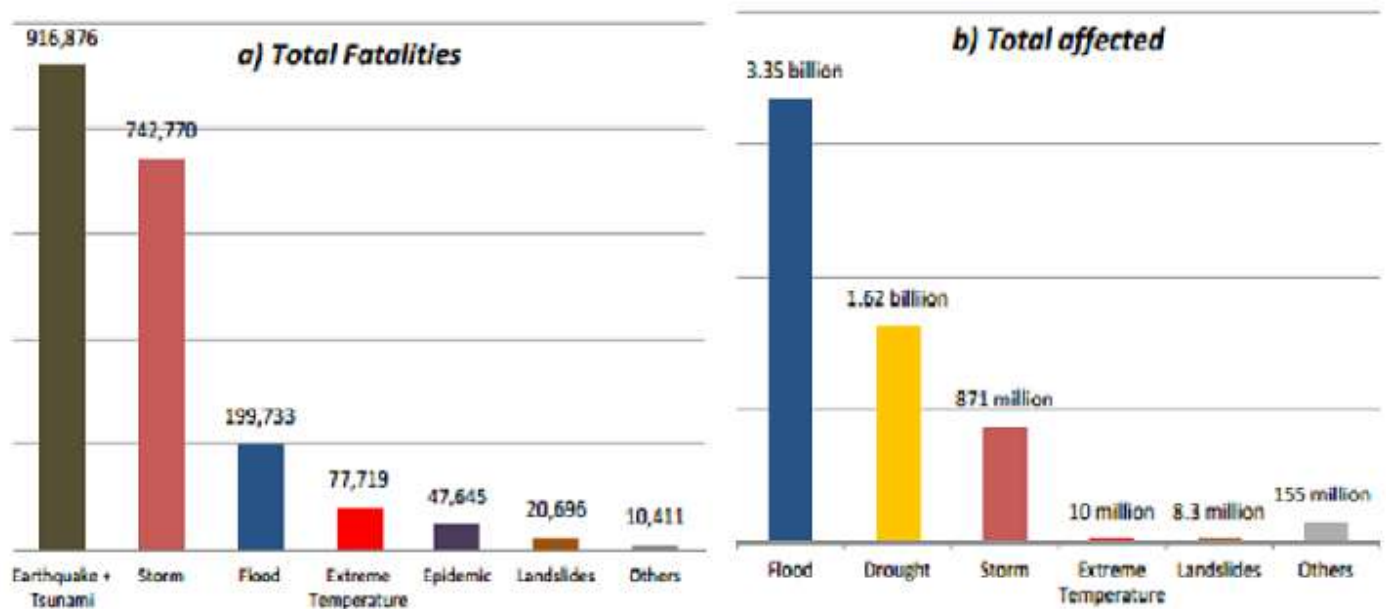


Figure 2.2 - Total fatalities and affected from natural disasters in Asia and the Pacific

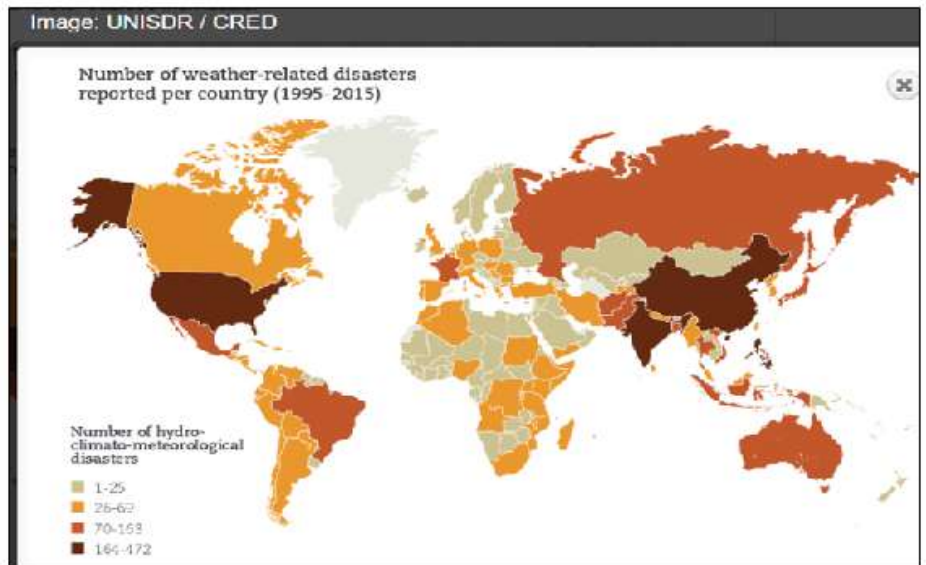
In terms of countries, of the five nations with the highest number of disasters, the two worst affected by far are the United States (472) and China (441); India (288), Philippines (274), and Indonesia, (163) make up the remaining top five. It has thus become urgent and critical to anticipate, plan for, and reduce disaster risks in order to more effectively protect persons, communities, and countries, their livelihoods, health, cultural heritage, socioeconomic assets, and ecosystems, and thus strengthen their resilience.

The UNISDR/CRED Report stressed the need for additional activities and focus that are required on a priority basis to:

- Reduce exposure and vulnerability, thus preventing the creation of new disaster risks.
- Fix accountability for disaster risk creation at all levels.
- Undertake devoted action focused on tackling underlying disaster risk drivers, such as the consequences of poverty and inequality, climate change and variability, unplanned and rapid urbanization, poor land management, and address compounding factors such as demographic change, weak institutional arrangements, non-risk-informed policies, lack of regulation and incentives for private disaster risk reduction investment, complex supply chains, limited availability of technology, unsustainable uses of natural resources, declining ecosystems, pandemics and epidemics.
- Strengthen good governance in disaster risk reduction at the local, district, state, national, regional, and global levels and improving mitigation, preparedness, and national coordination for disaster response, rehabilitation, and reconstruction, and to use post-disaster recovery and reconstruction to “Build Back Better”, supported by strengthened modalities of international cooperation while ensuring acceptable standards of engineering after ascertaining the existing and future risks are now taken as priorities.

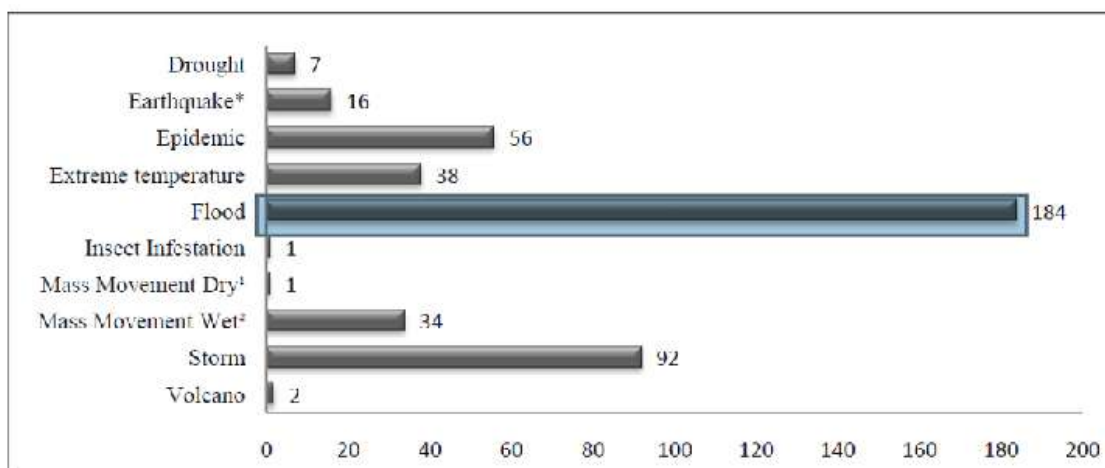
The report concludes that economic losses from weather- and climate-related disasters have been heavily influenced by increasing exposure of people and economic assets. Better management, mitigation, and deployment of early warnings could save more lives in future.

This Handout only strengthens the argument that to ensure sustainable development, DRR and CCA must be integrated and mainstreamed into all developmental planning and activities.



Disasters Situation in India

Natural disasters like floods, cyclones, and droughts occur repeatedly in different parts of the country. Many districts of India are multi-hazard prone and face different disasters all through the year. Earthquakes, hailstorms, avalanches, and landslides occur suddenly, but the extent of impact depends on the magnitude of the event and the vulnerability of the location. Diverse factors, natural and human induced, adverse geo-climatic conditions, topographic features, environmental degradation, population growth, unplanned urbanization and industrialization, unscientific development practices, etc. play huge roles in accelerating the intensity and frequency of disasters, resulting in huge economic losses and human casualties. These, coupled with the impact of climate change and climate variability, are accentuating disaster impacts and underscore the criticality of promoting disaster-resilience and risk reduction practices. Out of 35 states and union territories in the country, 27 are prone to different disasters. With increased socio-economic development, threats from Chemical, Biological, Radiological and Nuclear (CBRN) disasters demand greater preparedness levels at national, state, and district levels.



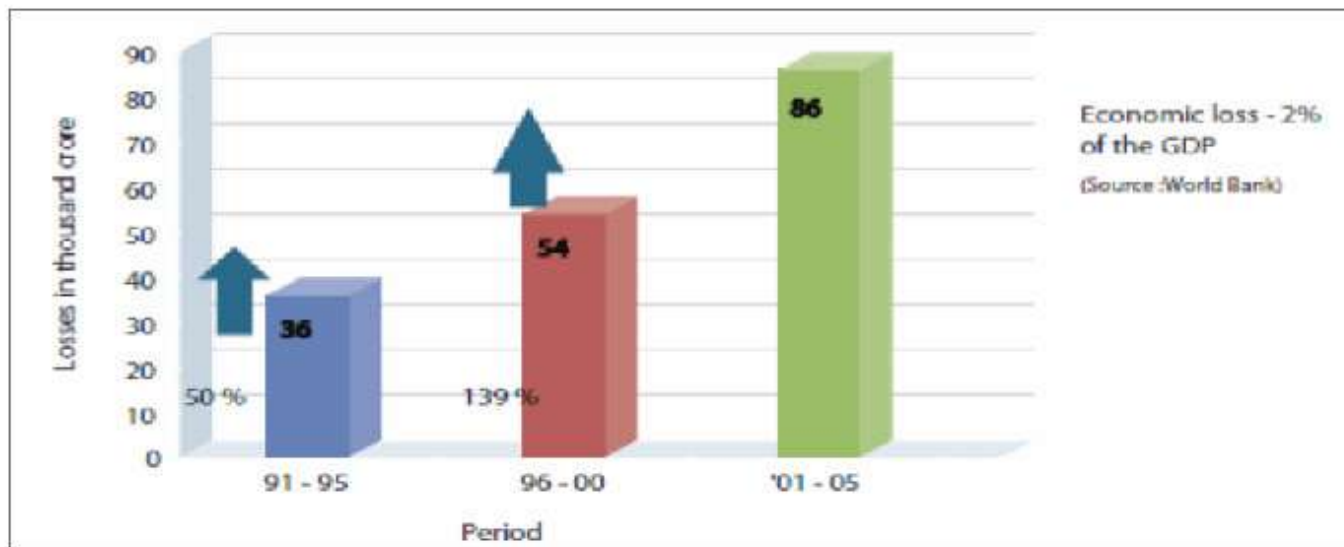
Natural Disaster Occurrence Reported during 1980-2010 in India
 Source: UCL, "EM-DAT: The OFDA/CRED International Disaster Database," UCL, <http://www.emdat.be> [10]

1 Mass Movement (dry): These are geophysical events originating from solid earth comprising of rock fall, avalanche, landslide and subsidence.

2 Mass Movement (wet): These are hydrological events caused by deviations in the normal water cycle and/or overflow of bodies of water caused by wind set-up comprising of subsidence, rock fall, avalanche and landslide.

Economic Losses Due to Disasters

The impact of disasters varies across states as well as ecosystems. The level of preparedness, economic base, and geo-climatic settings play a major role in determining the impact on various sectors and human beings. Data on lives lost, loss of cattle, and damage to cropped areas, as well as number of houses lost, present a picture of the most vulnerable states. The system of collection of reliable data on disasters also needs substantial improvement. (Sources: The various loss data from disasters are from NDMA and World Bank Reports.)



Year	Lives Lost (Humans) (in nos.)	Cattle Lost (in nos.)	Houses Damaged (in Nos.)	Cropped area affected (in lakh hectares)
2001-02	834	21,269	3,46,878	18.72
2002-03	898	3,729	4,627,00	21.00
2003-04	1,992	25,393	6,82,209	31.98
2004-05	1,995	12,389	16,03,300	32.53
2005-06	2,698	1,10,997	21,20,012	35.52
2006-07	2,402	4,55,619	19,34,680	70.87
2007-08	3,764	1,19,218	35,27,041	85.13
2007-09	3,405	53,833	16,46,905	35.56
2009-10	1,677	1,28,452	13,59,726	47.13
2010-11	2,310	48,778	13,38,619	46.25

Annual damage due to floods, cyclonic storms, landslides etc. during 2001 – 2011 in India

TYPES OF DISASTERS IN INDIA

Many regions in India are highly vulnerable to natural and other disasters on account of geological conditions. About 60% of the total area of the country is vulnerable to seismic damage of buildings in varying degrees. The most vulnerable areas, according to the present seismic zone map of India, are located in the Himalayan and sub-Himalayan regions, Kutch, and the Andaman and Nicobar Islands, which are particularly earthquake hazard prone. Over 8% India's 40 million hectares is prone to floods, and the average area affected by floods annually is about 8 million hectares. Of the nearly 7,500 kilometers long coastline, approximately 5,700 kilometers is prone to cyclones, and 68% area is susceptible to drought (India, MHA, 2004, p. 3) [11].

<p>Major Natural Disasters</p> <ul style="list-style-type: none"> • Flood • Cyclone • Earthquake • Drought • Tsunami 	<p>Minor Natural Disasters</p> <ul style="list-style-type: none"> • Heat Wave • Cold Wave • Landslide • Tornado • Avalanche
<p>Human-made Major Disasters</p> <ul style="list-style-type: none"> • Communal riot • Ethnic conflict • Refugee Situation • War • Epidemic • Industrial Disaster • Fire • Deforestation • Chemical Pollution 	<p>Human-made Minor Disasters</p> <ul style="list-style-type: none"> • Transport – road, air, railways & water disaster • Festival & pilgrimage-related disaster • Food poisoning • Alcohol/liquor tragedies • Acid Rain • Environmental Pollution

Categorisation of Disasters

The types of disasters have been the subject of research and concern to academicians and to government and independent agencies. The Disaster Statistics in India, compiled by Department of Public Administration, M L S University, Udaipur, India, and published in International Journal of Scientific and Research Publications, Volume 2, Issue 5, May 2012 1 ISSN 2250-3153, divides disasters into 2 categories (natural and technological), and further divides the natural disaster category into 5 subcategories, which in turn cover 12 disaster types and more than 30 subtypes (see Table below).

Disaster subcategory definitions

- Geophysical: Events originating from solid earth
- 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 process (in the spectrum from intra-seasonal to multi – decadal climate variability)
- Biological: Disaster caused by the exposure

India has a highly diversified range of natural features. Its unique geo-climatic conditions make the country among the most vulnerable to natural disasters in the world. Disasters occur with amazing frequency in India and while the society at large has adapted itself to these regular occurrences, the economic and social costs continue to mount year after year. It is highly vulnerable to flood, drought, cyclones, earthquakes, landslides, volcanoes, etc. Almost all parts of India experience one or more of these events. The country also, from time to time, experiences a number of human-made disasters (with over 100,000 persons being killed in road accidents annually), which cause considerable damages to property and loss of lives.

All the above figures reinforce the fact that disaster impacts are on the rise, as are economic losses, and amongst all regions, the south Asian region is the most disaster prone. India is also among the topmost five disaster prone countries in the world. In this context, considering the high degree of vulnerability of Himachal Pradesh to disasters and climate change, developmental planning and investment need to progressively mainstream DRR and CCA into all sectoral plans to minimise disaster and economic losses.

		Hydrometeorological	
Biological	Geophysical	Hydrological	Meteorological
Epidemic Viral Infectious Disease Bacterial Infectious Disease Parasitic Infectious Disease Fungal Infectious Disease Prion Infectious Disease Insect infestation Animal stampede	Earthquake Volcano Mass Movement (dry) Rock-fall Landslide Avalanche Subsidence	Flood General flood Storm surge/coastal flood Mass movement (wet) Rock-fall Landslide Avalanche Subsidence	Storm Tropical Cyclone Extra-tropical cyclone Local storm Climatological Extreme temperature Heat Waves Cold Waves Extreme winter condition Drought/wildfire Forest fire Land fire

Natural Disaster Categories, Types and Subtypes

During 2015, the southern and western states continued to reel under the impact of the continuation of one of the severest droughts, for the third consecutive year, severe floods, and one of the highest numbers of deaths due to heat wave conditions. The floods in the city of Chennai were some of the worst ever experienced.

Floods, flash floods, and landslides continued to affect the state of Himachal. What is being observed is that changes in temperature and rainfall patterns are creating increasing impacts on the lives and livelihoods in most districts of the state. There are reports that higher seismic activities are being recorded in the region, along with earthquakes of smaller magnitude reported in Jammu & Kashmir and Himachal.

Given the cross-cutting nature of disaster damage and losses where it can impact lives, livelihoods, housing, health, education, and infrastructure, all at the same time, it is obviously not enough to have disaster management located within, and dealt with by one-line department. As government departments are organised around

identified sectors, in the case of cross-cutting issues like disasters, that span numerous sectors, the only appropriate option available is to mainstream DRR into all the development programmes and projects, across all the critical sectors that have a bearing on the nature and extent of damage and loss resulting due to disasters.

S.No.	Name of event	Year	State and Area	Fatalities
1	Floods	October 2014	Jammu & Kashmir	
2	Cyclone Hudhud	September 2014	Andhra Pradesh & Odisha	
3	Odisha Floods	October 2013	Odisha	21
4	Andhra Floods	October 2013	Andhra Pradesh	53
5	Cyclone Phailin	October 2013	Odisha and Andhra Pradesh	23
6	Floods/Landslides	June 2013	Uttarkhand and Himachal Pradesh	4094
7	Cyclone Mahasen	May 2013	Tamil Nadu	8
8	Cyclone Nilam	October 2012	Tamil Nadu	65
9	Uttarkhand Floods	Aug – Sep 2012	Uttarkashi, Rudraprayag and Bageshwar	52
10	Assam Floods	July – Aug 2012	Assam	-
11	Cyclone Thane	December 2011	Tamil Nadu, Puducherry	47
12	Sikkim Earthquake	September 2011	Sikkim, West Bengal, Bihar	60
13	Odisha Floods	September 2011	19 Districts of Odisha	45
14	Sikkim Earthquake	2011	North Eastern India with epicenter near Nepal Border and Sikkim	97 people died (75 in Sikkim)
15	Cloudburst	2010	Leh, Ladakh in J&K	257 people died
16	Drought	2009	Leh, Ladakh in J&K	--
17	Krishna Floods	2009	Andhra Pradesh, Karnataka	300 people died
18	Kosi Floods	2008	North Bihar	527 deaths, 19,323 livestock perished, 2,23,000 houses damaged, 3.3 million persons affected
19	Cyclone Nisha	2008	Tamil Nadu	204 deaths
20	Maharashtra Flood	July 2005	Maharashtra State	1094 deaths 167 injured 54 missing
21	Kashmir	2005	Mostly Pakistan, Partially Kashmir	1400 deaths in Kashmir (86,000 deaths in total)

S.No.	Name of event	Year	State and Area	Fatalities
22	Tsunami	2004	Coastline of Tamil Nadu, Kerala, Andhra Pradesh, Pondicherry and Andaman and Nicobar Islands of India	10,749 deaths 5,640 persons missing 2.79 million people affected 11,827 hectares of crops damaged 300,000 fisher folk lost their livelihood
23	Gujarat Earthquake	2001	Rapar, Bhuj, Bhachau, Anjar, Ahmedabad and Surat in Gujarat State	13,805 deaths 6.3 million people affected
24	Orissa Super Cyclone	1999	Orissa	Over 10,000 deaths
25	Cyclone	1996	Andhra Pradesh	1,000 people died, 5,80,000 houses destroyed, Rs. 20.26 billion estimated damage
26	Latur Earthquake	1993	Latur, Marathwada region of Maharashtra	7,928 people died 30,000 injured
27	Cyclone	1990	Andhra Pradesh	967 people died, 435,000 acres of land affected
28	Drought	1987	15 States	300 million people affected
29	Cyclone	1977	Andhra Pradesh	10,000 deaths hundreds of thousands homeless 40,000 cattle deaths
30	Drought	1972	Large part of the country	200 million people affected

Climate Change and Disasters

Apart from the impact of natural disasters, climate change has become a major challenge to developmental planners and for all those who govern. In a disaster prone and climate change sensitive state like Himachal, disaster and climate change induced risk management and governance assumes great significance.

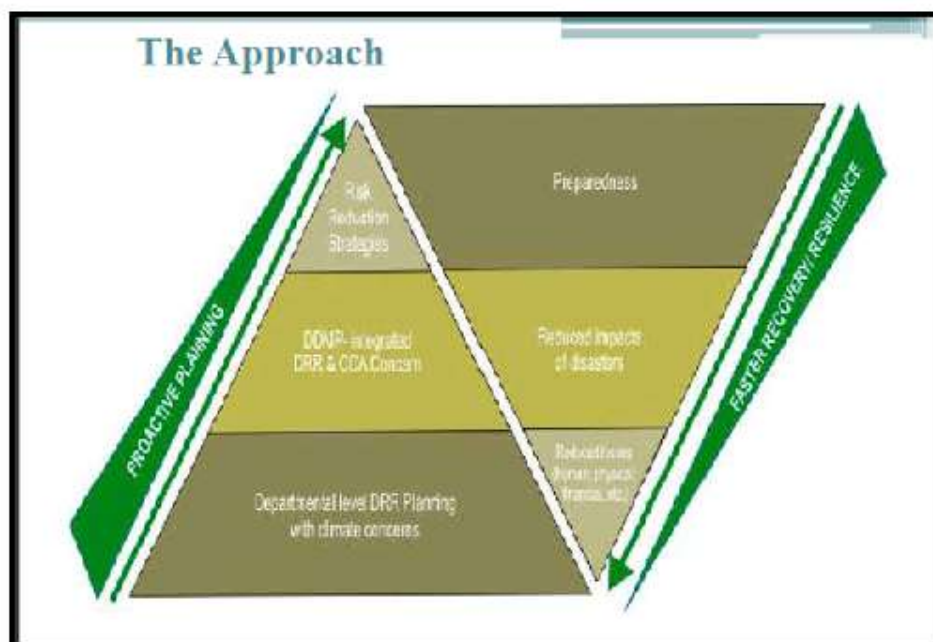
India's growth, especially that of urban areas at such a fast pace, is posing challenges both for governance and development. However, these challenges are often not clearly mapped out to feed into the development plans and programmes being undertaken by PRIs, as well as by different ULBs. Development plans are usually not based on an informed understanding of existing disaster and climate related risks, and thus is likely to increase disaster risk for many vulnerable groups of residents inadvertently.

In order to engage in analysis, we must approach the issues of disasters and climate related risks from the perspective of an opportunity for sustainable and resilient development planning and administration. It is becoming increasingly clear in the light of emerging evidence that most of the disasters, including the so-called natural disasters, have human hands in its making. And therefore knowing the human dimension of disasters also offers potential ways to reduce and/or minimise the disaster risks and be prepared to respond to disasters in a manner that results in the minimum possible damage and loss.

Having an informed understanding of the disaster risks and their appropriate management strategies is critical to effective disaster management. There are various ways to assess and manage disaster risks in different contexts. We can compare available approaches and strategies, in terms of their relative advantages and disadvantages in different kinds of contexts: these could relate to the size and complexity of growth across villages, small towns, peri-urban areas, large cities, medium, and small towns and, for Himachal Pradesh, locations of cultural heritage, religious and pilgrimage, as well as numerous locations that attract tourists. It is envisaged that a comparative assessment of existing disaster risk assessments, management approaches, and strategies will help us to arrive at our own new ideas and insights for carrying out disaster risk assessment and management strategies in our respective capacities, with regard to our departmental priorities and areas of work/responsibilities. The assessment will also assist determining the areas of multi-departmental/multi-stakeholders cooperation and role to minimise disaster risks and climate change impact.

HANDOUT 2

Disaster Risk Reduction (DRR) is now globally recognised to be the major strategy for effective disaster management. UNISDR's publication of 2000, titled 'Living with Risk', carried the first formal global recognition of the need to mainstream DRR in development. The latest global consensus was achieved through the adoption of SFDRR, which clearly gives a plan of action. The next figure describes the general context and primary activities of disaster risk reduction, including the elements necessary for any comprehensive disaster risk reduction strategy in the context of sustainable development.



DRR Approach Model

Source: Integrating DRR into Sectoral Planning, Philippines

HANDOUT 3

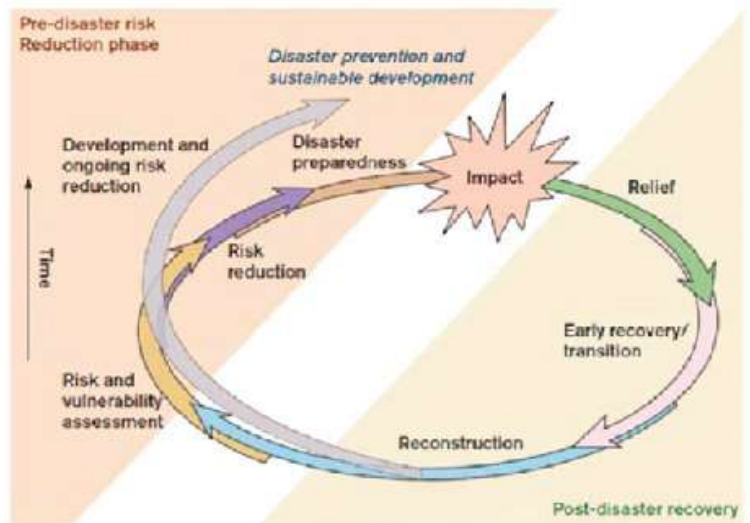
TRADITIONAL DISASTER MODEL



Traditional Disaster Model

With the evolution of a more pro-active understanding of Disaster Management, and an increasing focus on DRR as well as CCA, the DM cycle has evolved to where the focus is on preparedness and risk reduction through Risk and Vulnerability Assessment. In the new model, DRR is an ongoing measure for all developmental activities, with an increasing focus on mitigation (disaster prevention) measures as a tool for sustainable development. Even the Recovery and Reconstruction phases are based on “Building Back Better”, taking advantage of the lessons learnt after the most recent disaster event, and on analysing the risks and vulnerabilities that were exposed during the most recent disaster. The present DM Cycle primarily focuses on preparedness, prevention, and mainstreaming DRR into all developmental activities. For sustainable development to be attained, all developmental programmes will have inbuilt strategies and activities for ongoing disaster risk reduction measures as the principle component of the planning, monitoring, and evaluation process.

The adjacent illustrations highlight how the concept of the Disaster Management Cycle has evolved. The traditional Disaster Management Cycle depicts how, upon the impact of a disaster, the various aspects of the Disaster Management Cycle, which are response, recovery, and development, are on the post-disaster side of the cycle, while preparedness, mitigation, and prevention activities are on pre-disaster side. In the traditional model, DM was far more dependent on the post-disaster actions of response, relief, rehabilitation, and reconstruction.



HANDOUT 4

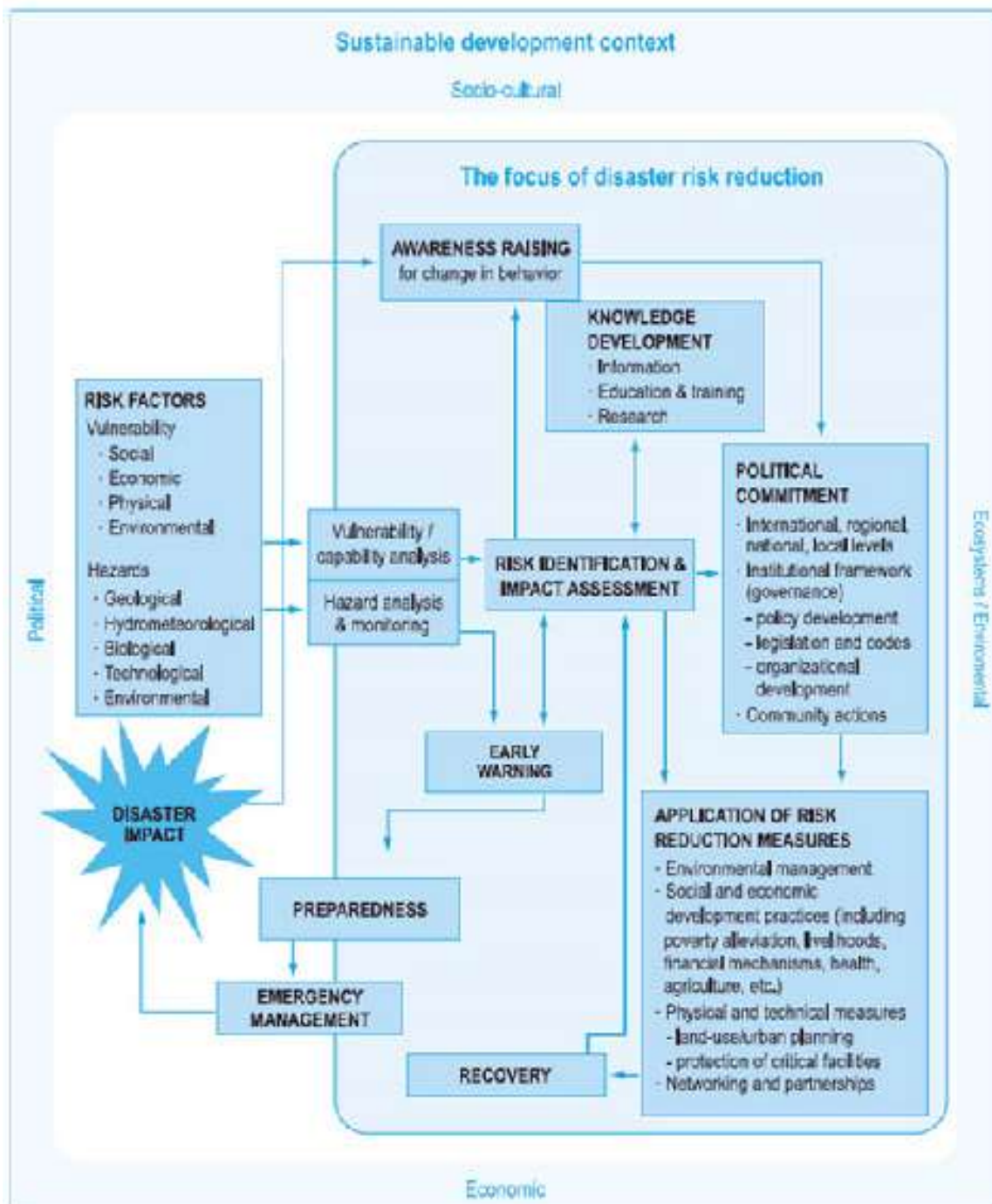
Disaster Risk Reduction has emerged as prerequisite for sustainable and resilient development in recent times. The escalation of hazards and risks poses serious threats to sustainable development and poverty reduction measures, undermining development gains. The framework suggests that the post-disaster period is the most appropriate time for introducing DRR measures for ensuring sustainable development. It also suggests that risk reduction and adaptive planning measures need to be incorporated into development programmes and should not be seen as a distinct and separate set of activities.

The above illustration highlights a Sustainable Development Model, focused on mainstreaming DRR as a core element of all developmental activities through awareness raising, knowledge development, and political commitment, through vulnerability/capacity analysis, hazard analysis and monitoring, risk identification and impact assessment, application of all risk reduction measures in all developmental programmes, physical, and technical measures, land use and especially urban planning, and protection of critical facilities while also including environment management. Via this process, it is possible to strengthen networking and partnerships with other stakeholders to continuously mainstream and strengthen DRR and CCA aspects into all developmental plans.

On the basis of the information above, and given the increased impacts of disasters and climate change, it has become imperative that DRR and CCA are integrated and mainstreamed into all present and future developmental policies and plans if sustainable developmental trends are to be achieved. We must gradually move away from the recurring experiences of developmental gains being continuously negated or neutralised by repeated disasters and climate change impact.

Additional Reference Materials:

1. Sendai Framework for Disaster Risk Reduction – 2015 – 30 <http://www.unisdr.org/we/coordinate/sendai-framework>
2. Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters - <http://www.unisdr.org/we/inform/publications/1037>
3. 'Natural Hazards and Unnatural Disasters' - <https://www.gfdrr.org/gfdrr/nhud-home>



MODULE 1 (Contd.)

SESSION 1.2

Development and Disaster Management

DURATION

60 Minutes

NOTE FOR THE FACILITATOR

Some of the participants may already be aware of development, disaster, and climate change linkages, making it desirable to involve them in sharing their conceptual understanding with real world examples, especially from Himachal Pradesh. The impact of disasters and climate change on key development sectors - agriculture, forestry, water, sanitation, housing, education, health, power, livelihoods, environment, roads, and critical public infrastructure - needs to be discussed with reference to the Post Disaster Needs Assessment (PDNA) data gathered from recent major disasters that have impacted the state (examples from other Himalayan states and Nepal may also be relevant). This could then be linked to risk and environmental impact assessments and their roles in defining these risks and potential to offer solutions.

OBJECTIVES

- Develop understanding of linkages across disasters, development, DRR, CCA, and poverty reduction
- Develop rationale for mainstreaming DRR and CCA with risk analysis and environmental impact assessments as inputs

METHOD

Presentation and discussion, interspersed with questions from participants, sharing and clarifications from the facilitator(s), and participatory summation of the session by the facilitator(s).

Key Concepts

- The rapid increase in the impact of disasters over several decades has affected almost all sectors, in both wealthy and poor countries.
- There are numerous small disasters and events that go unreported. Loss figures are usually under-reported, with the impact on economies not taken into account. The relative economic impacts on individuals, and especially poor households, who are rarely able to break out of the vicious cycle of poverty and regular/periodic disaster impacts, are undervalued.
- The impact of disasters on damaged livelihoods is of particular concern, as it leads to greater exposure, higher vulnerability, and losses. Identification and proactive management of risks are integral part of the development process.
- With improved understanding, data collection, and database building, long-term plans for DRR become a core component for sustainable development.
- The impact of climate change and the increase in climate induced disasters have become major developmental challenges that nations face today.
- Disasters and climate change are both contributing to enhanced continuous vulnerabilities and increasing poverty. Achieving the goals of sustainable development and poverty reduction will require that DRR and CCA be integrated into all developmental plans.

Technical Notes

Natural hazards destroy lives and livelihoods, and have long-term consequences for human and economic development. The detrimental impacts of these events on development have been seen over and over, with destruction of lives and livelihoods setting back development progress and increasing levels of poverty—or forcing new groups into poverty. As a result, both disasters and climate change are increasingly being considered and integrated as part of a development continuum, instead of as isolated phenomena. While hazards are natural, disasters are not. The scientific community has pointed out that the current drivers of risk are linked to poor policies and practices in land-use planning, governance, urbanization, natural resource management, and ecosystem management, as well as increasing poverty levels.

By 2050, 70 percent of the world's population is expected to be living in urban areas, two thirds of which are situated in low- and middle-income nations. Much of this growth is taking place in locations already prone to earthquakes, cyclones, floods, and droughts. The risks posed by both disasters and slow-onset processes will have the greatest impacts on the poorest and most marginalized, be it through gender inequality, age, disability or any other intersecting vulnerability, of those who are the most susceptible to risk. The interconnectedness of risk posed by climate change and disasters with poverty reduction, social protection, and sustainable development makes a strong case for the need for adaptive, inclusive, equitable, risk sensitive, and climate and disaster resilient development.

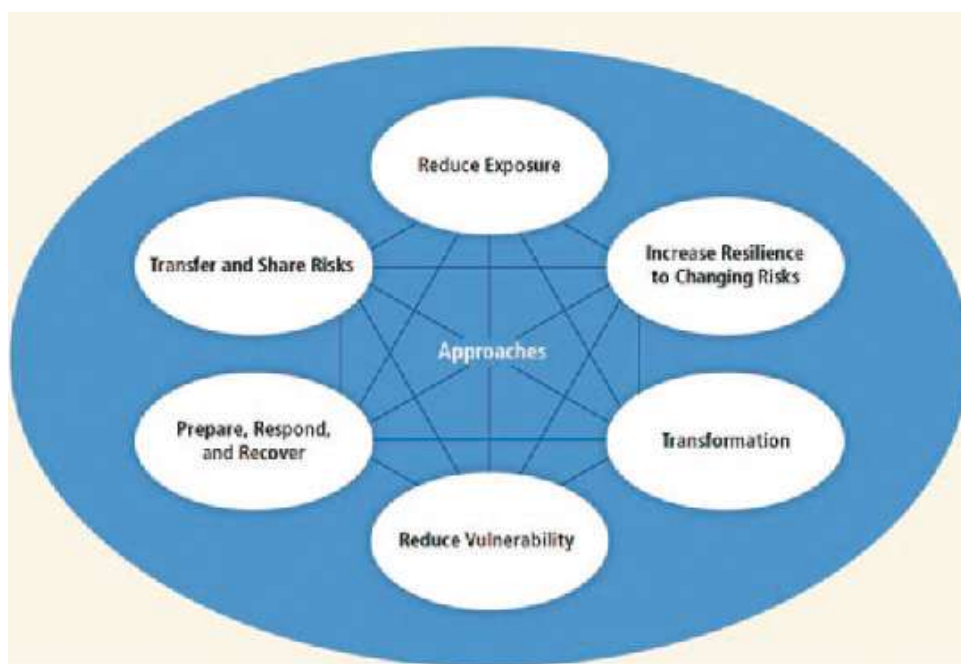
Focusing on climate change adaptation and disaster risk reduction, implementation has been channeled through integrated policies and plans, joint working groups, and comprehensive activities on the ground. Efforts are also underway to strengthen the linkages between climate change, disaster risk reduction, and other relevant issues such as food security, health, traditional knowledge, gender, and humanitarian responses, bringing different communities of practice together at all levels to guide and implement integrated approaches. This reflects the

inherent cross-cutting nature of climate change and disaster risk, and the importance of integrating solutions for poverty reduction, gender equality, disaster risk reduction, and climate change to ensure lasting solutions to global vulnerabilities and achieving sustainable development.

Learning from disasters creates opportunities to devise both sectoral, as well as overall, development plans designed in a manner that progressively reduces risks which, in turn, lead to lower damages and losses and creates the basis for sustainable development. The lessons learnt create new opportunities to “build back better” through risk identification, and measures to minimise risks which lead to reduced vulnerabilities and exposure. If DRR and CCA become an integral part of development planning, this will also lead to poverty reduction, reduced vulnerabilities, enhanced resilience, and economic growth. Governments are increasingly recognizing that reduction of disaster risks and climate change impact are the foundation for sustainable development and that Disaster Risk Reduction and Climate Change Adaptation and Mitigation are cross cutting issues that require action across all sectors.

The need to address both the immediate impacts of extreme events and the long-term impacts of slow onset processes has emphasized the importance of linking both DRR and CCA in a new framework to address loss and damage. Many countries that recognise the importance of linking DRR and CCA have taken steps to remove barriers to cooperation and coordination for effective integration of DRR and CCA within the context of both extreme and slow onset processes (UNISDR, 2012).

The linkages between DRR and CCA are best explained by the illustration below:



Adaptation and Disaster Risk Management Approaches for a changing climate

Adaptation and disaster risk management approaches for reducing and managing disaster risk in a changing climate. (Source: IPCC 2012a, p. 6)

While a general consensus seems to exist that linking CCA and DRR would be beneficial, challenges associated with developing effective integrative processes at the national level remain, due to mismatches between CCA and DRR and different or even uncoordinated responsibilities across ministries. The lack of cooperation between different ministries and agencies involved in DRR and CCA is often a significant barrier that hinders the realisation of practical synergies between both fields in various countries.

At the local level, it often appears equally difficult to effectively take advantage of synergies between both fields. For example, the opportunities that disaster recovery and reconstruction processes offer as a catalyst

for change (Birkmann et al. 2009; Birkmann and Fernando 2008), including the development of climate-proof structures in the aftermath of an extreme event, is not sufficiently taken into consideration. The reconstruction of coastal areas affected by the Indian Ocean Tsunami in Sri Lanka and Indonesia is an example of this missed opportunity. However, various local communities often view risk reduction to extreme events, CCA, and resilience building as three interconnected fields that need to be addressed simultaneously in order to improve the livelihood security of communities and people at risk. Additionally, climate change-related risks are hardly considered when designing new standards for protection systems (e.g., early warning, dyke systems, etc.) and urban redevelopment (e.g., housing standards, urban planning after a disaster). Focus on a single hazard and on experiences drawn from the past often dominates the thinking of technical experts and collective action, whereas wider aspects of climate change adaptation-including scenarios for vulnerability-are rarely addressed.

Source: (Birkmann and von Teichman 2010; Birkmann et al. 2013)

In the context of heightened vulnerability to natural disasters and environmental degradation, sustainable development is a key objective that can be achieved through:

- responding to disasters (DRM)
- reducing risk and exposure to hazards (DRR)
- addressing the effects of a changing climate (CCA).

DRM, DRR and CCA are complementary tools and have a cumulative effect, reinforcing each other in building resilience and the capacity to cope with adverse and changing conditions.

Links between Climate Change, Disaster Risk Reduction and Sustainable Development

Over the last 35 - 40 years there has been an evolving recognition that action on climate change and disaster risk reduction is a prerequisite for achieving sustainable development. Emphasis has been placed on incorporating both climate change action and disaster risk reduction needs into development mechanisms, such as public investment planning systems, sectoral development plans, and social protection and infrastructure investments. Following the World Summit on Sustainable Development (Johannesburg, 2002), and guided by the Hyogo Framework of Action 2005-2015: Building the Resilience of Nations and Communities to Disaster (HFA) and the United Nations Framework Convention on Climate Change (UNFCCC), among other processes and General Assembly resolutions, disaster risk reduction and climate change action, including mitigation and adaptation, are seen not only as an imperative to protecting investments in development, but also as an opportunity for a transformative shift towards more resilient development. The United Nations Conference on Sustainable Development held in 2012 (Rio 2000) renewed the international community's commitment to sustainable development and also emphasized the importance of tackling poverty, climate change, and disaster risk in an integrated manner. In particular, it called for better coordinated strategies that integrate disaster risk reduction and climate change considerations into public and private investment, decision making, and planning of humanitarian, post-recovery, and development actions.

As a result of these and other global commitments, extensive efforts have been underway for the past few decades to address climate change and disaster risk in the context of development. Comprehensive risk reduction and mitigation and adaptation policies and practices have been designed and implemented in many countries around the world, closely integrated into national and sub-national development processes. Furthermore, efforts have also been ongoing to reduce greenhouse gas emissions which are contributing to climate change, in the hope of minimizing impending impacts. These climate change mitigation efforts are extremely relevant to adaptation and risk reduction given their impact on natural resources and production and consumption patterns, including energy systems, agricultural practices, and forestry management. An important shift is emerging that recognizes climate change as an opportunity for green growth and low-carbon economies alongside co-bene-

fits and building resilience.

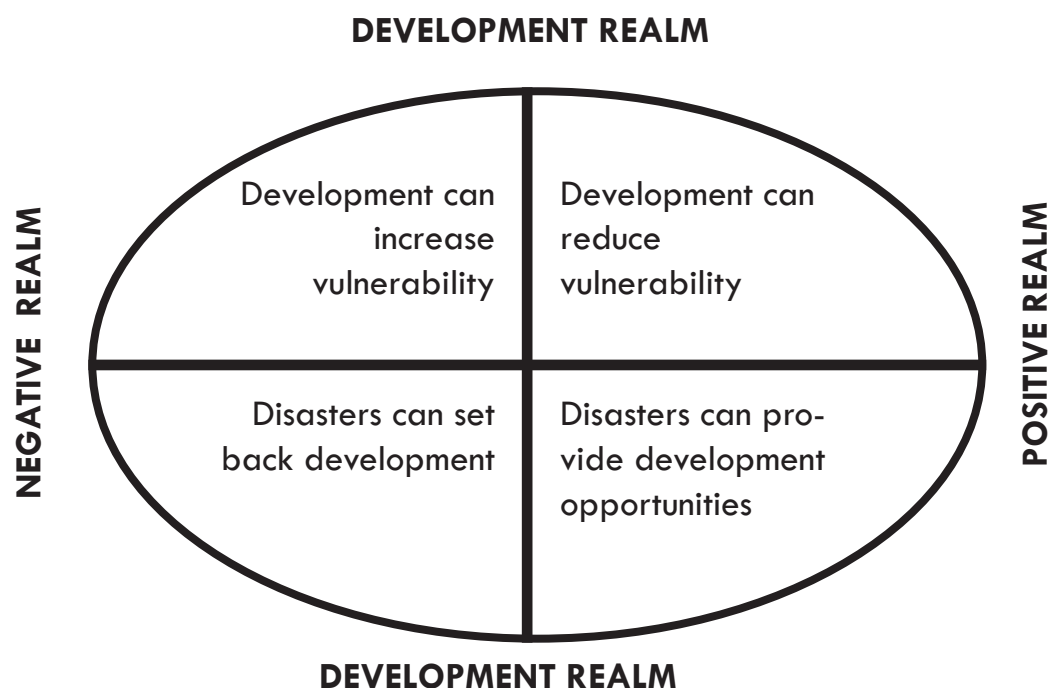
In a state such as Himachal Pradesh, which is prone to both disasters and climate change impact, developmental gains over time can only be achieved through mainstreaming DRR and CCA into sectoral plans.

This session will examine the relationship between disasters, climate change, and development. Disasters are increasingly seen as unresolved problems of development. The linkages and dynamics of growing climate and disaster related risks, with special reference to development induced risks, will be explored during the session. Participants are encouraged to provide real world examples from their areas, and to identify growing risks, if any, within ongoing development programmes in their work area from a DRR and CCA perspective.

The session will then explore the key elements of risk assessment and its role in identifying and quantifying the risks that must be addressed in order to secure disaster resilient development. Participants will be exposed to the methodology for carrying out such assessments, as prescribed in the Ministry of Finance, Government of India's recent memorandum, for conducting risk assessments by all line departments before designing and formulating any project. This same memo makes risk assessments a mandatory exercise prior to submission of detailed project reports (DPRs) for sanction.

Global average annual loss from disasters is estimated to increase from an annual average of USD 260 billion in 2015 to USD 414 billion by 2030. There has been a sustained rise in the number of climate-related disasters such as storms and floods over the last twenty years and they now count for well over 80% of all disasters linked to natural hazards. Such a large sum of potentially lost capital is not surprising given our experiences of disasters. The impact of economic losses varies greatly at the country level. When capital flows into hazard prone areas, it leads to significant increases in the exposure of economic assets. If these trends continue, sustainability is compromised. Disaster risk reduction and building of resilience to disasters needs to be addressed with a renewed sense of urgency in the context of sustainable development and poverty eradication, and, as appropriate, to be integrated into policies, plans, programmes, and budgets at all levels and considered within relevant future frameworks.

The Sendai Framework for Disaster Risk Reduction 2015-2030 adopted on 18 March 2015, and endorsed by the UN General Assembly, was the first of the post-2015 development agreements. The Sendai Framework is the basis for a risk-informed and resilient sustainable development agenda.



Source: Disasters & Development, 2nd Edition, Disaster Management Training Programme-Module prepared by: R. S. Stephenson, PhD

The multi-faceted relationship between development and disaster, which can be characterized as positive or negative, is represented by the four quadrants in the diagram above:

1. Disaster can set back development. Infrastructure improvements, such as transport and utility services, can be destroyed by floods or earthquakes.
2. Disaster can provide development opportunities. Rebuilding after a disaster creates significant opportunities to initiate developmental programmes. Local communities in Kashmir (trained by Gujarati masons who were trained after the 2001 earthquake in Bhuj), rebuilt schools and houses themselves, after the 2005 earthquake, which strengthened community pride and leadership, allowing community members to earn and save money which could have gone to an external construction company.
3. Development can increase vulnerability. Developmental programmes can increase risks by building or rebuilding housing after floods in low-lying areas, or increase vulnerability to landslides for poor and marginalized communities via poorly planned and/or poorly executed road construction.
4. Development can reduce vulnerability. Development programmes to construct new houses following earthquake-resistant designs will minimise losses.

MODULE 1 (Contd.)

SESSION 1.3

Overview of Disaster Context in India and Himachal Pradesh

DURATION

60 Minutes

NOTE FOR THE FACILITATOR

Highlight the need for focusing on increasing investments and giving priority to strengthening disaster risk reduction, climate change adaptation, mitigation, and vulnerability reduction monitoring. Trends indicate the increasing possibility of more frequent disaster events and accompanying losses. It has become imperative that no sustainable development is undertaken unless DRR and CCA are incorporated into all developmental plans.

For Himachal Pradesh, the integration of CCA with DRR should be considered as a priority for all sectors, in both rural and urban contexts. The Planning Commission, keeping in mind the topography, climate, and disaster vulnerability, had suggested that watersheds should be considered not only as the unit of development planning, but also for demarcating districts and blocks.

The characteristics of the Himalayan ecosystem should be the basis of all developmental plans.

OBJECTIVES

- Define the types of disasters that occur in India, and especially in Himachal Pradesh, in terms of naturally occurring and human-made disasters
- Define the concepts of climate change and climate-induced disasters, as relevant to DRR and CCA in India, and especially in Himachal Pradesh
- Develop an understanding of the extent of threats to Himachal Pradesh, due to hazards, vulnerabilities, disasters, and climate change
- Develop an understanding of which risks are most likely in the various agro-climatic zones within Himachal Pradesh and how climate change factors into the ultimate impacts of disaster events

HANDOUT

Hazard Profile of Himachal Pradesh (Page 62)

KEY CONCEPTS

- Due to increasing disaster risks, exacerbated by climate change, mainstreaming of DRR and CCA into all sectoral plans should be a top priority.
- Disaster risks may be reduced, if not completely eliminated, through various prevention, mitigation, and risk reduction measures.

OUTCOMES

At the end of this session, the participants should:

- Have an overview of the type of hazards in the country and in Himachal Pradesh.
- Have an understanding of the increasing vulnerabilities and consequent increases in disasters, especially climate-induced disasters that further strengthen the rationale for mainstreaming DRR and CCA into developmental planning. Given the highly fragile ecosystem of the state and risk zoning, developmental plans and policies, and with over 80% of the population being rural based and dependent on agriculture and horticulture for their livelihoods and sustenance, integrating DRR and CCA needs to be prioritised in accordance to relative agro-climatic zoning. Further, environmental aspects need to be considered for any developmental intervention, justifying an ecosystem based adaptation and DRR approach.
- Note that hazard-specific disasters are on the rise and that the state is highly vulnerable to earthquakes, landslides, avalanches, GLOFs, forest fires, accidents, flash floods, lightning and cloud bursts.
- Have an understanding that climate change is exacerbating disaster risks and vulnerabilities, adversely affecting lives and livelihoods. Losses are on the rise and the possibilities of greater damages and losses are increasing, which will lead to decreasing development opportunities, lower investments, and declines in economic growth unless DRR and CCA are integrated into all plans on a priority basis.

METHODS

Presentation and discussion, interspersed with questions from participants, sharing of participant experiences with regard to disaster risks, vulnerabilities, and climate change impacts, discussions of how/whether the ecosystem based approach facilitates mainstreaming DRR and CCA into sectoral plans, sharing and clarifications from the facilitator(s), and participatory summation of the session by the facilitator(s).

TRAINING METHODS AND MATERIALS

Presentation, interactive lecture, chart paper and participant handbook

HANDOUT

Disasters in Himachal Pradesh (Page 58)

Technical Notes

This session presents an overview of the types and classification of disasters across India, as well as in Himachal Pradesh. It also provides details and trending data relevant to increasing disaster impacts, both in terms of frequencies and intensities, as well as increasing losses, due to climate change impacts and increasing levels of vulnerabilities.

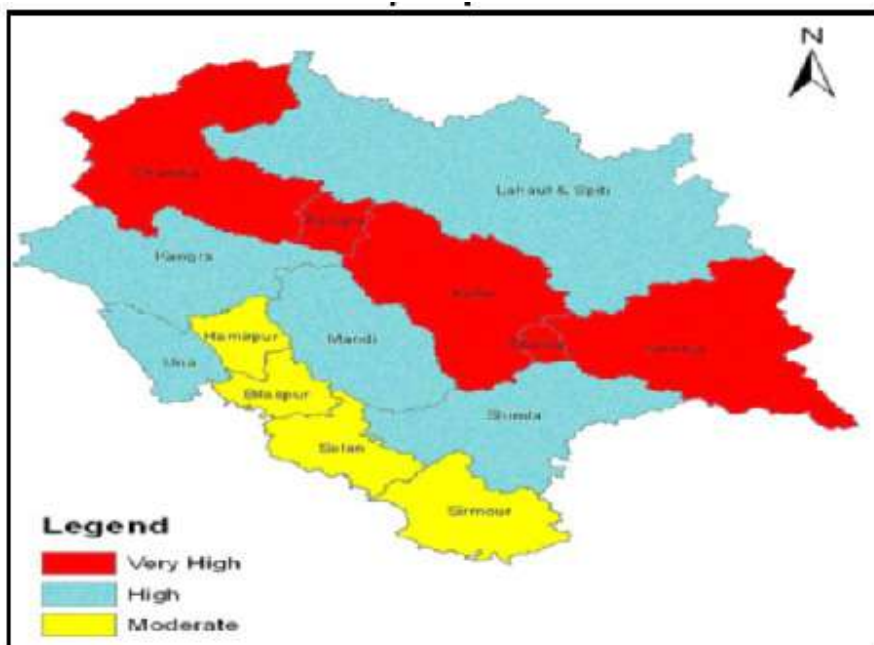
VULNERABILITY PROFILE

India is vulnerable, in varying degrees, to a large number of disasters. More than 58.6 per cent of the landmass is prone to earthquakes of moderate to very high intensity; over 40 million hectares (12%) of its land are prone to floods and river erosion; close to 5,700 kms, of 7,516 kms of coastline in total, are prone to cyclones and tsunamis; 68% of its cultivable area is vulnerable to droughts; and, its hilly areas are at risk from landslides and avalanches. Moreover, India is also vulnerable to Chemical, Biological, Radiological, and Nuclear (CBRN) emergencies and other human-made disasters.

Disaster risks in India are further compounded by increasing vulnerabilities related to changing demographics and socio-economic conditions, unplanned urbanization, and development within high-risk zones, environmental degradation, climate change, geological hazards, epidemics and pandemics. Clearly, all these contribute to a situation where disasters seriously threaten India's economy, its population, and sustainable development.

HAZARD PRONENESS OF HIMACHAL PRADESH – DIFFERENT HAZARDS AND RISK RANKING OF DISTRICTS

Taking into account various hazards and vulnerabilities, the state has been divided into 3 risk zones: (a) very high risk zone, consisting of Chamba, Kulu, Kinnaur, and parts of Kangra and Shimla districts; (b) high risk zones, consisting of Mandi, Una, Lahul and Spiti, and most of Kangra and Shimla districts, and (c) moderate risk zone, consisting of Hamirpur, Bilaspur, Soan, and Sirmour districts*.



Overall Vulnerability Map of Himachal Pradesh

Source:<http://www.hpsdma.nic.in/ProfileOfState/CurrentStatus.html>

* Report of the Workshop organised by the Disaster Cell of the Department of Revenue, Govt. of HP and the HIPA on Training Need Assessment Report on DRR and CCA

CLIMATE CHANGE AND CLIMATE INDUCED DISASTERS – TRENDS AND IMPACTS

There has been a particularly alarming effect of global warming on the climate of India. India is already a disaster prone area, with the statistics of 27 out of 35 states being disaster prone, with most disasters being water related. The process of global warming has led to an increase in the frequency and intensity of climatic disasters. According to surveys, in the year 2007-2008, India ranked the third highest in the world regarding the number of significant climatic disasters, with 18 such events in one year, resulting in the death of 1103 people due to these catastrophes. A figure presenting the different disaster prone areas of India is given below.

Source:https://commons.wikimedia.org/wiki/File:India_climatic_disaster_risk_map_en.svg



With the trend of increasing global warming, predictions of severe climatic events have been made for India. The anticipated increase in precipitation, the melting of glaciers, and expanding seas are projected to influence the Indian climate particularly severely, with an increase in the incidence of floods, hurricanes, and storms. Global warming is also threatening the food security situation in India in the forms of recurring and severe droughts, and ravaging floods in agricultural areas. Rising temperatures on the Tibetan Plateau result in the melting of Himalayan glaciers, reducing water flow in the rivers Ganges, Brahmaputra, Yamuna, as well as other major rivers, endangering the livelihoods of farmers across the country. According to the Indira Gandhi Institute of Development Research, if the process of global warming continues to increase, resulting climatic disasters could cause a decrease in India's GDP and a significant decrease in major crop production. A temperature increase of 2° C in India is projected to displace seven million people, with a submersion of major cities in India, such as Mumbai and Chennai.

RECENT CLIMATIC DISASTERS IN INDIA

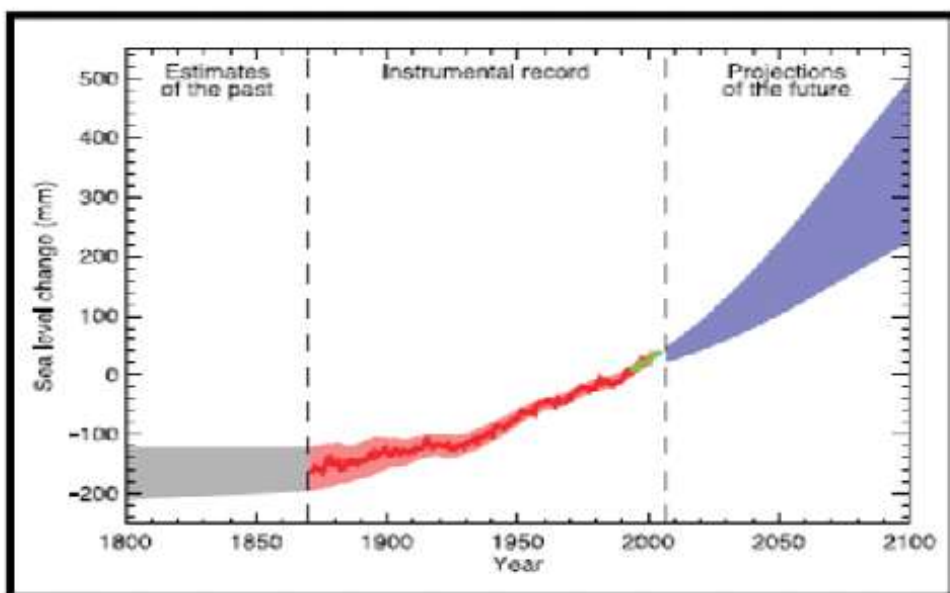
India has been afflicted by large numbers of floods, which have inflicted heavy damage on local, regional and national economies. The occurrence of severe cloud bursts with accompanying flooding (in Mumbai and Chennai) is on the rise. The process of global warming has had such an impact on the climate that it increases the severity of precipitation events while adversely affecting precipitation patterns. Drought conditions in India have devastating impacts on millions of people, just as they have over the course of past few centuries. India's monsoon seasons are critical to sustained and sufficient agricultural production. Just over two thirds of India's farmland is prone to drought, and one third of that fraction is chronically drought prone, with annual rainfall of less than 750mm. The states of Maharashtra, Gujarat, Rajasthan, Karnataka, Andhra Pradesh, and Orissa are highly vulnerable to drought. The southern and western states of India have experienced severe drought conditions during the period from 2013 through 2015.

Over the past three decades, the average annual number of cyclones capable of producing catastrophic damage in India has steadily increased. India's over 7500kms of coastline leave it very vulnerable to cyclonic activity. It is observed that The Bay of Bengal sees more cyclonic activity than the Arabian Sea, for a number of reasons. The states of West Bengal, Orissa, Andhra Pradesh, and Tamil Nadu are the most vulnerable because of being situated on the Bay of Bengal. The National Institute of Oceanography (NIO), under the Council of Scientific and Industrial Research (CSIR), Government of India, conducted research into the impacts of climate change on sea level, and based on their observations, reached the conclusion that the occurrence of cyclones in the Bay of Bengal is increasing, especially after the end of monsoon season, coupled with higher cyclonic maximum wind speeds, and greater numbers of tidal surges. In addition, the strength of tropical cyclones, which represent a threat to the eastern coast of India and to Bangladesh, is also likely to increase.

The impacts of climate change are linked to increased cyclonic activity, sea level rises, flooding, and reduction in food harvests. Thousands of people have already been displaced by rising sea levels in areas such as the Sunderbans. Some estimates place the number of people displaced in India alone, by a one-meter sea level rise, at 7 million people, along with a loss of about 6000 hectares of land. Rising sea levels are projected to displace an estimated 28 million people living in India, by the year 2100, even if we manage to contain global warming temperature rises to 2°C. The effects of global warming have already, and will continue, to damage coastal infrastructure, aquaculture, and coastal tourism. Aquatic ecosystems such as mangroves, coral reefs, and wetlands are extremely vulnerable to the impacts of climate change.

Nearly 40 million Indians will be at risk from rising sea levels by 2050, with people in Mumbai and Kolkata having the maximum exposure to coastal flooding due to rapid urbanisation and economic growth, according to a UN environment report. India tops the chart with nearly 40 million people in the country projected to be at risk from rising sea levels, followed by more than 25 million in Bangladesh, over 20 million in China and nearly 15 million in the Philippines.

The figure below shows the evolution of global mean sea level in the past, and as projected for the 21st century by the SRES A1B (Special Report on Emissions Scenario – IPCC Report 1996) scenario.



In the Himalayas, global warming has led to an increase in cloud bursts, flash floods, landslides, and shorter and warmer winters, resulting in snow line reduction and snow thickness, increasing the threat of Glacial Lake Outburst Floods (GLOFs).

Continuous drought conditions and monsoon failure over the past three consecutive years in Himachal Pradesh have resulted in the loss of over rupees 200 crores to the state's econo-

my. Flash floods in the state have caused property damages estimated at rupees 1000 crores. Apple, potato, and seasonal vegetable crops that contribute significantly to the economy of the state have also been adversely affected. In the higher elevations, there was little or no snow fall during the previous year. Experts working on

water harvesting systems in the state are concerned that in the absence or reduction of snow on the high hills, rivers such as the Sutlej, Beas, and Yamuna will also dry up in the coming summer because the snow melt in the hills will end by mid- May. Farmers and fruit growers may have no other alternative except to change crop patterns. There are also higher probabilities of GLOFs occurring in certain areas of the state.

Rainfall patterns have drastically changed and environmental degradation is exacerbated by current mining practices and deforestation, leading to severe soil erosion, landslides, and forest fires.

HANDOUT 1 - Disasters in Himachal Pradesh

The State of Himachal Pradesh is prone to various hazards, both natural and human-made. The primary hazards are earthquakes, landslides, flash floods, snow storms and avalanches, droughts, dam failures, fires – domestic and forest fires, and accidents – road, rail, air, stampedes, boat capsizing, biological, industrial and hazardous chemicals. This handout examines how the climate ties in with the hazards and disasters, how and whether it exacerbates certain hazard risks, mitigates them, in terms of impact on recovery, rebuilding, or restoral of livelihoods.

Climate Types Within Himachal Pradesh

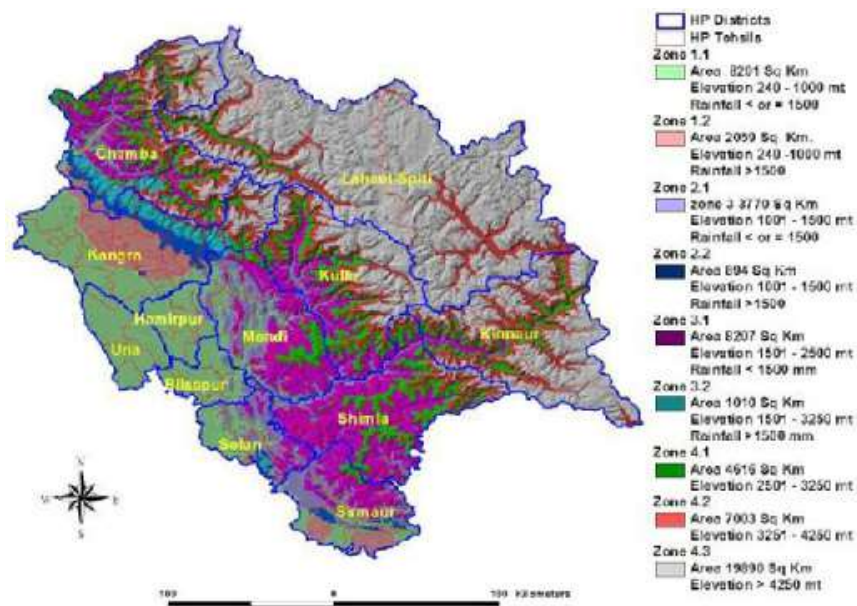
The climate varies across Himachal Pradesh in relation to the altitude. In the southern lower tracks between an altitude of 400-900, the climate is a hot sub-humid type; between 900-1800m altitude, warm and temperate; between 900-2400m, cool and temperate, and cold alpine and glacial above 2400-4800m altitude. Bilaspur, Kangra, Mandi, Sirmaur, and Una districts experience sub-tropical monsoon, mild and dry winter, and hot summer. Shimla district has a tropical upland type climate with mild and dry winter and short warm summer. Cham-ba district experiences a humid subtropical type climate, with a mild winter, and a long hot moist summer. Kulu district experiences mainly humid subtropical climate with a mild moist winter and a long hot summer. During the period from January to February, heavy snowfall in higher reaches creates conditions for low temperature throughout the state, making it unpleasant. Western disturbances also affect the state.



Climate Type Classifications within Himachal Pradesh

The state has been divided into 4 different agro-climatic zones, viz. (a) Shivalik Hill Zone, (b) Mid Hill Zone, (c) High Hill Zone, and (d) Cold Dry Zone. In order to address the complex problems of Himachal Pradesh, policies and programmes development needs to be responsive to change in agricultural systems and resources, since the majority of the population lives in rural areas, and are primarily dependent on agriculture and horticulture for their livelihoods. Considering the natural resources and agriculture information data, the state has been divided into 6 agro-ecological zones, using biophysical attributes of the land such as elevation, land use, and soil to cluster areas into homogeneous units. The State has been divided into 6 agro-ecological zones.

The agro-climatic zoning of the State has been redefined based on the elevation and the amount of rainfall given in the map below.



Redefined Agro-ecological Zonation of Himachal Pradesh

Source: Centre for Geo-informatics Research and Training, CSK Himachal Pradesh Agricultural University, Palampur, Himachal Pradesh, India

Centre for Geo-informatics Research and Training, CSK Himachal Pradesh Agricultural University, Palampur, Himachal Pradesh, India

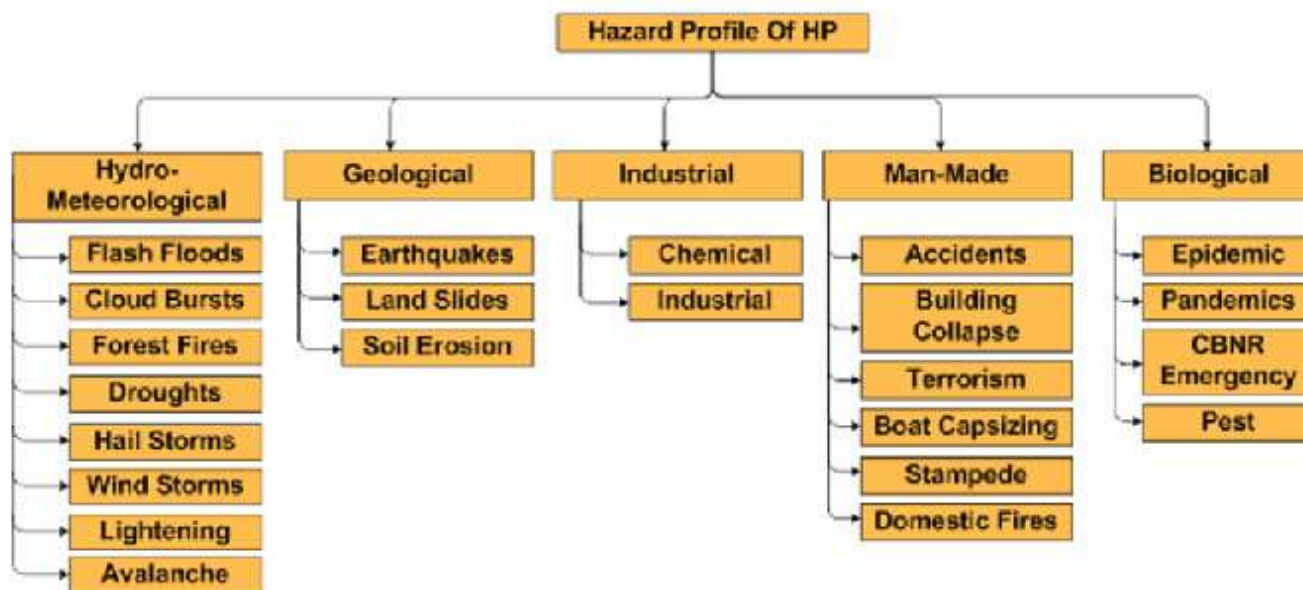
Based on the agro-climatic zoning and the type of soil, details of major crops grown are given in the next table.

Different Zones	Climate/ Altitude	Districts	Area	Soil	Major Crops
Shivalik Hill Zone	Climate sub tropical consists of foothills and valley area from 350 to 650 m above mean sea level	Una, Bilaspur, Hamirpur districts and parts of Sirmaur, Kangra, Solan and Chamba districts	It occupies about 35% of the geographical area and about 40% of the cultivated area of the state	Hill soil, mountain meadow skeletal tarai	Rice wheat sugarcane citrus, mango, litchi, guava, deciduous forest, dry deciduous shrubs, vegetables, oilseeds, barley
Mid Hill Zone	This zone extends from 651 meters to 1800 meters above sea level. Having mild temperate climate	Palampur and Kangra Tehsil of Kangra district, Rampur Tehsil of Shimla district and parts of Mandi, Solan, Kullu, Chamba, Bilaspur and Sirmaur district.	It occupies about 32% of the total geographical area and about 37% of the cultivated area of the state.	Brown Hill	Rice, Wheat, Arhar, Sesamum, Temperate fruits, Citrus, Vegetables, lower Himalayan temperate forest and Himalayan Chirpine Forest.
High Hill Zone	It lies from 1801 to 2200 meters above sea level with humid temperate climate and alpine pastures	North western Himalayan region lying in the state	The zone covers about 35% of the geographical areas and about 21% of the cultivated area of the state.	Sub-mountain, mountain skeletal, meadow	Maize, Rice, Oilseeds, pulses, rajmash, Soybean, Barley, Bee keeping, apple, pear, plum, peach apricot, chestnut, vegetables

Cold Dry Zone	It comprises of Lahaul Spiti and Kinnaur Districts and Pangi Tehsil of Chamba District lying about 2200 meters above mean sea level	Kinnaur, Lahaul and Spiti and part of Chamba district	It occupies about 8% of the geographical and 2% of the total cultivated area of the state	Alluvial (recent) brown hills	Barley, Maize, Pulses, Potatoes, Minor millets, Kutheris, hopes, Kumin, saffron, apples, nuts, dry fruits, chilgoza, Neoza pine, yak, jersy cow, cabbage seed, sugarbeet, chicory, agro forestry alnus, ulnas, cettis salix
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Source: Agriculture Department, Govt. of Himachal Pradesh

The following graphic is a diagrammatic representation of the hazard profile of Himachal Pradesh:



Earthquakes

The hazard which, however, poses the greatest threat to the state is earthquakes. Over the period that such occurrences have been recorded, the state has been shaken more than 80 times by earthquakes, of magnitude of 4 and above on the Richter scale. According to the BIS seismic zoning map, in five districts of the state, namely Chamba (53.2%), Hamirpur (90.9%), Kangra (98.6%), Kulu (53.1%), and Mandi (97.4%), 53-98.6% of their area are liable to the severest seismic intensity of MSK IX or more, with the remaining area of these districts being liable to the next most severe intensity, VIII. Two districts, Bilaspur (25.3%) and Una (37.0%), also have substantial area are MSK IX and the rest in MSK VIII. The remaining districts also are liable to intensity VIII.

Landslides

Another form of natural hazards in the state is the frequent occurrence of landslides. The hills and mountains of Himachal Pradesh are liable to suffer landslides during monsoons and also during high intensity earthquakes. The vulnerability of the geologically young and not so stable steep slopes in various Himalayan ranges has been increasing at a rapid rate in the past decade, due to inappropriate human activity such as deforestation, road cutting, terracing, and agriculture crops requiring more intense watering.

Floods and flash floods

Although widespread flooding problems do not exist in the state because of its topography, continuing attention is necessary to reduce flood hazards in the state, more particularly flash flooding, the incidences of which are increasing, causing large scale damages.

Avalanches

The higher hills comprising the districts of Kinnaur, Lahaul-Spiti, Chamba, and Kulu are particularly vulnerable to the hazards of avalanches, and their resultant destruction. In the past, though not widespread, the damages caused by avalanches in Himachal Pradesh were confined to the higher reaches of the state only.

Retreat of Glaciers

Glaciers are melting and forming lakes. These lakes are quietly growing because of rising temperatures, but sufficiently close monitoring is not performed. There are no authentic and updated data as to how many are close to bursting, and no steps have been taken to establish early warning systems for the villages downstream. A lake burst would cause flash floods that could sweep away people, houses, roads, and bridges. Such disasters have already happened more than a dozen times in and around Nepal in the last 70 years. A glacial lake burst in Khumbu, Nepal, in 1985, killed at least 20 people. It also washed away a hydropower station, a trekking trail, and numerous bridges. Despite the real threat, no systematic on-the-ground research has taken place since the mid-1990s.

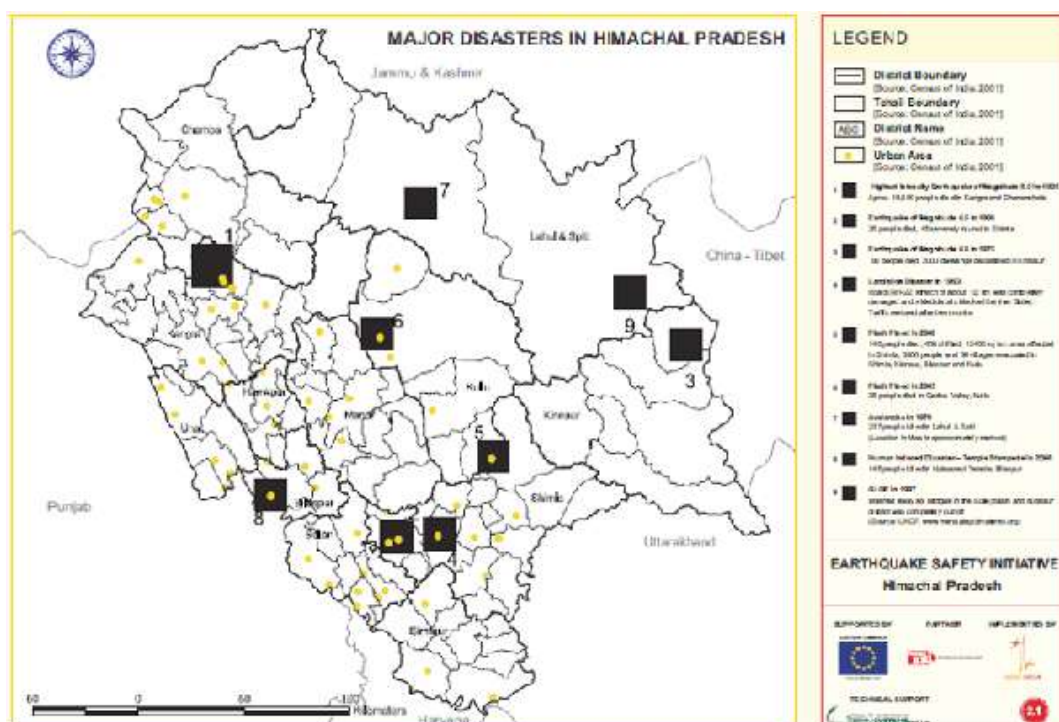
Between 1970 and 1989, Japanese researchers discovered most of the glaciers in the Khumbu region had retreated 30-60m. In Nepal's Dhaulagiri region, field studies from 1994 showed the same trend. Nepal's most studied glacier in TsonongHimal underwent a 10m retreat between 1978 and 1989. For now, there is reliance on satellite data. These images show that some glaciers are stable or advancing, particularly in the west and north.

Forest Fires

The forests of Himachal Pradesh are rich in vascular flora, which forms the conspicuous vegetation cover. Out of a total of 45,000 species of plants found in the country, as many as 3,295 species (7.32%) are reported to occur in the state. More than 95% of the plant species are endemic to Himachal and are characteristic of Western Himalayan flora, while about 5% (150 species) are exotics, introduced over the last 150 years. The forest wealth of the state is gradually being destroyed by the incidences of fire, attributable to multiple causes, including anthropogenic. Destruction of rich flora and fauna of the state due to forest fires will have serious repercussions on the ecological balance of the state.

Map indicating some of the major recent disasters in the state

Source: Himachal Pradesh – National Risk Reduction Portal, National Institute of Disaster Management, New Delhi



Himachal Pradesh is prone to multiple natural and human-made disasters. Himachal Pradesh's biggest challenge is conservation, sustenance of the State's ecologically fragile regions, which is becoming further aggravated due to the projected increases in variable climate change impacts. The Disaster Reduction Portal of the State prepared by the National Institute for Disaster Management has made a district wise hazard specific vulnerabilities categorisation as given in the table below.

With very high variations of topography and rainfall, prediction of future climate trends will be especially difficult for Himachal Pradesh. It is evident that farmers are already feeling the impacts of climate change. Observed parameters include movement of apple orchards to higher altitudes, loss of various tree species, drying of traditional

District	Earthquake	Landslide	Floods	Avalanche	Forest Fire	Drought	Cloud Burst
Kangra	VH	L	M	M	H	H	M
Chamba	VH	VH	H	M	H	M	H
Hamirpur	H	L	L	-	VH	M	L
Mandi	VH	H	H	-	VH	M	H
Kullu	VH	VH	H	H	H	M	VH
Bilaspur	H	M	L	-	VH	M	L
Una	H	L	H	-	M	H	L
Sirmour	H	L	L	-	VH	M	M
Solan	H	M	L	-	M	M	L
Kinnaur	H	H	H	VH	M	M	VH
Lahaul & Spiti	M	M	M	VH	M	M	H
Shimla	VH	H	H	M	H	M	H

water sources, changes in bird types and populations, reduction in crop yields, and increased vulnerability of winter cropping due to changes in rainfall patterns and planting dates. The mountain ecosystems harbour a wide range of natural resources and are particularly sensitive to change. Regional changes in climate have already affected many of the physical and biological systems in the mountains. Analysis of temperature trends in the Himalayas and vicinities shows that temperature increases are greater in the uplands than the lowlands. Climate change impacts on water resources will likely include:

- Increased frequency of heavy precipitation
- Increase in extreme rainfall intensity
- Increased variability in rainfall patterns
- Increased likelihood of water shortages/drought
- Reduced levels of precipitation as snow
- Loss of glacier volumes
- Earlier snow melts
- Increased temperatures.

These are the primary large-scale impacts on livelihoods, which can also exacerbate disaster impacts. Planning for mitigating these impacts will require an ecosystem based approach and an appropriate land use plan, with watersheds as the unit of planning.

Disasters and Climate Change Impact in Himachal Pradesh

The Himalayan region of India, characterized by a wide variation in topography, geology, soil, climate, flora, and fauna, and various ethnic groups with varied socio-cultural traditions, is a unique geographical entity within our country. Human activities in this region are the prime cause of environmental degradation within this region. The effects of human activities on environment may be direct or indirect, immediate or deferred, and predictable or unpredictable, depending on the nature, intensity, and frequency of the disturbance to natural ecosys-

tems. The hazard specific vulnerability maps are given in the Power Point presentation (attached separately).

Observed Changes in Climate

Based on a short term analysis at different altitudes, the rate of increase in maximum temperature at higher altitudes appears to be higher than the increase in the lower altitudes.

Over the last century, the northwestern Himalayas warmed significantly higher than the global average, and a clear increase in winter temperature was observed. According to the data available, there is also a significant decrease in the amount of snowfall at different altitudes. While there is not much change in the winter precipitation, there is a significant decrease in monsoon precipitation.

There has been about a 40% decrease in rainfall in the state over the past 25 years. Trend analysis of annual rainfall data from the last 25 years in different districts of Himachal Pradesh reveal an increasing trend of increases in the districts of Kinnaur (33.5%), Chamba (54.3%), and Lahaul-Spiti(51.5%), and a trend of decreases in Solan (8.7%), Shimla (13.3%) and Sirmaur(26.6%)respectively. An increase in maximum temperature of about 0.5°C has been observed in the Palampur area of Kangra District. (Source: State Strategy and Action Plan on Climate Change, Himachal Pradesh, 2012 – Department of Environment, Science & Technology, Govt. of Himachal Pradesh)

The data further indicates that the seasons tend to end 10 – 12 days earlier per decade, resulting in an impact on agriculture, meaning the horticultural production of the state. Glaciers are retreating, precipitation is becoming erratic, and protection of glacier fields and related livelihoods has emerged as a critical issue requiring attention. The data available clearly indicates that the impact of climate change will become more intense as temperatures are expected to rise by 2-4°C over the next several decades.

The changes in the extreme events of temperature and rainfall will likely lead to increases in droughts in the southeasterly regions, and accelerated summer flows leading to floods and flash floods in the northwesterly areas of the state. The projected changes in the hydrological response of basins are expected to have direct, as well as indirect impacts, on different sectors of the economy. The land use changes will also have a bearing on the development trends.

Direct impacts – Agriculture, Water Resources, Biodiversity, and Forests

Indirect impacts – Livelihoods, Hydropower, Tourism, and Health

The state's climate variables are showing clear signs of:

- Changes in trends of snowfall and rainfall
- Changes in cropping patterns, vegetation species, and apple contour
- Disappearance of certain birds, butterflies, and insects
- Vegetation species and crops have changed and, in some cases, become extinct
- Decline in normal winter precipitation and drying up of natural water resources and changes in setting of seasons
- Increases in incidences of diseases, pests, etc.

The major challenges faced in the state are escalations of issues such as forest fires, deforestation, landslides, desertification, and GLOF, through atmospheric as well as human induced interferences. The impacts of climate changes are becoming increasingly visible in the State and so are the risks of climate induced disasters.

In the Planning Commission Report on Disaster Management for the State for the 11th Five Year Plan, it was proposed for the state that “All development projects should be linked with disaster mitigation. A cost-benefit

analysis is essential to meet the economic impact of a disaster. Linkages between environment, natural disasters, and development must be clearly established to mitigate disasters and to improve the environment.”

The report further states “the watershed principle is the most appropriate for organisation of space for administration and development. The boundaries of districts and block should preferably coincide with that of the watershed.”

The 12th Plan aimed at consolidating the process by streamlining the existing institutional mechanism so as to avoid multiplicity of structures and have a clearly defined responsibility matrix to obtain optimum results. Further, a review of implementation of the Disaster Management Plan(DMP) should identify the gaps to ensure integration of DRR requirements into all the components of development initiatives in a holistic manner. If DRR is taken as the common denominator of all developmental plans to achieve the objective of inclusive growth, mindful of the geo-climatic vulnerabilities at micro levels and the needs of socially and economically disadvantaged segments of community, the complementary objectives of disaster risk reduction and multi hazard preparedness can be met to a large extent. The 12th Plan also stressed the need for improvement and strengthening existing institutional arrangements and systems to deal with disasters more effectively and professionally. The 12th Plan also highlighted the need for streamlining and strengthening the institutional arrangements along with the integration of training and deployment.

The planning framework has arranged the actions envisaged for risk reduction under five thematic areas for action with one of the four priorities for action of Sendai Framework as its dominant feature. For each hazard, the approach used in this national plan incorporates the four priorities enunciated in the Sendai Framework into the planning framework for Disaster Risk Reduction under the five Thematic Areas for Action:

1. Understanding Risk
2. Inter-Agency Coordination
3. Investing in DRR – Structural Measures
4. Investing in DRR – Non-Structural Measures
5. Capacity Development

For each thematic area for action, the NDMP has identified a set of major themes for undertaking actions within the broad planning framework. For each hazard, themes for action are presented in a separate responsibility matrix while assigning roles of centre and state level agencies/departments for each of the thematic areas for action have also been developed and suggested.

The activities envisaged in the NDMP and the Sendai Framework have been categorised into short/ immediate (within 5 years), medium-term (within 10 years), and long-term (within 15 years) categories, which will be implemented in many instances concurrently, but not necessarily, sequentially. For both implementation and the realization of outcomes, they correspond to widely differing scope in terms of geographic spread, institutional complexity, and time scales. Some of the actions under immediate response are short-lived, while many of the measures for risk reduction and strengthening resilience are long term, which become part of all facets of developmental process through mainstreaming. Apart from DRR being a part of the mandatory provision of preparing all future Detailed Project Report (DPR), the NDMP also recommends Environment Impact Assessment (EIA) to be used along with risk reduction measures.

Climate change is also contributing to higher degrees of disaster risks, vulnerabilities, and a greater probability of development gains being negated by repeated disasters. There has been a greater degree of achievement toward sustainable development through integration of DRR and CCA into development planning. As impacts of climate change are ecosystem-specific, so must be adaptation. Ecosystems are not bounded by state boundar-

ies and there are more overlaps than there are clear demarcations. Adaptation plans should be ecosystem-specific. Climate change impacts are not restricted within political or administrative boundaries; livelihood practices such as agriculture and fishing are culture-specific, which depends on the ecosystems common across states.

In many environmentally sensitive areas, an ecosystem based adaptation is already an acceptable academic and international process. It treats an ecosystem as an entity and correlates its interactions with human settlements and draws from and feeds into various ecosystem services. It necessitates collective action among governments, communities, conservation, development organisations, and other stakeholders to plan and empower local action. The different departments, wherever possible, might consider this approach as a viable alternative while mainstreaming DRR and CCA into sectoral plans. As each state has different vulnerabilities to various disasters, the institutional structures have to be compatible and flexible to plan and manage the impact of climate change and disaster risks keeping in mind the priority actions of the SFDRR. The release of funds to states under the Thirteenth Finance Commission could be linked to setting up of the institutions as envisaged in the Act and their performance in terms of preparation of Disaster Management Plans and activities undertaken by them for disaster preparedness and mitigation.

Further, the choice of technologies, both for sectoral developmental programmes and infrastructure building and strengthening should be environmentally sensitive and culturally acceptable being based primarily on local materials and having the potential to create green, sustainable employment, alternative livelihood options and enterprise development, especially Small and Medium Enterprises supported by renewable source of energy while ensuring that the percentage and density of green cover increases. (Examples of preference given to use of bio-engineering rather than existing structural engineering for critical infrastructure and covering land mass, especially eroded slopes and wasteland with bio-energy crops, etc.).

The issue of determining the unit of planning for the state, given the trend of increasing vulnerabilities, risks and exposure to hazards and climate change, assumes great importance. This critical issue needs to be debated and a conclusion reached to determine future developmental policy formulation, planning and implementation priorities and strategies, and the institutional mechanisms necessary for ensuring more effective governance.

The goal of the Plan is “to protect lives and maintain resilient, sustainable communities by fostering disaster mitigation as a way of life”. The principles reflect the essence of what the National Disaster Mitigation Plan aims to achieve and how it should be developed. The principles are:

- I. Preserve Life – Protect lives through prevention.
- II. Safeguard Communities – Enhance economic and social viability by reducing impacts of disasters.
- III. Fairness – Consider equity and consistency in implementation.
- IV. Sustainable – Balance long-term economic, social and environmental considerations.
- V. Flexible – Be responsive to regional, local, national and international perspectives.
- VI. Shared– Ensure shared ownership and accountability through partnership and collaboration.

A multi-pronged approach has been proposed to be adopted to undertake disaster mitigation:

- I. Mainstreaming mitigation measures into all development projects.
- II. Initiating of national level mitigation projects in high priority areas by central ministries and departments concerned.
- III. Encouraging and assisting state level mitigation projects in accordance with the guidelines.
- IV. Indigenous knowledge on disaster and coping mechanism adopted by various states will be given due weightage with special focus on protection of heritage structures.

The National Disaster Management Plan prepared by the MHA, Government of India, reiterates that “as far as disaster mitigation is concerned, we believe that it should be a part of the plan process and that the expenditure therein should be met out of the plan resources of the respective ministries of the Union and the states. This is also advisable as there are already schemes at the central as well as state levels that are targeted towards mitigation, in areas such as drought-proofing, flood and water management, soil erosion and promotion of earthquake-resistant structures. While we realise that the current levels of funding of these schemes may not be adequate, it is our view that this aspect is best left to be decided by the Planning Commission and the NDMA.”

Additional References:

1. 11th and 12th Five Year Plans, Planning Commission, Govt. of India
2. Himachal – National Disaster Risk Reduction Portal, National Institute for Disaster Management
3. State Strategy and Action Plan for Climate Change, 2012, Department of Environment, Science and Technology, Govt of Himachal Pradesh

NOTES

DAY 2

MODULE 2 - Mainstreaming DRR in development planning process with reference to India and Himachal Pradesh: issues and challenges

Sessions 2.1 –Mainstreaming DRR into Sectoral Planning

Session 2.2- Mainstreaming DRR in environment planning and city development plans: case studies and discussion

Session 2.3: Issues related to women, children, elders, marginalised/ Disadvantaged and underprivileged sections of the society, differently-able, youths in mainstreaming DRR in National and sub-national plans

Session 2.4 - Climate Change and DRR – need for integration

Session 2.5 – Incorporation of DRR and CCA into Sectoral Plans

MODULE 2 - Mainstreaming DRR in development planning process with reference to India and Himachal Pradesh: issues and challenges

SESSION 2.1

Mainstreaming DRR into Sectoral Planning

DURATION

120 Minutes

NOTE FOR THE FACILITATOR

Most of the participants will be well conversant and have experience with the rationale, framework, and at least some of the measures for mainstreaming. Sharing of experiences by several participants, on the importance of mainstreaming DRR and CCA and the measures that are to be taken, may be a good way to initiate this session.

TWO PARTS (SESSIONS)

1. Concepts and approaches for mainstreaming DRR and CCA into development planning
2. Issues and challenges relative to effective mainstreaming

OBJECTIVES

- Develop a critical understanding of the global and national discourse on mainstreaming DRR and CCA into development planning.
- Develop an understanding of how to initiate a planning process in the State of Himachal Pradesh, in order to develop and execute different sectoral plans from the perspective of progressively minimizing disaster risks and climate change impacts.
- Develop comprehensive understanding of various issues and challenges facing the efforts to mainstream DRR and CCA into development planning and ways to overcome them.
- Identify and utilize various tools and instruments for mainstreaming DRR and CCA into planning, using measures necessary to avoid the creation of new risks.

KEY CONCEPTS

- The measures for realising these objectives being implemented are in keeping with the Sendai Framework for Disaster Risk Reduction 2015–30 and its priorities for action (given as a handout). During 2015, India was also one of the signatories to the Sustainable Development Goals 2015–30 and the Paris Agreement on Climate Change.
- The methodology for mainstreaming DRR and CCA into all developmental

OUTCOMES

work is based on the objectives and framework laid out in the above three global agreements.

The participants will become more conversant and perceptive about the practical steps they must take and tools required to mainstream DRR and CCA into the planning process, and also about the measures necessary to address various issues and challenges in order to establish more resilient development processes.

METHOD

Presentation, interactive discussions with questions, and sharing of experiences by participants. Listing of issues and challenges, and categorizing and analysing them into strategies, policies, institutional arrangements, and capacity building - Group exercise

GROUP EXERCISE IN PART 2

(each group consisting of 4- 6 participants) for (a) Infrastructure Sector – PWD, Irrigation, Transport, Tourism, Electricity, etc.; (b) Productive Sector- Agriculture, Horticulture, Animal Husbandry, etc.; (c) Social Sector - Health, Education, Women and Child Development, etc.; (d) Local Government and Urban Development; and (e) Environment, to analyse methodology, planning process, and strategy for integrating DRR, CCA, and mitigation into sectoral plans. The group exercise will be undertaken to analyse risks, their rankings, and types of investments required for enhancing resilience and risk governance, to develop plans for each of the sectors chosen in the previous group exercise by choosing one different National Flagship Programme for each group. The findings of the group exercise will be presented at the plenary and key findings and measures proposed, analysed, and summarized.

HANDOUT

Sendai Framework for Disaster Risk Reduction (Page 87) and discourse on how it can be applied to mainstream DRR/CCA.

Technical Notes—Part 1

Introduction

India is highly vulnerable to various kinds of disasters, which cause significant loss of life and property, as well as serious damage to the environment and the economy. During the last 30 years, the country was affected by 431 major disasters, resulting in very high losses of life and property. According to Prevention Web statistics, 1,43,039 people were killed and about 150 crore persons were affected by various disasters during the last three decades. The disasters have been estimated to cause loss to property and other infrastructure worth more than US \$48,000,000,000. India's loss to disasters, as a percentage of GDP, is high in comparison to many countries, justifying the rationale to mainstream DRR into developmental policies and plans. The State of Himachal Pradesh is highly vulnerable to different disasters and all Himalayan states are particularly sensitive to climate change, justifying the need for synergy between DRR and CCA and their integration into developmental planning.

Context

Since the late 1990s, there has been increasing recognition by both governments and donors of the need to 'mainstream' disaster risk reduction into development – that is, to consider and address risks emanating from natural hazards in medium-term strategic development frameworks, in legislation and institutional structures, in sectoral strategies and policies, in budgetary processes, in the design and implementation of individual projects and in monitoring and evaluating all of the above (Benson and Twigg, 2007). Mainstreaming requires analysis of both how potential hazard events could affect the performance of policies, programs and projects and the impact of those policies, programs and projects, in turn, on vulnerability to natural hazards. This analysis should lead to the adoption of measures to reduce vulnerability, treating risk reduction as an integral part of the development process rather than as an end in itself. It does not require a re-working of government objectives; instead it seeks to help ensure that these objectives – such as poverty reduction – are both attainable and sustainable. From a disaster risk reduction perspective, mainstreaming supports and encourages the adoption of disaster risk reduction measures by linking it to other development priorities and securing a risk-aware ethos.

While there seems to be a global consensus about the need to mainstream DRR into development, knowledge of how to achieve it and how to measure the results are still in a nascent state. This offers both an opportunity and a challenge. The argument that investing in DRR can substantially minimise the damage and loss from disasters is widely accepted. However, it has been hard to generate evidence to support the argument and build real world planning practices. Nevertheless, the need to mainstream DRR into development is sufficiently well accepted globally.

There is yet to be a robust body of action by most of the respective national governments in the South Asian region, including India, for mainstreaming DRR in the development processes. However, there are a few practices from other regions that showcase the inclusion of disaster risk reduction in development. In Costa Rica, for example, citizens and businesses are better able to protect their assets against disaster losses because of groundbreaking legislation to change the regulatory environment of the insurance industry.

Another example which relates to the partnership between World Bank, UNDP, and other development actors in Madagascar signifies how the country has given the highest possible profile to disaster risk management. A \$1.2 million GFDRR grant is aiding the government to develop a national DRR and CCA plan, strengthen national and regional risk assessments, develop cyclone-proof standards for major infrastructure, establish a disaster contingency fund, and expand emergency planning capacity.

Similarly, Republic of Yemen has emerged as a flagship country for institutional capacity and consensus building on the importance of DRR. With GFDRR support, the government is developing a national strategy for disaster risk management, new national risk reduction laws, a national risk assessment, disaster risk reduction awareness and education programmes, and improved coordination between public and private partners, including civil society. Most of these initiatives are supported by multilateral and bilateral organisations through respective national governments and there is absolutely negligible action taken by the governments on their own.

DRR was first introduced as a matter of concern, planning, and action in the Tenth Five-Year Plan. This was further strengthened in the Eleventh Five-Year Plan, which defined safe development and good governance as its overarching plan goal. In the following section on the development planning process in India, some of the constraints and opportunities inherent in the planning processes are underlined from the point of mainstreaming DRR into these processes.

Within the larger framework provided by the five-year plans, annual plans are developed and implemented by different ministries and departments both at central and state levels. A major part of these planning exercises includes planning for the implementation of flagship national programmes. Some of these ongoing programmes include:

- Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)
- Sarva Shiksha Abhiyan (SSA)
- National Rural Health Mission (NRHM)
- Indira Awas Yojana (IAY)
- Jawaharlal Nehru National Urban Renewal Mission (JNNURM)

All of these national programmes are designed to address key development challenges of livelihoods, education, health, housing, and urban development, including urban infrastructure and poverty. All these key areas have significant implications for mainstreaming DRR into development planning and administration.

Despite the system of centralised planning in the form of five-year plans, there are definite moves to institutionalise a system of decentralised development planning at the local level. Following the 73rd and 74th Amendments to the Constitution of India, strengthening the institutions of local self-government, both in the rural and urban areas, has been accorded high priority. Some states, such as Kerala, Karnataka, Maharashtra, and West Bengal, have ensured effective decentralisation of the planning processes at the local level. However, DRR is an area of attention and action that has eluded any effective attempts at mainstreaming within development planning processes at the central, State, and other local levels in general across the country.

There are many possible constraints and barriers to mainstreaming. The most obvious one is lack of appropriate instruments and incentives for planners to mainstream DRR concerns and elements into planning processes at various levels. However, opportunities outweigh the constraints. India has a robust institutional set-up at the national level comprising the National Disaster Management Authority (NDMA) and the National Institute of Disaster Management (NIDM). While NDMA is mandated to offer policy and planning advisory services at the national level, NIDM is the apex national level capacity development agency in the arena of disaster management in the country. The Ministry of Finance has issued an office memorandum advising all the line ministries and departments to undertake risk assessment as a mandatory input in planning and programming activities in their respective sectors. These are very welcome developments and carry the immense potential to help intensify the mainstreaming efforts and outcomes.

With the promotion of similar set-ups at state and district levels, and the positive roles being played by SDMAs and DDMAAs in promoting DRR, there is an opportunity to mainstream it in all sectors. In Himachal Pradesh, the Revenue Department, which is the nodal department to promote DRR in the state, has been playing a pro-active role in mainstreaming DRR through the involvement of other departments. The present training programme is one such initiative to mainstream DRR.

One of the issues that most forums raise as an obstacle to mainstream DRR into the developmental process is the lack of finances for it and the lack of clarity on the types of tools that should be used to track public investments in DRR. 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 ensure 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 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 the use of 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.

There is great diversity among the policies and instruments developed and in use at the national level. The principal characteristics prevalent in Asia, from case studies undertaken by ADB are listed below.

- Facilitated by legislative and institutional developments, India requires DRR to be integrated within the federal investment planning process, while financing for disaster response, relief, and rehabilitation rests largely at state level.
- Indonesia has developed a budget classification for stand-alone DRR, which facilitates the monitoring of expenditure and outcomes of investments developed by both national and regional planning systems.
- The Philippines has developed enabling policies and frameworks in which a system for the integration of DRR into national development planning has been realised. It has yet to develop accounting methodologies for DRR expenditure within relevant programmes.

Although countries persistently identify the lack of resources over the long term as a major impediment to effectively reducing disaster risk in public investment, there is evidence from these preliminary studies that public investment allocations for DRR are growing; a development that can also be observed in other countries* . Despite notable exceptions, in prioritizing ex post investment, governments still tend toward the management of disasters as exogenous shocks rather than endogenous risks. In other words, they treat disasters as unpredictable events to be managed in a reactive manner, as opposed to proactively addressing vulnerability as a controllable factor. Where national planning and finance institutions have been able to successfully integrate or embed DRR within (sectoral) development strategies, they have found it extremely challenging to effectively track investments.

For many, accounting for DRR investments is only possible with stand-alone disaster investments (commonly found in ex post response and reconstruction expenditure). However, DRR interventions can only be effective in reaching those communities which are seriously vulnerable to natural hazards and disasters if they are founded on broad-based community participation in their design, implementation, monitoring, and evaluation, and if they build on, complement, and strengthen the community's own coping strategies. Such participation is essential to ensure the local community's ownership of the DRR process and the adaptation of DRR principles and programmes to local realities and needs. Within the community, the involvement of vulnerable groups and their involvement in planning and mainstreaming DRR into their daily activities would be critical in poverty and vulnerability reduction. However, if DRR mainstreaming is to be sustained, the role of multi-stakeholders from government to NGOs, various other institutions including education and health institutions (who especially have key roles), industries, trade unions, youth and student bodies, media, and also the political parties, all have a role in promoting and developing a culture of "prevention, mitigation, and preparedness" in all aspects of life.

Another aspect which needs to be taken into the account to strengthen the planning process is that the losses due to impacts on ecosystems, resulting in loss of livelihoods, diminished health, increased psychological stress, and enhanced vulnerabilities are not quantified. The same is true regarding the impact of climate change on natural resources, including land, water, and forests, and on infrastructure as well, leading to enhanced vulnerabilities, and socio-economic and environmental impacts, especially due to hydro-meteorological disasters. Vector-borne diseases, rapid and unplanned urbanization, and industrial disasters are also serious challenges. The socially and economically disadvantaged and marginalised sections of the population - women, children, elders, and differentially abled persons - are the most affected by repeated disasters, pushing them into high risk categories.

Disaster management efforts have been attempted prior to the enactment of the Disaster Management Act (2005). This act issued a mandate and provided a mechanism by which to combine all efforts into a single plan for a more concerted effort to review, monitor, and continuously improve its performance. On a national level and in some states, including Himachal Pradesh, state-wide action plans for climate change have been formulated.

Risk Assessment (RA) is a key step toward initiating mainstreaming. It is based on:

- a) Identification of location, nature, expected intensity, and threat level (hazard assessment);
- b) Estimation of the degree of vulnerabilities and the extent or magnitude of exposure to the hazard threat;
- c) Appraisal of the possible impact levels based on the present and future projected vulnerabilities; and
- d) Assessing acceptable levels of risk.

* Millennium Ecosystem Assessment (2005)

Risk Mitigation Analysis (RMA), which is a tool used to decide which types of measures and/or activities are necessary to derive direct and indirect benefits from risk and vulnerability mitigation measures, is illustrated below. This will facilitate the evaluation of measures, programmes, projects, schemes, actions, government policies, other stakeholders, and the community to address disaster risks due to natural and anthropogenic hazards and various developmental programmes, and the ranking of risks*.



Understanding Risk Acceptance

Source: Mainstreaming Climate Change Adaptation and Disaster Risk Reduction into District Level Development Plan, Gupta & Nair

The process of mainstreaming DRR and CCA, though not exhaustive, would include the following key measures:

- Identification of the existing risks and vulnerabilities, keeping in mind the multi-hazard proneness of specific locations
- Improved preparedness {see Case Study 1 (pg. 82)- Cyclone Phailin} for making responses effective and “building back better” during recovery, rehabilitation, and reconstruction activities
- Identification of the type of programme or projects that will mitigate existing risks, while not creating new risks at various levels
- Strengthening inter-agency coordination, including knowledge sharing and networking
- Investing in DRR both through structural and non-structural measures
- Investing in Climate Change Adaptation (CCA) and Mitigation
- Integrating DRR and CCA measures into the programme/project chosen
- Allocation of dedicated budgets for DRR and CCA
- Capacity development and awareness generation
- Ensuring updating of laws and policies and their enforcement, and overall strengthening of risk governance
- Special focus on urban risk management and measures to check and reduce mass migration from rural to urban areas and/or displacements due to enhanced disaster risks and climate change impacts
- Priority and special focus to reduce disaster risks and climate change impact on women, children, elders, and differentially-abled persons while increasing their resilience

* Mainstreaming Climate Change Adaptation and Disaster Risk Reduction into District Level Development Plan, NIDM, GEAD and ISET (Authors – Gupta and Nair)

Technical Notes – Part 2

Disaster impacts are on the rise, leading to significant increases in losses, which often neutralize the progress made over decades in a single major incident. A case study of the impact of the January 26, 2001 earthquake in Gujarat (see Case Study 2 (pg. 84)) gives an overview of the extent of damages caused by a single disaster event. Though Gujarat is one of the most advanced states in the country, losses due to the earthquake were so colossal that it took many years to recover. Expenditures for relief and reconstruction were very high, reducing revenue and development investment substantially. There have been a number of mega-disasters in the country practically every year, further justifying the rationale for mainstreaming DRR into development planning. Given the fact that Himachal Pradesh, like Gujarat, is also highly vulnerable to earthquakes, the high level of losses and high expenditure for relief, reconstruction, and restoring normalcy will take their toll. It could be more crippling for Himachal, which is not as financially strong, a state as Gujarat.

Mainstreaming is a dynamic process with a dual purpose:

- 1) Ensure development is protected through integrating DRR elements into developmental policies and plans
- 2) Endeavour that development does not increase people's vulnerabilities to disasters.

Mainstreaming entails assessing the implications of disaster risks in any planned development action in all areas and sectors, at all levels, as an integral dimension of the design, implementation, and monitoring and evaluation of policies and programmes to strengthen institutional arrangements, in order to overcome any possible constraints and barriers.

Another key aspect of mainstreaming is institutionalising the concept at local levels, through the system of decentralized planning, following the 73rd and 74th Constitutional Amendments, through strengthening the institutions of local self-government, both in rural and urban areas that have been accorded high priority. This measure will also enhance community participation in mainstreaming DRR and CCA into daily life, and facilitate the desired lifestyle and attitude changes that will strengthen disaster resilience.

With increasing disaster impacts, especially hydro-meteorological disasters, there is a global consensus that DRR and CCA have to be mainstreamed in all developmental plans and policies. Policy makers have realised that today there is urgent need for a course correction in the way development planning is being undertaken and that integration of DRR and CCA into developmental planning is no longer optional.

The justifications for choosing the following case studies in mainstreaming DRR into developmental planning are:

1. Case study 1 focuses on the high degree of preparedness shown in the State of Odisha, which in turn reduced the risks and thus, the losses, when the state faced a severe cyclone named Phailin in 2013. During two previous similar cyclones, in 1971 and in 1999, over 10,000 persons were killed during each cyclone. Apart from the loss of lives, the destruction was so heavy that it took a number of years for the people of the state to regain normalcy – being affected by one natural disaster or another practically every year. This state of preparedness based on the lessons learnt from the past cyclones not only led to lower losses and very little diversion of scarce developmental funds for relief, rehabilitation, and reconstruction, but also a return to normal life and activities in a short time span.

2. Case Study 2 details the huge losses faced and overcome by Gujarat State after the devastating 2001 earthquake. It was truly a herculean effort to recover from the impact of the mega earthquake, and not only have they recovered, but the state is currently considered one of the fastest growing economies in the country, with a very positive climate for investors. During the reconstruction and recovery phases, a lot of effort went into

risk reduction so that another earthquake does not result in the same levels of destruction inflicted by the 2001 event. The state of Himachal Pradesh has had a history of earthquakes, and is highly vulnerable. The greatest devastation was caused in 1909 by a Kangra earthquake in which 100,000 buildings were reported to have been demolished. At least 20,000 people are estimated to have been killed and 53,000 domestic animals were also lost. There was also major damage to the network of hillside aqueducts that fed water to the affected area. The total costs of recovering from the effects of the earthquake were calculated as Rs. 2.9 million at that time. This case study justifies the need for mainstreaming DRR to minimise such crippling losses due to disasters from which it might take the state years to recover.

CASE STUDY 1 - How a prepared India saved lives during monster storm Phailin

By Nita Bhalla – Reuters, October 14, 2013
NEW DELHI (Thomson Reuters Foundation)

As meteorologists warned last week of a monster storm ploughing towards India's east coast, the country's disaster preparedness teams snapped into action, pre-positioning emergency response teams and supplies, and evacuating nearly a million people - ultimately saving countless lives. The impressive show of disaster preparedness is thanks in large part to the lessons learnt after a powerful cyclone hit the country and killed 10,000 people in 1999, and the plans implemented in the years since, say aid workers and disaster experts.

"Credit is due to those who have been involved in efforts to reduce the scale of vulnerability to disasters across India," said Tom Mitchell, head of climate change at the Overseas Development Institute in London. "The low loss of life, following the strongest storm ever measured in the Bay of Bengal, would almost certainly not have been possible without learning lessons from previous cyclones and tsunamis that have hit this coastline."

Cyclone Phailin, India's fiercest storm in 14 years, smashed into the coastline of Andhra Pradesh and Odisha. It flooded swathes of farmland and ripped apart tens of thousands of mud-and-thatch homes - but surprisingly, only 15 people were reported dead.

Early warnings which started five days before the storm's arrival, the pre-positioning of food rations and packaged drinking water in shelters, and the orderly - and sometimes forceful - evacuation of close to one million people saved many lives, said aid workers. As Phailin approached, authorities cancelled the holidays of civil servants during the popular Hindu Dussehra festival, deployed disaster response teams with heavy equipment and positioned helicopters and boats for rescue and relief operations. Trains and flights were cancelled, roads barricaded and helplines and control rooms set up. Satellite phones and generators were dispatched to the heads of districts to ensure they remained in contact with the state capital.

The army, navy and air force were put on standby, and power and telecoms companies were instructed to be ready to restore damaged infrastructure as soon as possible after the storm. Efforts to save people's livelihoods were also taken. Specific warnings were given to fishermen not to venture out to sea and to put their boats in safe places, while farmers were advised to harvest their standing crops.

"It's nothing short of a miracle that so many lives were spared. We were expecting the worst, but it just shows that all the time and investment put into preparing for such disasters by the authorities, civil society organisations and communities has paid off," said Save the Children's Devendra Tak.

WAKE-UP CALL

India is one of the most disaster-prone countries in the world, and many of its 1.2 billion people live in areas vulnerable to natural hazards such as floods, cyclones, droughts and earthquakes. The 1999 super cyclone which thrashed Odisha with wind speeds of 300 km per hour - leaving more than a million homeless - was a wake-up call to authorities as well as humanitarian agencies, say disaster experts. With meteorologists warning that climate change will bring more severe natural calamities to the Indian subcontinent, states like Odisha and Andhra Pradesh have since invested heavily in disaster risk reduction projects.

Both states have their own disaster management departments and have built hundreds of cyclone shelters across the coast. Technological advances have been made with models that forecasters can use to accurately predict weather for seven days in advance. Humanitarian organisations such as the Indian Red Cross have also played an instrumental role - mobilising thousands of volunteers across the cyclone-prone region who are trained in first aid and can support evacuations and aid distributions. Drills are regularly organised so people know what to do when an alert is issued - locking up their homes, keeping their cattle in safe places and taking only a few clothes and important documents with them.

“Christian Aid and its local partner organisations have been working with the coastal communities in Odisha and Andhra Pradesh for almost two decades and have established an extensive network of disaster management task forces all along the coast,” said a statement from UK-based charity Christian Aid. “They have increased the resilience of coastal communities, preparing them for emergencies such as Cyclone Phailin, as well as teaching them about life-saving search and rescue activities, and the availability of stockpiles of emergency relief supplies.”

CASE STUDY 2 - The Impact of Catastrophes on National and Regional Economies: A Case Study of Gujarat

Presented at the World Bank, Washington conference on financing the Risks of Natural Disasters, June 2-3, 2003

Background

- Gujarat: an advanced state on the west coast of India.
- On 26 January 2001, an earthquake struck the Kutch district of Gujarat at 8.46 am.
- Epicenter 20 km North East of Bhuj, the headquarters of Kutch.
- The Indian Meteorological Department estimated the intensity of the earthquake at 6.9 Richter. According to the US Geological Survey, the intensity of the quake was 7.7 Richter.
- The quake was the worst in India in the last 180 years.

Summary

- The earthquake devastated Kutch. Practically all buildings and structures of Kutch were brought down.
- Ahmedabad, Rajkot, Jamnagar, Surendranagar, and Patan were heavily damaged.
- Nearly 19,000 people died. Kutch alone reported more than 17,000 deaths.
- 1.66 lakh people were injured. Most were handicapped for the rest of their lives.
- The dead included 7,065 children (0-14 years) and 9,110 women.
- There were 348 orphans and 826 widows.

Economic Consequences of the Earthquake

Disaster loss, reconstruction cost and output loss

- ADB and World Bank's Gujarat Earthquake Assessment Mission visited Gujarat during February 11-22, 2001 for assessing the economic impact of the earthquake.
- The disaster loss was estimated at Rs 99 billion.
- Reconstruction costs were estimated at Rs 106 billion.
- The annual loss of state domestic product was estimated at around Rs 20 billion (assuming an ICOR of 4) for the first 12 months.

Demographics and labour market

- Geographic pattern of ground motion, spatial array of population and properties at risk, and their risk vulnerabilities.
- Low population density was a saving grace.
- Holiday
- Extra fatalities among women
- Effect on dependency ratio
- Farming and textiles

Social security and insurance

- Ex gratia payment: death relief and monetary benefits to the injured
- Major and minor injuries
- Cash doles
- Government insurance fund
- Group insurance schemes
- Claim ratio

Disaster loss

- Initial estimate Rs. 200 billion.
- Came down to Rs. 144 billion.
- No inventory of buildings
- Non-engineered buildings
- Land and buildings
- Stocks and flows
- Reconstruction costs (Rs. 106 billion) and loss estimates (Rs. 99 billion) are different
- Public good considerations

Impact on GDP

- Applying ICOR
- Rs. 99 billion – deduct a third as loss of current value added.
- ICOR of 4
- Estimated GDP loss at Rs. 23 billion
- Adjust for heterogeneous capital, excess capacity, and loss Rs. 20 billion.
- Reconstruction efforts.
- Likely to have been Rs. 15 billion.

Fiscal accounts

- Differentiate among different taxes: sales tax, stamp duties and registration fees, motor vehicle tax, electricity duty, entertainment tax, profession tax, state excise and other taxes. Shortfall of Rs. 9 billion of which about Rs. 6 billion unconnected with earthquake.
- Earthquake related other flows.
- Expenditure: Rs. 8 billion on relief. Rs. 87 billion on rehabilitation.

Impact on Revenue

- Sales tax losses for February and March 2001 were Rs 115 core. For 2001-02, the losses were expected to be Rs 260 crores.
- Only 10% of the estimated stamp duty and registration fees were expected to be realised in February and March 2001. For 2001-02, collections were expected to fall by 50%.
- Motor vehicle tax collections were expected to fall short of budgeted figures by almost Rs 600 crores.
- Monthly losses of Rs 4 crores each were projected for electricity duty and entertainment tax.
- Professional taxes were expected to be lower by Rs 5 crores in the current year.
- The impact on total tax revenues was estimated at Rs 286 crores, Rs 345 crores, and Rs 436 crores, in 2000-01, 2001-02, and 2002-03 respectively.
- Total own taxes (as % of SDP) were expected to fall from budgeted estimate of 8.56% (2000-01)

to 7.85% and further to 7.46% in 2001-02.

- Total tax revenue (as% of GDP) was expected to decline from budgeted estimate of nearly 10% (2000-01) to 9.27% and further to 8.76% in 2001-02

Impact on Expenditure

- Total relief expenditure (food supplies, medical relief, debris removal, and cash compensation) was estimated at around Rs 840 crores.
- Total rehabilitation expenses were figured at Rs 8665 crores. Housing accounted for the highest expenditure (Rs 5148 crores), followed by education (Rs 837 crores) and drinking water (Rs 614 crores).
- Total (relief and rehabilitation) expenses amounted to Rs 9,345 crores.

Other Economic Impacts

- Non-tax revenues: Interest receipts, irrigation receipts, and royalties were expected to remain largely unaffected.
- Municipal finances: Almost 10% of municipal revenues were expected to be lost in a year.
- Banking: 68 commercial bank branches were fully damaged and 80 branches were partially damaged.
- Financial market: The wealth loss was expected to lead to reshuffling of peoples' portfolios and affect asset market behaviour.
- Employment: Nearly 5 lakh people were expected to become unemployed. Employment in salt, ceramic, and small-scale industries (including refractories, powerlooms, cotton ginning etc.) was worst affected.

India: Vulnerability to earthquakes

- 56% of the total area of the Indian Republic is vulnerable to seismic activity.
- 12% of the area comes under Zone V (A&N Islands, Bihar, Gujarat, Himachal Pradesh, J&K, N.E. States, Uttaranchal)
- 18% area in Zone IV (Bihar, Delhi, Gujarat, Haryana, Himachal Pradesh, J&K, Lakshadweep, Maharashtra, Punjab, Sikkim, Uttaranchal, W. Bengal)
- 26% area in Zone III (Andhra Pradesh, Bihar, Goa, Gujarat, Haryana, Kerala, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttaranchal, W. Bengal)

Due to the high vulnerability of Himachal Pradesh, it is important for the people of the state to understand the degree of loss and the high economic costs of reconstruction and rehabilitation that Gujarat incurred to recover, so that from the lessons learnt adequate earthquake-proof measures can be taken.

HANDOUT - Chart of the Sendai Framework for Disaster Risk Reduction 2015-2030

Scope and Purpose

The present framework will apply to the risk of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters, caused by natural or manmade hazards as well as related environmental, technological and biological hazards and risks. It aims to guide the multi-hazard management of disaster risk in development at all levels as well as within and across all sectors

Expected Outcome

The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical social, cultural and environmental assets of persons, businesses, communities and countries.

Goal

Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, cultural, educational, environmental, technological, political and institutional that prevent exposure and reduce hazard exposure and vulnerability to disasters, increase preparedness for response and recovery, and thus strengthen resilience.

Targets

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

Priorities for Action

There is a need for focused action within & across sectors by States at local, regional, national and global levels in the following priority areas:

PRIORITY 1	<p>Understanding disaster risk</p> <p>Disaster risk management needs to be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons & assets, hazard characteristics and the environment</p>
PRIORITY 2	<p>Strengthening disaster risk governance to manage disaster risk</p> <p>Disaster risk governance at the national, regional & global levels is vital to the management of disaster risk reduction in all sectors and ensuring the coherence of national & local framework of laws, regulations & public policies that, by defining the roles & responsibilities, guide, encourage & incentivize the public & private sectors to take action and address disaster risk</p>
PRIORITY 3	<p>Investing in disaster risk reduction for resilience</p> <p>Public & private investment in disaster risk prevention through structural & non-structural measures are essential to enhance the economic, social, health & cultural resilience of persons, communities, countries & their assets as well as the environment. These can be drivers of innovation growth and job creation. Such measures are cost effective and instrumental to save lives, prevent & reduce losses & ensure effective recovery and rehabilitation.</p>
PRIORITY 4	<p>Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation & reconstruction</p> <p>Experience indicates that disaster preparedness needs to be strengthened for more effective response and ensure capacities are in place for effective recovery. Disasters have also demonstrated that the recovery, rehabilitation & reconstruction phase which needs to be prepared ahead of the disaster is an opportunity to “Build Back Better” through integrating disaster risk reduction measures. Women & persons with disabilities should publicly lead & promote gender-equitable and universally accessible approaches during the response & reconstruction phases</p>

To achieve the goals and targets set forth in the Sendai Framework, and successfully carry out the priority actions, one of the most necessary key actions will be strengthening the mainstreaming of DRR into all developmental plans and policies. The realization of this outcome requires strong commitment and the involvement of political leadership in every country, at all levels, in the implementation and follow-up of the present framework and in the creation of the necessary conducive and enabling environments.

Disaster risk reduction requires an all-of-society engagement and partnership. It also requires empowerment and inclusive, accessible, and non-discriminatory participation, paying special attention to people disproportionately affected by disasters, especially the poorest. A gender, age, disability, and cultural perspective should be integrated into all policies and practices, and women and youth leadership should be promoted. In this context, special attention should be paid to the improvement of organized voluntary work of citizens.

Policies and practices for disaster risk management should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics, and the environment. Such knowledge can be leveraged for the purpose of pre-disaster risk assessment, for prevention and mitigation, and for the development and implementation of appropriate preparedness and effective response to disasters. This is an important task of mainstreaming DRR.

Another key aspect of mainstreaming is strengthening disaster risk governance at the national, regional, and global levels for effective and efficient management of disaster risks. Clear vision, plans, competence, guidance and coordination within and across sectors, as well as participation of relevant stakeholders, are needed.

Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health, and cultural resilience of persons, communities, countries, and their assets, as well as the environment. These can be drivers of innovation, growth, and job creation. Such measures are cost-effective and instrumental to save lives, prevent and reduce losses, and ensure effective recovery and rehabilitation. This is another key measure for mainstreaming DRR.

The steady growth of disaster risk, including the increase in exposure of people and assets, combined with the lessons learned from past disasters, indicate the need to further strengthen disaster preparedness for response, taking action in anticipation of events, integrating disaster risk reduction into response preparedness, and ensuring that capacities are in place for effective response and recovery at all levels. Empowering women and persons with disabilities to publicly lead and promote gender equitable and universally accessible response, recovery, rehabilitation, and reconstruction approaches is key. Disasters have demonstrated that the recovery, rehabilitation, and reconstruction phase, which needs to be implementation ready ahead of a disaster, is a critical opportunity to “Build Back Better”, through integrating disaster risk reduction into development measures, makes nations and communities more resilient in the face of disaster. This is another key aspect which can only be achieved through mainstreaming DRR into all sectoral plans.

While states have overall responsibility for reducing disaster risk, it is a shared responsibility between governments and relevant stakeholders. In particular, non-state stakeholders play an important role as enablers to providing support to states, in accordance with national policies, laws, and regulations, in the implementation of the present framework at local, national, regional, and global levels. Their commitment, goodwill, knowledge, experience, and resources will all be required.

MODULE 2 (Contd.)

SESSION 2.2	<ul style="list-style-type: none">• Mainstreaming DRR in environment planning and city development plans: case studies and discussion
DURATION	<ul style="list-style-type: none">• 90 Minutes
NOTE FOR FACILITATOR	<ul style="list-style-type: none">• The facilitator should offer insights from various DRR initiatives and debates in urban contexts, from within the country and globally.
OBJECTIVES	<ul style="list-style-type: none">• Develop an appreciation of the increasing challenges due to rapid urbanisation, limited infrastructure, and disaster risks enhanced by climate change impact• Develop understanding of the tools and instruments available for mainstreaming DRR into environment planning and city development plans and its role in making urban areas resilient.
OUTCOME	<ul style="list-style-type: none">• Participants develop a more comprehensive understanding of the role of DRR mainstreaming in environment planning and city development plans and its usefulness in making cities safer.
METHOD	<ul style="list-style-type: none">• This session will be initiated with a brief presentation of the documentary “Gorakhpur”, which highlights the problems, faced by the city, located at the foothills of the Himalayas. The film highlights the issue of high migration into the city from the surrounding rural hinterland, environmental degradation, and problems of increased flooding being faced by the citizens due to cloud bursts as a result of climate change, prolonged water logging and a total breakdown of the drainage and waste management city whose growth was unplanned, no concept of land use planning or other measures for the city to cope up with the growing population which is a common problem for majority of the urban areas in India. The unplanned growth of the cities adds to the risks and vulnerabilities levels and is making the Indian cities increasingly unsafe for the increasing number of migrants who are migrating to the cities in search of livelihoods.• This will be followed by a panel presentation, comprised of four to six volunteers from among the participants or guest speakers, involved in different aspects of urban planning and development work within the state, focusing on issues facing cities in Himachal, due to rapid population increase and unplanned growth, and the issues and challenges of mainstreaming DRR into policy and development programmes in an urban context. The panel discussion, followed by a brief question and answer session, will focus on:

- (a) Issues of migration, rapid increase of population, and infrastructure priority needs
- (b) Growth of slums, influx of unskilled persons in search of livelihoods, increases in urban risks and vulnerabilities, exposure factors, and status of present disaster risk arrangements, which are likely either non-existent or in nascent states in the urban areas
- (c) Increasing disaster risks, exacerbated by climate change
- (d) Integrating DRR and CCA into urban planning, specifically land use, zoning, and implementation of laws, policies, and statutes for strengthening urban climate resilience.

• The panel discussion will be followed by a question and answer session. Given the high potential for tourism in the state, existing disaster risks, and the fragile ecosystem – the facilitator will sum up the session highlighting key issues and challenges and the processes and tools that will be necessary for integrating DRR and CCA into urban developmental plans.

• Utilising national flagship programmes, such as the National Mission for Sustainable Habitat, JNNURM, and other missions, could aid in the task of integrating DRR and CCA into urban developmental plans. Developing appropriate policy frameworks and supportive institutional frameworks for urban Himachal Pradesh, keeping in mind the vulnerabilities of hill ecosystems, are urgent priorities in the process of defining, creating, and implementing climate resilient urban development plans.

Technical Notes

Cities in India are facing massive changes and challenges – rapidly growing populations with large-scale migration from rural areas, and physical expansion, with the majority of these events being unplanned, requiring heavy investments in infrastructure, changing governance parameters and priorities, and increasing demand for quality services. It is projected that by 2030, the urban population will become about 600 million, adding an additional 223 million inhabitants, and necessitating building 70% of the infrastructure required to support this future urban population within the next 15 years. The challenges for rapid expansion coincide with the same period of time that the projected impacts of climate change and accompanying hydro-metrological disasters will be peaking.

Increasing urban population in the country is putting an enormous amount of pressure on limited infrastructure and services. High density population in cities, accompanied by the ever increasing influx of migrant people in search of jobs and opportunities, adds to the overall complexity of urban governance. A high percentage of urban migrants live in slums without basic services such as water, electricity, sanitation, and health care.

The urban areas in a hilly state like Himachal Pradesh are prone to landslides and flash floods, and are also located in a very high risk earthquake zone. Existing problems with water supplies, solid waste management, sewage treatment, storm water drainage, and traffic congestion in most cities, become acute during tourist seasons. The urban poor, in most hilly regions, are forced to reside in highly vulnerable areas. The problems of basic health care and education for children of the urban poor is also a major issue. The percentage of child labour in urban areas is high. Apart from various forms of social discrimination and bias, women from urban poor families often face serious health and sanitation problems.

Generally speaking, disaster risk reduction (DRR) and climate change adaptation (CCA) are missing from the urban planning process. Urban Plans presently include CDP (City Development Plan), CSP (City Sanitation Plan), SFCP (Slum Free City Plan), and ward plans, which offer very good opportunities for the integration of DRR and CCA into city planning processes. Fast track urban reforms, mainly focused on strengthening of urban local bodies, were started in 2005. Preparation of city development plan (CDP) is one of the most important tasks to be completed at the ULB level under this reform initiative. City Development Plans including CSP and SFCP are opportunities to integrate disaster risk and climate change resilience into urban planning and sectoral and sub-sectoral development programs.

It has been recognised and outlined under the Hyogo Framework for Action priority 4, entitled “Reduce the Underlying Risk Factors”, that healthy environmental management and city development are considered key actions in DRR and investments in sustainable and sound environmental management can offer cost-effective solutions to reduce community vulnerability to disasters (IUCN, 2009). This session will present some examples of successful cases of mainstreaming DRR into city development and environment planning. Participants are also encouraged to share their experiences with risk reduction initiatives which they have led or encountered during their tenure in city development and environment planning.

The session would conclude through an open forum discussion pertaining to the policies, specific plans/programmes for urban development including identification of which National Flagship Programme is best suited or can be harnessed for which priority activities, components of DRR and CCA that have been integrated into all urban developmental plans in the State. The hazard and climate profile, risk and vulnerabilities of each urban area, key areas of strengthening urban governance and assessment of the capacity development needs of both government officials and elected representatives of the ULBs will also be discussed and follow-up measures for mainstreaming DRR into urban planning highlighted and recorded.

Reference:

1. Mainstreaming Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) into City Development Plans (CDPs) – National Institute for Disaster Management
2. Mainstreaming Disaster Risk Reduction into Development: Challenges and Experience in the Philippines, Charles Benson, 2009
3. Climate Resilient Urban Development: Vulnerability Profiles of 20 Cities in India – Report by Integrated Research and Action for Development (IRADe)

MODULE 2 (Contd.)

SESSION 2.3

Issues related to women, children, elders, marginalised/disadvantaged and underprivileged sections of the society, differently-able, and youths in mainstreaming DRR in national and sub-national plans

DURATION

60 Minutes

NOTE FOR FACILITATOR

To begin, participants could be given some time to reflect on their current understandings about gender and the differential impacts of disaster on women, children, and the socially and economically disadvantaged/underprivileged sections of society. This can be facilitated via a SWOT analysis, examining the possible roles that they could play in various phases of the disaster management cycle. Participants will be requested to present selected case studies of a few examples from the state regarding the impact of disasters and climate change on women, children, senior citizens and differentially abled persons and highlight not only the problems that they face, but also examples where they have played a lead role in DRR and CCA activities. The facilitator, from her/his own experience, can also share a case study where a higher participation of women has ushered in an institutionalisation process of mainstreaming DRR into development planning.

OBJECTIVES

- Develop a critical understanding of the need to address the issues and concerns related to women, children, elders, differentially abled, and others who are marginalised and disadvantaged to reduce their vulnerabilities and exposure
- Develop an understanding of how to incorporate these groups as priorities while mainstreaming DRR in developmental plans

OUTCOMES

- Deeper knowledge, combined with an informed understanding of the need for mainstreaming the issues and challenges of specific vulnerable and marginalised groups as an important part of the participatory planning processes and decentralized planning state and appreciates their role as valuable resources in DRR and CCA related planning and implementation.
- Women, children, elders and differentially abled and other marginalised groups have differing needs, priorities, and experiences during and following a disaster. The impact of climate change also differs. Incorporating varying needs and experiences of these vulnerable groups means that all types of vulnerabilities to disasters and exposure have been considered while integrating DRR and CCA into developmental plans and projects.

METHOD

- Presentation and discussion interspersed with questions from the participants and sharing and clarifications from the facilitator/resource person(s); participatory summing up of the session by the facilitator.
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Technical Notes

The gender concerns expressed and experienced in the development context are applicable in the context of disasters, with added weight, due to the specific nature of vulnerabilities and capacities prevalent in all stages of disasters. The specific vulnerabilities and capacities of men and women, as well as the gender/social dynamics of disaster situations, are often not obviously visible. Detailed analysis however, exposes these often subtle but vital considerations. If ignored or unattended, these concerns will impede development efforts from reaching their goals. The subtle gender concerns and gender-based social dynamics prevalent in managing disasters, protecting daily livelihoods, and in disaster/crisis situations are aspects which must be considered while mainstreaming DRR into developmental plans.

In a similar manner, the special and specific needs of children, senior citizens, and differentially abled persons need to be considered while mainstreaming DRR and CCA into all sectoral plans in each component of the DM cycle. Including and properly addressing all forms of vulnerabilities is essential, especially social vulnerabilities, which deepen the process of marginalisation and exclusion of vulnerable and marginalised groups, especially during a period of crisis following a disaster.

Most of the DM plans invariably deal with issues related to women/gender as a separate or a 'cross cutting' issue while frequently neglecting other related groups, with the result that the issues and concerns related to these groups do not get integrated into each phase of DM, from prevention to recovery. Most approaches see these particular groups as 'most vulnerable' but none of the approaches perceive them as valuable resources, capable of performing more than merely supplemental roles, and often relegated to attend to functions which are seen as "womanly" or "supportive" or "supplemental".

For example, in MGNREGA, employment is given to one person from each family for 100 days and that person, most often, is a man. In other words, without saying it in so many words, the scheme indirectly favours men. Social constraints experienced by women that prohibit them publicly articulating their priorities, undertaking public roles, and engaging as decision makers mean that women essentially remain outside public conversations and policy processes. Those who speak on behalf of poor women tend to reinforce the notion that women are primarily beneficiaries and victims, underplaying their capacity to contribute to resilience building.

This training session should present an opportunity to engage with issues related to women (and the other vulnerable/marginalised groups) living with disaster risk to understand their realities. By applying this understanding to policy recommendations that emerge, these realities can be reconfigured, by formally positioning individuals from vulnerable/marginalized groups as key stakeholders, who, like other stakeholders, are resourceful and innovative in the face of the challenges posed by natural hazards and climate change. There are also positive examples of children-led DRR and the important role that the School Safety Programme is playing in some states to strengthen mainstreaming DRR into development planning and in institutionalizing the process where youths are given leadership roles. Incorporation of the needs and issues of differentially abled persons are usually raised only by those who have such family members or organisations/departments who work with this group. They are always looked upon as beneficiaries and not as contributors. This aspect of involving them as planners and contributors, offering them leadership opportunities while mainstreaming DRR into developmental planning increases the sensitivity and likelihood of the planners to address all forms of vulnerabilities.

Organised women's groups, active in urban, peri-urban and rural areas, have a reservoir of experiences linked to housing, community infrastructure, livelihoods, basic services, and enhancing public accountability, which can be drawn upon and applied to enhance the effectiveness of disaster management initiatives. Also, contrary to the assumptions that addressing women's interests' leads to an exclusive focus on women while leaving out the larger interests of the community, it is usually the case that women's interests and aspirations are tied to the well-being of their families and communities, including those of men.

Analysing both the vulnerabilities and resilience of women, children, and other marginalised groups will provide insights into their risks and capacities in both DRR and CCA related activities. Their reactions, coping mechanisms, and their different experiences will help participants appreciate their special needs, their roles in decision making and power, their reproductive burden, age, physical, and mental barriers. Each of these groups also carries specific capacities that provide resilience to face disaster, risks, and exposure. All these will be explored in detail during the training programme and follow-up planning exercises and will enrich the planning process.

Additional References:

- I. Gender Perspective in Disaster Management, ABCD, Kolkata
- II. Gender and Climate Change, Training Module, UNDP
- III. Children's Action for Disaster Risk Reduction, 2012, UNISDR

MODULE 2 (Contd.)

SESSION 2.4

Climate Change and DRR – The Need for Integration

DURATION

90 minutes

NOTE FOR FACILITATOR

The session will begin with the screening of a documentary “Eastern Himalayas – Ancient Risks, Future Threats”, lasting 15 minutes, which depicts the challenges faced by local communities in the Eastern Himalayas. Discussion will follow, regarding similarities and differences of the impacts of climate change on the people of Himachal Pradesh, as well as the specific priorities and challenges involved in implementing developmental programmes. Participants will be encouraged to share a few experiences which highlight the need and the process attempted for mainstreaming and integrating DRR and CCA into developmental planning.

Since most of the participants are conversant about DRR and CCA and about the State and their department/sector’s plan priorities, the remainder of the session will proceed as follows:

- Introduce concept and rationale for integrating DRR and CCA as climate-induced disasters are on the rise.
- The facilitator will then explain the process of integrating DRR and CCA aspects into policy formulation, planning process, financing, implementation strategies, as well as monitoring and evaluation, as a fundamental prerequisite to ensure sustainable development.
- Identify elements of commonalities and differences between DRR and CCA, and why their integration is necessary under the broader Disaster Management Framework, Poverty Reduction and Sustainable Development.

OBJECTIVES

- Comprehend the relations between DRR, CCA, and their combined impact on the developmental process
- Develop critical analysis and understanding of the processes and tools for mainstreaming DRR and CCA concepts into developmental planning at various levels and how best to link them with sectoral plan priorities
- Build strategies for mainstreaming DRR and CCA concepts into developmental planning through the examination of possible impacts of natural disasters and climate change, vulnerability analysis, and characteristics of ecosystems impacted by proposed measures
- Develop an improved understanding of how to initiate DRR and CCA integration into different sectoral plans

OUTCOMES

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

1. Comprehend the commonalities and differences between risks and exposure, and understand the justification for mainstreaming DRR and CCA into planning processes.
2. Justify the need for integrating DRR and CCA into planning methodologies in the face of increasing disaster risks and climate change impact.
3. Develop a critical understanding for initiating the integration of DRR and CCA into their respective sectoral plans, keeping in mind the Framework and Priority Action Plans and Plans of the Sendai Framework for Disaster Risk Reduction 2015-30 and the Paris Agreement on Climate Change (2015). The tools, methodology, and framework, provided in the National Disaster Management Plan (2016), can be used as guidelines by ministries and departments to develop sectoral plans and operational procedures, and to develop a set of actions to be undertaken toward disaster risk reduction and climate change adaptation and mitigation.

KEY CONCEPTS

- Climate, disaster, and development are inseparable. They cannot be addressed in isolation from each other.
- Human activity is the critical variable, determining the delicate balance between them. State, market, and communities are major factors.
- People, particularly the poor, stand at the intersection of climate, disaster, and development. They are most deeply affected by development policies and practices that impact the linkages between them.
- Vulnerability and capacity, as essential constitutive elements of both climate and disaster related risks, come into sharp focus in thinking through CCA and DRR issues.
- Well thought out CCA and DRR strategies are features and factors both of good governance and sustainable development.

METHOD

Power Point presentation, interactive lecture presentation, group work, and plenary; presentation and discussion interspersed with questions from the participants, with sharing and clarifications from the facilitator(s); participatory summation of the session by the facilitator(s).

MATERIALS REQUIRED

Slide projector, note sheet, markers and poster charts, and participant handbook

HANDOUTS

- Annexure 1 - Briefing Note on the 21st Conference of the Parties to the UNFCCC (COP21) in Paris – Brief Note Explaining the Linkages of COP21 with Himachal Pradesh is given at the end of Additional Reference and Prior to the Handout.

Technical Notes

Adapting to climate change is a rapidly growing challenge, particularly for developing countries. Even if greenhouse gas emissions are reduced significantly in the coming years, climate change impacts, such as gradual temporal and spatial shifts in resources as well as drought, floods, severe weather events and sea-level rise, are likely to result in food shortages, increases in vector-borne diseases, infrastructure damage and the degradation of natural resources. The poor will be affected disproportionately.

Climate change will exacerbate impacts such as droughts, floods, extreme weather events and sea level rise, which may contribute to food shortages, infrastructure damage and the degradation of natural resources upon which livelihoods are based. This may also jeopardise development gains achieved through development co-operation and make it more difficult to reach our development objectives including those agreed at the Millennium Summit that are described as the Millennium Development Goals. Adapting to the impacts of climate change is therefore critical. It is not just an environmental issue but also affects the economic and social dimensions of sustainable development.

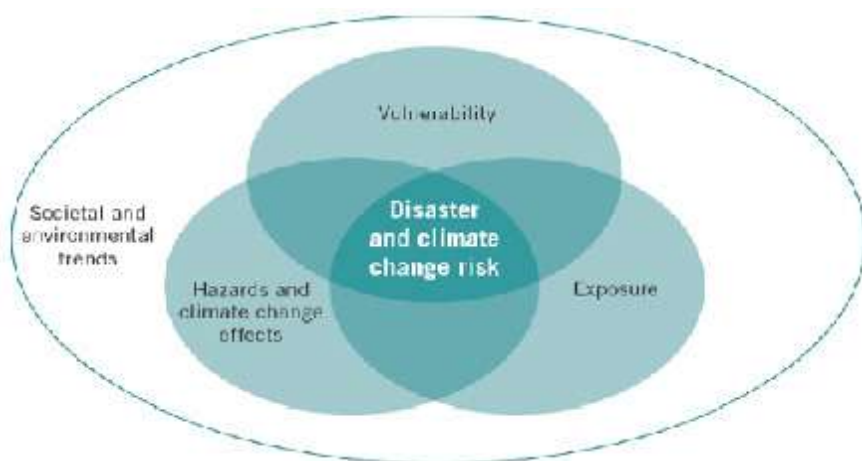
“Development as usual”, without consideration of climate risks and opportunities, will not allow us to face these challenges. Although a range of development activities contribute to reducing vulnerability to many climate change impacts, in some cases, development initiatives may increase vulnerability to climatic changes. For example, coastal zone development plans which fail to take into account sea level rise will put people, industries and basic infrastructure at risk and prove unsustainable in the long term. In addition, climate change considerations may raise the importance of supporting such sectors as agriculture, rural development and water resource management.

Development choices today influence the adaptive capacity of people and their governments well into the future. We cannot afford to delay adaptation planning and action. However, many development policies, plans and projects currently do not take climate change into account due to a lack of awareness and clarity on how to effectively develop and integrate adaptation options.

The majority of disaster events globally, nationwide, and within the state of Himachal Pradesh are due to hydro-meteorological type events, and mainly due to the impacts of climate change. About 71% of the population of the state is directly dependent on agriculture for income, while 89% reside in rural areas. Increasing water scarcity is adversely affecting both the lives and livelihoods of communities within the state. The integration of DRR and CCA into the state’s development processes will aim to reduce the vulnerabilities of these people through measures to combat hydro-meteorological disasters. Both CCA and DRR must be addressed simultaneously in an integrated manner, cutting across social, economic, political, cultural, and institutional spheres, through a dynamic process to move from the present state of increasing risks and vulnerabilities to a process of sustainable development. In Bangladesh, where the integration of DRR and CCA has been more effective, the strategy that is followed is to develop a DRR plan from a CCA perspective and vice-versa. It follows that the government is attempting to ensure that there are no separate systems, process, or tools utilized for integrating DRR, CCA, and development; rather, they are addressing the issue through a single tool and process.

State governments are already undertaking many activities to help reduce the impact of climate change (e.g. on farming systems, water security, and disaster management). There is some evidence that the current spending on such adaptation actions will reduce climate change damage and loss by between 10% and 20% (i.e. resulting in GDP being about 3.5 times higher than at present, rather than only 3 times higher), depending on a state’s level of vulnerability and adaptation spending. There is therefore a large ‘adaptation gap’. Some states have started to provide estimates of the costs of SAPCC actions. These have been produced mostly through bottom-up exercises which calculate how much is required to implement the actions. Managers of mixed development/adaptation actions can now apply for funding from both the state budget and from international

and domestic climate funds. The new climate funds provide opportunities to boost the importance of adaptation and to pilot new adaptation approaches. All states are preparing their first applications to access these climate funds. However, it is important to ensure that mixed actions are not neglected in the budget as a result of the new climate funding. To improve the consistency of funding from the relevant budget and from climate funds, the first step is to understand the links between SAPCC actions and the budget. This involves checking the SAPCC actions and the funding for departments in the budget. An explanation of how the SAPCC actions will complement the activities funded in the budget is then needed, as well as an explanation of the consistency between the funding under the SAPCC and in the budget to avoid duplication and conflicting policies. The complementarity between climate funding and development funding will strengthen the position of the departments in charge of mixed development/adaptation actions in two ways. Firstly, it will improve the quality of applications for climate funds, since the selection criteria used by the climate funds require a clear statement of links with development. Secondly, it will help strengthen the departments' case in budget negotiations, as the state budget process will adjust to respect the increased priority given to development actions that also deliver adaptation benefits. Such CCA efforts can be dovetailed into DRR activities or ideally, planned together to ensure proper integration of DRR and CCA. The best way to do it is to plan on the basis of ecosystems with the planning unit being a watershed, as suggested by the 11th and 12th Planning Commission's Reports on Himachal Pradesh. At the heart of this work is the need to develop a common understanding in government about the relative importance of development and adaptation in mixed actions. This need applies especially to the government departments responsible for the sectors most affected by climate change, including agriculture, forestry, water, energy and infrastructure.



Source- First Regional Training course of the RCC on mainstreaming disaster risk reduction into national developmental processes, ADPC

An integrated approach of mainstreaming DRR and CCA is explained in the diagram above. Increasing disaster and climate risks are based on the degree of vulnerabilities and exposure, by which the impacts of disasters and climate change can be gauged. A continuing analysis of the societal and environmental trends based on vulnerability, exposure, and risk analysis will strengthen the mainstreaming process per se.

The purview and framework of DRM activities are mandated by the Disaster Management Act (2005). The National Disaster Management Plan (2016), aligns with the SFDRR, and provides a planning framework which can be used by ministries and departments to draw up their own plans and operational procedures for strengthening different aspects of disaster risk management. The NAPCC, as well as a State Strategy and Action Plan for Climate Change, provide the framework and areas of priority for Climate Change Adaptation (CCA). In the briefing note of the Paris Climate Change Agreement, the guiding principle, means of action, and the linkage with the Sendai Framework for Disaster Risk Reduction have been globally agreed upon.

The need for integrating Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) into development planning has become essential in the face of increasing climate change impact and the rise in the number of climate related disasters. This, especially, is becoming increasingly important in fragile ecosystems such as the Himalayas, where the impact of climate change and ensuing disaster risks is visible.

The nodal department for DRR at the state level is the Department of Revenue, supported by the SDMA and DDMA, while for CCA and environment related activities, the nodal department is the Department of Forests and Environment. Each department has their own institutional arrangements for implementing their policies, programmes, and projects. The facilitator(s) requests that participants deliberate on the institutional arrangements for achieving the proposed integration during the group exercise proposed in the next session and then make a presentation during the plenary session, proposed to follow at the end of the final session.

In the state of Himachal Pradesh, the following observations have been made*:

- I. Natural hazards and climate change impact are increasing and the numbers of climate-induced disaster events are increasing.
- II. Changes in temperature and precipitation are having an impact risk on the lives, livelihoods, health, and other developmental aspects in different parts of the state.
- III. Degradation of natural resources is negatively impacting changes in water flow especially during summer season, adversely affecting agriculture, horticulture, food security, water availability, biodiversity, forests, hydropower, and tourism.
- IV. Climate change impacts are exacerbating disaster risks, resulting in increases in frequencies and intensities of floods, flash floods triggering landslides, mudslides, rock falls, droughts, forest fires, snow line retreat, and increasing risks of GLOFs, along with increases in vector-borne and stomach related diseases.
- V. Disaster Risk Management (DRM) alone is not proving as effective in reducing disaster impacts as it is when aspects of Climate Change Adaptation (CCA) and mitigation are integrated into its scope and into the overall planning process.

Ecosystem Based Adaptation – Rationale and Process

Disaster risks, especially those posed by climate change, will reduce the resilience of natural and human ecosystems in the coming years. This in turn, is already adversely affecting the communities at risk, especially the poor and marginalized. In many fragile ecosystems, the repetitive impacts of disaster events and climate change are resulting in mass migration and displacements. The vulnerability of the people living in these ecosystems has steadily increased, as these climatic changes in the natural atmosphere have proven to be harmful for agriculture, horticulture, fishing, and other natural resource-based livelihoods. As the capacities of local communities to cope with the changing ecosystem deteriorate, livelihood options will decrease and their vulnerability increases. As livelihood options diminished, in most of these regions, the number of people categorised as 'marginal labour', as classified in the Census Reports, have taken a quantum jump, especially during the last 2–3 decades.

As impacts of climate change are ecosystem-specific, so must be adaptation. Ecosystems are not bounded by state boundaries and there are more overlaps than there are clear demarcations. Adaptation plans should be ecosystem-specific. Climate change impacts are not restricted to within political or administrative boundaries; livelihood practices such as agriculture and fishing are culture-specific, which depends on the ecosystems common across states.

* Himachal Pradesh – National Disaster Risk Reduction Portal, NIDM, New Delhi, An analysis of the Strategy & Action Plan on Climate Change, Himachal Pradesh, by Anu Jogesh and Navroz K. Dubash February 2014

In many environmentally sensitive areas, an ecosystem based adaptation is already an acceptable academic and international process. It treats an ecosystem as an entity and correlates its interactions with human settlements and draws from and feeds into various ecosystem services. It necessitates collective action among governments, communities, conservation, development organisations, and other stakeholders to plan and empower local action. The different departments, wherever possible, might consider this approach as a viable alternative while mainstreaming DRR and CCA into sectoral plans.

The issue of determining the unit of planning for the state, given the trend of increasing vulnerabilities, risks, and exposure to hazards and climate change, assumes great importance. This critical issue needs to be debated and a conclusion reached to determine future developmental policy formulation, planning and implementation priorities, strategies, and the institutional mechanisms necessary for ensuring more effective governance.

In the Planning Commission Report on Disaster Management for the State for the 11th Five Year Plan, it was proposed for the state that “All development projects in the vulnerable areas should be so formulated as to minimize the adverse effects of natural disasters and should be linked with disaster mitigation. A cost-benefit analysis is essential to meet the economic impact of a natural disaster. Linkages between environment, natural disasters, and development must be clearly established to mitigate disasters and to improve the environment.”

The Report further states “the watershed principle is the most appropriate for organisation of space for administration and development. The boundaries of districts and block should preferably coincide with that of the watershed.”

In case of Himachal Pradesh, given its agro-climatic zoning, risk hazard ranking, vulnerabilities and capacities profile, and cultural diversity, innovative pilot projects with the potential of scaling up could be implemented where CCA and DRR is integrated into the different sectoral plans utilising watersheds as the planning units.

The synergies gained by the simultaneous applications of bio-engineering and bio-technology solutions will be key elements to

- Strengthening critical infrastructure,
- Providing mitigation measures for landslides, land subsidence, mine collapse, embankments, and soil conservation, and
- Promoting and strengthening of tree and grass cover, especially via the promotion of appropriate bio-energy crops as alternative, renewable resources, as well as for soil stabilisation.

Another cross-cutting area involves the development of educational materials, along with demonstration plots relevant to different levels of educational institutions, to enhance knowledge of the Himalayan ecosystem and encourage incorporation of key learnings into sustainable development modules for each ecosystem.

Additional References:

1. Sendai Framework for Disaster Risk Reduction – 2015 – 30 <http://www.unisdr.org/we/coordinate/sendai-framework>
2. NAPCC- <http://www.moef.nic.in/>
3. State Strategy and Action Plan on Climate Change, Himachal Pradesh, 2012 - www.moef.nic.in/sites/default/files/sapcc/Himachal-Pradesh.pdf
4. Operational Framework for Integrating Risk Reduction and Climate Change Adaptation in Urban Development – Wamsler,, 2009

Brief Note Explaining the Linkages of COP21 given in the Handout with the Situation in Himachal Pradesh:

Himachal Pradesh, as part of the Himalayan ecosystem, is highly climate sensitive and prone to climate-induced hazards. Hence, addressing climate change concerns and linkages in accordance with the context of COP21 will be the most important aspect of mainstreaming DRR for the state. Some of the critical activities and objectives which should receive priority in the state are

- Building resilience through risk-sensitive planning and implementing key actions of the Sendai Framework for DRR, specifically those that address climate change and climate action, providing measures, guiding principles, and means of implementation,
- Understanding that DRR requires specific actions that support conducting comprehensive surveys on multi-hazard disaster risks, including climate change scenarios,
- Strengthening disaster risk governance to manage disasters, and enhance collaboration across mechanisms and institutions involved in the implementation and coherence of instruments and tools relevant to disaster risk reduction, while enhancing disaster preparedness for effective responses and to “Build Back Better” in recovery, rehabilitation, and reconstruction, and
- Prepare, review, and periodically update disaster preparedness and contingency policies, plans, and programmes incorporating climate change scenarios and their impacts on disaster risk.

All these are being given priority in the state and are important elements of the Paris Agreement.

Briefing Note on the 21st Conference of the Parties to the UNFCCC (COP21) in Paris

Climate change poses risk to sustainable development with increasing disaster losses associated with climate related extreme events and slow-onset hazards. Climate change is altering the face of disaster risk and adding complexity to disaster risk management. The world cannot afford to perpetuate disconnect between disaster risk reduction, sustainable development and climate change. Disaster risk and climate change are felt differently by different countries and communities.

All regions and almost all countries on the planet will be impacted by climate change one way or another. These impacts will in turn affect poverty, health, social development, economic growth, demographics and migration, and environmental protection. Hence, addressing climate change and reducing disaster risk will be critical for sustainable development now and in the future. IPCC report «Climate Change 2014: Impacts, Adaptation, and Vulnerability»), as contribution of Working Group II to the 5th Assessment Report states that effects of climate change are already occurring on all continents and across the oceans.



In March 2015, the Third United Nations World Conference on Disaster Risk Reduction (WCDRR) adopted the Sendai Framework for Disaster Risk Reduction 2015-2030, which was later endorsed by the UN General Assembly in its 69th session. The Sendai Framework is the first of the post-2015 international

agreements to be adopted and provides the basis for a risk-informed and resilient future. The Sendai Framework specifically addresses climate change and climate action, providing measures, guiding principles and means of implementation. Sendai outcomes are a significant milestone in international cooperation for building resilience to climate-related disaster. Sendai Framework establishes the significance of ensuring credible links

on the post-2015 agenda including sustainable development goals, financing for development, climate change and disaster risk reduction and the calls for enhanced coherence across policies, institutions, indicators, reporting and measurement systems for implementation.

In the context of COP21 and expected outcome of a new climate agreement to succeed the Kyoto Protocol, UNISDR aims at promoting coherence and mutual reinforcement of disaster risk reduction in the climate change agenda including global, national, and local commitments to build climate resilience, foster collaboration for effective action and efficient implementation towards achievement of global targets on risk reduction and on climate mitigation and adaptation.

Specific messages for COP21 on disaster risk reduction to build climate resilience:

COP21 outcomes to stress the need for accelerated action to build resilience through risk-sensitive planning and implementation of Sendai Framework for Disaster Risk Reduction 2015- 2030.

- o The policy foundations for coherence and mutual reinforcement between disaster risk reduction and climate change adaptation are well established in various decisions of the UNFCCC which are explicit in regards to the importance of disaster risk reduction. The Cancun Adaptation Framework specifically called for: “enhancing climate change related disaster risk reduction strategies, taking into consideration the Hyogo Framework for Action, where appropriate, early warning systems, risk assessment and management, and sharing and transfer mechanisms such as insurance, at the local, national, sub- regional and regional levels, as appropriate;”.

- o COP21 is an opportunity to reinforce the importance of coherent and coordinated actions on reducing disaster risk and building climate resilience through recognizing Sendai Framework as an existing international framework that provides means for implementing and accelerating national and local actions on climate risk management and resilience. Engagement of non-state actors is critical to accelerate action at all levels.

Adaptation is a challenge faced by all countries. It is critical for a post-2015 climate regime to stress the importance of building resilience by enabling communities to adapt and build back better from devastating impacts of disasters and climate change. Building on references made in the Cancun Adaptation Framework (adopted in COP16) and the Sendai Framework for Disaster Risk Reduction, the post-2015 climate regime to promote a more integrated approach to adaptation, sustainable development, environmental management and disaster risk reduction.

- o Adaptation planning is further strengthened through consideration of exposure and vulnerability to extreme and slow onset events; coordination with national and local disaster risk reduction plans;

- o Reducing disaster risk through effective adaptation plans at all levels, improving people-centred early warning systems, improving ecosystem management and enhancing disaster preparedness and disaster management capacities are crucial to sustainable and resilient development.

- o Support to national and local adaptation efforts through enhanced international cooperation, enhanced institutional arrangements and linkages to existing knowledge and information on climate risk and projected impacts enable and advance adaptation.

Loss and Damage associated with climate change is on the increase leaving its marks on developing and developed countries all over the world. The Warsaw International Mechanism for Loss and Damage already establishes close linkages between knowledge and understanding of comprehensive risk management approaches and actions to address loss and damage associated with the adverse effects of climate change, including slow onset impacts. Enhanced international cooperation and complementarities of efforts to support countries increase understanding of comprehensive risk management approaches and improve data on disaster losses by building on, expanding, and strengthening existing national disaster loss databases and risk analysis will be important.

- o The approved two-year work plan of WIM calls for enhancing the understanding of the capacity and coordination needs with regards to preparing for, responding to and building resilience against loss and damage associated with extreme and slow onset events, including through recovery and rehabilitation.
- o Strengthening cooperation with institutions outside the convention will facilitate coordination and information sharing between the climate change and disaster risk reduction communities allowing for effective implementation of the WIM work plan as well as national adaptation and mitigation efforts.
- o Knowledge and information generated through risk management approaches and disaster risk reduction activities contribute to climate risk management and to understanding and managing losses and damages linked to climate change impacts.

Sendai Framework on Disaster Risk Reduction 2015-2030 specifically addresses climate change and climate action, providing measures, guiding principles and means of implementation. It focuses attention on action needed to tackle underlying disaster risk drivers, such as the consequences of climate change and variability, among others. It calls on UNISDR to support the development of coherent global and regional follow-up and indicators and in coordination, as appropriate, with other relevant mechanisms for sustainable development and climate change.

- a) The Sendai Framework establishes the significance of ensuring credible links between inter-governmental negotiations on the post-2015 development agenda, financing for development, climate change and disaster risk reduction and the calls for enhanced coherence across policies, institutions, goals, indicators, and measurement systems for implementation. It sets out guiding principles which include the development, strengthening and implementation of policies, plans, practices and mechanisms that promote coherence among climate change and variability, environmental management and disaster risk reduction agendas (among others).
- b) Understanding disaster risk requires specific actions that support conduct of comprehensive surveys on multi-hazard disaster risks, including climate change scenarios. It also identifies actions to maintain and strengthen in situ and remotely-sensed earth and climate observations and investment in effective, nationally-compatible, regional multi-hazard early warning mechanisms, where relevant, in line with the Global Framework for Climate Services.
- c) Strengthening disaster risk governance to manage disaster calls for collaboration across global and regional mechanisms and institutions for the implementation and coherence of instruments and tools relevant to disaster risk reduction, such as for climate change, among others.

d) Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction calls for efforts to prepare, review and periodically update disaster preparedness and contingency policies, plans and programmes considering climate change scenarios and their impact on disaster risk.

e) Sendai specifically calls for the incorporation of disaster risk reduction measures into multilateral and bilateral development assistance programmes including those related to adaptation to climate change. It also calls upon the other international organizations and treaty bodies, including the Conference of the Parties to the United Nations Framework Convention on Climate Change, to support in the implementation of the framework.

f) The Sendai Framework also reinforces the Global Platform for Disaster Risk Reduction, the regional and sub-regional platforms for disaster risk reduction and the thematic platforms as instruments to forge partnerships periodically assess progress and share practice and knowledge including on development and climate issues.

In addition to these specific provisions, full implementation of Sendai Framework will support and accelerate national and local efforts to adapt to climate change. With no other international operational goal on adaptation in place, the Sendai Framework is the most focused and robust instrument currently available to address resilience.

MODULE 2 (Contd.)

SESSION 2.5

Incorporation of DRR and CCA into Sectoral Plans

DURATION

60 Minutes

NOTE FOR FACILITATOR

- The session should start by introducing the rationale for integrating DRR and CCA into sectoral plans as climate-induced disasters are on the rise.

- The facilitator then could explain the process of integrating DRR and CCCA aspects into sectoral plans.

- The presentation showcases some successful applications of green technologies and bio-engineering applications.

- This will be followed by group exercises for preparing plans to integrate DRR and CCA into sectoral plans for (a) Infrastructure Sector – PWD, Irrigation, Transport, Tourism, Electricity, etc; (b) Production Sector – Agriculture, Horticulture, Animal Husbandry, etc.; (c) Social Sector – Health, Education, Women and Children’s Development and (d) Local Governance and Urban Development. Present the group exercise developed plans using one National Flagship Programme at the plenary, which will be followed by a discussion to identify priorities and gaps.

- Elaborate on the rationale for selecting ecosystem based DRR and CCA planning and using watersheds as the unit of planning for more effective management of natural resources management in the fragile ecosystems of the state. Promote the use of green technologies (e.g., increasing use of bio-engineering, etc) and environmental sensitive planning.

- Emphasise the use of traditional knowledge and pro-conservation cultural forms and practices will strengthen the process of integration of DRR and CCA.

As the linkages across CCA and DRR in the context of development are still in the process of being understood globally across sectors and organisations, preparation for this session must involve undertaking a thorough literature survey, particularly in terms of facts, figures, and arguments. Use of examples from within and outside India will help the participants better appreciate the points being made. Use of local examples and experiences of participants will assist in contextualizing the proposed process of integrating DRR and CCA into sectoral plans.

OBJECTIVES

- Develop a basic understanding of the need for integrating Climate Change Adaptation and mitigation and Disaster Risk Reduction into overall and individual sectoral plans.
- Develop an appreciation for the criticality of mainstreaming DRR and CCA in the face of increasing climate change impacts and increasing numbers of climate related disasters.
- Develop an awareness of the increasing threats and disaster risks in Himachal Pradesh, a fragile ecosystem of the Himalayas.

OUTCOMES

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

1. Comprehend the linkages between National and State Disaster Management Plans and Policies and the National and State Actions Plans for Climate Change Adaptation
2. Justify the need for integrating DRR and CCA into sectoral plans in the face of increasing disaster risks and climate change impact
3. Support the global and regional DRM frameworks India has adopted and committed to follow, namely both the Hyogo Framework for Action and SDFRR, as well as the Paris Framework on Climate Change. These frameworks indicate sets of actions to be undertaken toward DRR and CCA and mitigation.
4. Analyse sectoral hazard and risk data, as well as risk ranking, and comprehend how climate change impact is increasing the frequencies and intensities of certain hazards, setting up the pre-conditions for various hazard events which already have increased impacts on lives and livelihoods.
5. Prioritize areas and sectors, and types of intervention.

KEY CONCEPTS

- I. Natural hazards and climate change impact are increasing and the numbers of climate-induced disaster events are increasing.
- II. Changes in the temperature and precipitation are having an impact risk on the lives, livelihoods, health, and other developmental aspects of different parts of the state.
- III. Overall DRM is not comprehensive if it does not integrate aspects of Climate Change Adaptation and mitigation into its ambit and into the overall planning process.
- IV. Climate Change impact is exacerbating disaster risks.

**MATERIALS
REQUIRED**

HANDOUTS

- V. Utilizing and defining different approaches to integration facilitate success by avoiding one-size-fits-all solutions.
- slide projector, note sheet, markers and poster charts, and participant handbook
- Examples of projected major impacts by sector
- Conceptual and Practical Differences between DRR and CCA

Technical Notes

Climate, disaster, and development are inseparable. They cannot be addressed in isolation from each other. Human activity is the critical variable determining the delicate balance between them. State, market, and communities are also major factors. People, particularly the poor, stand at the intersection of climate, disaster, and development. They are most deeply affected by development policy and practices that impact the linkages between them. Vulnerability and capacity, as essential constitutive elements of both climate and disaster related risks, come into sharp focus in thinking through CCA and DRR issues. This session focuses on the concept that well thought out CCA and DRR strategies are features and factors which have become essential for both good governance and sustainable development, and needs to be integrated into developmental planning.

In the case of Himachal Pradesh, the major natural hazards are flash floods, hailstorms, cloud bursts, lightning, drought, and forest fires, which are meteorological in nature; earthquakes and landslides which are geological hazards, and biological hazards, such as epidemics. Climate variability influences the timing and extent of natural hazards. For effective risk management in a climate sensitive state like Himachal Pradesh, the integration of disaster risks and climate variables are equally important elements of sustainable development modules.

Despite the existence of different concepts (and consequently methods and approaches), common objectives and components in DRR and CCA policy and practice have been identified. However, there has been a lack of effort by both national governments and international bodies to link DRR and CCA. The value of coupling DRR arrangements and tools for CCA is not sufficiently recognized, and DRR has not been incorporating CCA systematically into regional, national, and local risk assessment. Case Study 1, involving an initiative in Indonesia, will be used to facilitate this session's exercise of how DRR and CCA can both be integrated and used in different sectoral plans.

CCA and DRR have much in common. Both aim to reduce the impacts of shocks by anticipating risks and uncertainties and addressing vulnerabilities. Indeed, a significant portion of climate change impacts will materialise through exacerbating climate variability (for example an especially wet rainy season) and extreme weather events (such as heavy rainfall events). Climate change is shifting the frequency and intensity of hazards, such as heat extremes, heavy rainfall, droughts, high sea levels, and possibly cyclones, with direct implications for disaster risk (Handout 1).

The trend of climate change is resulting in:

- a) For most places, it will result in more frequent hot days and fewer cooler days, with the greatest warming over land. Longer, more intense heat waves will become common. Storms, floods and droughts will generally be more severe as precipitation patterns change. Cyclones may increase in intensity due to warmer ocean temperature;
- b) Apart from driving temperatures up, global warming is likely to cause bigger, more destructive storms, leading to an overall increase in precipitation. With some exceptions, the tropics will likely receive less rain as the planet warms, while the polar region will receive more precipitation.
- c) Heat waves, droughts, and intense rain events have increased in frequency during the last 50 years, and this trend is likely to continue.
- d) Sea levels will rise and erode coasts and cause more frequent coastal flooding. Some is-

land nations will disappear.

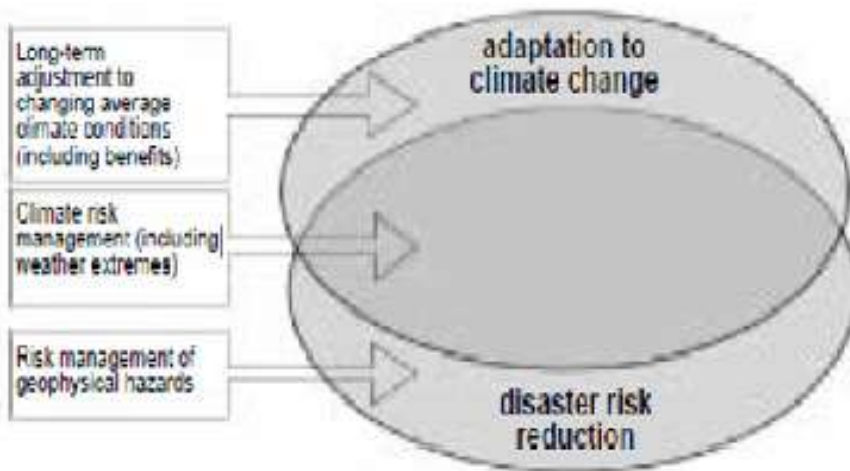
e) Warmer temperatures have already shifted the growing season in many parts of the globe and putting pressure on ecosystems, the plants and animals that co-exist in a particular climate zone resulting in many plant or animal species to migrate, adapt or face extinction

However, while reducing the risk of weather extremes is a substantial component of managing climate risk, the overlap between DRR and CCA, DRR is not the same thing as CCA, making effective disaster risk management in a changing climate a more complex, urgent issue which requires immediate attention.

As illustrated in the next Figure, the main overlap between the two is the management of hydro-meteorological hazards, where DRR needs to take into account the changes in these hazards, and CCA aims to reduce their impacts.

Two key distinctions are that:

1. DRR addresses the risks of geophysical hazards (such as volcanoes and earthquakes), whereas CCA does not.
2. CCA also considers the long-term adjustment to changes in mean climatic conditions, including the opportunities that this can provide, and how people and organisations can develop the capacities to stimulate and respond to longer-term change processes. This has not been a traditional focus of practical applications of DRR.



Source: Convergence of Disaster Risk Reduction and Climate Change Adaptation A Review for DFID 31st October 2008 Dr. Tom Mitchell¹ and Dr. Maarten van Aalst*

The differences between DRR and CCA both theoretically and in practice are elaborated in Handout 2.

Disaster risks, especially those posed by climate change, will reduce the resilience of natural and human ecosystems in the coming years. Global environmental changes will affect communities at risk, especially the poor and marginalized. To minimize these risks, ecosystem management that maximizes ecosystem services and bio-

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diversity in support of disaster risk reduction and climate change adaptation should be undertaken. In ensuring that ecosystems services are maintained, “sound natural resource and environmental management as well as disaster management require a holistic, multidisciplinary and inter-sectoral approach, environmental awareness of the dangers of resource depletion, a coherent and comprehensive policy to guide the process, and institutional framework for effective program implementation”(Suda, 2000, p. 102). Also, management frameworks can support in spreading risk by providing opportunities to diversify patterns of resource use and undertake alternative activities and lifestyles.

In the case of Himachal Pradesh, based on its agro-climatic zoning, risk hazard ranking, vulnerabilities, capacities profile, and cultural diversity, innovative pilot projects with the potential of scaling up could be implemented where CCA and DRR is integrated into the different sectoral plans, based on watershed as the planning unit.

One of the key factors could be the synergy created by the simultaneous application of bio-engineering and bio-technology for strengthening of critical infrastructure, mitigation measures for landslides, land subsidence, mine collapse, embankments, soil conservation, promotion and strengthening of tree and grass cover, and especially promotion of appropriate bio-energy crops as source of alternative, renewable resources, as well as for soil stabilisation. Another cross-cutting area is to develop educational materials along with demonstration plots for different levels of educational institutions to enhance knowledge of the Himalayan ecosystem and to incorporate learnings into developing sustainable development modules for each ecosystem. One of key areas of intervention is to promote eco-sensitive green technologies along with the increase in the area and density of green cover.

Recommended Reading and References:

1. Sendai Framework for Disaster Risk Reduction – 2015 – 30 <http://www.unisdr.org/we/coordinate/sendai-framework>
2. Paris Framework for Climate Change, 2015
3. National and State Action Plan for Climate Change- <http://unfccc.int/resource/docs/2015/cop21/eng>
4. Operational Framework for Integrating Risk Reduction and Climate Change Adaptation in Urban Development – WamslerC-2009

CASE STUDY 1

Climate Change Adaptation policy development

Indonesia has started a series of activities to respond to increasing climate risk by developing various policy initiatives, through task forces within different government sectors and research institutions, as well as a national committee on climate change mitigation and adaptation. These government sectors (water resources, coastal zones and peat land, coastal and small islands, agriculture, forestry, health, energy, infrastructure and spatial planning) have developed programmes for adaptation in the short and long-term as presented in the Indonesia Country Report “Climate Variability and Climate Change, and their Implications” (Ministry of Environment 2007).

An example of long-term plan for the Agriculture sector that has been described by Boer et al. (2008) in the Indonesia Country Report is given below:

- adjust the cropping pattern following the climate forecast
- improve crop management
- improve irrigation facility and irrigation efficiency
- provide more opportunity for alternative economic activities
- set up policy to ban conversion of rice field to other uses in Java; stand by funding, insurance system
- expand the rice growing areas to less vulnerable areas, new varieties
- maintain and increase forest cover in the upstream
- diversity of food consumption
- develop new irrigation plan facility in vulnerable rice production centre areas whenever possible to allow for increasing planting index and productivity
- Inter-basin transfer.

Research to develop knowledge on climate change phenomena and problems in Indonesia has been ongoing since the 1990s, conducted by academic institutions and government research organizations. Although work on the issue has not always been conducted in an integrated and coordinated manner, it has provided valuable input to the development of government policy and programmes, despite a sectoral approach.

The development of the National Action Plan Addressing Climate Change (NAPA-CC) in Indonesia was initiated during the International Joint Workshop on Water and Climate from 23 to 24 May 2007, organized by the Indonesia Water Partnership and the Ministry of Public Works. This workshop was followed-up by a report on climate change and its implications in Indonesia and subsequently, the government launched the Indonesia Country Report and NAPA-CC documents at the ICCOP Meeting in Bali in 2007 (Pribadi et al. 2010).

Following the establishment of the NAPA-CC, the Ministry of National Development Planning/National Development Planning Agency produced a document on the National Development Planning Response to Climate Change: Long-Term and Medium-Term 2004 – 2009 National Development Planning Climate Change Mitigation and Adaptation Program, which covers initiatives in the forestry, marine, mining and mineral resources, environment, agriculture, health, water resources, transportation, energy, electricity/power, housing and settlements sectors) (Anon 2007d in Pribadi et al. 2010). A document produced by UNDP Indonesia in 2007, “The Other Half of Climate Change”, discusses the climate change issues in term of threats to livelihoods, health,

food security and water sector. The recommended priority areas to be developed for CCA programmes include agriculture, coastal zone management, water supply, health, urban areas and disaster management.

UNDP also supported the national government in developing Indonesia's Climate Change Adaptation Program (ICCAP) which was drafted in December 2007, consisting of the following principles:

- opting for no-regrets measures and addressing climate variability as the starting points
- ensuring participatory approach in developing the CCA agenda
- adjusting the ongoing and planned initiatives and programmes for possible adaptation
- measures to the climate risks
- institutionalizing and effectively utilizing the knowledge base on climate variability to better manage current and future risks
- Harmonizing policies and programmes in decentralized and multi sectoral setting.

The approach adopted by the ICCAP is such as to:

- Contribute to embedding climate risk and opportunity management into development planning within the framework of the MDGs
- Ensure consideration of climate change and opportunities in development decisions and
- Investment to improve socio-economic resiliency of sectors and communities to climate change and variability

The ICCAP targeted the following output:

- A national Consortium and Research Grant Facility for Climate Risk and Opportunity Management (CROM)
- Guidance for climate resilient spatial planning, settlement design and infrastructure systems in key sectors and priority geographic areas
- education, awareness and training programmes to enhance CROM in seasonal/inter-annual and multi-decadal time scales
- community, private and government institutional capacities strengthened to undertake CROM
- policy, legal and regulation framework for CROM implementation on the seasonal/inter-annual and multi-decadal time scales
- Climate and development information exchange systems established in a number of priority sectors and vulnerable regions.

Although ICCAP provided an opportunity for a programmed CCA planning approach and supports different aspects of good governance, such as strategic vision, transparency, fairness, performance and accountability, the process was not followed up by the necessary detailed planning and implementation due to a change in the governance. Nevertheless, some of the ideas are being taken seriously and some projects were developed accordingly and implemented, although in a partial manner.

The lessons learnt from this Case Study in Indonesia can be fruitfully used to integrate DRR and CCA into sectoral plans for a climate sensitive state like Himachal Pradesh. Some of the examples especially those highlighted in the agricultural sector can be tried out for agro-horticultural practices which are getting adversely affected in the State. Some examples are:

- adjust the cropping pattern following the climate forecast
- improve crop management
- improve irrigation facility and irrigation efficiency
- provide more opportunity for alternative economic activities
- set up policy to ban conversion of rice field or in case of Himachal apple, to other uses in Java; stand by funding, insurance system
- expand the rice growing areas to less vulnerable areas, new varieties
- maintain and increase forest cover in the upstream
- diversity of food consumption
- develop new irrigation plan facility in vulnerable rice production centre areas whenever possible to allow for increasing planting index and productivity
- Inter-basin transfer.

Some aspects of the programmes approach and target of the Indonesia's Climate Change Adaptation Program (ICCAP) could be considered and contextualized to make it compatible to the needs and priorities of Himachal Pradesh.

HANDOUT 1

The sectors requiring special attention during integration efforts are agriculture, horticulture, soil conservation, irrigation and flood management, landslide management, appropriate disaster risk and climate resilient housing, and other critical infrastructure.

Phenomenon and direction of trend	Livelihoods of future trends based on projections of 21st century using SRES scenarios	Examples of major projected impacts by sector			
		Agriculture forestry and ecosystems	Water Resources	Human Health	Industry, Settlement and society
Over most land areas warmer and fewer cold days and nights, warmer and more frequent hot days and nights	Virtually certain	Increased yields in colder environments; decreased yields in warmer environments; increased insect outbreaks	Effects on water resources relying on snowmelt; effects on some water supplies	Reduced human mortality from decreased cold exposure	Reduced energy demand for heating; increased demand for cooling; declining air quality in cities; reduced disruption to transport due to snow, ice effects on winter tourism
Warm spells/ heat waves. Frequency increases over most land areas	Very likely	Reduced yields in warmer regions due to heat stress; increased danger of wildfire	Increased water demand; water quality problems eg. algal booms	Increased risk of heat related mortality, especially for the elderly, chronically sick, very young and socially isolated	Reduction in quality of life for people in warm areas without appropriate housing; impacts on the elderly, very young and poor.
Area affected by drought increases	Likely	Land degradation yields/ crop damage and failure; increased livestock deaths; increased risk of wildfire	More widespread water stress	Increased risk of food and water shortage; increased risk of malnutrition; increased risk of water and food borne diseases	Water shortage for settlements industry and societies; reduced hydropower generation potentials; potential for population migration

Source: IPCC (2007) Climate Change 2007, Synthesis Report, IPCC Fourth Assessment

HANDOUT 2

Differences		Signs of Convergence
DRR	CAA	
Relevant to all hazard types	Relevant to climate and weather related hazards	DRR Programmes have always considered weather related hazards but there are indications that some are now taking into account the impact of climate change on hazard frequency and magnitude and on vulnerability and planning interventions accordingly.
Practice of DRR strongly influenced by post-disaster humanitarian assistance	Origin and culture of CCA derived from scientific theory and international climate change policy processes.	Common ground being found in joint mainstreaming into development sectors- so specialists on both adaptation and DRR working in infrastructure, water/ sanitation, agriculture and health for example.
Most concerned with the present and near future: addressing existing risks based on assessment of local experience and historical record for example	Most concerned with the short medium and long term future-addressing uncertainty and new risks derived from the impacts of climate change	DRR increasingly forward looking and CCA increasing using and existing climate variability as the entry point for activating adaptation processes. The idea of “no regrets” options is a key area of convergence.
Traditional and local knowledge is the basis for community based DRR and resilience building	Widely held view that traditional and local knowledge at community level may be insufficient as impacts of climate change introduces new risks and changes to the frequency and magnitude of existing hazards. However increasingly recognised that local knowledge also includes peoples ingenuity in facing risks.	Growing number of examples where local knowledge and meteorological/ climatological knowledge being considered side by side to inform DRR interventions.
Traditionally has considered risk a function of hazard, vulnerability exposure and capacity	Traditionally has created vulnerability interchangeably with physical exposure	IPCC special report on managing the risks of extreme events and disasters for advancing adaptations (due in 2011) promises convergence in this area.

Full range of established and developing tools	Range of tools under development	Significant progress made in integrating learning from DRR into adaptation tool development.
Incremental development, moderate political interest	New emerging agenda, high political interests	Disasters more often seen as linked to climate change and governments recognising the need to consider both simultaneously.
Funding streams often ad hoc, unpredictable and insufficient	Funding streams increasing and promise to be considerable though problems of delivery and implementation widespread	DRR community demonstration signs of being increasingly savvy in engaging in climate change adaptation funding mechanisms.

Source: Modified from Tearfund (2008), Linking Climate Change Adaptation and Disaster Risk

DAY 3

MODULE 3: Tools and Processes to mainstream DRR and CCA into developmental planning: financing, incentives and sustainability issues for mainstreaming

Session 3.1: Mainstreaming DRR in development planning: issues and challenges

Session: 3.2: Challenges in mainstreaming DRR in key sectors

Session 3.3: Financing, strategic learning and action planning

Session 3.4: Tools to be used for Field Exercise

MODULE 3: Tools and Processes to mainstream DRR and CCA into developmental planning: financing, incentives, and sustainability issues for mainstreaming

SESSION 3.1	• Mainstreaming DRR into development planning: issues and challenges
DURATION	• 120 Minutes
OBJECTIVES	• Develop an understanding of the challenges related to mainstreaming DRR and CCA • Develop identification and evaluation skills of best solutions for overcoming challenges related to mainstreaming DRR and CCA into development plans
OUTCOMES	• Participants are able to identify and anticipate specific challenges • Participants understand and appreciate their roles, in managing and addressing these challenges, while mainstreaming DRR and CCA into development planning
METHOD	• The session will start with group work, followed by presentation, debate, discussion, and critical reflection from within their respective sectors. Group work will be based on participant discussion and presentation, followed by a participatory summation of the session by the facilitator. • After establishing available frameworks for mainstreaming DRR and CCA, case studies, taken from ongoing national development programmes and other projects where mainstreaming has been attempted, will be shared with the participants. Analysis by the participants of these cases from the perspective of mainstreaming and relating them to their own experience will facilitate their efforts to mainstream DRR and CCA in their own department/sectoral policies and plans.
NOTES FOR FACILITATOR	• Explain the purpose and process of the session and its intended learning outcomes, including a brief overview of the content to be covered and the overall flow of the session.

Group Work

Mainstreaming DRR and CCA into development plans poses major challenges for many national governments. The Global Assessment Report (2009) on Disaster Risk Reduction concluded that “governance arrangements for disaster risk reduction in many countries do not facilitate the integration of risk considerations into development. In general, the institutional and legislative arrangements for disaster risk reduction are weakly connected to development sectors.”

This session will engage participants in group work to identify the challenges in mainstreaming DRR and CCA. Subsequently, they will engage in determining alternative to address these challenges.

As per the indicators of institutionalisation identified within the Humanitarian Practice Network’s Good Practice Review on disaster risk reduction, there are six key areas crucial to the process of mainstreaming. These are: policy, strategy, geographical planning, project cycle management, external relations, and institutional capacity. Attempts at measuring mainstreaming DRR can be categorised into four levels of attainment including:

- little or no progress
- awareness of needs
- development of solutions
- full integration

Some of the indicative questions that the participants can be given to brainstorm:

1. What in your view are the key challenges in mainstreaming DRR and CCA into national and subnational Plans?
2. How can they be addressed?

The facilitator can then engage participants in a discussion to identify each of key challenges from all the presentations and possible solutions for addressing them.

Interactive Lecture Presentation and Discussion

This session starts with an introduction of the interrelationships of DRR, CCA, and development. One way to do this is to look at disasters as ‘unresolved problems of development’. Development programmes and projects that inadvertently end up increasing the vulnerability of people, failing to enhance their coping capacity to disasters and climate related emergencies, are interventions where disaster risk reduction (DRR) and climate change adaptation (CCA) elements are not mainstreamed.

Distribute Handout 1 (Trade-offs between climate change and development) and discuss it briefly to stress the point that investment in development without a DRR and CCA perspective may result in unsafe and unsustainable development outcomes. This may also adversely impact the future ability of concerned stakeholders, particularly communities at risk, to adapt to the impact of disasters and climate change and, at times, even increase their vulnerability.

Also distribute Handout 2 (Examples of (likely to very likely) impacts from projected changes in extreme climatic events) to put into perspective the simple extreme and complex extreme scenarios that could be generated due to climatic changes. This will be a group exercise based session, and the facilitator can conclude the session by reviewing

- 1) key challenges to mainstreaming DRR and CCA and
- 2) instruments and incentives for mainstreaming DRR in selected key development sectors, with particular reference to initiatives and programmatic approaches for mainstreaming DRR and CCA into selected national flagship programmes.

Mainstreaming DRR/CCA in development implies doing development differently, i.e., doing development with an eye on reducing disaster and climate related risks. Development is not only about providing goods and services to people. It is also, and even more so, about empowering people and enabling them to engage in analysis and strategic action planning at the local level. Instead of undertaking DRR as a separate activity, not organically linked to mainstream development programmes and projects, there is a need to make DRR an essential feature of the design and delivery of development programmes.

In the specific context of disasters, it also implies making a shift in focus from disaster response and relief, to a risk reduction and mitigation approach to disaster management. In order to do this, hazards, risks, vulnerabilities, and capacities of communities at risk must be mapped out and factored in into the programme design and delivery strategy.

Conventional focus has been on response oriented disaster management approaches. The desired current shift in focus is in terms of increased emphasis on risk reduction and mitigation approaches to disaster management. The purpose of mainstreaming DRR in development is to ensure the following:

- Development policies, programmes, and projects do not create new vulnerabilities
- Development policies, programmes, and projects enhance the coping capacities of communities living with disaster and climate risk.

In view of the above, effective and sustainable development is essentially risk free and safe development. This understanding in planning and implementation will ensure effective disaster risk reduction (DRR) on the ground.

Key Concepts

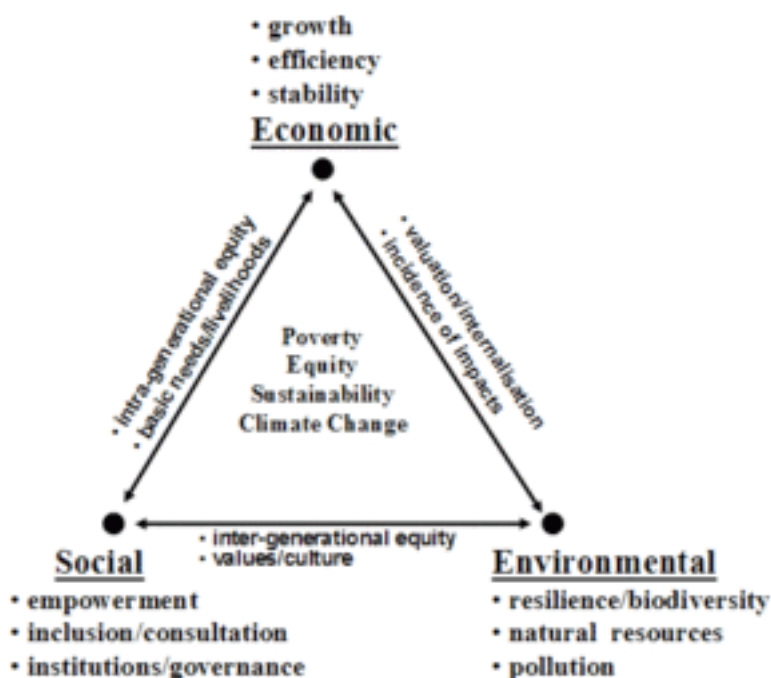
Sustainable development: To understand how disasters and development inter-relate, it is first important to understand sustainable development. “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The idea of sustainable development is centred on three key factors, economy, society, and environment” (Munasinghe, 2007).

The figure above shows how social, economic, and environmental concerns are the three key dimensions of development and how they interact with each other. In order to make development and its outcomes sustainable, all these dimensions have to be addressed in unison with each other. While growth is considered an important measure of development, the benefits of growth do not reach everyone equally. People, particularly the poor and the marginalised, are often left out. They need to be empowered and included in development processes if they are to be sustainable. Along with social and economic factors, environmental degradation as manifested in deforestation, loss of water sources, and erosion of top soil increases the vulnerability of poor people and affects their lives and livelihoods adversely.

In view of the above, a sustainable development initiative is the one that empowers people, protects the en-

vironment, and leads to productivity, growth, and equity. Disaster risk reduction (DRR) and climate change adaptation (CCA) measures have to be built into mainstream development programmes and processes at ground levels. In this session, two national flagship programmes – from among MNREGA, NRHM, SSA, JNNURM, BHARAT NIRMAN, and TSC – will be chosen for in-depth examination and analysis. Ideally, one will focus on rural area(s) and the other on urban location(s).

Selection of the programmes for case analysis will be based largely on considerations related to the professional backgrounds and learning interests of the participants. In an earlier session, issues related to mainstreaming DRR and CCA were presented and discussed, in the specific context of environmental planning and preparation for city development plans. Increasing urbanization, high population density, migration to cities, rampant poverty, poor land use planning and practices, and a dismal sanitation situation are major contributors to the risk of disasters in a changing climate, adding to the complexity of the challenges involved. Mainstreaming DRR and CCA has to be undertaken with these issues in mind, as well as operational and procedural challenges, to build climate resilience.



In the specific context of India, rural development represents one of the largest development investments in the country. Poverty reduction and equitable, inclusive, and sustainable development are the larger developmental objectives of the Ministry of Rural Development, Government of India. Housing for the poor, employment, and sustainable livelihoods are some of the high-focus areas in rural development ministry programmes.

There are two categories of policy approaches addressing disaster risks in the context of climate change in the development sector. The first involves integrating disaster risk reduction as a part of the

implementation strategy in rural development programmes. The other is to focus on incorporating resilience building elements, focused primarily on appropriate adaptation strategies, into the design and delivery of these development programmes.

From a policy perspective, the adaptation approach to development is driven by mainstreaming adaptation into the planning process itself: this essentially means accounting for climate change concerns in social, institutional, and infrastructural development planning. While numerous national and global entities have endorsed and urged the adoption of mainstreaming adaptation into the existing development agenda, mainstreaming isn't likely to succeed if existing development plans contributing to increased vulnerability and are not revised to incorporate adaption ideals as part of the process.

The promotion of sustainable social and economic development may be a less conceptually problematic way to achieve adaptation eventually, particularly as the policy frameworks for such development are more explicitly elaborated and less dependent on uncertainties regarding climate change than for adaptation. This is also relevant, as adaptation needs to confront the same constraints as those faced by development, and therefore an adaptation process is only possible if there is successful sustainable development to support it. However, for this to be successful, an awareness of climate change impacts and the need for successful vulnerability reduction are imperative within the development process. This also implies that a sustainable development process will be inclusive of risk reduction and adaptation approaches by intent and design.

However, policies and plans require enabling conditions in order to be effective. Focusing on adaptation before aligning development processes through the creation of enabling conditions for adaptation is like putting the cart before the horse. This is of critical importance, as climate change is expected to exacerbate the existing disaster risks by adding the elements of uncertainty and unpredictability regarding the nature and scale of likely disasters.

Development Induced Vulnerability

Development projects which are poorly planned and executed, without any prior consideration to DRR and CCA aspects, can in some cases increase the vulnerability of people facing climate and disaster risks.

Many infrastructure projects, such as highway construction, have been reported to increase the hazard of floods in many neighbouring villages in Gujarat, Bihar, and Odisha. Indiscriminate exploitation of ground water resources for irrigation and industrial purposes have resulted in scarcity of water and drought-like conditions in many states including Andhra Pradesh, Bihar, Maharashtra, and Rajasthan.

Thus, development projects can lead to increased vulnerability in a multitude of ways. Lack of basic services such as health care and education facilities renders people vulnerable in very specific ways. A population that is under-nourished and unhealthy is more likely to contract diseases in the aftermath of a hazard event than others. Equally important, non-educated people may have lower hazard awareness and risk perception, the presence of which would otherwise decrease their vulnerability. The poor, as a result, usually have high vulnerabilities and low coping capacity.

A common example of how vulnerability can be increased through unsustainable development is that of rapid urban development, which frequently leads to the migration of relatively low-income groups into the expanding urban areas. Due to poor land use planning, these migrant 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).

Disasters and Development

Disasters often provide specific windows of opportunity in all areas of development - social, economic, and environmental. Although most disasters bring large scale damage and loss affecting the social, economic, and environmental aspects of human life, they also offer an opportunity to engage in long term recovery and reconstruction, which can help build back better. This can be done in a manner that reduces the vulnerabilities of people at risk and enhancing their coping capacities.

During the reconstruction and recovery phase following a disaster, DRR strategies can be implemented where it may not have been possible or practical to do so before. Examples of implementing DRR strategies at this

stage include:

- Implementation of building codes and land use regulations
- Adoption of new technologies so that new constructions are adequately disaster resistant to future events
- Relocation of dwellings, office buildings, or infrastructure to less hazardous locations
- Diversification of economies, leading to employment generation.

The reconstruction phase will be supported financially by foreign aid, insurance pay-outs, and debt relief, which will provide further incentive to re-develop the affected areas in sustainable ways considering hazard assessments (Stephenson & DuFrane 2005).

The last session in this module will cover mainstreaming issues encountered in designing programmes and projects, as these have significant planning implications as well. This module is thus intended to cover the entire range of operational issues related to mainstreaming DRR and CCA into development. The deliberations held during this module will generate useful insights in terms of strategies for planning mainstreaming initiatives. The field work on the 4th day of the training will also provide opportunities to build an improved understanding of the obstacles and complexities of mainstreaming, the roles of respective departments to strengthen local governance institutions, and ensuring active participation of the communities through strengthening of decentralized planning processes, which are prerequisites for the sustainability of mainstreaming DRR and CCA into development planning.

Key Learning Points

- Development projects can lead to increased vulnerability in a multitude of ways
- Mainstreaming DRR/CCA in development implies doing development with an eye on reducing disaster and climate related risks.
- Resilient and sustainable development is essentially an inclusive, risk free and safe development.
- Disasters can provide a specific window of opportunity for all areas of development, social, economic and environmental.
- National flagship programs of the Ministry of Rural Development, Government of India including MGNREGA, IAY etc. offer a huge opportunity to mainstream DRR and CCA into the rural development sector in India.
- Development policies, plans, programs and projects offer entry points for mainstreaming DRR/CCA into development planning and administration

Disasters and Development: issues and challenges

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

- Conceptual and perceptual issues, such as misguided beliefs that disasters are 'acts of god' and cannot be stopped, have been common for millennia, but the human hand in the making of disasters is now being increasingly recognised. 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 processes is a critical component in understanding the links between disasters and development.
- 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 a donor's humanitarian and development wings.
- Assumptions such as poverty-focused development will automatically reduce disaster risk.
- Inadequate exposure to and information on disaster issues.

What is Mainstreaming DRR?

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

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

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

“Mainstreaming risk reduction should result in appropriate measures being taken to reduce disaster risk and ensure that development plans and programmes do not create new forms of vulnerability”(ProVention 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).

While the need for mainstreaming DRR/CCA in development is widely recognised, there is a clear dearth of practical ideas, approaches, and practices to facilitate mainstreaming DRR concerns into development planning and administration effectively. Mainstreaming has been largely there more as a concern than as a tangible approach to engaging in development action on the ground.

There is an urgent need to engage with people and communities at risk as agents of change and not merely as beneficiaries of development programmes. Focus on the delivery of goods and services is not enough. There is a need to empower people to take charge of their own lives and livelihoods. This underlines the need to make a shift from a response and relief focused approach to a risk reduction and mitigation approach in dealing with disasters and climate risks, using a sustainable development perspective and framework.

National Development Programmes (NDPs) such as National Rural Livelihoods Mission (NRLM), National Rural Health Mission (NRHM), Indira Awas Yojana (IAY) and others seek to empower people and communities by helping them organise and facilitate their access to housing, health and sustainable livelihoods opportunities.

Identifying entry points into the development planning framework for mainstreaming DRR

Some of the entry points for mainstreaming DRR are:

- National flagship programmes such as MGNREGA, NRLM, IAY, NRHM, NBA, NRDWP and other national policies and plans
- Physical framework/land use plans

- Processes related to implementation of plans; investment programming, budgeting and financing, project appraisal, implementation, monitoring and evaluation
- Project cycle of individual projects
- Environmental policies and plans
- Sectoral policies, plans and programs

HANDOUT 1

Case Study 1- highlights the relative success of mainstreaming DRR into development planning in Assam. The case study can also be shared with the participants to cite a positive example of mainstreaming efforts in the country and the methodology that was followed to reach the claimed level of success as illustrated in the Case Study.

STEPS TO SUCCESSFUL MAINSTREAMING



HANDOUT 2

Trade-offs Between Climate Change and Development

In certain cases, there are direct trade-offs between development priorities and the actions required to deal with climate change. Governments and donors confronting immediate challenges, such as poverty and inadequate infrastructure, have few incentives to divert resources to investments that are seen as not paying off until climate change impacts are full-blown.

Putting a real value on natural resources and deciding when not to develop coastal areas or hillsides may be seen as hampering development. At the project level, mainstreaming of adaptation may be perceived as complicating operating procedures or raising costs.

In addition, short-term economic benefits that often accrue to only a few in the community can crowd out longer-term considerations such as climate change. Shrimp farming, mangrove conversion and infrastructure development, for example, provide employment and boost incomes, but they may also reduce the future ability to adapt to the impact of climate change and increase the vulnerability of critical coastal systems.

Source: OECD 2006

HANDOUT 3

Examples of (likely to very likely) impacts from projected changes in extreme climatic events Projected changes in extreme climate phenomena during the 21st Century	Representative examples of projected impacts
Simple extremes	
Higher maximum temperatures, more hot days and heat waves over nearly all land areas	<ul style="list-style-type: none"> • Increased incidence of death and serious illness in older people and urban poor • Increased heat stress in livestock and wildlife • Increased risk of damage to several crops
Higher (increasing) minimum temperatures: fewer cold days, frost days and cold waves over nearly all land areas	<ul style="list-style-type: none"> • Decreased cold-related human morbidity and mortality • Decreased risk of damage to several crops • Extended range and activity of some disease vectors
More intense precipitation events	<ul style="list-style-type: none"> • Increased flood, landslide, avalanche and mud-slide damage • Increased soil erosion • Increased flood run-off
Complex extremes	
Increased summer drying over mid-latitude continental interiors and associated risk of drought	<ul style="list-style-type: none"> • Decreased crop yields • Decreased water resource quantity and quality • Increased risk of forest fire
Increased tropical cyclone peak wind intensities, mean and peak precipitation Intensities	<ul style="list-style-type: none"> • Increased risk to human life, risk of infectious disease epidemics • Increased coastal erosion • Increased damage to coastal ecosystems and coral reefs
Intensified droughts and floods associated with El Niño events in many different regions	Decreased agriculture and range-land productivity in drought-prone and flood-prone regions
Increased Asian summer monsoon precipitation variability	Increased flood and drought magnitude and damages in temperate and tropical Asia

CASE STUDY 1 - The making of district disaster management plans

This case study highlights the relative success of mainstreaming DRR into development planning in the Assam. The case study could also be shared among the participants to site a positive example of mainstreaming efforts in the country and the methodology that was followed to reach the claimed level of success as illustrated here.



The case study demonstrates how effectively the HFA 1 can lead to the incorporation of its five priorities at all levels. A policy initiative of India that made disaster risk reduction (DRR) and disaster management (DM) planning a national priority, has resulted in Assam State Disaster Management Authority (ASDMA) revamping its DM plans that lay special impetus on DRR into local (district) level developmental planning by conducting risk assessments (HFA Priority 2). This focus on Priority 2 will pave the way for reduction in underlying risk factors (HFA Priority 4) in these districts. The focus on the need for cooperation and coordination in the preparedness and response plans also ensures that HFA Priorities 3 and 5 are appropriately addressed in the state of Assam in particular, and India in general.

Case Study - The Making of District Disaster Management Plans

HFA Priorities - The case contributes to all five priorities of action.

Location - State of Assam – India.

Context

The State of Assam is one of the most severely flood affected states in India since many rivers flow into it from the hills of the Indian state of Arunachal Pradesh and from the mountain nation Bhutan. This cause severe floods in most parts of Assam.

The mighty River Brahmaputra in Tibet, whose waters are known for their destructive might, enters the plains in the north-eastern part of Assam from the hills of the state of Arunachal Pradesh. This causes large-scale damage to public infrastructure, private property, sedimentation and erosion of agricultural fields along with the loss of lives of animals and humans. The inundation also causes a rise in water borne diseases to both humans and livestock. This situation is a major challenge to both state and district administration in leading an effective emergency response.

Besides flooding, other major hazards, which include storms, hailstorms, lightning, road accidents, animal depredation, also have an immense impact on the districts. The effects of these hazards is compounded because of large-scale vulnerabilities that exist due to the poor economic strength of households, the lack of a disaster mainstreamed development focus and a limited scale of development. In addition to all these challenges, the district disaster management plans of several districts were not well prepared to play a role in risk mitigation, resilience building or even responding effectively to disasters.

What was done to address the problem?

The worst floods of 2012 were a tipping point. The Assam State Disaster Management Authority (ASDMA) decided that the District Disaster Management Plans (DDMPs) of all 28 districts of the state should be audited with the classification of plans into Type 1, Type 2 and Type 3. Type 1 referred to the most limited in scope, while Type 3 referred to the most comprehensive. The audit of all the plans was conducted between April and August 2013. Four plans were classified as Type 1. It was then decided that three of those four plans should be redrafted to cover all forms of hazards and make an assessment of vulnerabilities and capacities before preparation of active plans at district level.

Who was involved and what role did they play?

Assam State Disaster Management Authority (ASDMA), which is the state's lead agency for managing disasters was formed in 2007 and was the key stakeholder that initiated the proceedings for the redrafting of Type 1 DDMPs. ASDMA placed a disaster management specialist consulting organisation, the All India Disaster Mitigation Institute (AIDMI), based in Ahmedabad, Gujarat to provide technical support in the process to make DDMPs. Besides this, ASDMA played a pivotal role in leading state-district coordination and monitoring the project during the process to make the plans in three districts.

Apart from AIDMI, the District Disaster Management Authority (DDMA) was the key local agency that was involved in providing facilitation support to the technical support agency, AIDMI, within the district. DDMA played a key role in coordination meetings with Deputy Commissioner and the district administration that included

senior officers and the heads of various line departments such as Water Resources, Public Health Engineering, and Forests, among several others. DDMA also facilitated the holding of one-to-one consultation meetings with line departments who were also involved in providing a greater depth to the challenges faced in the delivery of services from their end. DDMA also facilitated the selection of sample villages that could be ideal for the conducting of assessments during the exercise where meetings were held directly with the leaders of the local democratic institution, the Panchayati Raj Institution, and with village community members.

What were the main challenges and how were they overcome?

The prerequisite to the making of the plan was the conducting of a field assessment exercise, called Hazard, Risk, Vulnerability and Capacity Assessment (HRVCA). However, since some of the field assessments were made in very remote areas of the districts to make assessments comprehensive. Travel to these locations was in some cases extremely tough and time consuming with field personnel required to travel by boats to reach land masses separated by rivers, and even walk long distances to reach target locations.

One of the districts that had been hit by ethnic violence in the past proved to be a risky location from requiring the team to turn back. Both scenarios limited the available time in the field in some cases. However, the field visits in such locations were identified in advance and scheduled for an early start in the day along with Panchayat (cluster of villages) Presidents of Panchayati Raj Institutions (PRIs), and later on holding meetings with the community and ward members in villages.

One another key challenge was to ensure that local villagers made it in time for the community meetings with the field team. This challenge was addressed to a considerable extent by making direct telephone calls to the Panchayat Presidents and community leaders to ensure the community was mobilised and available in time to take part in the process. This approach was particularly useful as in some cases the circulars were not even delivered to them.

Apart from this, the risk of visiting sensitive field locations was alleviated by coordinating with the district police, sharing the team's travel plan and reporting to the nearest police stations upon arrival in the Panchayat. All these initiatives played a key role in overcoming the challenges and reducing anything detrimental to field assessments.

What are the lessons learnt?

As a result of the exercise, it was learnt that it is necessary to make telephone communications with the local Panchayat Presidents at least a couple of days prior to the exercise to ensure timely arrangements, availability and active participation of the community for the meeting with the field team. Also, the circular must be sent to the Presidents of these rural locations at least a week in advance to ensure that they are received.

Panchayat Presidents and the community leaders must also be contacted before finalisation of sample locations to assess their availability to participate in the meetings that requires active community involvement and basic arrangements at the local level for the holding of the meeting.

What could have been done differently and why?

While the selection of the sample field sites was done, telephone communication prior to the selection of the Panchayat as a sample site was not done which led to few scenarios where the community didn't participate actively because of limited or no efforts by the President. As a result, the field team had to adapt its approach in the field by holding interviews with community members rather than conducting group discussions.

What was the result of this approach/intervention?

The approach followed a complete process for the preparation of the plan and a report on the HRVCA was prepared that clearly dealt with a range of aspects to assess vulnerability and the capacity of the district that included social, economic, environmental and institutional aspects. This formed the basis for making plans for each district, and particularly to focus on making a plan for disaster risk mitigation and resilience building. Apart from this, separate plans were drafted for preparedness, response, recovery, reconstruction and rehabilitation.

What were the key elements of success?

Before the drafting of the plan was initiated, there were certain key elements that were expected to be included. Before the advent of the India's Disaster Management Act (2005), all disaster management plans in the country were responses plan that contained contact details of all emergency response officers. In a major shift, the focus was placed on making a plan that deals with aspects of climate change and ecosystems. The 'Climate Change & Ecosystem Sensitive Risk Mitigation and Resilience Building Plan' was prepared that focuses on preventing, minimizing and containing the impact of disasters, along with risk mitigation for man-made disasters through preemptive risk reduction measures. This plan also ensured the integration of disaster risk management (DRM) with district development plans. The plan addressed factors that have been having negative effects on the ecosystem, based on the HRVCA study.

Another key success factor was the preparedness, response plans that needed incorporation of factors that will ensure an effective and efficient response to any disaster. Thus, the Incident Response System (IRS) was introduced in sync with the National Disaster Management Authority (NDMA) guidelines that elucidate the roles & responsibilities that are demarcated. A system has been drafted that will ensure selection of officers for relevant positions whose capacity building can be done during the preparedness phase (as per the preparedness plan), while also being available for response. In order to ensure that the IRS is a success, it was also ensured that clear guidelines are introduced for the placing of intellectually capable officers into specific positions.

Was the success/impact measured? What indicators were used to measure?

The success of the plan at the drafting stage was measured an exhaustive review of the plan by the ASDMA in consultation with the DDMA's and with some heads of key line departments. Their comments on gaps or improvements to make the plan executable were incorporated into the plan. The indicators used to assess the success were the incorporation of factors to assess vulnerability and the capacities of people and habitations in terms of: social capital; trust in public institutions; inter ethnic/religious group relationships; environmental wellbeing and damage assessments; economic resilience; and livelihood situations. Departments were assessed according to institutional assessments in terms of: physical infrastructure; access to financial resources; challenges in procurement and; availability of required manpower for operations. However, at the implementation stage, the plan is yet to be tested since it has only just been drawn up.

How have the results contributed to HFA progress in the country? Did HFA play a role in enabling the initiative? In line with the HFA, there were five key priorities promoted by the plan. Before the designing of the project for the making of DDMPs, all the HFA priorities were referred to and played a crucial role in the design of the entire plan. As a result, the plan now contributes to the HFA 1 that ensures DRR is a local priority of not just the state, but also the district that leads developmental interventions locally while also being first responders in the case of disasters. DRR was made a part of the planning which has now been done department wide, responsibilities have been decentralised and stress has been laid on community participation in risk reduction

and response. The plan also contributes to HFA 2 which focuses on identifying, assessing and monitoring disaster risks, as well as enhancing early warning by conducting micro level assessments with both community and line departments.

The plan also contributes to HFA 2 as it promotes the building of a culture of safety and resilience at the community level by planning the formation of village disaster management committees to lead DRR, and focus on the public awareness by the committees and also through media management by the district administration. The HFA 2 was pushed in the state through the Climate Change & Ecosystem Sensitive Risk Mitigation and Resilience Building plan. While this plan focuses on reducing the vulnerability of the environment due to disasters as well as susceptibility to disasters due to damage to the ecosystem, it also addresses factors such as risk transfer and better land use planning. Finally, the preparedness plan for effective response also contributed to the progress of the HFA in the districts of the state of Assam.

Can this initiative be replicated?

The approach can be easily replicated across the world because documentation gives a detailed insight that can be followed. At the same time, a number of tools have been made that can be used for making effective and exhaustive field based assessments at the community level as well as with line departments through one-to-one consultations. However, it has to be noted that there will always be a need for adaptation of the process, the tools (designed questionnaires) and the focus of the tools depending upon which part of the country or the world the process being implemented.

Contribution by:

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MODULE 3 (Contd.)

SESSION 3.2	• Challenges to mainstreaming DRR in key sectors
DURATION	• 90 Minutes
NOTES FOR FACILITATOR	• This is a group exercise based session, the facilitator can summarize the session, focusing on 1) key challenges facing mainstreaming DRR and CCA, and 2) instruments and incentives for mainstreaming DRR and CCA in selected key development sectors, with special reference to initiatives and programmatic approaches for mainstreaming DRR in selected national flagship programmes. A lecture/presentation focused on in-depth analysis, emanating from earlier discussions of how national flagship programs can be used to strengthen DRR and CCA have been discussed, could be incorporated into the session.
OBJECTIVES	• Build understanding of the challenges related to mainstreaming • Develop identification and analysis skills of potential means of overcoming challenges
OUTCOMES	• Participants are able to identify, analyse, and develop effective responses to specific challenges, while developing an appreciation of their real-life roles while working with these challenges.
METHOD	• Group work, based on participants' discussions and presentations; participatory summing up of the session by the facilitator.

Key Concepts

- Keeping in mind the strategic framework of Disaster Risk Management in a country prone to so many natural and human made hazards and given the high degree of vulnerability, disaster risk management is essentially a development problem and thus any preparedness and mitigation planning must be taken up in tandem with environmental concerns that the country is facing today.
- Our efforts here intend to strengthen community, local self-government, and district administration responses, preparedness and mitigation measures, particularly in the most vulnerable districts (ref: Vulnerability Atlas, Gol), along with state and national responses. A key element of this programme is establishing linkages between government and civil society response plans and capacity building plans of government institutions and local self-governments, as they pertain to disaster mitigation, preparedness, and recovery.
- Panchayati Raj and Urban Planning Institutions, at all levels in the selected districts should be directly involved in planning processes, to ensure sustainability of these initiatives. Wide representation of women is envisaged in this project during the planning process. Self-help groups representing women and other vulnerable groups in the programme areas are expected to be directly involved in DRM programme planning. However, the majority of such initiatives have thus far been proven to be unsustainable.
- While some progress has been made, the increasing losses and numbers of disaster events force our focus onto strengthening the institutionalisation process of mainstreaming DRR and CCA into all sectoral developmental planning, while also harnessing a more coordinated effort amongst all stakeholders to take mainstreaming forward.

The key challenges facing mainstreaming DRR and CCA can be categorised as follows:

- a. Achieving effective coordination among sectors/ministries/departments at the national, state, district, and lower levels, and proactive involvement and unified community action among social, economic, politically and culturally diverse and independent ministries, departments, agencies, funding agencies, and diverse interest groups
- b. Developing common technical, legal, and institutional frameworks and strategies for mainstreaming DRR and CCA to address various and diverse impacts of different hazard types and climate change impact, even across a district or at lower levels preferably ecosystem specific) with varied and diverse socio-economic, cultural, poverty, and vulnerability levels
- c. Maintaining continuous upgradation and flexible project planning, as well as design and implementation strategies, keeping in mind the importance of relating them to local contexts and mainstreaming DRR and CCA into the project management cycle, from the lowest to the highest platforms of planning unit (national, state, district, block, municipality, Panchayat, ward, and to the lowest democratic unit level, i.e., upto the voting booth)
- d. Strengthening advocacy and networking for mainstreaming DRR and CCA at all levels, along with supportive training and IEC support.

Technical Note

Disaster risk management strategy

The Disaster Risk Management Strategy should ensure that development gains are protected through inclusion and grounding of DRR and CCA in development planning and implementation.

Realising the above goal calls for mainstreaming DRR into development processes via the following strategies:

- Increased utilisation of disaster risk (current and future) information for development planning processes at all levels
- Implementation of priority interventions at national level with active partnerships between government ministries, national technical agencies, universities, and public training institutes
- Capacity building of government officials and elective representatives on mainstreaming DRR into development
- Proactive documentation and sharing of experience and lessons learned among different stakeholders at state and lower levels
- Establishing partnerships with similar initiatives with other development partners at national and regional levels

These strategies will focus on mainstreaming DRR into development planning processes at the national, state and local level. This will include long-term visions, medium-term development planning, physical planning, public investment programming, annual planning, national budgetary processes, formulation and appraisal of development projects, and monitoring and evaluation systems. The approach for the implementation of such Project Implementing Plans (PIP) will include strengthening working relationships between state, district, and lower level government offices, Panchayat, ULBs, NGOs and other stakeholders, with a focus on community based DRR and CCA planning, and nodal/resource agencies for socio-economic planning, physical planning, finance, environment, and local development. Partnerships will also be strengthened with national technical agencies responsible for providing information on natural hazards and socio-economic vulnerabilities.

Additional strategies will aim to mainstream DRR & CCA into sectoral plans, focusing on sectoral development planning processes in order to mainstream DRR. Examples include using information on disaster risk in sector policies and plans, to appropriately adopt measures to reduce risk (current and future) as part of sectoral development strategies and sectoral program and projects. They will also seek to involve or form partnerships with national technical agencies involved in providing information on natural hazards and socio-economic vulnerabilities, and with nodal agencies of planning and finance involved in prioritizing program and projects and allocating resources. Linkages will also be established with development partners involved in supporting the larger development agenda of the sector in question.

Below are examples of some themes guiding the implementation of PIPs:

Agriculture

- Promoting programs of contingency crop planning and crop diversification
- Supplementary income generation from off-farm and non-farm activities
- Effective insurance and credit schemes to compensate for crop damage and loss to livelihood

Infrastructure

- Introducing results of risk assessments into the construction of new roads and bridges
- Promoting the increased use of hazard-resilient designs in housing in hazard-prone areas
- Utilisation of national building codes; and the compliance and enforcement of local building laws in urban hazard-prone areas

Financial Services

- Incorporating flexible repayment schedules into microfinance schemes
- Encouraging financial services and local capital markets to finance DRM measures

Education

- Introducing DRM modules into the school curriculum
- Promoting hazard resilient construction of new schools
- Introducing features into schools for their use as emergency shelters

Health

- Vulnerability assessment of hospitals in hazard-prone areas
- Promoting hazard resilient construction of new hospitals Implementing of disaster preparedness plans for hospitals

Another important strategic component will be to continue to build capacities through targeted and tailored training courses on mainstreaming DRR and CCA, to be delivered at state, district, and lower levels. The training course on mainstreaming DRR and CCA into the state, district and lower level planning processes will be periodically revisited to capture recent learnings from the programme, as well as the experiences of those trained. The course will continue to be delivered at the state, district, and lower levels through initiative and support of the Revenue Department and other sources, and in partnership with UNDP and other interested agencies. Recognising the importance of building capacity at the state level will hopefully lead to increased focus on developing and delivering training on mainstreaming DRR and CCA into development planning processes and/or sectoral development processes and measures taken by the state government for institutionalisation within existing relevant public sector training courses in the state.

Mainstreaming DRR and CCA into development plans poses major challenges for many national Governments. The 2009 Global Assessment Report on Disaster Risk Reduction concluded that “governance arrangements for disaster risk reduction in many countries do not facilitate the integration of risk considerations into development. In general, the institutional and legislative arrangements for disaster risk reduction are weakly connected to development sectors.” This session will entail engaging participants in group work for the purpose of identifying challenges facing mainstreaming DRR efforts. Subsequently, they will be engaged in discovering effective solutions to address these challenges in a subsequent part of the exercise. Some of the indicative questions that the participants could be given to brainstorm:

- What in your view are the five key challenges in mainstreaming DRR in national and sub-national plans?
- How can they be addressed?

After the completion of the group work exercise, the facilitator should engage the participants in discussion to single out key challenges from among all the presentations and possible solutions proposed for addressing them.

Some of the key issues and challenges of mainstreaming are:

A. Coordination and synergy across sectors and levels, including the national and sub-national level, for mainstreaming DRR and CCA

NOTE FOR FACILITATOR

- Selection of case studies and best practices chosen should be relevant to the general professional profile of the participants and their experiences with regard to specific sectors, programmes, and projects.

- One of the selected case studies and best practices must involve an integration initiative addressing both CCA and DRR, with the objective of safe and sustainable development, preferably from within India or from the South Asian region. An example from Himachal Pradesh will be helpful.

OBJECTIVE

- Develop an understanding and appreciation of the critical role of coordination and synergy across sectors and levels for mainstreaming DRR and CCA within the broader perspective of safe and sustainable development.

OUTCOME

- An enhanced appreciation of the strategies, instruments, and mechanisms for ensuring effective coordination and creation of synergy across different sectors and stakeholders.

METHOD

- Presentation of case studies and best practices in coordination and synergy building.

B. Technical, legal, and institutional frameworks and strategies for mainstreaming DRR and CCA

NOTE FOR FACILITATOR

The facilitator will provide a detailed insight into the techno-legal regime and institutional arrangements related to mainstreaming of DRR and CCA at various levels. Examples of the range and scope of relevant topics include national and state DM acts and policies, HPC recommendations, NDMA and SDMA guidelines, various relevant rules and guidelines, laws, and GOs issued by various ministries and departments at central and state levels, with special focus on the role of PRIs and ULBs in mainstreaming DRR.

One of the most recent efforts to mainstream DRR and CCA by using the DPR and the associated Finance Commission recommendation regarding inclusion of risk reduction and environment impact assessment of all schemes of all departments should be discussed in detail. The facilitator should also offer guidance and instruction on how to develop a DPR for a National Flagship Programme, preferably one with which the participants have experience implementing, and how a DPR can facilitate mainstreaming DRR and CCA into planning.

OBJECTIVE

Develop knowledge of the various technical, legal, and institutional frameworks and strategies for mainstreaming DRR and CCA into development.

OUTCOME

An enhanced appreciation and understanding of the various technical, legal, and institutional options and their applications for mainstreaming DRR and CCA within relative key sectors.

METHOD

Lecture/presentation

TECHNICAL NOTE

The Government of India and various state governments have made a paradigm shift to help mainstream DRR and CCA into key development sectors by introducing a range of technical, legal, and institutional arrangements at various levels over the past decade.

This session will provide a glimpse of the global scenario from IDNDR to SFDRR, with special reference to good practices and lessons learnt across the globe, as applicable in the local/regional/Indian context.

C. Mainstreaming DRR and CCA into Project Cycle Management: Project planning, design and implementation

NOTE FOR FACILITATOR

Depending on the overall interest and orientation of participants, the facilitator may choose to organise them into sectoral groups and task them with the development of checklists for integrating DRR and CCA into project planning, design, and implementation. An alternative would be to invite volunteers to share their experiences in mainstreaming DRR and CCA into actual projects, planned, designed, or implemented by them.

OBJECTIVE

Develop various strategies for integrating DRR and CCA concerns into project planning, design, and implementation in respective work area(s).

OUTCOME

Enhanced understanding of identifying, analyzing, and selecting the best methods for mainstreaming DRR and CCA into project planning, design, and implementation.

TECHNICAL NOTE

Content of the introductory lecture will be related to the basics of Project Management (PM) and Project Cycle Management (PCM) in pre- and post-disaster scenarios with suitable examples, generated through a case studies approach. Application-oriented learning will emanate as a result of the group exercise, presentation, experience-sharing, and group discussion led by the facilitator.

To take the mainstreaming process forward, four objectives must be achieved:

1. Integration of climate change programmes as part of national, state, district, and lower level development planning process;
2. Inclusion of sectoral and cross-sectoral top priorities for CCA within the framework of sustainable development;
3. Provide guidelines for financing mechanisms and institutional arrangements required for bilateral as well as multilateral cooperation scheme and update the information on a periodic basis
4. Establish clear guidance for development partnerships on CCA along with DRR.

D. Developing partnerships and advocacy for mainstreaming DRR and CCA: A panel discussion

NOTE FOR FACILITATOR

• The facilitator will act as moderator for a panel discussion, facilitating the discussion among panelists and subsequently between participants and panel experts.

OBJECTIVE

• Understanding of the major mainstreaming initiatives and their roles in taking forward the agenda of disaster resilient development policy formulation and implementation.

OUTCOME

• Developed understanding of the role of policy advocacy in mainstreaming and the ways in which they, the participants, can act as instruments for policy advocacy.

METHOD

• Panel discussion, followed with question and answer session

CONTENT BRIEF

• The session will involve 3-4 experts, with extensive experience in organising and designing large scale, multi-stakeholder DRR initiatives in India and South Asia, if available.

E. Introduction to Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) in the context of development: Linkages and overlaps

NOTE FOR FACILITATOR

As the linkages across CCA and DRR in the context of development are still in the process of being understood globally across sectors and organisations, preparation for this session must involve undertaking a thorough literature survey, particularly in terms of facts, figures and arguments. Use of examples from within and outside India will help the participants appreciate the points being made better.

OBJECTIVE

To develop an understanding and appreciation of the interconnections between issues related to climate change adaptation (CCA) and disaster risk reduction (DRR) within the broader perspective of safe and sustainable development.

OUTCOME

An enhanced appreciation of the linkages between CCA, DRR and development among the participants.

METHOD

Presentation and discussion interspersed with questions from the participants and sharing and clarifications from the facilitator resource person/s; participatory summing up of the session by the facilitator

CONTENT BRIEF

Climate, disaster and development are inseparable. They cannot be addressed in isolation with each other. Human activity is the critical variable determining the delicate balance between them. State, market and communities are major factors. People, particularly the poor, stand at the intersection of climate, disaster and development. They are deeply affected by development policy and practice that impact the linkages between them.

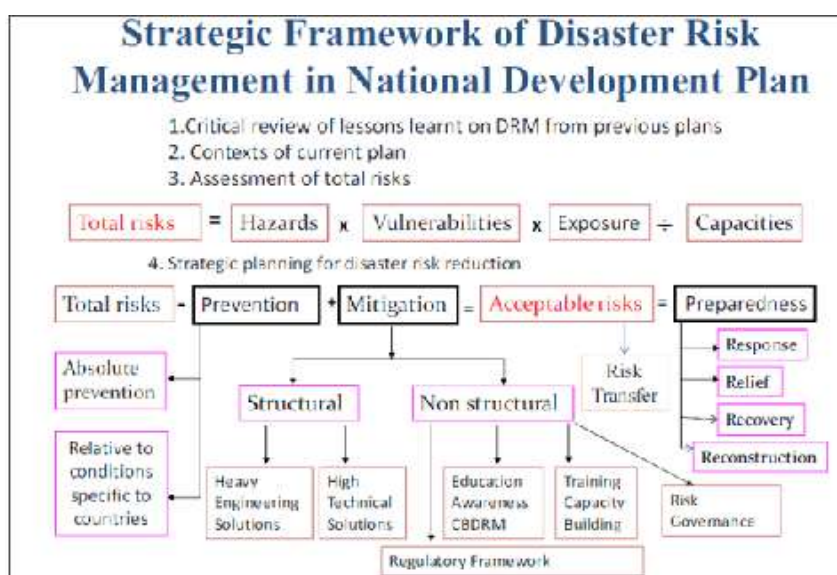
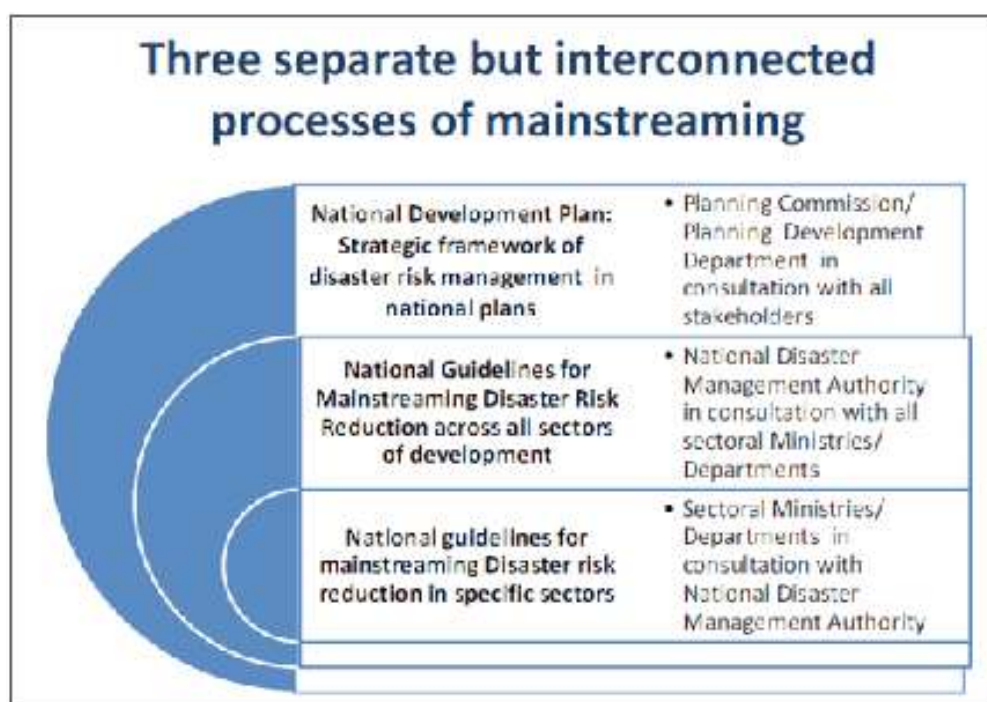
Vulnerability and capacity, as essential constitutive elements of both climate and disaster related risks, come into sharp focus in thinking through CCA and DRR issues. The session would conclude that well thought out CCA and DRR strategies are features and factors both of good governance and sustainable development.

Recommended Reading and References:

1. Sendai Framework for Disaster Risk Reduction – 2015 – 30 <http://www.unisdr.org/we/coordinate/sendai-framework>
2. Planning Commission, Government of India, Eleventh and 12th Five-Year Plan, 2007 – 12 and 2012- 17, Government of India, Disaster Management Act, 2005
3. National Disaster Management Plan, 2016, MHA, Government of India
4. National Action Plan for Climate Change, Ministry of Environment and Forests, Government of India
5. Training Module – “Environmental Legislation for Disaster Risk Management”. GIZ

HANDOUT 1*

In India, there are three separate but interconnected processes of mainstreaming being guided and/or implemented by three separate government entities. With the focus also on CCA, there is an independent department and therefore, one of the main challenges will be to develop a common framework and associated guidelines among many departments. The most important aspect is to ensure a common framework for training and overall implementation strategy as well as a strong political commitment to take the mainstreaming initiative forward.



The above diagram gives a pictorial representation of the Strategic Framework of Disaster Risk Management in National Development Plan which includes the process of reviewing the lessons learnt from previous plans; understand the context of the current plan along with the assessment of total risks and develop a strategic planning appropriate for the local context for Disaster Risk Reduction.

*Mainstreaming Disaster Risk Reduction into National Development Planning & Financing in Asia-Pacific – P.G. Dhar Chakrabarti

MODULE 3 (Contd.)

SESSION 3.3

Financing, strategic learning and action planning

DURATION

120minutes (2 sessions)

OBJECTIVES

The two key objectives of this session are:

a) To strengthen the process to increasingly mainstream DRR and CCA into more plans, projects and policies cutting across sectors through use of appropriate tools, advocacy, legislative backup, availability of risk information, knowledge sharing and enhancing multi-agency coordination; and

b) To ensure higher allocation of dedicated finance for integrating DRR and CCA components into all developmental sectoral plans and projects, develop systems to track and evaluate the impact of DRR and CCA measures and take measures for mobilising additional financial resources from different stakeholders and creation of favourable conditions for higher investments in risk reduction and climate change adaptation and mitigation measures.

OUTCOMES

By the end of this session, the participants should be able to

- Identify possible sources of financing for mainstreaming and to bring about changes in the financial system that will aid in tracking financial resources for promoting mainstreaming.
- Possess clarity on the needs and sources of financing and understand that, at present, limited evidence has been presented on how the overlapping objectives and activities through various financial mechanisms and institutional frameworks that affect mainstreaming DRR and CCA.
- Understand, at a fundamental level, both strategic and tactical planning for mobilizing resources and procuring institutional support to promote mainstreaming DRR and CCA through an ecosystem based approach, utilizing innovative pilot projects and tying up the same with National Flagship Programmes and other large project funds for scaling up.
- Develop an understanding of the distinction between embedded and dedicated financing for DRR and CCA with case studies, with examples provided by participants from their own work experience.
- Explore and identify specific opportunities for financing DRR and CCA activities using different programmes in various departments.

- Develop the ability, as a part of strategic planning, to link risk ranking with supportive financial requirements and then carry out a cost-benefit analysis in terms of reduction in losses and needs for redesigning relief and reconstruction needed during disaster events and improving the resilience to various hazards
- Develop the ability to prioritise highly vulnerable areas and sectors and processes and document case studies of successes and failures
- Develop the ability to periodically monitor and report on both reductions in risk levels due to climate change impact and the degree of vulnerabilities, and improvements in the socio-economic status of vulnerable groups, as a result of investment in DDR and CCA, to advocate for a greater degree of mainstreaming.
- Develop an exhaustive list of outcome indicators sector-wise with specific indicators addressing the priorities and vulnerability levels of women, children, and other vulnerable groups.

Financing options and budgetary allocations for mainstreaming DRR

NOTE FOR FACILITATOR

- It may be more effective to organise the trigger presentation around a real case study from one of the development sectors, including employment, housing, health, education, roads, transport, and telecommunication. The trigger presentation should not be more than 20 minutes, allowing sufficient time for open discussion in a plenary.

OBJECTIVE

- Participants will develop an appreciation of the critical importance of having adequate funding arrangements and budgetary allocations for mainstreaming disaster risk reduction (DRR) in development.

OUTCOME

- An enhanced appreciation of the need to focus on funding aspects of mainstreaming DRR.

METHOD

- A brief trigger presentation followed by discussion in a plenary; participatory summing up of the session by the facilitator.

Good ideas alone are not enough to bring about desired results on the ground. Mainstreaming DRR in development is certainly a good idea, as made amply clear during the deliberations in the preceding sessions. But it requires an adequate funding support to work. Integration of disaster risk concerns into government budgets should be tackled from two angles, ensuring that levels of public expenditure on risk reduction are sufficient and that there are adequate financial arrangements to manage the residual risk.

The Government of India has made a major policy move to help mainstream DRR into key development sectors by introducing a revision in the function of the Expenditure Finance Committee (EFC), especially to support the guidelines provided by the National Disaster Management Plan and the 14th Finance Commission in 2016, where the inclusion of DRR and EIA in all DPRs for all sectors have been proposed. Earlier, in the office memorandum dated 19.06.2009, the Department of Expenditure, Ministry of Finance, Government of India provided guidelines and a checklist indicating natural disaster impact assessment, project environmental impact, and people as essential inputs into the preparation of detailed project reports (DPRs) for all development projects across all sectors. This is a huge policy initiative that shows Gol's policy commitment to mainstreaming DRR in an effective manner.

Implementation of DRR- Financial Aspects Plan Schemes

The primary mechanisms for funding DRR related schemes and projects in India are via Plan Schemes at central and state levels. Various nodal ministries play a key role in disaster management as far as specific disasters are concerned. These nodal ministries, as well as other ministries and departments, have dedicated schemes, aimed at disaster prevention, mitigation, capacity building, etc. within their particular domain. Existing examples include the scheme of MHA for Strengthening of Fire and Emergency Services, Financial Assistance to ATIs other Training institutions for disaster management, Integrated Coastal Zone Management programme of Ministry of Environment, Forest, and Climate Change (MOEFCC), and flood management and flood forecasting programmes of Ministry of Water Resources (MOWR). The Department of Space (DOS) has a disaster management support programme and the Ministry of Earth Sciences (MOES) has a project on tracking and early warning for tsunami and storm surge warning system. NDMA is implementing an important World Bank funded project for cyclone risk mitigation. The National Cyclone Risk Mitigation Project encompasses cyclone forecasting, tracking, and warning systems, capacity building, and structural measures.

Apart from this, many of the schemes, which are implemented by various ministries/ departments, have embedded DRR components, as for example, those implemented by the MOEFCC. There are many other programmes that improve societal resilience, which is a critical component of DRR, such as the National Rural Health Mission, Mahatma Gandhi Employment Guarantee Scheme, and the Urban Development's Urban Renewal Mission. Outlay for reconstruction activities are normally embedded in the plan schemes of Union Government ministries to ensure that "Building Back Better" is in consonance with the approved programs. Post disaster reconstruction work is funded by the Union Government through increased outlay for on-going infrastructure projects in the region and providing more untied grants to the affected state. The centre/state may also utilize funds from international agencies for specific intervention in a particular region, in the form of an externally aided project. Flexi Funds as Part of Centrally Sponsored Schemes

As per the Department of Expenditure, Ministry of Finance, O.M No. 55(5)/PF-II/2011, dated 6.1.14, all Central Ministries shall keep at least 10 percent of their plan budget for each Centrally Sponsored Scheme (CSS) as flexi-fund (except for schemes which emanate from legislation or schemes where the whole or a substantial

proportion of the budgetary allocation is flexible). States may use the flexi-funds for the CSS to meet the following objectives:

- a) Provide flexibility to states to meet local needs and requirements within the overall objective of each program or scheme;
- b) Pilot innovations and improve efficiency within the overall objective of the scheme and its expected outcomes;
- c) Undertake mitigation /restoration activities in case of natural calamities in the sector covered by the CSS.

The utilisation of flexi-funds for mitigation/restoration activities in the event of a natural calamity must be in accordance with the broad objectives of the CSS. It is possible to combine flexi-fund components across schemes within the same sector, but the flexi-funds of a CSS in a particular sector, however, shall not be diverted to fund activities/schemes in another sector. The flexi-funds constitute a source of funding for mitigation activities within overall objectives of the particular CSS(s) under which they are allocated, and this would still leave a gap in terms of funding purely mitigation related projects, especially those addressing cross cutting themes that cover multiple sectors.

Externally Aided Projects

Besides the funds which are available through plan and non-plan schemes, efforts have also been made by the Centre to mobilize resources from external funding agencies for vulnerabilities assessment, capacity development, institutional strengthening of response mechanisms, and mitigation measures. The central government will continue to support states for reconstruction and rehabilitation in the aftermath of major disasters through aid from World Bank and other such external funding agencies.

Risk Transfer and Insurance

As of now, the Government of India is acting as a self-insurer for the purpose of maintaining relief funds (National Disaster Response Fund and State Disaster Response Fund). The funds are monitored by MHA in consultation with Ministry of Finance. The amount committed for the State Disaster Response Fund is invested by the Union in government securities. MHA has issued guidelines in consultation with Ministry of Finance for the maintenance and encashment of the securities, as and when required. However, the need for projects or risk transfer instruments by private agencies is also acknowledged by the government. The corresponding policy changes and fund requirement is to be deliberated in detail in consultation with the IRDA, insurance sector, and other stakeholders.

KEY CONCEPTS:

In spite of the increasing threats of climate change and resultant greater areas of SE Asian countries being exposed to disaster risks (details given in Handout 1), the planning process and financing of DRR and CCA components remain weak and insufficiently addressed, leading to high degrees of losses, negating development progress after each disaster event.

Adequate financing, accompanied by appropriate budget allocations, are potent instruments for mainstreaming DRR and CCA into development. Their presence is indicative of commitment and willingness to invest in mainstreaming. The first part of this module will look at available financing options and explore specific opportunities for DRR and CCA budget allocations for key flagship programmes of the government at the central and state levels.

At present, financial allocations for DRR, both dedicated and embedded, are significantly low. Further, budget allocations per se do not provide much information on quantity and nature of investments in embedded schemes in DRM. Many investments in embedded schemes are not very explicit and remain hidden under broader plans and objectives. It is only through detailed sectoral analysis that it would be possible to locate investments in each sector and quantify them properly.

What is necessary is the creation of a database and records of various case studies becomes a key activity apart from the establishment of an appropriate DRM and CCA based management system, in all forms of planning, sectors, and departments to highlight development gains which are sustainable. The goal is to move away from developmental planning processes that are continuously combating losses due to increases in vulnerabilities, disasters, and impacts of climate change. This will assist in supporting the need for additional dedicated financial allocation for DRR and CCA. To take this process further, develop and maintain a logical framework that incorporates details of present and future risks, tools to identify and reduce them, sources of verification at defined periodicity for analysing reduction in vulnerabilities, risks, and climate change impact.

The tasks that logically follow have two components: the first, monitoring and evaluation as an exercise in strategic learning and action, and the second, development of indicators for measuring progress. Both are related to the same theme and aim at underlining the importance and relevance of tracking results in the process of mainstreaming.

Note for Facilitator

- The facilitator should discuss factors that encourage mainstreaming DRR and CCA, such as advocacy among policy makers and media, legislative backing, enhancing multi-agency coordination, availability of risk information, knowledge sharing, and promoting further applications in development planning process.
- Examples of initiatives in India in line with the above mentioned factors can be discussed to further appreciate the current environment for mainstreaming DRR and CCA. Example from Himachal Pradesh could be shared by the participants.
- The facilitator should encourage participants to reflect upon the challenges facing mainstreaming DRR and CCA and discuss various forms of supporting actions or mechanisms within the government system, as well as from within the communities or stakeholders, to translate the mainstreaming approach into concrete actions. For this exercise, participants could be grouped by development theme or sector: national development planning, sectoral ministries, city development committees, and regional development planning and the group exercises carried out..
- The facilitator introduces the group work, describing the aim to identify supporting factors so as to progress DRM/CRM applications in the development planning processes.
- Examine and discuss the factors that will create a supportive environment for mainstreaming DRR and CCA into development, and the overall management issues including financing, strategic learning, action planning, and use of allied tools and processes to institutionalise mainstreaming DRR and CCA into developmental planning and ensure its sustainability.

After the group work presentation, the facilitator undertakes a summation exercise in which:

- I. The participants reflect upon and consolidate key learnings from the training session.
- II. The participants suggest individual action plans to apply mainstreaming DRR and CCA in their respective departments, mandates and functions.
- III. Guide the participants through the outline of the training session and summarize key points of each session, as well as overall message of the course.
- IV. The facilitator leads a discussion on the participants' reflections with emphasis on relevancy, applicability, and added value of the key learning to the respective mandates and functions of each individual department/agency.
- V. Each individual participant spends 10-15 minutes to note key action points on applying mainstreaming DRR and CCA into their respective mandates and functions and type of support needed.

Materials Required:

Slide projector, note sheets, markers and poster charts and participant handbook

Recommended Reading and References:

- A. 11th and 12th Five Year Plan, Planning Commission, Government of India
- B. ProVention Consortium, 2007, Tools for Mainstreaming Disaster Risk Reduction
- C. Guidance Tearfund, 2005, Mainstreaming Disaster Risk Reduction: a tool for development Organizations
- D. Global Facility for Disaster Reduction and Recovery, 2008, Integrating Disaster Risk Reduction into the Fight Against Poverty
- E. Thomas Mitchell, Benfield Hazard Research Centre, Disaster Studies Working Paper 8, November 2003, AN OPERATIONAL FRAMEWORK FOR MAINSTREAMING DISASTER RISK REDUCTION
- F. Disaster Management Plan, 2016, MHA, Govt. of India
- G. Understanding Existing Methodologies for Allocating and Tracking DRR Resources in India by Dhar Chakrabarti, Prabodh G.

HANDOUT 1 - Levels of Exposure to Disaster Risks

Country	Area exposed (%)	Population exposed (%)	Economy exposed (%)
Bhutan	31.7	74.5	74.9
Cambodia	9.1	31.9	34.5
China	7.2	34.8	39.2
Fiji	60.7	53.5	81.7
India	22.1	47.7	49.6
Indonesia	11.5	67.4	62.3
Iran	31.7	69.8	66.5
Maldives	10.2	83.1	88.2
Mongolia	7.7	77.7	75.7
Nepal	32.3	86.7	85.2
Pakistan	9.0	40.1	41.6
Philippines	50.3	81.3	85.2
Samoa	61.7	51.6	82.7

MODULE 3 (Contd.)

SESSION 3.4

- Tools to be used for Field Exercise
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ALL GROUP EXERCISES REQUIRED HAVE BEEN COMPLETED IN THE PREVIOUS SESSIONS. THIS EXERCISE WILL ORGANISE THE PARTICIPANTS INTO TWO GROUPS, AT THE END OF THE SESSION ON THE THIRD DAY, FOR THE NEXT DAY'S FIELD EXERCISE.

THE PARTICIPANTS HAVE ALSO UNDERTAKEN GROUP EXERCISES EARLIER ON NATIONAL FLAGSHIP PROGRAMMES FOR BOTH RURAL AND URBAN AREAS. THE NATIONAL FLAGSHIP PROGRAMME CHOSEN FOR EACH AREA WILL DEPEND ON THE PRIOR VISIT TO THE TWO RESPECTIVE AREAS, AND HAVE BEEN COVERED DURING EARLIER GROUP. A BRIEFING OF THE TWO LOCATIONS TO BE CHOSEN, THE LINKS BETWEEN THE TOOLS TO BE USED, AND THE DEVELOPMENT OF A PLAN OF ACTION FOR MAINSTREAMING DRR IN PROGRAMMES FOR URBAN AND RURAL AREAS WILL BE DISCUSSED DURING THE GROUP EXERCISE PRESENTATIONS. THE FINAL PREPARATION AND PRESENTATION OF THE PLANS OF ACTION BY THE TWO GROUPS WILL BE UNDERTAKEN ON DAY 5 IN SESSION 3.5, BASED ON THE EXPERIENCE GAINED IN THE FIELD EXERCISE. FOR THE GROUP EXERCISE, THE PARTICIPANTS WILL BE IN MIXED GROUPS, BASED ON THEIR SECTORAL/ DEPARTMENTAL INTERESTS. DURING THE GROUP EXERCISE, EACH GROUP WILL BE REQUESTED BY THE FACILITATOR TO CHOOSE ONE MAJOR SECTOR, ONE EACH FOR RURAL AND URBAN AREAS, AND THE SUGGESTED NATIONAL FLAGSHIP PROGRAMME. EACH GROUP WILL THEN APPLY THEIR LEARNING (KNOWLEDGE, SKILLS, AND TOOLS) TO A REAL LIFE SCENARIO RELATED TO THEIR ROLES AND RESPONSIBILITIES, TO MAINSTREAM DRR IN THE CHOSEN SECTOR, ALONG WITH ESTABLISHING THE LINKAGES WITH OTHER RELATED SECTORS ACROSS DIFFERENT LEVELS, FOR DIFFERENT DISASTERS AND DIFFERENT PHASES OF THE DISASTER MANAGEMENT CYCLE. LATER, WITH THE GUIDANCE OF THE FACILITATOR, THE GROUPS WILL EVOLVE A MULTI-HAZARD, MULTI-LEVEL, AND MULTI-SECTORAL STRATEGIC ACTION PLAN FOR MAINSTREAMING DRR IN A PARTICIPATORY MANNER.

THE TOOLS TO BE USED DURING FIELD EXERCISE, SUCH AS HRVCA, HAVE BEEN GIVEN IN THE NEXT SECTION'S HANDOUT, AND A POWER POINT PRESENTATION OF THE TOOLS WHICH HAVE BEEN USED DURING THIS AND THE PREVIOUS SESSION WILL BE TAKEN UP DURING THE PRE-FIELD GROUP EXERCISE

Selection of Location for Field Visit

The following criteria and methodology are requested to be followed for selection of field work groups and locations of field visit:

- The participants will be divided into 2 groups, one group for urban area (under Municipality/ULB) and the other to undertake field exercises in a rural area (under PRI)
- Female participants are to be equally divided and especially entrusted with ensuring gender issues are addressed during the field visit
- The field sites are within a reasonable distance from where the training is being held (within an hour's drive)
- Preferably in sites where DRR or CCA related activities have been undertaken in the recent past, preferably under a National Flagship or a major programme of the state
- The location should be prone to one or more hazards and/or climate change impact
- A prior visit is organised for discussing the purpose of the field visit with the ULB or PRI and local opinion leaders to make necessary arrangements for the field visits
- Prior visit by the facilitator and one of the training organizer is suggested to ensure higher participation, including participation of women and senior citizens, and to ensure that participants are made aware of the purpose and visit of the teams
- Necessary training tools such as board with chalk or white board with markers, nylon rope, cloth clips to hang and exhibit posters, or chart papers and markers
- During the field visit, the training participants will play the role of the facilitators while local persons who attend the field exercise will act as participants

OBJECTIVE

- The objective is to provide the participants practical skills in using tools for identification of various risks, necessary measures, analysis of the changes and impacts of climate change, and interacting with local Panchayat or Ward representatives and community members through a participatory process.

OUTCOME

- The participants will have a more comprehensive understanding of using tools to identify and quantify risks and possible measures that are necessary to mainstream DRR and CCA while implementing their department's plans and programmes.

NOTE TO FACILITATOR

- (a) It is suggested that for two or more participants from the same department should be inducted into the two groups so that both urban and rural areas are covered during the field visit.
- (b) The participants in the two groups will be given specific responsibilities to take detailed notes of one tool each for contributing during the follow-up group work.

METHOD

(c) Each group will choose a chairperson and rapporteurs who will assist in documenting the field exercise, findings, and analysis of the specific tool (they are supposed to document) that was used during field visit and any other additional aspect(s) they have been identified/observed that needs to be incorporated, that were not addressed in the earlier group exercises for strengthening the mainstreaming process.

Presentation, interactive session, group work and plenary presentation, followed by finalization of next day's field exercise groups and programme

NOTES

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DAY 4

FIELD EXERCISE

FIELD WORK

At the end of this session, the participants, who are now facilitators, will encourage participants from their group, with local community members and representatives from ULBs and PRIs, to undertake a group exercise and then present a Plan of Action for a chosen sector under a specific National Flagship Programme highlighting:

- 1) Vulnerability and Risk Assessment
- 2) Capacity Analysis
- 3) Rationale for site selection
- 4) Detailed Risk Analysis with identification of hazard specific risks and an analysis of the present and future trends in terms of temperature and rainfall
- 5) Detailed plan of action including description of DRR and CCA components in the overall activities
- 6) Outcome Indicators
- 7) Budget with sources of finance
- 8) Aspects of continuity/maintenance after completion of project
- 9) Any other salient features

DURATION	• Full day (including travel time)
METHOD OF PRESENTATION	• Interactive lecture presentation, transect, group work, and presentation
MATERIALS NEEDED AT THE TRAINING CENTRE	• Note sheet, markers and poster charts, and participant handbook
MATERIALS NEEDED FOR FIELD EXERCISE	• Board, chalk, and poster charts, markers, nylon rope, cloth clips, and someone responsible for documentation of the field exercise for each of the groups
HANDOUT	• HRVCA tool and other tools attached separately with Power Point presentation

HANDOUT

USE OF HAZARD RISK, VULNERABILITY AND CAPACITY ANALYSIS (HRVCA) FINDINGS FOR PREPARATION OF EFFECTIVE DRR PLANS

HRVCA data and findings should be reviewed in the context of the following seven impact categories/criteria, which are given in the Table below. The impact category/criteria should be individually ranked as on an ascending scale from one to four, one being the least severe and four being the most severe. The sum of these scores will be taken to create an overall consequence score which will then be contrasted against the likelihood rating of one to four, one being the unlikely and four being the most likely. Details regarding the measure of likelihood are mentioned in the Table below. The aggregate score of each hazard, combined with the hazard impact consequences and likelihood will provide the basis for risk ranking of low, moderate, high or very high disaster risk.

Category/Criteria of Impact	Score
Fatality	1 - 4
Injury	1 - 4
Critical Facilities (hospital, fire/police services, etc.)	1 - 4
Lifelines (water, gas, power, etc.)	1 - 4
Environmental impact (particularly climate change impact)	1 - 4
Economic and Social Impact with a focus on livelihood)	1 - 4

Measure of Likelihood	Return Period (Years)	Score
Frequent or Very Likely	Every 1 – 3	4
Moderate or likely	Every 4 – 10	3
Occasional, Slight Change	Every 11 - 30	2
Unlikely, improbable	Every 31 - 100	1

The table below details each level of risk rating with description how these ratings should be interpreted

Risk Rating	HRVCA Risk Rating Interpretation
1 - 10	Low Risk: Implementation of mitigation measures will enhance emergency preparedness, but less urgent; the concerned communities can live with this level of risk
10 – 15	Moderate Risk: Related hazards have intermediate levels of frequency and intensity. Hazards classified as moderate and are relatively of an urgent nature as compared to low-risk hazards and are often common place concern. Given this, moderate level hazards should be addressed with appropriate level of urgency.
15 – 20	High Risk: Related hazards warrant review and development of mitigation actions to reduce the risks to an acceptable level: mitigation measures should be planned with a sense of urgency.
20 - 30	Very High Risk: Related hazards are both frequent and are of high severity; these hazards require immediate and urgent examination and mitigation measures to reduce the risks to an acceptable level.

Reducing Risk; Enhancing Resilience

The National Policy suggests a multi-pronged approach for disaster risk reduction and mitigation consisting of the following:

- Integrating risk reduction measures into all development projects
- Initiating mitigation projects in identified high priority areas through joint efforts of the Central and State Governments
- Encouraging and assisting State level mitigation projects
- Paying attention to indigenous knowledge on disaster and coping mechanisms
- Giving due weightage to the protection of heritage structures

Disaster risk reduction requires responsibilities to be shared by different divisions/departments of governments and various agencies. The effectiveness in disaster risk reduction will depend on coordination mechanisms within and across sectors and with relevant stakeholders at all levels. For each hazard, the approach used in the national plan incorporates the four priorities enunciated in the Sendai Framework into the planning framework for Disaster Risk Reduction under the five thematic areas for action:

1. Understanding Risks
2. Inter-Agency Coordination
3. Investing in DRR – Structural Measures
4. Investing in DRR – Non-Structural Measures
5. Capacity Development

The table below is a suggestive matrix of hazard specific Roles and Responsibilities at different levels for DRR.

SEISMIC RISK MITIGATION

Major Theme	Agency				
	Central	State	Block	Municipality	Panchayat
Understanding Disaster Risk					
1. Earthquake Monitoring - Seismic					
National Seismological Network					
Real Time Seismic Monitoring					
2. Earthquake Hazard and Risk Assessment					
3. Scientific Micro Zonation					
4. Hazard Risk Vulnerability Assessment					
Inter-Agency Coordination					
Structural Measures					
Non-Structural Measures					
Capacity Development					

NOTES

DAY 5

Session 3.5: Summing up of The Planning Exercise After Field Visit

Session 3.6: Group Exercise for Revision and final preparation of the suggested sectoral plans

Concluding Session - Plenary -

Responsibility Sharing Matrix - Follow-up Road Map

MODULE 3: Tools and Processes for mainstreaming DRR and CCA into developmental planning: financing, incentives and sustainability issues for mainstreaming

SESSION 3.5

Summation of the planning exercise after field visit.

Based on a guideline provided by the Facilitator and based on the learnings from the field exercise, the participants will convene in the same group that was formed prior to the field exercise and do the following:

- A. Review the sectoral plan the group prepared earlier
- B. Identify any changes/modifications to the plan and budget
- C. Insert changes, giving their justifications and source of funds, according to budget
- D. Rework the revised plan with all details, giving outcome indicators, logical framework, and detailed budget with sources of finance
- E. Present the group-wise findings at the plenary, incorporate suggestions from other participants and facilitators for each presentation, and add them to the final group presentation

DURATION

90 Minutes

NOTE FOR FACILITATORS

1. Ask the participants reflect upon and consolidate the key learning from the training and field exercise.
2. Ask the participants to suggest individual action plans to apply mainstreaming DRR/CCA into their respective departments, mandates and functions.
3. Facilitator takes the participants through the outline of the training, and summarizes key points of each session, as well as overall message of the course.
4. Facilitator encourages discussion of participants' reflections with emphasis on relevancy, applicability, and added value of key learnings to respective mandates and functions of each individual, and sums up the key points highlighted by the participants.
5. Each individual participant spends 10-15 minutes to note key action points on applying mainstreaming DRR/CCCA into their respective mandates and functions and type of support needed.
6. The participants present group-wise plans based on the previous planning tasks they have undertaken in earlier sessions, prior to the field visit

MODULE 3: (Contd.)

SESSION 3.6

Group Exercise

Revision and final preparation of the suggested sectoral plans with brief methodology, budgets, source of finance, monitoring indicators, and linkages with existing (or proposed) schemes based on field experience.

DURATION

90 Minutes

CONCLUDING SESSION

Plenary

NOTES FOR FACILITATORS

a. Highlight various factors that will create an environment favorable to mainstreaming DDR and CCA.

b. Facilitate the discussion to come up with a collective view on the enabling factors to enhance mainstreaming DDR/CCA applications in Himachal Pradesh.

c. Discuss factors that enable mainstreaming DDR/CCA, such as advocacy among policy makers and media, legislative backing, enhancing multi-agency coordination, availability of risk information, knowledge sharing and promoting further applications in development planning process.

d. Share examples of any initiatives in India that involve the above mentioned factors. A discussion could generate appreciation of the current environment for mainstreaming DDR/CCA in the country.

e. The facilitator should encourage participants to reflect upon the challenges to mainstreaming DDR/CCA, and discuss various forms of supporting actions or mechanisms within the government system, as well as among the public/stakeholders, to translate the mainstreaming approach into concrete actions. For this exercise, participants could be grouped by development theme: national development planning, sectoral ministries, city development committees, and regional development planning and make their presentations at the plenary.

f. Ask the participants reflect upon and consolidate key learnings from the training and suggest approaches and methods to effectively mainstream DRR and CCA.

The module will end with a hands-on exercise in strategic action planning, devising a road map for mainstreaming DRR into the respective develop-

ment sectors being represented by the participants. As the senior policy-makers are likely to be from different departments, sectors, and positions, this exercise is intended to be more in the spirit of reflection and high level commitment to action as an outcome of the training programme.

PLENARY

To conclude, a plenary exercise is undertaken to plan follow-up action using a Responsibility Sharing Matrix tool to determine roles and responsibilities over an agreed time frame. The Responsibility Sharing Matrix is given as a handout.

DURATION

60 Minutes

HANDOUT - RESPONSIBILITY SHARING MATRIX

IMPLEMENTATION SCHEDULE MASTER PLAN

Proposed Location

Project Implementation Department/organization:

Project support Department/organization:

Technical Support Department/Organisation/Consultant:

Time Frame for Project Implementation:

Sl. No	Time Frame (in months)	Main Activity	Sub - Activities	Lead Agency	Support Agency

NOTES

REFERENCES

The range of tools, frameworks and methodologies for mainstreaming DRR and also CCA, reflect the variety and multiplicity of the process. Tools might include cost benefit analysis (CBA) as a way to encourage policymakers to advocate DRR mainstreaming; frameworks could include templates for including DRR in policies and/or development initiatives and methodologies may include guides to integrating DRR into every sector. These tools, frameworks and methodologies are aimed at policymakers, development organisations, civil society, charities and local Governments.

Publisher	Year of Publication	Name of the Publication
National Disaster Management Authority, Ministry of Home Affairs, Govt. Of India	2016	National Disaster Management Plan, India
UNISDR	2015	Sendai Framework for Disaster Risk Reduction, 2015 – 30
UNISDR	2007	Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters http://www.unisdr.org/we/inform/publications/1037
World Bank	2011	'Natural Hazards and Unnatural Disasters' https://www.gfdrr.org/gfdrr/nhud-home
DFID	2005	Disaster Risk Reduction: A Development Concern
UNISDR	2010	Disaster Risk Reduction: An Instrument for Achieving the Millennium Development Goals
	2010	Urban Governance and Community Resilience Guide 4 – Mainstreaming Disaster Risk Reduction
ADPC	2010	Mainstreaming Disaster Risk Reduction: A Road Towards Sustainable Urban Development and Creating Safer Urban Communities
ProVention Consortium	2007	Tools for Mainstreaming Disaster Risk Reduction
Wamsler, C.	2007	Operational Framework for Integrating Risk Reduction for Organisations Working in Settlement Development Planning
ADPC	2014	Training on Mainstreaming DRR into Development
ADPC/UNDP	2005	Integrated Flood Risk Management in Asia
UNISDR	2010	School emergency and disaster preparedness: guidance note
Tearfund	2005	Mainstreaming disaster risk reduction: a tool for development organisations

ProVention Consortium (Benson and Twigg)	2004	Measuring Mitigation. Methodologies for assessing natural hazard risks and the net benefits of mitigation -- a scoping study
Wamsler, C.	2009	Operational Framework for Integrating Risk Reduction and Climate Change Adaptation in Urban Development
Government of India	2005	Disaster Management Act
Government of India	2009	National Policy on Disaster Management
ProVention Consortium (Benson and Twigg)	2004	Integrating disaster reduction into development: recommendations for policymakers
Tearfund	2006	Legislation for mainstreaming disaster risk reduction
Planning Commission, Gol	2012	Twelfth Five Year Plan (11th Chapter dedicated to DM and DRR)
Planning Commission, Gol	2017	Eleventh Five Year Plan (11th Chapter dedicated to DM and DRR)
ProVention Consortium (Benson and Twigg)	2007	Tools for Mainstreaming Disaster Risk Reduction
ProVention	2006	Monitoring and Evaluation sourcebook
UNISDR	2003	A Draft Framework to Guide and Monitor Disaster Risk Reduction
UNISDR	2008	Indicators of Progress: Guidance on Measuring the Reduction of Disaster Risks and the Implementation of the Hyogo Framework for Action
UNDP and NDMA, Pakistan	2010	Guidelines for Mainstream Disaster Risk Reduction
National Institute for Disaster Management	2014	Himachal Pradesh – National Disaster Reduction Portal
SDMA, Himachal Pradesh	2012	Himachal Pradesh State Disaster Management Plan, 2012 (FINAL)
Department of Environment, Science and Technology, Govt. of Himachal Pradesh	2012	State Strategy and Action Plan for Climate Change
SDMA, Himachal Pradesh	2011	Himachal Pradesh State Policy on Disaster Management

ADDITIONAL REFERENCES

Legislations, Acts, Tools, National Development Plans

1. National Disaster Management Plan, 2016, NDMA, Govt. of India
2. Planning Commission, Government of India, Twelfth Five-Year Plan, 2012-17
3. Planning Commission, Government of India, Eleventh Five-Year Plan, 2007-12
4. Government of India, Disaster Management Act, 2005
5. Ministry of Finance, Department of Expenditure, Government of India, 2010, Office
6. Memorandum – Revision in EFC and DPR formats to address disaster management concerns
7. ProVention Consortium, 2007, Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisations
8. Pacific Disaster Risk Management Partnership, October 2009, Guide to Developing National Action Plans: a tool for mainstreaming Disaster Risk Management – Based on experiences from selected Pacific Island countries
9. Tearfund, 2005, Mainstreaming Disaster Risk Reduction: a tool for development organisations
10. Tearfund, 2006, Legislation for Mainstreaming Disaster Risk Reduction
11. Global Facility for Disaster Reduction and Recovery, 2008, Integrating Disaster Risk Reduction into the Fight Against Poverty

Frameworks and Action Plans

1. Thomas Mitchell, Benfield Hazard Research Centre, Disaster Studies Working Paper 8, November 2003,
2. An Operational Framework For Mainstreaming Disaster Risk Reduction ISDR, 2007,
3. Guidance note on the Costs and Benefits of Disaster Risk Reduction
4. ISDR, 2003, a Draft Framework to Guide and Monitor Disaster Risk Reduction
5. National Committee for Disaster Management and Ministry of Planning, 2008, Strategic National Action Plan for Disaster Risk Reduction 2008-13
6. Government of the Philippines, 2009, Strengthening Disaster Risk Reduction in the Philippines: Strategic National Action Plan (SNAP) 2009 – 2019

7. NEDA/ UNDP/ ECHO, 2008, Mainstreaming Disaster Risk Reduction in Sub-national Development and Land Use/Physical Planning in the Philippines
8. Government of Nepal, 2008, National Strategy for Disaster Risk Management in Nepal
9. Government of Pakistan, 2003, National Disaster Risk Management Framework Pakistan
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11. Government of Vietnam, 2007, National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020
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ANNEXURE A

Evaluation:

Evaluation Form for Sessions: Please indicate your level of agreement with the statements listed below.

Statements	Strongly Agree	Agree	Disagree	Strongly Disagree
The Objectives of the session were clearly defined.				
Topics covered were relevant to me.				
The content was organised and easy.				
The materials distributed were helpful.				
Instructions were clear and understandable.				
The presentation was effective.				

1. What did you learn during this session that you anticipate using in your work?

2. Was there anything you did not understand during this session? Please provide specific examples.

3. Please provide feedback for the trainer.

Evaluation Form for Module: Please indicate your level of agreement with the statements listed below.

Statements	Strongly Agree	Agree	Disagree	Strongly Disagree
I was personally interested in taking this training.				
I had the necessary prerequisite knowledge for completing this training.				
This training was relevant to my needs.				
The time allotted for each session and whole training was sufficient.				

How will this training benefit you at your workplace?

1. Most important things that you learned from this training are:

2. How do you rate the training overall?

- Excellent
- Good
- Average
- Poor

3. What aspects of the training could be improved?

GLOSSARY

Climate change - The increase in the Earth's temperature caused by a build-up of carbon dioxide and other greenhouse gases in the atmosphere due to human activity, such as burning coal, oil and natural gas for energy and transportation, deforestation and various agricultural and industrial practices.

Climate Change Adaptation (CCA) – Planned measures taken to strengthen human and natural systems to withstand the effects of climate change. It is the adjustment in natural or human systems in response to actual or expected climatic occurrences or their effects, which reduces harm or takes advantage of beneficial opportunities. For people, it means being ready for climate change by building capacity and putting measures in place to cope with and recover from the impacts of climate change. It also means preparing ourselves to live with any climate induced change to our surroundings.

Climate change mitigation - Planned actions taken to reduce human impact on the climate system. It involves measures to reduce greenhouse gas emissions by limiting activities that produce greenhouse gases or to enhance the natural systems or sinks that remove greenhouse gases from the atmosphere. Without mitigation, climate change would continue unchecked and would eventually outstrip all our efforts to adapt.

Disaster - 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.

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

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

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

Glacial Lake Outburst Flood (GLOF) – A flood event that occurs when a glacier damming a lake experiences a massive failure due to some force such as earthquake, erosion, water pressure, or volcanic activity beneath the glacier, releasing the water trapped either behind the glacier (in the case of marginal lakes) or beneath the surface of the glacier (in the case of sub-glacial lakes).

Hazard - The potential occurrence, in a specific time period and geographic area, of a natural phenomenon that may adversely affect human life, property or activity to the extent of causing a disaster. The probability that a hazard will or will not occur and its magnitude when it does occur also contribute to risk. Methods of predicting various hazards and the likelihood and frequency of occurrence vary widely by the type of hazard.

Hyogo Framework for Action (HFA) - HFA was adopted by 168 Governments at the World Conference on Disaster Reduction held in 2005 in Hyogo, Japan, and focused on building the resilience of nations and communities to disasters.

Mainstreaming Disaster Risk Reduction - Broadly, mainstreaming DRR is referred to as the integration of disaster risk reduction measures into development planning, poverty reduction strategy, as well as resource management and environmental protection. To mainstream is to upstream; to change the way we deal with natural hazards (to see it as 'norms' rather than exceptions); to take natural disaster risk reduction as matter of development; and the most fundamental of all, to understand the dynamic nature of vulnerability and its underlying causes; and to make vulnerability reduction as the central focus. <http://www.unisdr.org/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf>).

Non-structural measures - Any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, raising public awareness and training.

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

Prevention - Expresses the concept and intent to completely avoid potential adverse impacts through action taken in advance.

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

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

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

Risk - Is defined differently by people in different situations. Risk as understood by a politician is different from the risk to a seismologist, or to an insurance company executive, or to a family living in an earthquake zone. Risk is also different to local and national Governments involved with disaster management. In this text, we will consider the point of view of these local and national public policy authorities who make decisions for the well-being of the community.

For these policymakers, the community elements at risk include its structures, services, economic and social activities such as agriculture, commercial and service businesses, religious and professional associations and people. Risk is the expected losses to a community when a hazard event occurs, including lives lost, persons injured, property damaged and economic activities or livelihoods disrupted.

Risk assessment- A scientific and quantitative exercise born out of analysis of field and/experimental data (e.g. modelled tsunami wave height) and from an overall understanding of the nature of the hazard and of vulnerable parameters (UNDP, 1994).

Risk Transfer - The process of formally or informally shifting the financial consequences of particular risks from one party to another whereby a household, community, enterprise or State authority will obtain resources from the other party after a disaster in exchange for ongoing or compensatory social or financial benefits provided to that other party.

Sendai Framework for Disaster Risk Reduction (SFDRR) -Was adopted by 196 countries for the period 2015-

2030 at the Third UN World Conference in Sendai, Japan, in March 2015. The Sendai Framework is the successor instrument to the Hyogo Framework for Action (HFA) 2005-2015. The Sendai Framework is built on elements which ensure continuity with the work done by States and other stakeholders under the HFA and introduces a number of innovations. The most significant shift is a strong emphasis on disaster risk management as opposed to disaster management and the reduction of disaster risk as an expected outcome. The goal focuses on preventing new risk, reducing existing risk and strengthening resilience, as well as a set of guiding principles, including primary responsibility of states to prevent and reduce disaster risk, all-of-society and all-of-State institutions engagement. The scope of disaster risk reduction has been broadened significantly to focus on both natural and man-made hazards and related environmental, technological and biological hazards and risks. Health resilience is strongly promoted throughout. www.unisdr.org/we/inform/publications/43291

Sustainable Development - Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Structural measures - Any physical construction to reduce or avoid possible impacts of hazards or application of engineering techniques to achieve hazard resistance and resilience in structures or systems.

Vulnerability - The relative lack of capacity of a person or community to anticipate, cope with, resist and recover from the impact of a hazard. Structural or physical vulnerability is the extent to which a structure or service is likely to be damaged or disrupted by a hazard event. Community vulnerability exists when the elements at risk (defined below) are in the path or area of the hazard and susceptible to damage by it. The losses caused by a hazard, such as a storm or earthquake, will be proportionally much greater to more vulnerable populations - those living in poverty, with weak structures and without adequate coping strategies.

Differential vulnerabilities refer to the fact that “communities, social groups, sectors, regions, and nations differ in the degree of vulnerability to disaster and climate risks i.e. there exists differential vulnerabilities”.



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