STRATEGIC FRAMEWORK FOR MAINSTREAMING DRR IN INFRASTRUCTURE DEVELOPMENT PLANNING-GOOD PRACTICES

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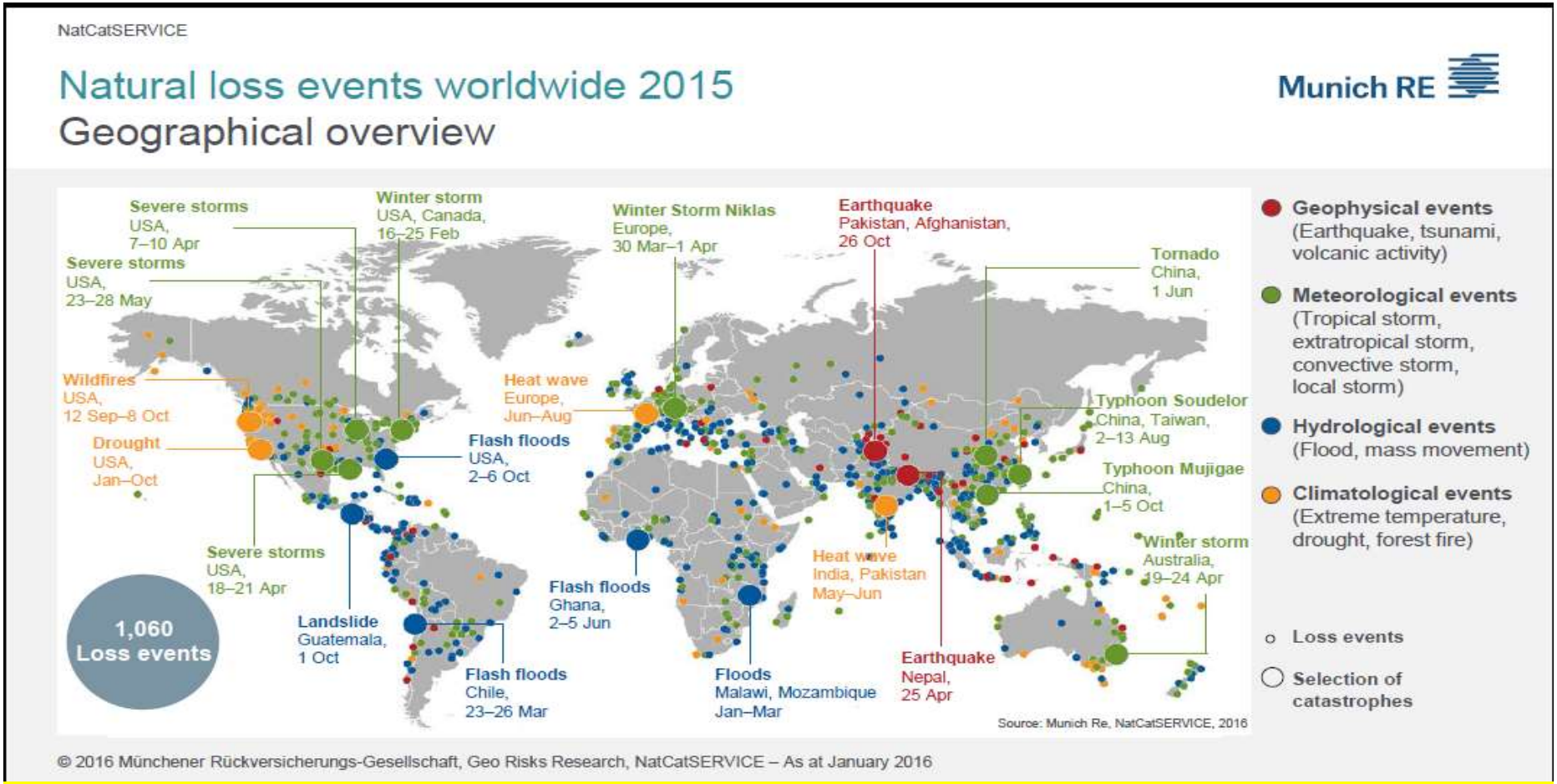
DISASTER IMPACTS / 2000-2012

*Disasters refers to drought, earthquake, geologic activity, epidemic, extreme temperature, flood, insect infestation, mass movement, dry & wet, storm, volcano, and wildfire. / Data source: EM-DAT: The OFDA/CRED International Disaster Database / Data version: 12 March 2013 - v12.07
OCHA Humanitarian Symbol. (2012). http://reliefweb.int/map/world/world-humanitarian-and-country-icons-2012 / Find out more about UNISDR: http://www.unisdr.org

LOSS EVENTS 2015



- Total economic losses caused by the disasters in 2015 were USD 92 billion.
- Asia was hardest hit. The earthquake in Nepal was the biggest disaster of the year in economic-loss terms, estimated at USD 6 billion, including damage reported in India, China and Bangladesh. (Swiss Re)

WORLD NATURAL CATASTROPHES BY TYPE OF EVENT, 2016 (% DISTRIBUTION)

Source: Munich RE

- Of the US$ 175bn in overall losses, 27% came from geophysical events.
- Almost 60% of the fatalities in natural catastrophes were in Asia.
- The countries mainly affected were China, India and Pakistan, where protracted rainfall led to extensive flooding that ultimately claimed the lives of almost 2,400 people.

MULTI HAZARD VULNERABILITY

- India is vulnerable in varying degrees to a large number of natural as well as man-made hazards.
- Over 40 million hectares (12 per cent of land) is prone to floods and river erosion.
- 58.6 per cent of the landmass is prone to earthquakes of moderate to very high intensity.
- Of the 7,516 km long coastline, close to 5,700 km (nearly 76 per cent of coastline) is prone to cyclones and tsunamis.
- 68 per cent of the cultivable area is vulnerable to drought and hilly areas are at risk from landslides and avalanches (nearly 15 per cent of landmass).
- Further, the vulnerability to Nuclear, Biological and Chemical (NBC) disasters and terrorism has also increased.

LOSSES DUE TO DISASTERS

British risk assessors Maplecroft conducted a survey "Natural Hazards Risk Atlas 2014".

India along with China is placed as top five countries (Japan, USA, Taiwan, China, and India) as "high risk" in absolute economic exposure due to natural hazards.

According to the World Bank:

i. Direct losses from natural disasters have been estimated to amount up to **2 per cent of India's GDP** and up to 12 per cent of central government revenues. **This amounts to nearly Rs 25,000 Crore**.

INSTITUTIONAL MECHANISM

- India having a Federal Structure of Governance.
- Disaster Management responsibility rests with State Governments.
- Central Government supplements the efforts of State Governments.
- The Constitution of India entries in the State List - entry 14, which deals with agriculture, including protection against pests and plant diseases, and entry 17 which deals with water, including water supply, drainage and embankments.

DISASTER MANAGEMENT IN INDIA

1. Until 2001 – Responsibility with Agriculture Ministry.
2. Responsibility Transferred to MHA in June 2002.
3. NDMA constituted with Executive Order in May 2005.
4. DM Act passed in December 2005.

DISASTER MANAGEMENT ACT 2005

- From a response and relief-centric approach to a holistic approach.
- The Act provides for:
  - Establishment of legal and institutional framework at all three levels i.e. National, State and District.
  - Formulation of policy and plan backed by statutory and financial support at all three levels.
  - Mainstreaming of multi-sectoral DM concerns into the developmental process and mitigation measures.

DISASTER MANAGEMENT ACT 2005

contd.

All States/UTs, Ministries/ Departments are required to:

- take necessary measures for prevention of disasters, mitigation, preparedness and capacity building;
- Integrate the measures for prevention or mitigation of disasters into their development plans and projects;
- Prepare Disaster Management Plan and update annually;
- Allocate funds for undertaking the activities under its DM Plan.

WHY FOCUS ON DISASTER RESILIENT INFRASTRUCTURE

EXPOSURE TO HAZARDS

Floods

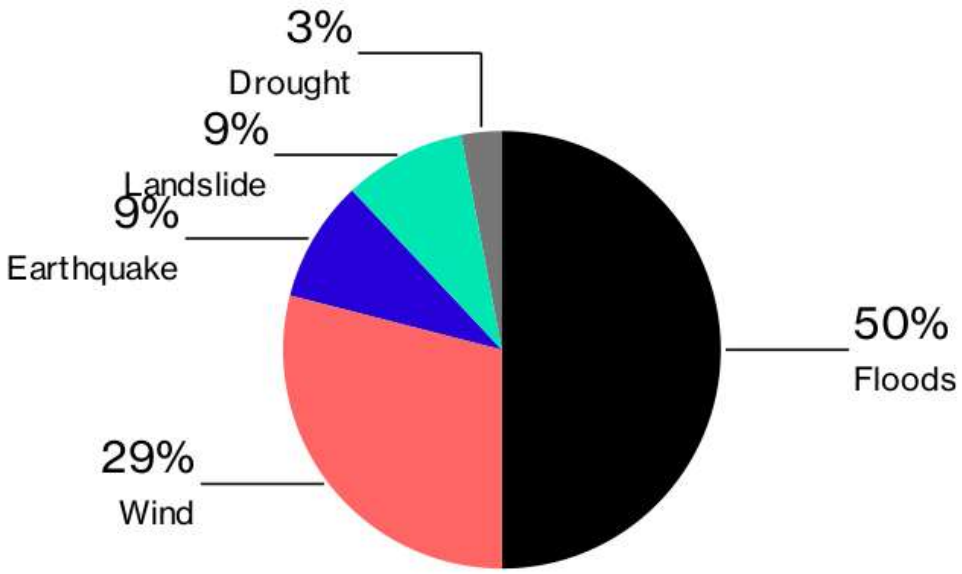
Earthquake

Cyclone

Tsunami

Disaster Risks

Floods in South Asia account for half of all disasters



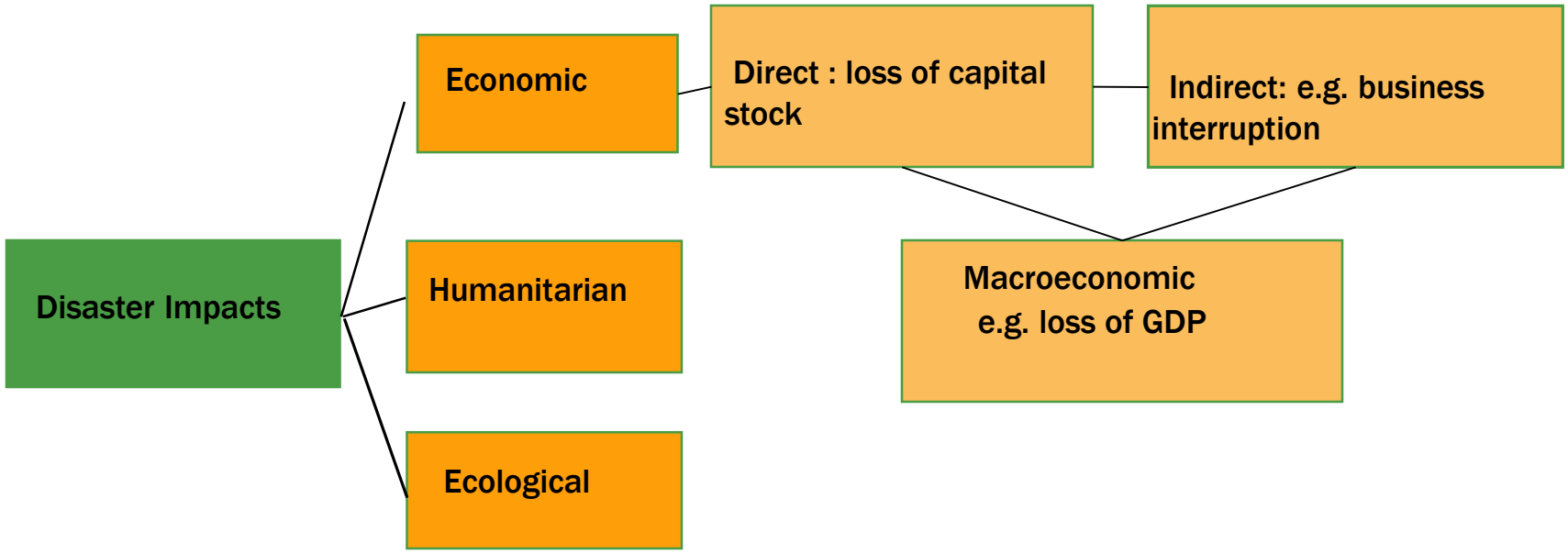
* Figures based on 40 years of data through 2010 * Floods affected about 82% of all individuals hit by disasters; were responsible for 80% of total economic losses
Source: World Bank and Global Facility for Disaster Reduction & Recovery

CLIMATE CHANGE

90%

of disasters related
to extreme climate
and weather

THE ECONOMIC IMPACTS OF NATURAL DISASTERS ON DEVELOPING COUNTRIES



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ASIA DEVELOPMENT BANK REPORT

Asia alone *"will need to invest $1.7 trillion per year in infrastructure until 2030..."*

Event	Total Loss (million $)	Infra. Loss (million $)	Infra Loss as % of Total Loss	Infra Loss as % of Public Loss
2001/India/Quake	2.131	334	16%	n/a
2004/ Indonesia / Tsunami	4.452	877	20%	56%
2004/ Sri Lanka/ Tsunami	970	127	13%	n/a
2005/ Pakistan/ Quake	2.852	472	17%	n/a
2006/ Indonesia/ Quake	3.134	59	2%	17%
2010/Pakistan/ Flood	10.056	2.025	20%	n/a
2012/ Samoa/ Cyclone	204	75	37%	66%
2014/ Cape Verde/ Volcano	28	2	8%	30%
2015/ Nepal/ Quake	7.065	668	9%	30%

SENDAI FRAMEWORK FOR DRR

- In March 2015, India along with 186 other Countries ratified Sendai Framework for Disaster Risk Reduction (SFDRR), 2015-30, with 7 Global Targets to be accomplished under 4 priorities.

- The Sendai Framework is the first part of the post-2015 development agenda that provides a once-in-a-generation opportunity to implement development that is both resilient and sustainable.

4 Priorities for action under SFDRR

1. Understanding disaster risk.

2. Strengthening disaster risk governance to manage disaster risk.

3. Investing in disaster risk reduction for resilience.

4. Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction.

AMCDRR 2016

"...India will work with other partner countries and stakeholders to build a coalition or centre for promoting disaster resilient infrastructure in the region..."

G20 SUMMIT 2017

"...To build disaster resilient infrastructure, I propose an international coalition of countries and stakeholders that can identify technologies, develop systems and standards, and build capacities..."

SENDAI FRAMEWORK FOR DRR
SDGS
PARIS AGREEMENT

THE SENDAI FRAMEWORK AND THE PARIS AGREEMENT ON CLIMATE CHANGE

Article 2

Para1: Aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:

(a) Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;
(b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production; and
(c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

Article 7

Para1: Parties hereby establish the global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal.

Para 9: Each Party shall, as appropriate, engage in adaptation planning processes and the implementation of actions, including the development or enhancement of relevant plans, policies and/or contributions, which may include:
(c) The assessment of climate change impacts and vulnerability, with a view to formulating nationally determined prioritized actions, taking into account vulnerable people, places and ecosystems;
(e) Building the resilience of socioeconomic and ecological systems, including through economic diversification and sustainable management of natural resources.

THE SENDAI FRAMEWORK AND THE PARIS AGREEMENT ON CLIMATE CHANGE

Article 8

Para 1: Parties recognize the importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage.

Para 3: Parties should enhance understanding, action and support, including through the Warsaw International Mechanism, as appropriate, on a cooperative and facilitative basis with respect to loss and damage associated with the adverse effects of climate change.

Para 4: Accordingly, areas of cooperation and facilitation to enhance understanding, action and support may include:

(a) Early warning systems;
(b) Emergency preparedness;
(c) Slow onset events;
(d) Events that may involve irreversible and permanent loss and damage;
(e) Comprehensive risk assessment and management;
(f) Risk insurance facilities, climate risk pooling and other insurance solutions;
(g) Non-economic losses;
(h) Resilience of communities, livelihoods and ecosystems

Article 10

Para 1: Parties share a long-term vision on the importance of fully realizing technology development and transfer in order to improve resilience to climate change and to reduce greenhouse gas emissions

THE SENDAI FRAMEWORK AND THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

- The 'Transforming Our World: The 2030 Agenda for Sustainable Development' is a successor to the Millennium Declaration (including the Millennium Development Goals)

- **17** Sustainable Development Goals (**SDGs**) and 169 global targets.

- A **transformative plan of action for people, planet and prosperity** that all countries and all stakeholders will implement.

- Highlights **the need for disaster risk reduction** across a number of sectors in line with the understanding that disaster risk reduction is cross-cutting and requires a multi-sectoral approach.

- Calls for a **revitalized global partnership** and echoes Sendai Framew call for building disaster risk reduction partnerships across sectors and stakeholders to meet the post-2015 international agreements.


TRANSFORMING OUR WORLD: THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS

Disaster Risk Reduction in the Sustainable Development Goals & Targets

SDG 1 calls for an end to poverty in all its forms everywhere and recognizes that **reducing exposure and vulnerability of the poor to disasters** is essential for sustainable poverty eradication (**target 1.5**).

Indicator 1.5.1 Number of deaths, missing persons and persons affected by disaster per 100,000 people [**Target A**]

Indicator 1.5.2 Direct disaster economic loss in relation to global gross domestic product (GDP) [**Target C**]

Indicator 1.5.3 Number of countries with national and local disaster risk reduction strategies [**Target E**]

Disaster Risk Reduction in the Sustainable Development Goals & Targets

SDG 11 on inclusive, safe, resilient and sustainable cities and human settlements has explicit links are seen with the Sendai Framework targets. Target 11.5 calls for reducing the "number of deaths" and "direct economic losses relative to global GDP" caused by disasters, which align directly with the global targets (a), (b) and (c) of the Sendai Framework. **Target 11.b calls for an increase in the number of cities and human habitats with integrated plans on inclusion, resource efficiency, adaptation to climate change and resilience to disasters** "in line with the Sendai Framework for Disaster Risk Reduction 2015-2030", calling for aligned implementation on the ground. Other targets under this goal promote enhanced urban planning and upgrading of slums, which also tackle key risk drivers for disaster losses.

Indicator 11.b.1 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030 **[Target E]**

Indicator 11.b.2 Number of countries with national and local disaster risk reduction strategies **[Target E]**

Disaster Risk Reduction in the Sustainable Development Goals & Targets

SDG 13 is on combating climate change and where all the targets can be linked to the Sendai Framework, for example **target 13.1 which calls for strengthening resilience and adaptive capacity to disasters.**

Indicator 13.1.1 Number of countries with national and local disaster risk reduction strategies **[Target E]**

Indicator 13.1.2 Number of deaths, missing persons and persons affected by disaster per 100,000 people **[Target A, B]**

REQUIRES MULTI- DISCIPLINARY EFFORTS

STRATEGIC FRAMEWORK

1. Mainstreaming DRR into national and local development planning processes- NDMP and SDMPs.
2. Mainstreaming DRR into Sectoral development planning processes.
3. To foster implementation through partnerships and convergence.
4. Capacity building for mainstreaming DRR into development. .
5. Leveraging Finances.

SECTORAL INTERVENTIONS

1. Financial Services
   - Incorporating flexible fund schemes
   - Encouraging financial services and local capital markets to finance DRM measures

2. Infrastructure
   - Introducing results of risk assessments into the construction of new roads and bridges

3. Housing
   - 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.

SECTORAL INTERVENTIONS

4. 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
5. 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
6. Health
   - Vulnerability assessment of hospitals in hazard-prone areas
   - Promoting hazard resilient construction of new hospitals
   - Implementing of disaster preparedness plans for hospitals

PIP on mainstreaming DRR in national and local development planning processes, Bhutan

The Department of Disaster Management under the Ministry of Home and Cultural Affairs, as a member of the RCC, had expressed an interest in undertaking a PIP on mainstreaming DRR in national and local socio-economic development planning processes. The PIP formed a TWG under the leadership of Ministry of Home and Cultural Affairs and with members from key agencies such as the Gross National Happiness Commission, the National Environmental Commission, the Department of Geology and Mines, Ministry of Economic Affairs, SOCA, Ministry of Education, Ministry of Health, Ministry of Agriculture and Forest, Ministry of Work and Human Settlement (Roads, Housing, Urban, Land Use), UNDP and ADPC. An assessment of the needs for assistance with mainstreaming was undertaken. As a result of the assessment the TWG identified 6 priority objectives of the PIP:

- Conducting a study on **"Disasters and Development Planning in Bhutan."**
- Mainstreaming DRR into the existing **Protocol for Policy Formulation**
- Mainstreaming DRR into the **Policy and Project Screening Tools**
- Mainstreaming DRR into the **Guidelines for the Preparation of the 11th Five Year Plans (FYP).**
- Mainstreaming DRR into the **Annual Grants Guidelines for Local Governments**
- Mainstreaming DRR into the **Local Development Planning Manual (LDPM)**
- Conducting and supporting the **National Training Course on Mainstreaming DRR into National and Local Development Planning Process**

Through providing a strong case for the need to mainstream DRR into socio-economic development processes through the "Disasters and Development Planning" study, and building institutional capacity on 'how to' mainstream through the National Training Course on Mainstreaming DRR into National and Local Development Planning Process, the TWG was able to make substantial progress with achieving other PIP objectives.

After Phase I of the PIP came to a close, the Guidelines for the Preparation of the 11th Five Year Plan (FYP) had incorporated DRR as a priority for mainstreaming into development programs and projects, and had set Key Result Indicators (KRAs) as well as Key Performance Indicators (KPIs) to ensure this would carry through. The Local Development Planning Manual as well as the Protocol for Policy Formulation had also been revised to include DRR as a priority concern.

This progress, especially the incorporation of DRR in the 11th FYP, shows that there is significant scope for further development. Therefore, the main focus of a PIP Phase II in Bhutan would be to study the financial mechanisms for public investment programming and the implementation of government programs and projects, and to provide assistance to ensure that these mechanisms facilitate the long-term sustainable implementation of DRR and CCA in the country.

PIP on Safer Roads, The Philippines

Towards mainstreaming disaster risk reduction into the planning process of road construction in the Philippines: A Priority Implementation Partnership (PIP) between the National Disaster Coordinating Council (NDCC) and the Department of Public Works and Highways (DPWH), Philippines and supported by ADPC, UNISDR and SIDA.

On 2006-2007, the PIP formed aTechnical Working Group (TWG) with multi-agency membership to steer the process of mainstreaming disaster risk reduction into the planning phase of road construction. The members included representatives from NDCC, DPWH, Philippine Institute of Civil Engineers, Department of Environment and Natural Resources, Philippine Institute of Volcanology and Seismology and Philippine Atmospheric, Geophysical and Astronomical Services Administration.

After consultation, the TWG decided that it was best to work within existing frameworks for the development, design, construction and maintenance of road projects, looking for windows of opportunity to introduce DRR. Accordingly the scope of activities was detailed as follows:

- Documentation of existing procedures for the development of road projects with respect to hazards
- Documentation of the contents of pre- feasibility and feasibility reports of road projects over the past 20 years
- Analysis of past damages to road infrastructure
- Identification of specific steps that could be taken for incorporating hazard considerations in the project development and approval process
- List of future priority road construction projects in the Philippines.

The TWG met frequently over the period of implementation of the PIP to look into aspects of each of the above mentioned activities and to develop the final report. This report contains recommendations regarding how to incorporate DRR into the planning stages of road construction in the Philippines. The findings of the PIP were shared through a national workshop held in February 2007. A wide range of stakeholders from the government, technical agencies, UN agencies, and the Asian Development Bank participated in the workshop and discussed in detail the recommendations of the PIP and identified the next steps.

Source: ADPC

PIP on Mainstreaming DRR in the Housing Sector in Sri Lanka

Conducted over two phases from August 2008 to January 2011, the Government of Sri Lanka has aimed at integrating DRR into the policies, development regulations and technical specifications related to housing, through strengthening partnerships among national agencies involved in the Housing Sector. The PIP was implemented through a Technical Working Group (TWG), which was led by the Disaster Management Center (DMC) with a membership of more than 15 national agencies. The PIP identified entry points for integrating DRR into the housing development system in the country and supported partner agencies to take action to achieve such integration. In the period of June 2010 – January 2011 the following initiatives have been undertaken by the PIP:

I. **Mainstreaming DRR into selected Housing Projects of the National Housing Development Authority**
   a. DRR was integrated into the site selection process of two pilot housing projects
   b. Hazards and corresponding risks were identified, contour maps were prepared and the land sub-division process are reviewed in order to consider risk and the design standards of the houses

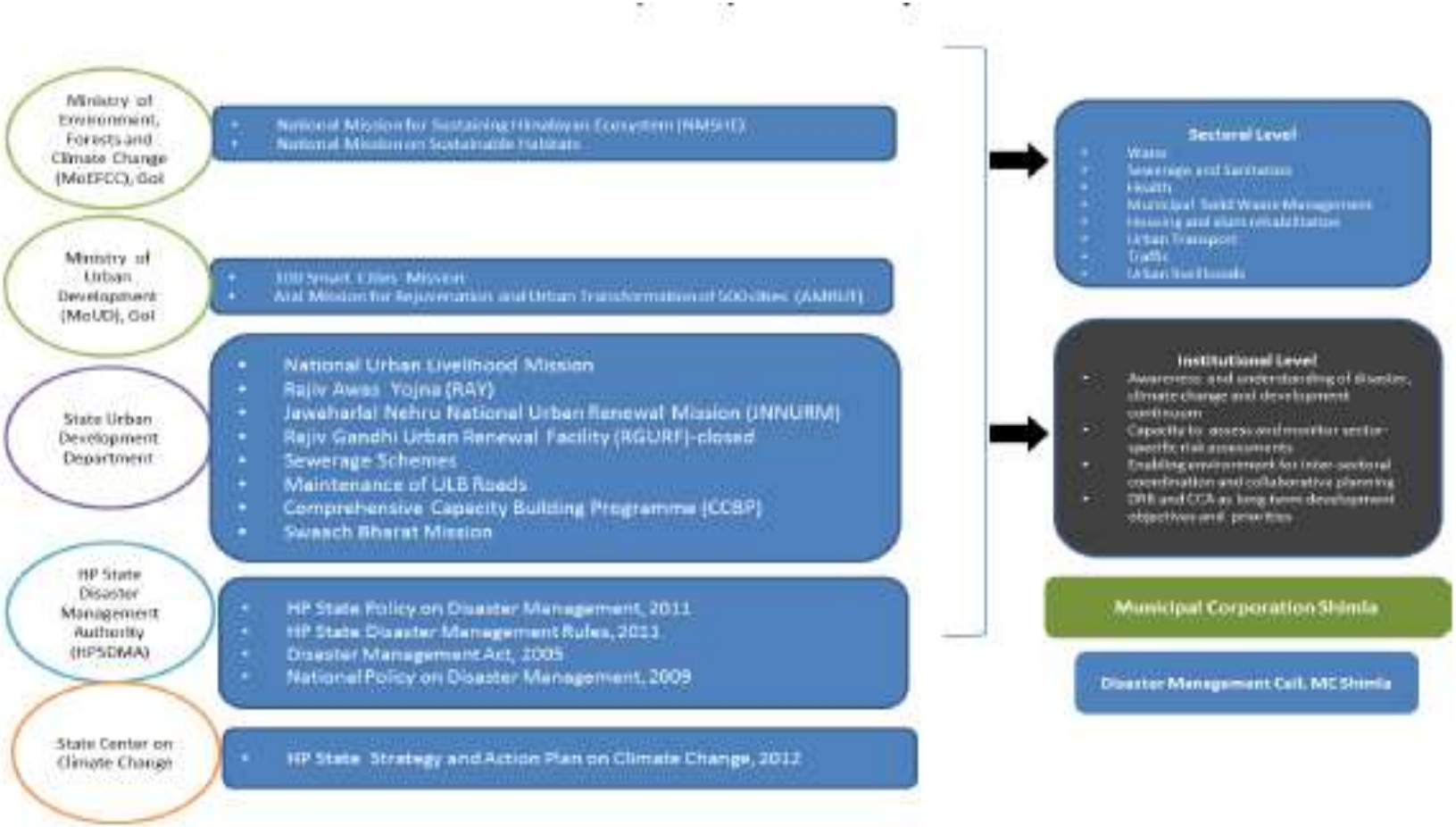
II. **Integrating DRR into the Local Development Plan of Kanthale in Trincomalee District by the Urban Development Authority**
   With the Urban Development Authority (UDA) as an active member of the TWG, the PIP supported the integration of DRR into the Development Plan of Kanthale Local Authority through:
   a. Revising the development planning guidelines to integrate DRR
   b. Building capacity of architects and engineers within UDA
   c. Supporting the UDA by helping to develop base maps with contours and with data on hazard and vulnerability (hazards such as drought, flood, cyclone, human-elephant conflict and dam breach were identified as the key hazards affecting the areas)
   d. Developing GIS-based hazards maps with the DMC through consultation with local government officials and the officials of the planning committee of Kanthale Pradeshiya

III. **Including DRR in the permit procedures of the Coast Conservation Department**
   The application form of CCD was reviewed in order to add additional specifications to the approval permit form. These will ensure that the proposed development is not exposed or be vulnerable to national hazards, and does not generate or exacerbate risk.

Towards the end Phase II a National workshop on lessons and experiences was held in order to provide an opportunity to the TWG members to present their initiatives under the PIP and demonstrate the effectiveness of working in partnership to address issues related to DRR. The workshop discussed the importance of continuing the mechanism of the TWG and provided specific recommendations to achieve the final outcomes of the different activities initiated under the PIP. The recommendations included

- Institutionalisation of the TWG mechanism as one of the permanent technical working groups of the DMC to support national agencies in housing related DRR issues
- Inclusion of DRR into related urban development plans and undertaking technical training workshops for UDA officers at sub-national and local levels
- Continuation of mainstreaming DRR into selected housing projects of NHDA
- Advocating and training for pilot testing of the revised development permit and application procedures at selected coastal regions of Sri Lanka

Building on the existing policy/programme priorities and opportunities under various ministries/departments of the central and state government and key organizations which could support the MC Shimla in the overall process of mainstreaming DRR and CCA in to both sectoral and overall development plan of the city.



NATIONAL DISASTER MANAGEMENT PLAN

India is making its contribution in achieving the Global Target No 4 set by the Sendai Framework.

"Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030."

Cyclone and Wind					*Understanding Risk*
	Major Themes	**Central/State Agencies and their Responsibilities**			
		Centre	**Responsibility – Centre**	**State**	**Responsibility – State**
4	Hazard Risk Vulnerability Assessment	NDMA, NIDM, MoST, DST, CSIR	• Promote studies, provide guidelines • Studies on vulnerability covering social, economic, ecological, gender, and equity aspects • Change in vulnerability and risk under climate change scenarios	State/UT,SDMA, CoR,Revenue Dept.,DDMA, Panchayats, ULBs	Undertake HRVA as part of preparing and periodic revision of DM plans, and for development planning
5	Dissemination of warnings, data, and information	IMD	Quick, clear, effective dissemination among central and state agencies	State/UT,SDMA, CoR,Revenue Dept., DDMA, Panchayats, ULBs	Dissemination of warnings to all (including fishermen), down to the last mile – remote, rural or urban; Regular updates to people in areas at risk
		MoIB, MoES	• Deployment of communication equipment • Warnings using all types of options, types of technologies, and media	State/UT, SDMA, CoR , Revenue Dept.,Information Dept., DDMA, Panchayats, ULBs	• Deployment of communication equipment • Warnings using all types of options, types of technologies, and media
		DST, DeitY, DoT, MoCIT, MoIB	Facilitating last-mile connectivity and access to disaster risk information	State/UT,SDMA, CoR, Revenue Dept.,DDMA, Panchayats, ULBs	Ensure facilities and infrastructure for the implementation of adequate access of information to communities at risk
			State Wide Area Networks (SWAN)	State/UT, Dept. of Science and Technology	Establishing seamless interface between national and state networks
		IMD	Providing weather information online and offline and interface with mobile network service providers for warnings on radio, TV, and cell phones	State/UT,SDMA, CoR, Revenue Dept., Information Dept.	Monitoring compliance by various network operators and service providers

	Major Theme	Central/State Agencies and their Responsibilities			
		Centre	Responsibility – Centre	State	Responsibility – State
2	Curriculum Development	MoHRD, AICTE, IITs, UGC, NIDM	Update curriculum for undergraduate engineering courses to include topics relevant for cyclone hazard mitigation	State/UT, Education Dept., Professional Bodies and Councils in States	Update curriculum for undergraduate engineering courses to include topics relevant for cyclone hazard mitigation
		MoHFW, IMA	Introduction of Crisis Management, emergency medical response/recovery and trauma management at Diploma /UG/ PG levels for Health Professionals	State/UT, Health Dept., Education Dept.	Introduction of Crisis Management, emergency medical response/recovery and trauma management at Diploma /UG/ PG levels for Health Professionals
		CBSE	Introducing basic DM concepts in curriculum	State Education Boards	Introducing basic DM concepts in curriculum
3	Awareness Generation	NDMA,NDRF, CAPF, NIDM, MoES	• Carry out mass media campaigns • Promote culture of disaster risk prevention, mitigation, and better risk management • Promote attitude and behaviour change in the awareness campaigns/ IEC • Promote use of insurance/ risk transfer • Promote Community Radio • Strengthening network of civil society organizations for awareness generation about DRR and DM	State/ UT, SDMA, CoR, Revenue Dept., DDMA,SDRF, Fire and Emergency Services, Civil Defence, Police	• Carry out mass media campaigns • Promote culture of disaster risk prevention, mitigation, and better risk management • Promote attitude and behaviour change in the awareness campaigns/ IEC • Promote use of insurance/ risk transfer • Promote Community Radio • Strengthening network of civil society organizations for awareness generation about DRR and DM • Information on care and protection of disaster-affected animals
4	Mock Drills/ Exercises	NDMA, All Government Ministries/ Agencies, NDRF, Armed Forces, CAPF	Promoting the planning and execution of emergency drills by all ministries and in all States/UTs		Joint planning and execution of emergency drills
5	Vocational Training/ Skill development	NDMA, NIDM, MoSDE, NSDA, NSDC, IIE, NIESBUD, MoMSME	Promoting skill development for multi-hazard resistant construction in cyclone-prone areas for different types of housing and infrastructure	State/UT, SDMA, CoR, Revenue Dept., state level skill development agencies	•Conduct training programmes •Creating ToT teams for different trades relevant to cyclone-resistant construction

Flood					*Structural Measures*
	Major Themes	**Central/State Agencies and their Responsibilities**			
		Centre	**Responsibility – Centre**	**State**	**Responsibility – State**
	improvement; floodwater diversion through existing or new channels			ULBs	
7	Hazard resistant construction, strengthening, and retrofitting of all lifeline structures and critical infrastructure	NDMA, NBCC, BMTPC, CBRI, SERC, IE(I), all relevant Ministries/ Departments	Guidance and implementation	State/UT, SDMA, CoR, Revenue Dept., DDMA, Panchayats, ULBs, all relevant Departments/ Agencies	Collaboration with technical agencies and implementation

3.3.4 Investing in DRR–Non-Structural Measures

Flood					*Non-Structural Measures*
	Major Themes	**Central/State Agencies and their Responsibilities**			
		Centre	**Responsibility – Centre**	**State**	**Responsibility – State**
1	• Regulation and enforcement of laws, norms, regulations, guidelines • Regulation of Reservoirs • Integrated Water Resources Management (IWRM)	IMD, CWC,NRSC, MoWR, NWDA, NRSC	• Guidance and Support • Oversight and monitoring of compliance with coastal zone laws • Promote institutional mechanisms for sharing forecasts, warnings, data, and information • Regulatory framework for flood plain zoning and flood inundation management • Implement IWRM in major river basins and their sub-basins • Scheme of incentives and disincentives with respect to the central assistance to encourage the states for implementing flood plain zoning regulations	Irrigation Dept., WRD, SDMA, CoR, Revenue Dept.	• Implementing land-use regulation for low lying areas as per flood control norms • Regulation of inhabitation of low-lying areas along the rivers, nallas and drains • Implementing flood management action plan • Review and modification of operation manuals for all major dams/ reservoirs • Support and cooperate with central agencies; Sponsor state-specific efforts; support local efforts; Cooperate with central efforts • Prevention and removal of encroachment into the waterways and natural drainage systems
2	Regulations to promote flood resilient buildings and infrastructure	NDMA, MoWR, MoUD, CWC, BIS	Guidance and Support	State/UT, SDMA, CoR, Revenue Dept., Local bodies	• Revise and implement the relevant rules in flood prone areas

Seismic					*Structural Measures*
	Major Themes	**Central/State Agencies and their Responsibilities**			
		Centre	**Responsibility – Centre**	**State**	**Responsibility – State**
	lifeline structures and buildings	Ministries	recommendations of safety audits	Panchayats, ULBs	recommendations of safety audits in all govt. departments, agencies, public utilities, schools, colleges, community halls, etc.
3	Hazard resistant construction, strengthening, and retrofitting of all lifeline structures and critical infrastructure	NDMA, NBCC, BMTPC, CBRI, SERC, IE(I), all relevant Ministries/ Departments	Guidance and implementation	State/UT, SDMA, CoR, Revenue Dept., DDMA, Panchayats, ULBs, PWD, all relevant Departments/ Agencies	Collaboration with technical agencies and implementation

3.5.4 Investing in DRR–Non-Structural Measures

Seismic					*Non-Structural Measures*
	Major Themes	**Central/State Agencies and their Responsibilities**			
		Centre	**Responsibility – Centre**	**State**	**Responsibility – State**
1	Regulations and model codes for town planning, civil works and public infrastructure	IRC,MoRTH, RDSO, MoR, AERB, DAE, BIS, MoRD, MoUD	• Periodic update of codes, rules, regulations • Work with all central ministries, agencies, and state governments to implement techno-legal regime by modifying/ developing necessary rules	State/UT, SDMA, CoR , Revenue Dept., UDD, DRD, PWD, All other relevant departments, DDMA, Panchayats, ULBs	• Adopt suitable byelaws for rural and urban areas, put model codes into practice and ensure proper compliance • Ensure strict compliance with code implementation through relevant Departments and agencies
2	Structural safety audit of lifeline structures and buildings Prioritization of lifeline structures and buildings for strengthening and seismic retrofitting	MoES,NDMA,IE(I), CIDC, CFI, NAC,relevant Ministries/ Departments	• Formulate standard procedures and guidelines • Periodically provide clarifications in line with the relevant national standards	SDMA, CoR, Revenue Dept., UDD,PWD,DDMA, Panchayats, ULBs	• Carry out safety audit of lifeline buildings and critical infrastructure • Ensure implementation, monitoring, enforcement and proper compliance within state by public, private and individuals

- In 2017 a Round Table on **Disaster Resilient Infrastructure** was held in New Delhi.

- Participants included representatives from:
  - United Nations Office for Disaster Risk Reduction,
  - Asian Development Bank,
  - Asian Infrastructure Investment Bank,
  - New Development Bank
  - World Bank,
  - Private sector infrastructure lenders,
  - Infrastructure developers,
  - Insurance companies, and
  - Government of India (GoI).

Round Table discussed the following four areas for collaboration:

- **Assessing Disaster Risk:** To assess disaster risk, systems that capture and update comprehensive data on infrastructure and disasters need to be established.

- **Standards of design and implementation; good risk management practices in infrastructure projects:** Standards, codes and management practices have to keep pace with the state-of-the-art engineering technologies.

- **Financing new infrastructure and mechanisms for covering risks:** Some risks, especially that emanates from low-frequency, high impact events, has to be covered through mechanisms that diversify this risk.

- **Mechanisms for supporting recovery in infrastructure sectors after disasters:** Predictable and reliable public finance mechanisms that support infrastructure recovery need to be in place.

INTERNATIONAL WORKSHOP ON DISASTER RESILIENT INFRASTRUCTURE

15-16 Jan 2018

New Delhi

WORKSHOP OBJECTIVES

1. To bring into reality PM's vision of building coalition for promoting disaster resilient infrastructure.
2. These coalition can identify technologies, develop systems & standards, and build capacities.
3. To identify critical gaps to be addressed and good practices undertaken.

INTERNATIONAL PARTICIPANTS

29 Countries

- Developed and Developing
- HIG, MIG and LIG
- All Continents – with focus on Asia
- G 20 – 11
- ASEAN/ BIMSTEC/SAARC – 9
- Indian Ocean Rim Association – 2

Bilateral MOU on Disasters – 3

- Not part of any Group – 7 (Chile, Costa Rica, Mongolia, Netherlands, Nigeria, Norway and Peru).

INTERNATIONAL PARTICIPANTS

Multilateral Development Banks

- The World Bank, India Office
- Asian Development Bank, Philippines
- Asian Infrastructure Investment Bank (AIIB), Beijing China
- New Development Bank, Shanghai, China

DESIRED OUTCOME

1. developing risk assessment methodologies, risk metrics and indicators for different infrastructure classes;

2. issues standards, design and regulation for infrastructure development, operations and maintenance;

3. Financing for disaster resilient infrastructure including risk transfer mechanisms; and

4. reconstruction and recovery of key infrastructure sectors after disasters.

MAINSTREAMING OF DISASTER RISK REDUCTION (DRR)

- Mainstreaming of DRR has 3 prime components :

A. Financial provisions like Flexi Funds

  - Regards flexi funds, as per Min. of Finance OM No. 55(5)/PF-II/2011 dated 06.09.2016, the flexi funds available in each CSS has been raised from the current level of 10% to 25% for States & 30% for UTs of the overall annual allocation under each scheme.
  - Further stated that the same instruction will be applicable for Centrally Sponsored Schemes (CSS) except those emanated by legislation (e.g. MGNREGA) or for Schemes where the whole or substantial proportion of the budgetary allocation is fixable (eg. Rashtria Krishi Vikas Yojna).

MAINSTREAMING OF DISASTER RISK REDUCTION (DRR)

- The flexi-fund component within the CSS can be used to achieve the following objectives :
  - To provide flexibility to States to meet local needs & requirements within the overall objective of any given Scheme at the sub-head level.
  - To improve efficiency within the overall objective of any given Scheme at the sub-head level.
  - To undertake mitigation/restoration activities in case of natural calamities, or to satisfy local requirements in areas affected by internal security disturbances.

B. Policy initiatives through guidelines and capacity building of the stakeholders – Railways and Petroleum.

C. Risk Transfer Mechanisms.

TYPES OF INTERVENTION REQUIRED

- Investment Neutral

  (amending building bye-laws, bringing in flood plane zoning legislation etc.)

- Requiring funds
  - Structural and
  - Non-Structural Measures

  (Awareness generation, training etc.)

STRUCTURAL MEASURES

With regard to:

- Existing structures - Retrofitting etc.

(NDMA has laid down guidelines in the case of earthquakes).

- Ongoing Programmes - Review from the point of view of disaster resilience, e.g.

Housing: Indira Awas Yojana
School Buildings: Sarva Shiksha Abhiyan
Jawaharlal Nehru National Urban Renewal Mission.

- New – Incorporate disaster risk reduction measures into all infrastructure and developmental projects

ALTERNATIVE RISK TRANSFER (ART) MECHANISMS

- CAT Bonds
- Weather Derivatives
- Micro-insurance
- Inter-governmental Risk Pool (IRPs)
  - -- With the opening of insurance industry to foreign collaborations and investment, it is feasible to develop the ARTs

CORPORATE SOCIAL RESPONSIBILITY

U/s 135 Companies Act 2013

(*1*) Every company having net worth of rupees five hundred crore or more, or turnover of rupees one thousand crore or more or a net profit of rupees five crore or more during any financial year shall constitute a Corporate Social Responsibility Committee.

(*3*) The Corporate Social Responsibility Committee shall formulate and recommend to the Board, a Corporate Social Responsibility Policy which shall indicate the activities (schedule VII) to be undertaken and recommend the amount of expenditure to be incurred on the activities referred

(*5*) The Board of every company referred to in sub-section (*1*), shall ensure that the company spends, in every financial year, at least two per cent. of the average net profits of the company made during the three immediately preceding financial years, in pursuance of its Corporate Social Responsibility Policy.

Thank You !