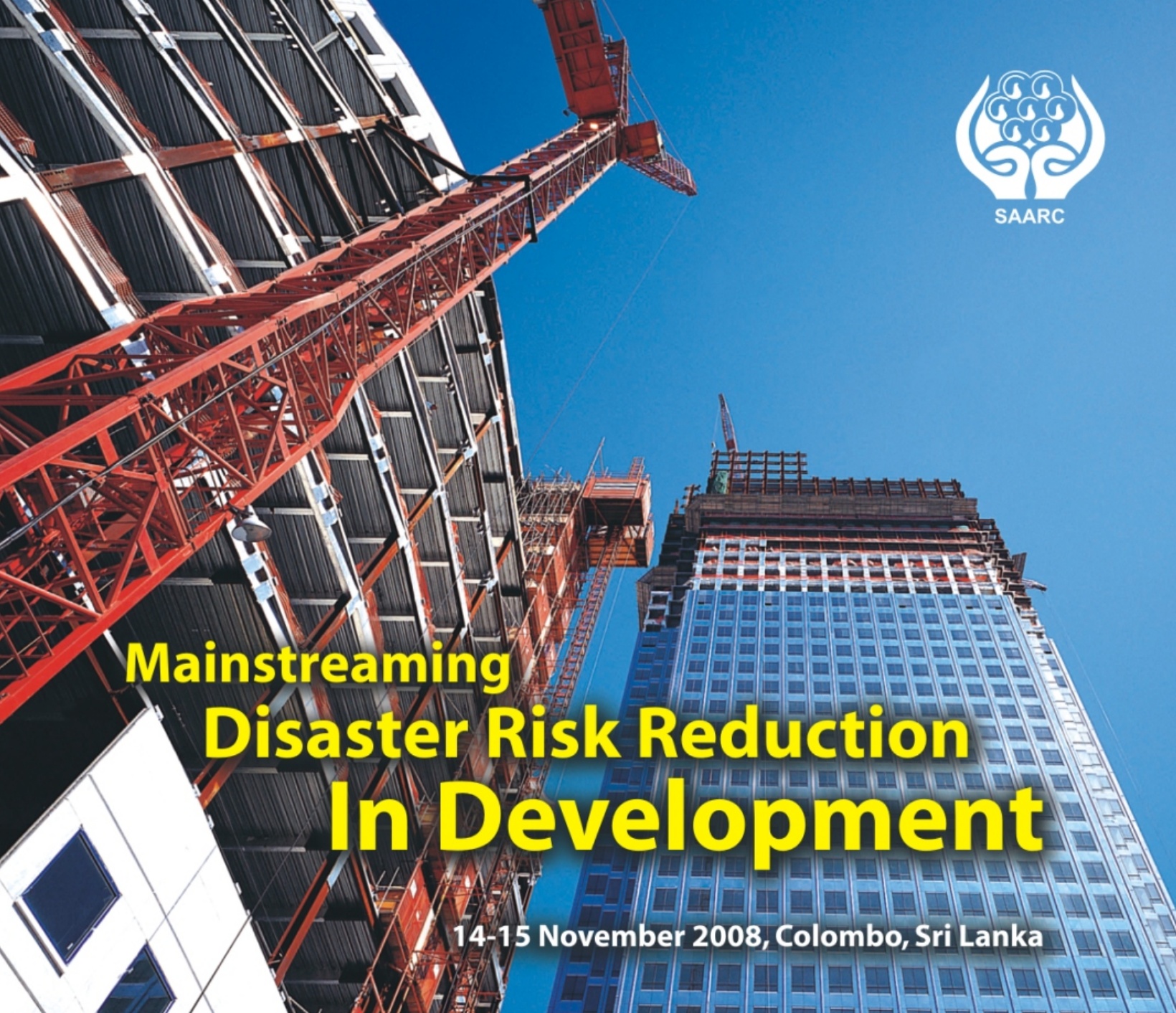


SAARC

Mainstreaming Disaster Risk Reduction In Development

14-15 November 2008, Colombo, Sri Lanka



Organized by

SAARC Disaster Management Centre, New Delhi

In collaboration with

Disaster Management Centre, Govt. of Sri Lanka, Colombo



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MESSAGE

Today, there is global concern about climate change and the escalating trend in the occurrence of natural disasters. The lesson learnt from study of their causes is that contemporary modes of decision-making for economic growth and development can create new disaster risks for future generations. For countries in the SAARC region, new development endeavors are imperative for the distribution of benefits in reducing poverty and ensuring social justice and the well being of our people. But it is also necessary to ensure that new development does not bring new risk. The two global initiatives, the Millennium Development Goals (MDGs) and the Hyogo Framework for Action (HFA), are striving in tandem to achieve this globally.

The SAARC region has contributed considerably to these global initiatives. Beginning with the 'Male Declaration' in June 2005, and the 'Comprehensive Regional Framework on Disaster Management 2006-2015' approved by the SAARC Council of Ministers in 2006, regional initiatives were taken further by the establishment of the SAARC Disaster Management Center (SDMC) in October 2006 in New Delhi, to coordinate and implement the Disaster Management Framework for South Asia in line with the HFA.

The present workshop on “Mainstreaming Disaster Risk Reduction in Development” in Colombo organized by the SDMC and Sri Lanka's Disaster Management Centre which functions under the purview of the Ministry of Disaster Management and Human Rights is the latest attempt to further the dialogue aimed at evolving regional consensus on new directions to achieve this challenging task. I wish the workshop participants every success in their deliberations.

Mahinda Samarasinghe
Minister of Disaster Management and Human Rights,
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MESSAGE

The UN Declaration on the Right to Development makes clear that the human person is the central subject of development, and should therefore be an active participant in, and beneficiary of, the right to development. The outcomes of development then must contribute positively to the well being of people.

Today we see the impact of disasters made worse because of development initiatives that create have not been carefully thought out. Some of the results of these spread across national and regional boundaries. Global warming and depletion of the earth's ozone layer stand foremost in global concerns.

In 2007, Southeast and South Asia were the sub-regions that experienced the highest number of natural disasters. South Asia remains the world's most vulnerable region to both natural and human-made disasters. The South Asian region is also notable for its large and rapidly growing population, which is more than one-fifth of the world total. Against this background, it is important to eliminate the creation of risks through development initiatives.

I am happy that SAARC as a group has taken the initiative in this regard, and that the SAARC Workshop scheduled for 14-15 November 2008 in Colombo, on 'Mainstreaming Disaster Risk Reduction in Development', attempts to address this important issue. I wish the workshop participants an enjoyable and productive dialogue.

Prof. Rajiva Wijesinha
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MESSAGE

Since the establishment of the SAARC Disaster Management Center (SDMC) in October 2006 in New Delhi to coordinate and implement the Disaster Management Framework for South Asia, there have been several initiatives to conceptualize a framework to integrate disaster risk reduction in development.

In August 2006, a South Asian Regional Policy Dialogue on Disaster Risk Reduction and Management was held in New Delhi under the aegis of SDMC. The result was the New Delhi Declaration on South Asian Regional Consensus for Disaster Management. This recognized a need to mainstream disaster risk reduction into development. In August 2007, a second South Asian Regional Policy Dialogue was held in Colombo titled "Towards Operationalising of Regional Consensus on Disaster Risk Reduction in South Asia". Incorporating Disaster Risk Reduction into development planning and having adequate methodologies/ tools and capacity to do so was one of the five key areas reiterated here.

In July 2008, the National Disaster Management Coordination Committee, Sri Lanka, a forum of governmental and non governmental agencies, which is the national platform for HFA implementation, conducted a two-day regional conference of government and non-government representatives from SAARC member countries on “Strengthening Understanding and Cooperation on Disaster Management for a Disaster Free Sri Lanka and South Asia” in Colombo. Recommendations were submitted to the 15th SAARC Summit of Heads of State held in Colombo in August 2008.

One of its recommendations was that all the development programmes and projects at all levels should be designed with evident consideration for potential disaster risks.

The Disaster Management Centre, Sri Lanka has associated closely with these initiatives realizing the significance of this issue to our individual countries and the region.

The SAARC Workshop scheduled for mid November 2008 on 'Mainstreaming Disaster Risk Reduction in Development' is a continuation of this collaboration in the search for a viable mechanism to achieve the integration of disaster risk reduction in development. I wish every success to the workshop activities.

Major General Gamini Hettiarachchi (Retd.)
Director General
Disaster Management Centre, Sri Lanka

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MESSAGE FROM THE MINISTRY OF FOREIGN AFFAIRS

Sri Lanka as the current Chair of SAARC is pleased that this SAARC Regional Workshop on Disaster Risk Reduction in Development is being held in Sri Lanka and welcome most warmly, the participants from our neighbouring countries.

Mitigating adverse effects of disasters is essential for every society, but particularly so for developing countries where poverty and underdevelopment can make the impact of disasters catastrophic in terms of human survival.

In the circumstances, this SAARC Workshop on Disaster Risk Reduction in Development is significant. It follows the landmark 15th SAARC Summit held in Colombo on 2-3 August 2008 where Heads of State and Government stressed the need for timely provision of relief in humanitarian emergencies and directed that a Natural Disaster Rapid Response Mechanism be created to adopt a coordinated and planned approach to meet such emergencies under the aegis of the SAARC Disaster Management Centre.

The SAARC Disaster Management Centre is one of the youngest Regional Centres of SAARC. It was SAARC's response in the aftermath of the Indian Ocean Tsunami of December 2004 to establish a vibrant centre for knowledge, research and training on disasters, actual or potential, natural or manmade, in any part of South Asia with the aim of being reckoned as a global centre of excellence in the field of disaster risk mitigation and management. The establishment of the Disaster Management Centre therefore, in realization of the need to approach our response to disasters as a region is indeed significant.

Mainstreaming disaster risk reduction in development is of immense importance to the countries in our region. Each and every SAARC Member State has learned through experience the severe negative impact that disasters have on development. Every disaster has a significant effect on development in a variety of key sectors such as agriculture, housing, health, education and infrastructure resulting in economic setback to development goals and priorities. In responding to crises, scarce resources that are allocated for development are often diverted for relief and rehabilitation efforts.

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On the other hand, the process of development itself and the development choices made by some of our countries have also led to increased risk of disaster.

Regional efforts in disaster risk reduction should not only focus on intra-regional cooperation but also cooperate, as a region, with international organisations and expert agencies in realising objectives.

I am happy that this Workshop endeavours to address a variety of aspects in mainstreaming disaster risk reduction (DRR) into development planning, policy and implementation.

On behalf of the Ministry of Foreign Affairs, I wish this Workshop which focuses on an area which is crucial for regional economic and social development, all success.

Prasad Kariyawasam
Additional Secretary

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Background Paper

1. Contexts

With 23 per cent of global population but only 1.3 per cent of global income, South Asia remains one of the underdeveloped regions of the world. This is reflected in poor physical, social, economic and human development index of almost all the countries of the region[1] . The region as a whole is home for more than 40 per cent of the world poor, malnourished and illiterates.

The geo-climatic conditions of the region are such that make the countries of the region highly vulnerable to natural hazards of every description. Unplanned human settlements, unsafe building practices and high density of population, particularly in the growing urban areas, have further compounded the complex matrix of hazards, risks and vulnerabilities of the region. The end results are disasters of every type and magnitude that visit the region at regular intervals, consuming life, property and livelihood of hundreds of thousands of people every year. In the year 2007, for example, out of ten worst natural disasters of the globe, seven were in South Asia[2] . This is not an isolated example of a year but the general trend of years and decades.

The disasters have been eroding, over minutes, hours or days hard earned gains of development of years and decades. It is estimated that the countries of the region have been loosing between 2 to 20% of their GDP and 12 to 66% of the revenues on account of disasters every year. These do not include losses in some of the informal sectors of the economy which generally go unaccounted or long term damage and loss of environment and ecology which can not be measured immediately. Some of the countries may not be spending as much on social sectors like public health or education as they may loosing due to disasters. On top of it, almost all the countries of the region are forced to divert scarce resources to disaster relief, rehabilitation and reconstruction, which create further set back to development. It is now quite evident that natural and manmade disasters in South Asia are one of the important barriers to the realization of the Millennium Development Goals of the United Nations.

The link between disaster and development has been appreciated by the countries of South Asia only recently. All the countries of the region have endorsed the Hyogo *Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters* which envisages "integrating risk reduction into development policies and plans at all levels of Government including poverty reduction strategies and multi-sectoral policies and plans". The countries have adopted the *SAARC Comprehensive Framework on Disaster Management* which identifies "mainstreaming disaster risk reduction into the development policies and practices of the government at all levels" as one of the key priority areas for developing resilience to disasters in SAARC region. Each country has developed its disaster management framework which commits mainstreaming

[1] The South Asian countries fare poorly in almost all the selected World Development Indicators published annually by the World Bank. In terms of Human Development Index (HDI) of the UNDP for the year 2008, the global ranking of the eight South Asian countries out of 177 countries of the world are: Afghanistan (166), Bangladesh (140), Bhutan (133), India (128), Maldives (100), Nepal (142), Pakistan (136) and Sri Lanka (99).

[2] CRED CRUNCH, Issue No 12, April 12, 2008 (www.cred.be)

disaster risk reduction in development. All these are significant steps forward; yet there are lots which remain to be done to translate these commitments into practices – words into action.

1.5 In this backdrop, the SAARC Disaster Management Centre (SDMC), New Delhi in collaboration with Disaster Management Centre (DMC), Govt. of Sri Lanka, is organizing a SAARC Workshop on Mainstreaming Disaster Risk Reduction in Development in Colombo, Sri Lanka on 14-15 November 2008. The Workshop aims at taking stock of on-going efforts with regards to mainstreaming disaster risk reduction in development in the region, review the progress made by the countries, identify the difficulties faced and develop a regional roadmap that would guide the future programmes and activities that the Centre in this direction.

2. Disaster and Development –Key Concepts and Issues

Disaster impacts considerably all the sectors of development and thus results in a serious social and economic setback to the development. On the other hand, the process of development, and the kind of development choices made in many countries, sometimes creates disaster risks. The intricate relationship between disaster and development is outlined in the following Table.

Three dimension of development and disaster linkage

	Economic Development	**Social Development**
Disaster limits development	Destruction of fixed assets. Loss of production capacity, market access or material inputs. Damage to transport, Communications or energy infrastructure. Erosion of livelihoods, savings and physical capital.	Destruction of health or education infrastructure and personnel. Death, disablement or migration of key social actors leading to an erosion of social capital.
Development causes disaster risk	Unsustainable development practices that create wealth for some at the expense of unsafe working or living conditions for others or degrade the environment.	Development paths generating cultural norms that promote social isolation or political exclusion.
Development reduces disaster risk	Access to adequate drinking water, food, waste management and a secure dwelling increases people's resiliency. Trade and technology can reduce poverty. Investing in financial mechanisms and social security can cushion against vulnerability.	Building community cohesion, recognising excluded individuals or social groups (such as women), and providing opportunities for greater involvement in decision-making, enhanced educational and health capacity increases resiliency.

(Source: Reducing Disaster Risk a Challenge for Development, UNDP[3])

[3] Reducing Disaster Risk a Challenge for Development, UNDP 2004

Further, mainstreaming is a cross-cutting issue which requires political commitment, public understanding, scientific knowledge and know-how, responsible risk sensitive development planning and practice, a people-centred early warning system and disaster response mechanisms. In addition, safeguarding human rights and integrating gender concerns are central to achieving mainstreaming concepts at the local and national level. Because disaster risks impact multi-sectoral development activities (such as education, health, environment, governance, employment and livelihoods) they influence development gains. So an assessment of the extent to which these social domains consider natural or human-induced factors of risks (existing and prospective) in the conceptualization and implementation of programmes, is crucial. This also means that development programmes need to assess whether a development project could cause/increase risk of any kind of disaster in future and if necessary identify/introduce counter-measures for risk control.

There is an emerging consensus that the key to achieving sustained reductions in disaster losses lies in factoring risk considerations into both development and post-disaster recovery activities. Managing risks could become a means of reducing future disaster risks through 'corrective' development planning which ensures, through measures such as land-use planning, building controls and others, that development activity does not generate new risks.

On the emerging contours of development and disasters, the 2nd Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR) in Nov 2007 at New Delhi had organized special panel discussion covering three aspects – (i) disaster impending development, (ii) developing creating disasters, and (iii) development without disasters. It was recognized that most of the countries of Asia have very high risks of disasters and they are also on a high trajectory of economic growth. Therefore the challenge of the Asian countries in the coming years and decades would be to develop in a manner that would reduce the risks of disasters. It was felt that the challenges are more formidable for high risk and fast developing South Asian region.

It was also recognized that the economic development which has a spin of effect on housing, education, nutrition, health etc does help vulnerability reduction, however, there is always the danger that unplanned growth of human settlements and unhindered exploitation of natural resources especially in low-income-high-growth South Asian economies would create new risks in the long run. Therefore mainstreaming disaster risk reduction in development would be one of the most challenging tasks of development planning in the coming years. Innovative tools and methodologies have to be developed to ensure that development does not create new disasters and that risks of disasters created by unplanned developments in the past are reduced in the future. These tools have to be tested, further adapted according to the local needs, capacities and resources and applied in a systematic and sustainable manner through a participatory process.

Yet another challenge would be incorporating disaster risk reduction in climate change adaptation and coping with high density urban growth. Innovative solutions are required to address these challenges. Capacity development of various stakeholders at national, regional and local levels, exchange of information and good practices and regional cooperation would be the key components in any innovative solutions.

3. Tools and Techniques

Realizing the regional imperatives, national needs and prospects of mainstreaming, the following mechanisms and instruments need to be developed and further strengthened while formulating plan of action for mainstreaming DRR in development.

a) Identify development induced disasters

3.2 It is a well known fact that inappropriate development processes are contributing to risk accumulation. There are many examples demonstrating how economic growth and social improvement lead to increase in disaster risk. Rapid urbanisation is an example. The growth of informal settlements and inner city slums, whether fuelled by international migration or internal migration from smaller urban settlements or the countryside, has led to the growth of unstable living environments. These settlements are often located in ravines, on steep slopes, along flood plains or adjacent to noxious or dangerous industrial or transport facilities. One such development has led to increase in risk due to landslides in urban areas of Chittagong city in Bangladesh. This is true in other megacities as well and in rapidly expanding small- and medium-sized urban centres. When population expands faster than the capacity of urban authorities or the private sector to supply housing or basic infrastructure, risk in informal settlements can accumulate quickly. Third, in cities with transient or migrant populations, social and economic networks tend to be loose. Many people, especially minority or groups of low social status, can become socially excluded and politically marginalised, leading to a lack of access to resources and increased vulnerability.

b) Develop guidelines on mainstreaming

All development projects should have mandatory guideline to address how exactly it is going to implement DRR in terms of social and physical vulnerability. Risk can be reduced by making efforts wherein either the vulnerability or exposure is reduced. Risk can also be reduced by reducing the hazard probability, for example while undertaking a road construction in hilly area, the slope stability measures can be built in such a way that the hazard probability can decrease thus reducing the overall risk. Similarly, the poverty alleviation or education programme can also reduce the social vulnerability, thus reducing overall disaster risk. Similarly limiting development is high risk area, it is possible to reduce exposure, and thus overall risk is reduced.

c) Develop sector specific guidelines on mainstreaming

It is necessary that appropriate strategy is developed to mainstream DRR into following specific sectors with clear cut guidelines and objectives. Some of the suggestive sectoral guidelines could be as under:

Infrastructure: Public Works, Roads and Construction

- Promote use of hazard risk information in land-use planning and zoning regulations.
- Conduct disaster risk impact assessments as part of the planning process before the construction of new roads or bridges.

Housing: Urban and Rural Housing Development

- Encourage use of hazard-resilient designs (e.g. flood proofing, or seismic safety) in rural housing programmes in hazard-prone areas.
- Promote utilisation of national building codes that have special provisions for enhanced design standards for buildings in areas affected by natural disasters.
- Ensure compliance and enforcement of local building laws requiring prescribed standards under natural building codes in urban hazard-prone areas.

Health

- To promote programmes to identify hospitals and health facilities that are located in hazard-prone areas, analyse their internal and external vulnerability during emergencies, and increase the hazard resilience of these hospitals through "Safe Hospital" programme.
- To prepare and implement a Hospital Preparedness Plan for all such health facilities.

Agriculture

- To promote effective programs of contingency crop planning to deal with year to year climate variations.
- To promote effective programs of crop diversification including the use of hazard resistant crops, to deal with shifts in climate patterns.
- To ensure sustainable livelihoods in areas of recurrent climate risks (i.e. arid and semi-arid zones, flood and cyclone prone areas) by promoting supplementary income generation from off-farm (e.g. animal husbandry) and non-farm activities (e.g. handicrafts).
- To promote effective insurance and credit schemes to compensate for agricultural related damage and losses to livelihoods due to natural hazards.

Education

- To incorporate DRR modules into the school curriculum.
- To construct all new schools located in hazard-prone areas to higher standards of hazard resilience as has been attempted in Kashmir and Bhuj region under "Safe School" programme.
- To add features in schools in hazard prone areas for use as emergency shelters such as facilities for water, sanitation and cooking as envisaged in coastal areas as possible cyclone shelters.

Financial Services

- To incorporate provisions in micro-financing schemes to have flexible repayments schedules that can be activated in the event of recipients being affected by natural disasters.
- To encourage the financial services sectors and local capital markets to develop schemes for financing disaster risk reduction measures.

d) Carry out cross-sectoral risk analysis

Cross-sectoral risk analysis needs to be carried out at national, local as well as regional level. Ongoing schemes across the sectors should be critically revisited and wherever possible the development aspects of these schemes should be integrated for a better result. This should be done in a futuristic mode with immediate medium and long terms planning. For example, if a hydroelectric project is being implemented, attempts must be made to assess the change in the hydrological regime and its impact on soil erosion and landsliding. This would require a multi-disciplinary approach across sectors

e) Develop area specific guidelines on mainstreaming

Area specific guidelines for mainstreaming DRR in development should be formulated with particular reference to coastal and hilly areas that are prone to disasters.

Coastal Zone Management

Coastal Zone Management would be critical for environment, natural resources, climate change adaptation and DRR as well. It would then lead to a holistic development of the coastal zones in the region which caters a significant population of South Asia and majority of whom are poor and vulnerable to any type of disaster. Therefore, in any coastal zone management effort, DRR with respect to multiple hazards must be considered.

Hilly Area Development

As South Asia encompasses large tracts of hilly area, it is important to use all developmental initiatives specific to hilly area to implement DRR strategy which is very critical for environmental protection and sustainable development. It would then lead to a holistic development of the hilly area and its population majority of whom is poor and vulnerable to disaster and is often isolated from the mainland of development.

f) *Create techno-legal regime for mainstreaming*

It is necessary that appropriate techno-legal mechanism is developed to implement the regulations made with respect to DRR strategy. There may be a statutory organisation responsible for the undertaking assessment on compliance and implementation on ground. For example, the hydro-projects have a mandatory provision of afforestation and it is imperative that it is implemented on ground and proper assessment is done with respect to its positive impact.

g) Conduct Disaster Impact Assessment

The assessment of the potential risks to any place (village, city, nation etc.) or elements (infrastructure/land use etc.) is the major part of DIA related to any developmental activity. Therefore, it is necessary to consider all possible impacts of various hazards that may arise due to implementation of a project. This entire exercise could be very complex and may require comprehensive assessment of data related to natural as well as social sectors. Some elements of the DIA are similar to well known practice of EIA and therefore, it must be pursued under similar guidelines.

h) Private-Public Partnership:

In the present scenario, it is visualized that more and more unorganized and organized private sectors would play major role in developmental activities. It is important to foster collaboration with private sector in a Public-Private partnership to address the implementation of DRR in development initiative. This partnership could play a key role in communication, infrastructure, market, health and many others areas. Recently, a leading software industry in Hyderabad, India has demonstrated a disaster response system for the citizens of the city which is operational 24/7 and is fully endorsed by government.

i) Research and development:

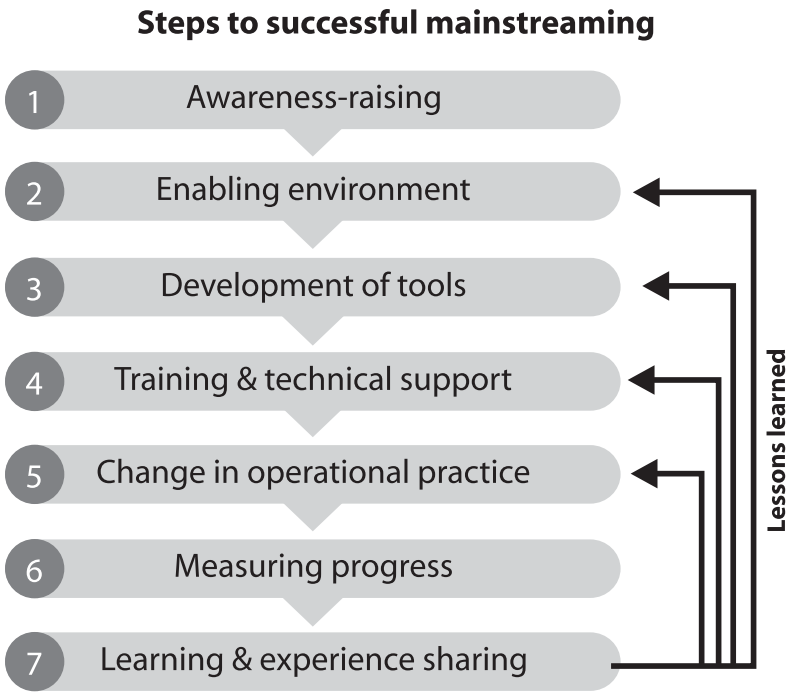
It is one of the major elements of mainstreaming disaster mitigation/reduction into development. R&D capacity in earthquake, flood, drought, climate change, industrial, nuclear disasters and many other fields must identify areas and strategies how to identify risk at early stage in a holistic manner and minimize it by suitably integrating mitigation measures in to development model. Various professional scientific organizations must reorient their programme to support the safe developmental needs. For example the road development agencies, must take into account the present requirement of mass transport and suggest suitable infrastructure which is viable and environmentally sustainable.

j) Awareness generation, training and capacity building:

It is important to make aware all stake holders about the coupling of disaster and development. It must be understood and communicated that there exist a mechanism by which development can be implemented with DRR provisions. This awareness will lead to public demand for disaster audit and in turn will ensure sustainable development. It is important to note that awareness development must be initiated at all levels starting from school curricula to basic training in safe construction to advance project management. Capacity building through education, training and mid career intervention using on campus as well as off campus model must be implemented for quickly covering large manpower base. Building on capacities that deal with existing disaster risk is an effective way to generate capacity to deal with future risk arising out of new context which is often not visualised.

k) *Recognition of best efforts:*

Recognition of efforts is one of the best incentives that promotes and attracts many to emulate the good practice in implementing DRR in development. It also acts as stimulant for the recipients to carry on the good work and innovate ways the efforts will have far reaching results across the society. Numerous such examples can be cited from drought management and poverty alleviation programmes that are being implemented in western part of India and have received international accolades.



This figure presents the series of steps necessary for successful mainstreaming of disaster risk reduction in hazard prone countries. Not all the steps are necessarily sequential in order as presented, but rather overlap with each other in practice.

Source: Benson, Charlotte, and John Twigg. Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisations. ProVention Consortium, 2007.

4. Mainstreaming DRR in Development in South Asia

Towards mainstreaming DRR in development, South Asian countries have just made a beginning. Pursing the HFA in the respective countries has led to some "foundation" level initiatives which would facilitate more specific national and local level activities on mainstreaming DRR. These include[4]:

- Development of legislative framework and institutional capacity to prevent, mitigate, prepare and manage hazards and disasters;
- Undertaking hazard, risk and vulnerability assessments;
- Developing education, training and information exchange programmes;
- Raising awareness of the community;
- Development of partnerships with the stakeholders at each level;
- The utilization of cooperative and information sharing mechanisms and institutions across the region.

While there are efforts in South Asian countries to implement DRR in development through National Adaptation Plans of Action (NAPAs), their integration to disaster risk reduction need specific priority. In order to address

[4] *Report on Implementation of The Hyogo Framework for Action (HFA): Asia, ISDR/Gp/2007/Inf.5*

adaptation concerns as part of their national development plans, the explicit focus on disaster risk is seen only in few cases. For example, the Safe Island programme of Maldives is an integrated effort on addressing vulnerability through strategic planning for climate change adaptation. Similarly, Bhutan has initiated plan of action in this direction through NAPA. It is expected that all member countries develop respective NAPA with an aim to mainstream DRR in development.

Specific entry point activities for mainstreaming DRR in development have been taken up in the multi-hazard prone regions.

Entry Points for Mainstreaming Disaster Risk Reduction in Development

Education: The building of appropriate school structures, which not only adhere to safety measures but may also be useful as disaster shelters and the development of curricula and institutionalization of safety drills, that provide information on DRR, particularly targeting women and children.

Health*:* Ensuring suitability of health infrasructure, compliance with building codes, availability of and accessibility to goods and services especially in times of emergency, and increased capacity to prepare for disaster events and the outbreak of infectious diseases.

Environment*:* Integrating disaster risk concerns into existing environmental assessment tools and planning mechanisms (environmental impact assesments, strategic environmental assessments), promoting greater compliance to existing environmental and risk management regulations, promoting integrated approaches to spatial planning, strengthening capacities to protect ecosystem services that reduce disaster risk (wetlands, coastal forests, watersheds, coral reefs etc), identifying potential sources of hazardous materials that can trigger acute environmental emergencies, and strategically assessing the environmetal impacts of proposed post-disaster recovery plans.

Governance*:* Efficiency and accountability of governance structures at central and local levels should be strengthened, encouraging more inclusive and participatory decision-making processes. Local and national governments design and apply regulatory frameworks that ensure a safer environment, reduce structural vulnerabilities and guide social behavior and economic decisions towards risk reduction and disaster prevention.

Employment & Livelihoods *(including informal sector):* considering the possible impacts of disasters on livelihoods and jobs, particularly those affecting the informal sector and youth. Promote innovative mechansim to reduce underlying risk such as microfinance and risk transfer schemes, targeting especially women. Promote greater compliance to existing workplace safety regulations and environmental standards and raise awareness of DRR measures in relevant sectors (e.g. engineers/construction sector, chemical industry etc.).

Agriculture: Increasing agricultural productivity through investments in soil health, water management, extension services, and research increases food availability for subsistence farmers. However, special focus is needed to mitigate the impact of hydro-meteorological fluctuations through multiple cropping, water conservation and biological control measures, with contingency cropping strategies linked to weather monitoring and early warning systems.

Gender: Improved women's participation in decision-making processes and productive activities should specifically include awareness of disaster risks, preparedness and preventive measures that reinforce traditional coping measures undertaken by women and increase disaster resilience of communities. Research on the degree to which women suffer the negative impact of disasters could be undertaken, to better understand and address their specific vulnerabilities and needs.

Information and Communication Technologies: Steps to strengthen science advisory mechanisms, invest in higher education and research, promote private sector development, and improve access to communications technologies can also be linked to better hydro-meteorological monitoring, seismic risks monitoring, and possibility of feeding into better early warning systems to save both lives and livelihoods.

Source: UNDP Disaster Risk Reduction Module, March 2007

Significantly all the countries of South Asia have put in place an administrative structure and supporting mechanism to enhance the mainstreaming DRR in development. Some of the major highlights are listed below:

Afghanistan

Disaster Management Framework of Afghanistan states to strengthen the capacity of government and civil society to manage disasters at both the national and sub-national levels, with immediate attention being given to the highest priority needs of (a) effective disaster preparedness and response; and (b) the implementation of community-based disaster reduction projects for the most vulnerable communities.

The National Disaster Management Programme (NDMP), as envisaged in 2003, advocates a comprehensive risk management approach. Members of the National Emergency Commission represent key sectors and have been active in dealing with a range of emergency responses, but the risk reduction thinking and capacity across government is still quite limited. Afghanistan National Disaster Management Authority (ANDMA) has the lead role and is the apex agency for coordinating disaster management activities. The primary function of ANDMA is coordination of disaster management activities at national level. UNDP Afghanistan initiated Comprehensive Disaster Risk Reduction Programme (CDRRP) to implement mainstreaming through disaster mitigation, poverty alleviation, livelihood generation and educational programmes.

Bangladesh

Recognising the multidimensional nature of poverty and its role in increasing vulnerability, emphasis is laid on comprehensive disaster management towards poverty reduction and growth. The promotion of food security is considered as an important factor in ensuring the resilience of communities to hazards that can weaken agriculture based livelihoods. The Corporate Plan (2005-2009) of Ministry of Food and Disaster Management endorses these aspects and identified “Mainstreaming of disaster risk management programming through coordination, cooperation and advocacy (partnership development)” as an important goal.

As a part of CDMP, mainstreaming disaster management and risk reduction into national policies, institutions and development processes has led to introduction of Disaster Impact and Risk Assessment (DIRA) in development project proposals like the Environmental Impact Assessment (EIA) which has been incorporated in all development project analysis. It has initiated a process of revision of Development Project Performa to include DRR in development planning and appraisal processes both for Government and NGO projects. The Bangladesh model of MDRRD emphasizes on mainstreaming risk reduction through a planning process involving national to community level with roles identified for both government and NGOs. In the whole process, emphasis is given to ensure social protection of women, children, elderly, people with disability and other vulnerable groups against vulnerability and risk.

Bhutan

Bhutan, a tiny Himalayan land locked state with population of over 600,000 (approx.) is threatened by GLOF, flash flood, landslides, forest fires and earthquakes disasters. Acknowledging the emerging disaster threats, Government of Bhutan had asked Ministry of Home and Cultural Affairs (MoHCA) to come up with a comprehensive National Framework for disaster risk management in the country. With assistance from UNDP Office in Bhutan and regional experts, MoCHA have drafted a National Framework for disaster risk management. In which the MDRRD has been envisaged as a theme of mitigation and integration of DRR in development sectors with respect to following:

- Mechanism such as mandatory risk assessments to incorporate disaster risk concerns in all development projects.
- Building codes for earthquake resistant construction and enforcement mechanism.
- Hazard specific (landslides, flood, GLOF) mitigation measures.
- Local level disaster mitigation plans.
- Public awareness and education programmes.
- Incorporation of disaster risk education materials in schools and college curricula.
- Specific attention to road and telecom sector for mainstreaming DRR.

India

The Government of India has adopted mitigation and prevention as essential components of their development strategy. For the first time ever, the Tenth Five Year Plan (2002-2007) document had a detailed chapter on Disaster Management, which provides guidelines for mainstreaming disaster risk reduction into developmental planning. Towards this, a number of significant steps have been taken up in the recent past such as passing of Disaster Management Act 2005, setting up of National, State and District Disaster Management Authorities, National Institute of Disaster Management etc.

As per the Act, the NDMA has been entrusted with responsibility to "lay down guidelines to be followed by the different Ministries or Departments of the Government of India for the purpose of integrating the measures for prevention of disaster or the mitigation of its effects in their development plans and projects." It also emphasises to "monitor the implementation of the guidelines laid down by the National Authority for integrating of measures for prevention of disasters and mitigation by the Ministries or Departments in their development plans and projects". DMA 2005 also states that a National plan would have "measures to be taken for the integration of mitigation measures in the development plans".

The Act has provided for constitution of dedicated funds at national, provincial and local levels for disaster risk mitigation. The National Disaster Management Authority has issued comprehensive guidelines for holistic management of specific types of disasters. Every Ministry is expected to develop its disaster management plan which would include measures for prevention, mitigation and preparedness.

Maldives

Maldives has developed the Safe Islands Programme, focusing on the development of the larger islands with better economic opportunities, high environmental resilience, and incentives for voluntary migration to these islands. To mitigate future risk from disasters, land use plans of the safer islands have been developed incorporating features of high resilience: with a wider environmental protection zone, elevated areas for vertical evacuation in case of floods, establishment of alternative modes of communication and energy and detailed disaster management plans. Currently five islands have been identified for the programme and development plans prepared in consultation with people. Challenges for the programme include geographical population dispersion, difficulties of access to islands, logistical difficulties, and a high unit cost of delivery of construction material, inadequate human resource to manage projects and above all unpredictable weather and rough seas. But the Maldives are working to reduce the underlying risk and vulnerability factors that at the moment make them among the most "at risk" countries in the world[5].

Nepal

A comprehensive national policy on disaster risk reduction and management has envisaged Mainstreaming disaster in sectoral development in Nepal. It also emphasises on strengthening prevention and preparedness with respect to implementation of building codes and change in human settlement pattern. Recently, good initiatives have been taken in Kathmandu, wherein Government and city planning organizations are engaged in developing the land-use and urban plans for the Kathmandu Valley (KTV). This project, referred to as Vision 2020, offers the opportunity to mainstream disaster risk reduction in future development of the cities in KTV. The Kathmandu Municipal Corporation is restructuring its operations, which offers an opportunity to position and elevate the disaster risk management function within the city organization. Realising this as an opportunity, Earthquakes and Megacities Initiative (EMI), a member of UN-ISDR's Global Platform for Disaster Reduction, has launched the 3rd Program with the objective of mainstreaming disaster risk reduction in megacity development planning and operations through demonstrated sound practices in collaboration with Kathmandu Municipal Corporation, Kathmandu Valley Town Planning Committee and National Society for Earthquake Technology – Nepal.

Pakistan

Realizing the importance of disaster risk reduction for sustainable social, economic and environmental development, the Government of Pakistan has embarked upon establishing appropriate policy, legal and institutional arrangements, strategies and programs to minimize risks and vulnerabilities. In this regard, National Disaster Management Ordinance has been passed, the implementation of which would be ensured by the National Disaster Management Commission. The National Disaster Risk Management Framework has been developed through wide consultation with stakeholders from local, provincial and national levels. The framework envisages to achieve sustainable social, economic and environmental development in Pakistan

[5] Report on Implementation of The Hyogo Framework for Action (HFA): Asia, ISDR/Gp/2007/Inf.5

through reducing risks and vulnerabilities, particularly those of the poor and marginalized groups, and by effectively responding to and recovering from disaster impact. Nine priority areas identified to establish and strengthen policies, institutions and capacities that include:

- Institutional and legal arrangements for DRM
- Hazard and vulnerability assessment
- Training, education and awareness,
- Disaster risk management planning
- Community and local level programming
- Multi-hazard early warning system
- Mainstreaming disaster risk reduction into development (MDRRD)
- Emergency response system
- Capacity development for post disaster recovery.

Realising the importance of Ministries in mainstreaming disaster risk reduction, Pakistan NDMA has identified the following Ministries for carrying out activities at the national, provincial and local levels.

- Housing and Works
- Water and Power
- Food, Agriculture and Livestock
- Planning and Development
- Industries and Production

Sri Lanka

4.16 Sri Lanka has developed a *Roadmap for Disaster Risk Management,* which is a ten-year plan of action to help Sri Lanka lower risks and better manage future disasters. It includes plans to develop a vulnerability atlas for Sri Lanka to enable development planning that is sensitive to multiple hazards and associated risks. Other components include multi-hazard early warning systems, preparedness and response plans, community-based disaster management and public awareness, education and training. Five main areas have been identified to integrate DRR in development plans. These include:

- Organizational and legal interventions
- Demonstration projects
- Physical interventions through projects and programme
- Research and development
- Awareness and training programmes

Disaster Impact Assessment (DIA) shall be integrated into approval process of all development projects. For this purpose necessary guidelines and procedures shall be developed and persons trained to conduct DIA of development projects. The Sri Lanka Disaster Management Act 2005 ordains every Ministry to prepare a detailed disaster management plan related to disaster counter measures proposed to be taken up each ministry, department, public corporation as the case may be. This would enable all concerned departments to implement measures to mainstream the DRR into development.

5. Regional Cooperation for Mainstreaming Disaster Risk in Development in South Asia

Mainstreaming disaster risk reduction in development is primarily the responsibility of national, provincial and local governments. There is a strong commitment in every country to do so, but there are huge gaps in implementation. The SAARC Disaster Management Centre can facilitate the process of mainstreaming disaster risk reduction in development in the region by a host of measures, which may include the following:

- Collect basic data on disaster risk and the development of planning tools to track the changing relationship between development policy and disaster risk levels through a series of simulation as well as real world studies;
- Develop simple tools and methodologies for integrating disaster risk reduction in specific sectors of development such as poverty reduction, health, education, infrastructure development, rural and urban development, coastal zone management etc;
- Develop standard process guidelines on Disaster Impact Assessment that can be applied to development projects to ensure that disaster do not create further disasters;
- Development training modules on mainstreaming DRR in development and facilitate the member countries to conduct training programmes;
- Document and disseminate best practices in mainstreaming DRR in general and specific sectors of development planning and practices;
- Review the progress made by the countries in mainstreaming disaster risk reduction in development.

6. Regional Workshop

With the above background, the overall aims and objectives of the SAARC Regional workshop on Mainstreaming Disaster Risk in Development scheduled at Colombo during Nov 14-15, 2008 are to:

- Highlight the key disaster risks and development challenges South Asian region faces, and discuss the best policy options for addressing their root causes and mutual impacts;
- Raise awareness about the importance of mainstreaming DRR at the regional, national and local levels, and also about the innovate methods, tools, techniques, policies and practices on context specific mainstreaming experiences in high risk and developent deficient South Asian region:
- Assess the prospects and constraints of mainstreaming DRR in development practice and develop the framework for cooperation on sharing of information, learning from others experience, capacity building etc; and
- Develop a roadmap as well as a tool kit for mainstreaming risk reduction due to flood, cyclone and earthquake in the region.

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Hyogo Framework for Action 2005-2015:*
Building the Resilience of Nations and Communities to Disasters

I. Preamble

1. The World Conference on Disaster Reduction was held from 18 to 22 January 2005 in Kobe, Hyogo, Japan, and adopted the present Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters (here after referred to as the "Framework for Action"). The Conference provided a unique opportunity to promote a strategic and systematic approach to reducing vulnerabilities[1] and risks to hazards.[2] It underscored the need for, and identified ways of, building the resilience of nations and communities to disasters.[3]

A. Challenges posed by disasters

2. Disaster loss is on the rise with grave consequences for the survival, dignity and livelihood of individuals, particularly the poor, and hard-won development gains. Disaster risk is increasingly of global concern and its impact and actions in one region can have an impact on risks in another, and vice versa. This, compounded by increasing vulnerabilities related to changing demographic, technological and socio economic conditions, unplanned urbanization, development within high-risk zones, under-development, environmental degradation, climate variability, climate change, geological hazards, competition for scarce resources, and the impact of epidemics such as HIV/AIDS, points to a future where disasters could increasingly threaten the world's economy, and its population and the sustainable development of developing countries. In the past two decades, on average more than 200 million people have been affected every year by disasters.

3. Disaster risk arises when hazards interact with physical, social, economic and environmental vulnerabilities. Events of hydrometeorological origin constitute the large majority of disasters. Despite the growing understanding and acceptance of the importance of disaster risk reduction and increased disaster response capacities, disasters and in particular the management and reduction of risk continue to pose a global challenge.

4. There is now international acknowledgement that efforts to reduce disaster risks must be systematically integrated into policies, plans and programmes for sustainable development and poverty reduction, and supported through bilateral, regional and international cooperation, including partnerships. Sustainable development, poverty reduction, good governance and disaster risk reduction are mutually

[1] Vulnerability is defined as: "The conditions determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards". UN/ISDR. Geneva 2004.

[2] Hazard is defined as: "A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. Hazards can include latent conditions that may represent future threats and can have different origins: natural (geological, hydrometeorological and biological) or induced by human processes (environmental degradation and technological hazards)" UN/ISDR. Geneva 2004.

[3] The scope of this Framework for Action encompasses disasters caused by hazards of natural origin and related environmental and technological hazards and risks. It thus reflects a holistic and multi-hazard approach to disaster risk management and the relationship, between them which can have a significant impact on social, economic, cultural and environmental systems, as stressed in the Yokohama Strategy (section I, part B, letter I, p. 8).

*Extract from the final report of the World Conference on Disaster Reduction (A/CON F.206/6)

supportive objectives, and in order to meet the challenges ahead, accelerated efforts must be made to build the necessary capacities at the community and national levels to manage and reduce risk. Such an approach is to be recognized as an important element for the achievement of internationally agreed development goals, including those contained in the Millennium Declaration.

5. The importance of promoting disaster risk reduction efforts on the international and regional levels as well as the national and local levels has been recognized in the past few years in a number of key multilateral frameworks and declarations.[4]

B. The Yokohama Strategy: lessons learned and gaps identified

6. The Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and its Plan of Action ("Yokohama Strategy"), adopted in 1994, provides landmark guidance on reducing disaster risk and the impacts of disasters.

7. The review of progress made in implementing the Yokohama Strategy[5] identifies major challenges for the coming years in ensuring more systematic action to address disaster risks in the context of sustainable development and in building resilience through enhanced national and local capabilities to manage and reduce risk.

8. The review stresses the importance of disaster risk reduction being underpinned by a more pro-active approach to informing, motivating and involving people in all aspects of disaster risk reduction in their own local communities. It also highlights the scarcity of resources allocated specifically from development budgets for the realization of risk reduction objectives, either at the national or the regional level or through international cooperation and financial mechanisms, while noting the significant potential to better exploit existing resources and established practices for more effective disaster risk reduction.

9. Specific gaps and challenges are identified in the following five main areas:

   (a) Governance: organizational, legal and policy frameworks;

   (b) Risk identification, assessment, monitoring and early warning;

   (c) Knowledge management and education;

   (d) Reducing underlying risk factors;

   (e) Preparedness for effective response and recovery.

   These are the key areas for developing a relevant framework for action for the decade 2005-2015.

[4] Some of these frameworks and declarations are listed in the annex to this document.

[5] *Review of the Yokohama Strategy and Plan of Action for a Safer World* (A/CONF.206/L. 1).

II. World Conference on Disaster Reduction: Objectives, expected outcome and strategic goals

A. Objectives

10. The World Conference on Disaster Reduction was convened by decision of the General Assembly, with five specific objectives:[6]

    (a) To conclude and report on the review of the Yokohama Strategy and its Plan of Action, with a view to updating the guiding framework on disaster reduction for the twenty-first century;

    (b) To identify specific activities aimed at ensuring the implementation of relevant provisions of the Johannesburg Plan of Implementation of the World Summit on Sustainable Development on vulnerability, risk assessment and disaster management;

    (c) To share good practices and lessons learned to further disaster reduction within the context of attaining sustainable development, and to identify gaps and challenges;

    (d) To increase awareness of the importance of disaster reduction policies, thereby facilitating and promoting the implementation of those policies;

    (e) To increase the reliability and availability of appropriate disaster-related information to the public and disaster management agencies in all regions, as set out in relevant provisions of the Johannesburg Plan of Implementation.

B. Expected outcome

11. Taking these objectives into account, and drawing on the conclusions of the review of the Yokohama Strategy, States and other actors participating at the World Conference on Disaster Reduction (hereinafter referred to as "the Conference") resolve to pursue the following expected outcome for the next 10 years:

The substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries.

The realization of this outcome will require the full commitment and involvement of all actors concerned, including governments, regional and international organizations, civil society including volunteers, the private sector and the scientific community.

C. Strategic goals

12. To attain this expected outcome, the Conference resolves to adopt the following strategic goals:

    (a) The more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction;

[6] As per General Assembly resolution 58/214 of 23 December 2003.

(b) The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience[7] to hazards;

(c) The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes in the reconstruction of affected communities.

III. Priorities for action 2005-2015

A. General considerations

13. In determining appropriate action to achieve the expected outcome and strategic goals, the Conference reaffirms that the following general considerations will be taken into account:

(a) The Principles contained in the Yokohama Strategy retain their full relevance in the current context, which is characterized by increasing commitment to disaster reduction;

(b) Taking into account the importance of international cooperation and partnerships, each State has the primary responsibility for its own sustainable development and for taking effective measures to reduce disaster risk, including for the protection of people on its territory, infrastructure and other national assets from the impact of disasters. At the same time, in the context of increasing global interdependence, concerted international cooperation and an enabling international environment are required to stimulate and contribute to developing the knowledge, capacities and motivation needed for disaster risk reduction at all levels;

(c) An integrated, multi-hazard approach to disaster risk reduction should be factored into policies, planning and programming related to sustainable development, relief, rehabilitation, and recovery activities in post-disaster and post-conflict situations in disaster-prone countries;[8]

(d) A gender perspective should be integrated into all disaster risk management policies, plans and decision-making processes, including those related to risk assessment, early warning, information management, and education and training;[9]

(e) Cultural diversity, age, and vulnerable groups should be taken into account when planning for disaster risk reduction, as appropriate;

[7] Resilience: "The capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure This is determined by the degree to which the social system is capable of organising itself to increase this capacity for learning from past disasters for better future protection and to improve risk reduction measures." UN/ISDR. Geneva 2004.

[8] The Johannesburg Plan of Implementation of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002, paragraphs 37 and 65.

[9] As reaffirmed at the twenty-third special session of the General Assembly on the topic "Women 2000: gender equality, development and peace for the twenty-first century".

(f) Both communities and local authorities should be empowered to manage and reduce disaster risk by having access to the necessary information, resources and authority to implement actions for disaster risk reduction;

(g) Disaster-prone developing countries, especially least developed countries and small island developing States, warrant particular attention in view of their higher vulnerability and risk levels, which often greatly exceed their capacity to respond to and recover from disasters;

(h) There is a need to enhance international and regional cooperation and assistance in the field of disaster risk reduction through, *inter alia:*

- The transfer of knowledge, technology and expertise to enhance capacity building for disaster risk reduction
- The sharing of research findings, lessons learned and best practices
- The compilation of information on disaster risk and impact for all scales of disasters in a way that can inform sustainable development and disaster risk reduction
- Appropriate support in order to enhance governance for disaster risk reduction, for awareness-raising initiatives and for capacity-development measures at all levels, in order to improve the disaster resilience of developing countries
- The full, speedy and effective implementation of the enhanced Heavily Indebted Poor Countries Initiative, taking into account the impact of disasters on the debt sustainability of countries eligible for this programme
- Financial assistance to reduce existing risks and to avoid the generation of new risks

(i) The promotion of a culture of prevention, including through the mobilization of adequate resources for disaster risk reduction, is an investment for the future with substantial returns. Risk assessment and early warning systems are essential investments that protect and save lives, property and livelihoods, contribute to the sustainability of development, and are far more cost-effective in strengthening coping mechanisms than is primary reliance on post-disaster response and recovery;

(j) There is also a need for proactive measures, bearing in mind that the phases of relief, rehabilitation and reconstruction following a disaster are windows of opportunity for the rebuilding of livelihoods and for the planning and reconstruction of physical and socio-economic structures, in a way that will build community resilience and reduce vulnerability to future disaster risks;

(k) Disaster risk reduction is a cross-cutting issue in the context of sustainable development and therefore an important element for the achievement of internationally agreed development goals, including those contained in the Millennium Declaration. In addition, every effort should be made to use humanitarian assistance in such a way that risks and future vulnerabilities will be lessened as much as possible.

B. Priorities for action

14. Drawing on the conclusions of the review of the Yokohama Strategy, and on the basis of deliberations at the World Conference on Disaster Reduction and especially the agreed expected outcome and strategic goals, the Conference has adopted the following five priorities for action:

    1. Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.

    2. Identify, assess and monitor disaster risks and enhance early warning.

    3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels.

    4. Reduce the underlying risk factors.

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

15. In their approach to disaster risk reduction, States, regional and international organizations and other actors concerned should take into consideration the key activities listed under each of these five priorities and should implement them, as appropriate, to their own circumstances and capacities.

1. Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation

16. Countries that develop policy, legislative and institutional frameworks for disaster risk reduction and that are able to develop and track progress through specific and measurable indicators have greater capacity to manage risks and to achieve widespread consensus for, engagement in and compliance with disaster risk reduction measures across all sectors of society.

Key activities:

(i) National institutional and legislative frameworks

(a) Support the creation and strengthening of national integrated disaster risk reduction mechanisms, such as multi sectoral national platforms[10], with designated responsibilities at the national through to the local levels to facilitate coordination across sectors. National platforms should also facilitate coordination across sectors, including by maintaining a broad based dialogue at national and regional levels for promoting awareness among the relevant sectors.

(b) Integrate risk reduction, as appropriate, into development policies and planning at all levels of government, including in poverty reduction strategies and sectors and multi sector policies and plans.

[10] The establishment of national platforms for disaster reduction was requested in Economic and Social Council resolution 1999/63 and in General Assembly resolutions 56/195, 58/214, and 58/215. The expression "national platform" is a generic term used for national mechanisms for coordination and policy guidance on disaster risk reduction that need to be multi-sectoral and inter-disciplinary in nature, with public, private and civil society participation involving all concerned entities within a country (including United Nations agencies present at the national level, as appropriate). National platforms represent the national mechanism for the International Strategy for Disaster Reduction.

(c) Adopt, or modify where necessary, legislation to support disaster risk reduction, including regulations and mechanisms that encourage compliance and that promote incentives for undertaking risk reduction and mitigation activities.

(d) Recognize the importance and specificity of local risk patterns and trends, decentralize responsibilities and resources for disaster risk reduction to relevant sub- national or local authorities, as appropriate.

(ii) Resources

(e) Assess existing human resource capacities for disaster risk reduction \at all levels and develop capacity-building plans and programmes for meeting ongoing and future requirements.

(f) Allocate resources for the development and the implementation of disaster risk management policies, programmes, laws and regulations on disaster risk reduction in all relevant sectors and authorities at all levels of administrative and budgets on the basis of clearly prioritized actions.

(g) Governments should demonstrate the strong political determination required to promote and integrate disaster risk reduction into development programming.

(iii) Community participation

(h) Promote community participation in disaster risk reduction through the adoption of specific policies, the promotion of networking, the strategic management of volunteer resources, the attribution of roles and responsibilities, and the delegation and provision of the necessary authority and resources.

2. Identify, assess and monitor disaster risks and enhance early warning

17. The starting point for reducing disaster risk and for promoting a culture of disaster resilience lies in the knowledge of the hazards and the physical, social, economic and environmental vulnerabilities to disasters that most societies face, and of the ways in which hazards and vulnerabilities are changing in the short and long term, followed by action taken on the basis of that knowledge.

Key activities:

(i) National and local risk assessments

(a) Develop, update periodically and widely disseminate risk maps and related information to decision-makers, the general public and communities at risk[11] in an appropriate format.

(b) Develop systems of indicators of disaster risk and vulnerability at national and sub-national scales that will enable decision-makers to assess the impact of disasters [n] on social, economic and environmental conditions and disseminate the results to decision- makers, the public and populations at risk.

[11] See footnotes 1,2 and 3 for the scope of this Framework for Action.

[12] See footnotes 1,2 and 3.

(c) Record, analyse, summarize and disseminate statistical information on disaster occurrence, impacts and losses, on a regular bases through international, regional, national and local mechanisms.

(ii) Early warning

(d) Develop early warning systems that are people centered, in particular systems whose warnings are timely and understandable to those at risk, which take into account the demographic, gender, cultural and livelihood characteristics of the target audiences, including guidance on how to act upon warnings, and that support effective operations by disaster managers and other decision makers.

(e) Establish, periodically review, and maintain information systems as part of early warning systems with a view to ensuring that rapid and coordinated action is taken in cases of alert/emergency.

(f) Establish institutional capacities to ensure that early warning systems are well integrated into governmental policy and decision-making processes and emergency management systems at both the national and the local levels, and are subject to regular system testing and performance assessments.

(g) Implement the outcome of the Second International Conference on Early Warning held in Bonn, Germany, in 2003[13], including through the strengthening of coordination and cooperation among all relevant sectors and actors in the early warning chain in order to achieve fully effective early warning systems.

(h) Implement the outcome of the Mauritius Strategy for the further implementation of the Barbados Programme of Action for the sustainable development of small island developing States, including by establishing and strengthening effective early warning systems as well as other mitigation and response measures.

(iii) Capacity

(i) Support the development and sustainability of the infrastructure and scientific, technological, technical and institutional capacities needed to research, observe, analyse, map and where possible forecast natural and related hazards, vulnerabilities and disaster impacts.

(j) Support the development and improvement of relevant databases and the promotion of full and open exchange and dissemination of data for assessment, monitoring and early warning purposes, as appropriate, at international, regional, national and local levels.

(k) Support the improvement of scientific and technical methods and capacities for risk assessment, monitoring and early warning, through research, partnerships, training and technical capacity- building. Promote the application of *in situ* and space-based earth observations, space technologies, remote sensing, geographic information systems, hazard modelling and prediction, weather and climate modelling and forecasting, communication tools and studies of the costs and benefits of risk assessment and early warning.

[13] As recommended in General Assembly resolution 58/214.

(l) Establish and strengthen the capacity to record, analyze, summarize, disseminate, and exchange statistical information and data on hazards mapping, disaster risks, impacts, and losses; support the development of common methodologies for risk assessment and monitoring.

(iv) Regional and emerging risks

(m) Compile and standardize, as appropriate, statistical information and data on regional disaster risks, impacts and losses.

(n) Cooperate regionally and internationally, as appropriate, to assess and monitor regional and trans boundary hazards, and exchange information and provide early warnings through appropriate arrangements, such as, *inter alia,* those relating to the management of river basins.

(o) Research, analyse and report on long-term changes and emerging issues that might increase vulnerabilities and risks or the capacity of authorities and communities to respond to disasters.

3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels

18. Disasters can be substantially reduced if people are well informed and motivated towards a culture of disaster prevention and resilience, which in turn requires the collection, compilation and dissemination of relevant knowledge and information on hazards, vulnerabilities and capacities.

Key activities:

(i) Information management and exchange

(a) Provide easily understandable information on disaster risks and protection options, especially to citizens in high-risk areas, to encourage and enable people to take action to reduce risks and build resilience. The information should incorporate relevant traditional and indigenous knowledge and culture heritage and be tailored to different target audiences, taking into account cultural and social factors.

(b) Strengthen networks among disaster experts, managers and planners across sectors and between regions, and create or strengthen procedures for using available expertise when agencies and other important actors develop local risk reduction plans.

(c) Promote and improve dialogue and cooperation among scientific communities and practitioners working on disaster risk reduction, and encourage partnerships among stakeholders, including those working on the socioeconomic dimensions of disaster risk reduction.

(d) Promote the use, application and affordability of recent information, communication and space based technologies and related services, as well as earth observations, to support disaster risk reduction, particularly for training and for the sharing and dissemination of information among different categories of users.

(e) In the medium term, develop local, national, regional and international user- friendly directories, inventories and national information-sharing systems and services for the exchange of information on good practices, cost-effective and easy-to-use disaster risk reduction technologies, and lessons learned on policies, plans and measures for disaster risk reduction.

(f) Institutions dealing with urban development should provide information to the public on disaster reduction options prior to constructions, land purchase or land sale.

(g) Update and widely disseminate international standard terminology related to disaster risk reduction, at least in all official United Nations languages, for use in programme and institutional development, operations, research, training curricula and public information programmes.

(ii) Education and training

(h) Promote the inclusion of disaster risk reduction knowledge in relevant sections of school curricula at all levels and the use of other formal and informal channels to reach youth and children with information; promote the integration of disaster risk reduction as an intrinsic element of the United Nations Decade of Education for Sustainable Development (2005-2015).

(i) Promote the implementation of local risk assessment and disaster preparedness programmes in schools and institutions of higher education.

(j) Promote the implementation of programmes and activities in schools for learning how to minimize the effects of hazards.

(k) Develop training and learning programmes in disaster risk reduction targeted at specific sectors (development planners, emergency managers, local government officials, etc.).

(l) Promote community-based training initiatives, considering the role of volunteers, as appropriate, to enhance local capacities to mitigate and cope with disasters.

(m) Ensure equal access to appropriate training and educational opportunities for women and vulnerable constituencies; promote gender and cultural sensitivity training as integral components of education and training for disaster risk reduction.

(iii) Research

(n) Develop improved methods for predictive multi-risk assessments and socioeconomic cost-benefit analysis of risk reduction actions at all levels; incorporate these methods into decision-making processes at regional, national and local levels.

(o) Strengthen the technical and scientific capacity to develop and apply methodologies, studies and models to assess vulnerabilities to and the impact of geological, weather, water and climate-related hazards, including the improvement of regional monitoring capacities and assessments.

(iv) Public awareness

(p) Promote the engagement of the media in order to stimulate a culture of disaster resilience and strong community involvement in sustained public education campaigns and public consultations at all levels of society.

4. Reduce the underlying risk factors

19. Disaster risks related to changing social, economic, environmental conditions and land use, and the impact of hazards associated with geological events, weather, water, climate variability and climate change, are addressed in sector development planning and programmes as well as in post-disaster situations.

Key activities:

(i) Environmental and natural resource management

(a) Encourage the sustainable use and management of ecosystems, including through better land-use planning and development activities to reduce risk and vulnerabilities.

(b) Implement integrated environmental and natural resource management approaches that incorporate disaster risk reduction, including structural and non-structural measures,[14] such as integrated flood management and appropriate management of fragile ecosystems.

(c) Promote the integration of risk reduction associated with existing climate variability and future climate change into strategies for the reduction of disaster risk and adaptation to climate change, which would include the clear identification of climate- related disaster risks, the design of specific risk reduction measures and an improved and routine use of climate risk information by planners, engineers and other decision-makers.

(ii) Social and economic development practices

(d) Promote food security as an important factor in ensuring the resilience of communities to hazards, particularly in areas prone to drought, flood, cyclones and other hazards that can weaken agriculture-based livelihoods.

(e) Integrate disaster risk reduction planning into the health sector; promote the goal of "hospitals safe from disaster" by ensuring that all new hospitals are built with a level of resilience that strengthens their capacity to remain functional in disaster situations and implement mitigation measures to reinforce existing health facilities, particularly those providing primary health care.

[14] "Structural measures refer to any physical construction to reduce or avoid possible impacts of hazards, which include engineering measures and construction of hazard-resistant and protective structures and infrastructure. Non-structural measures refer to policies, awareness, knowledge

(f) Protect and strengthen critical public facilities and physical infrastructure, particularly schools, clinics, hospitals, water and power plants, communications and transport lifelines, disaster warning and management centres, and culturally important lands and structures through proper design, retrofitting and re-building, in order to render them adequately resilient to hazards.

(g) Strengthen the implementation of social safety-net mechanisms to assist the poor, the elderly and the disabled, and other populations affected by disasters. Enhance recovery schemes including psycho-social training programmes in order to mitigate the psychological damage of vulnerable populations, particularly children, in the aftermath of disasters.

(h) Incorporate disaster risk reduction measures into post-disaster recovery and rehabilitation processes[15] and use opportunities during the recovery phase to develop capacities that reduce disaster risk in the long term, including through the sharing of expertise, knowledge and lessons learned.

(i) Endeavor to ensure, as appropriate, that programmes for displaced persons do not increase risk and vulnerability to hazards.

(j) Promote diversified income options for populations in high-risk areas to reduce their vulnerability to hazards, and ensure that their income and assets are not undermined by development policy and processes that increase their vulnerability to disasters.

(k) Promote the development of financial risk-sharing mechanisms, particularly insurance and reinsurance against disasters.

(l) Promote the establishment of public-private partnerships to better engage the private sector in disaster risk reduction activities; encourage the private sector to foster a culture of disaster prevention, putting greater emphasis on, and allocating resources to, pre-disaster activities such as risk assessments and early warning systems.

(m) Develop and promote alternative and innovative financial instruments for addressing disaster risk.

(iii) Land-use planning and other technical measures

(n) Incorporate disaster risk assessments into the urban planning and management of disaster-prone human settlements, in particular highly populated areas and quickly urbanizing settlements. The issues of informal or non-permanent housing and the location of housing in high-risk areas should be addressed as priorities, including in the framework of urban poverty reduction and slum-upgrading programmes.

(o) Mainstream disaster risk considerations into planning procedures for major infrastructure projects, including the criteria for design, approval and implementation of such projects and considerations based on social, economic and environmental impact assessments.

[15] According to the principles contained in General Assembly resolution 46/182.

(p) Develop, upgrade and encourage the use of guidelines and monitoring tools for the reduction of disaster risk in the context of land-use policy and planning.

(q) Incorporate disaster risk assessment into rural development planning and management, in particular with regard to mountain and coastal flood plain areas, including through the identification of land zones that are available and safe for human settlement,

(r) Encourage the revision of existing or the development of new building codes, standards, rehabilitation and reconstruction practices at the national or local levels, as appropriate, with the aim of making them more applicable in the local context, particularly in informal and marginal human settlements, and reinforce the capacity to implement, monitor and enforce such codes, through a consensus-based approach, with a view to fostering disaster-resistant structures.

5. Strengthen disaster preparedness for effective response at all levels

20. At times of disaster, impacts and losses can be substantially reduced if authorities, individuals and communities in hazard-prone areas are well prepared and ready to act and are equipped with the knowledge and capacities for effective disaster management.

Key activities:

(a) Strengthen policy, technical and institutional capacities in regional, national and local disaster management, including those related to technology, training, and human and material resources.

(b) Promote and support dialogue, exchange of information and coordination among early warning, disaster risk reduction, disaster response, development and other relevant agencies and institutions at all levels, with the aim of fostering a holistic approach towards disaster risk reduction.

(c) Strengthen and when necessary develop coordinated regional approaches, and create or upgrade regional policies, operational mechanisms, plans and communication systems to prepare for and ensure rapid and effective disaster response in situations that exceed national coping capacities.

(d) Prepare or review and periodically update disaster preparedness and contingency plans and policies at all levels, with a particular focus on the most vulnerable areas and groups. Promote regular disaster preparedness exercises, including evacuation drills, with a view to ensuring rapid and effective disaster response and access to essential food and non-food relief supplies, as appropriate, to local needs.

(e) Promote the establishment of emergency funds, where and as appropriate, to support response, recovery and preparedness measures.

(f) Develop specific mechanisms to engage the active participation and ownership of relevant stakeholders, including communities, in disaster risk reduction, in particular building on the spirit of volunteerism.

IV. Implementation and follow-up

A. General considerations

21. The implementation of and follow-up to the strategic goals and priorities for action set out in this Framework for Action should be addressed by different stakeholders in a multi-sectoral approach, including the development sector. States and regional and international organizations, including the United Nations and international financial institutions, are called upon to integrate disaster risk reduction considerations into their sustainable development policy, planning and programming at all levels. Civil society, including volunteers and community-based organizations, the scientific community and the private sector are vital stakeholders in supporting the implementation of disaster risk reduction at all levels.

22. While each State has primary responsibility for its own economic and social development, an enabling international environment is vital to stimulate and contribute to developing the knowledge, capacities and motivation needed to build disaster resilient nations and communities. States and regional and international organizations should foster greater strategic coordination among the United Nations, other international organizations, including international financial institutions, regional bodies, donor agencies and non governmental organizations engaged in disaster risk reduction, based on a strengthened International Strategy for Disaster Reduction. In the coming years, consideration should be given to ensuring the implementation and strengthening of relevant international legal instruments related to disaster risk reduction.

23. States & regional and international organizations should also support the capacities of regional mechanisms and organizations to develop regional plans, policies and common practices, as appropriate, in support of networking, advocacy, coordination, exchange of information and experience, scientific monitoring of hazards and vulnerability, and institutional capacity development and to deal with disaster risks.

24. All actors are encouraged to build multi-stakeholder partnerships, at all levels, as appropriate, and on a voluntary basis, to contribute to the implementation of this Framework for Action. States and other actors are also encouraged to promote the strengthening or establishment of national, regional and international volunteer corps, which can be made available to countries and to the international community to contribute to addressing vulnerability and reducing disaster risk.[16]

25. The Mauritius Strategy for the further implementation of the Barbados Programme of Action for Small Island Developing States underscores that small island developing States are located among the most vulnerable regions in the world in relation to the intensity and frequency of natural and environmental disasters and their increasing impact, and face disproportionately high economic, social and environmental consequences. Small island developing States have undertaken to strengthen their respective national frameworks for more effective disaster management and are committed, with the necessary support of the international community, to improve national disaster mitigation, preparedness and early-warning capacity, increase public awareness about disaster reduction, stimulate

[16] In compliance with General Assembly resolution 58/118 and OAS General Assembly resolution 2018 (xxxiv-0/04).

interdisciplinary and inter-sectoral partnerships, mainstream risk management into their national planning process, address issues relating to insurance and reinsurance arrangements, and augment their capacity to predict and respond to emergency situations, including those affecting human settlements stemming from natural and environmental disasters.

26. In view of the particular vulnerabilities and insufficient capacities of least developed countries to respond to and recover from disasters, support is needed by the least developed countries as a matter of priority, in executing substantive programmes and relevant institutional mechanisms for the implementation of the Framework for Action, including through financial and technical assistance and for capacity building in disaster risk reduction as an effective and sustainable means to prevent and respond to disasters.

27. Disasters in Africa pose a major obstacle to the African continent's efforts to achieve sustainable development, especially in view of the region's insufficient capacities to predict, monitor, deal with and mitigate disasters. Reducing the vulnerability of the African people to hazards is a necessary element of poverty reduction strategies, including efforts to protect past development gains. Financial and technical assistance is needed to strengthen the capacities of African countries, including observation and early warning systems, assessments, prevention, preparedness, response and recovery.

28. The follow-up on the World Conference on Disaster Reduction will, as appropriate, be an integrated and coordinated part of the follow-up to other major conference in fields relevant to disaster risk reduction.[17] This should include specific reference to progress on disaster risk reduction taking, into account agreed development goals, including those found in the Millennium Declaration.

29. The implementation of this Framework for Action for the period 2005-2015 will be appropriately reviewed.

B. States

30. All States should endeavour to undertake the following tasks at the national and local levels, with a strong sense of ownership and in collaboration with civil society and other stakeholders, within the bounds of their financial, human and material capacities, and taking into account their domestic legal requirements and existing international instruments related to disaster risk reduction. States should also contribute actively in the context of regional and international cooperation, in line with paragraphs 33 and 34.

(a) Prepare and publish national baseline assessments of the status of disaster risk reduction, according to the capabilities, needs and policies of each State, and, as appropriate, share this information with concerned regional and international bodies;

(b) Designate an appropriate national coordination mechanism for the implementation and follow up of

[17] As identified in General Assembly resolution 57/270 B.

this Framework for Action, and communicate the information to the secretariat of the International Strategy for Disaster Reduction;

(c) Publish and periodically update a summary of national programmes for disaster risk reduction related to this Framework for Action, including on international cooperation;

(d) Develop procedures for reviewing national progress against this Framework for Action, which should include systems for cost benefit analysis and ongoing monitoring and assessment of vulnerability and risk, in particular with regards to regions exposed to hydrometeorological and seismic hazards, as appropriate;

(e) Include information on progress of disaster risk reduction in the reporting mechanisms of existing international and other frameworks concerning sustainable development, as appropriate;

(f) Consider, as appropriate, acceding to, approving or ratifying relevant international legal instruments relating to disaster reduction, and, for State parties to those instruments, take measures for their effective implementation;[18]

(g) Promote the integration of risk reduction associated with existing climate variability and future climate change into strategies for the reduction of disaster risk and adaptation to climate change; ensure that the management of risks associated with geological hazards, such as earthquakes and landslides, are fully taken into account in disaster risk reduction programmes.

C. Regional organizations and institutions

31. Regional organizations with a role related to disaster risk reduction are called upon to undertake the following tasks within their mandates, priorities and resources:

(a) Promote regional programmes, including programmes for technical cooperation, capacity development, the development of methodologies and standards for hazard and vulnerability monitoring and assessment, the sharing of information and effective mobilization of resources, in view of supporting national and regional efforts to achieve the objectives of this Framework for Action;

(b) Undertake and publish regional and sub-regional baseline assessments of the disaster risk reduction status, according to the needs identified and in line with their mandates;

(c) Coordinate and publish periodic reviews on progress in the region and on impediments and support needs, and assist countries, as requested, in the preparation of periodic national summaries of their programmes and progress;

(d) Establish or strengthen existing specialized regional collaborative centers, as appropriate, to undertake research, training, education and capacity building in the field of disaster risk reduction;

[18] Such as the Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations (1998), which entered into force 8 January 2005.

(e) Support the development of regional mechanisms and capacities for early warning to disasters, including for tsunami.[19]

D. International organizations

32. International organizations, including organizations of the United Nations system and international financial institutions, are called upon to undertake the following tasks within their mandates, priorities and resources:

(a) Engage fully in supporting and implementing the International Strategy for Disaster Reduction, and cooperate to advance integrated approaches to building disaster- resilient nations and communities, by encouraging stronger linkages, coherence and integration of disaster risk reduction elements into the humanitarian and sustainable development fields as set out in this Framework for Action;

(b) Strengthen the overall capacity of the United Nations system to assist disaster-prone developing countries in disaster risk reduction through appropriate means and coordination and define and implement appropriate measures for regular assessment of their progress towards the achievement of the goals and priorities set out in this Framework for Action, building on the International Strategy for Disaster Reduction;

(c) Identify relevant actions to assist disaster-prone developing countries in the implementation of this Framework for Action; ensure that relevant actions are integrated, as appropriate, into each organization's own scientific, humanitarian and development sectors, policies, programmes and practices and that adequate funding is allocated for their implementation;

(d) Assist disaster-prone developing countries to set up national strategies and plans of action and programmes for disaster risk reduction and to develop their institutional and technical capacities in the field of disaster risk reduction, as identified through the priorities in this Framework for Action;

(e) Integrate actions in support of the implementation of this Framework into relevant coordination mechanisms such as the United Nations Development Group and the Inter-Agency Standing Committee (on humanitarian action), including at the national level and through the Resident Coordinator system and the United Nations Country teams. In addition, integrate disaster risk reduction considerations into development assistance frameworks, such as the Common Country Assessments, the United Nations Development Assistance Framework and poverty reduction strategies;

(f) In close collaboration with existing networks and platforms, cooperate to support globally consistent data collection and forecasting on natural hazards, vulnerabilities and risks and disaster impacts at all scales. These initiatives should include the development of standards, the maintenance of databases, the development of indicators and indices, support to early warning systems, the full and open exchange of data and the use of *in situ* and remotely sensed observations;

[19] The United Nations Advisory Board on Water and Sanitation established by the Secretary-General made an urgent appeal to halve loss of human life caused by major water related disasters, including tsunami, by 2015.

(g) Support States with the provision of appropriate, timely and well coordinated international relief assistance, upon request of affected countries, and in accordance with agreed guiding principles for emergency relief assistance and coordination arrangements.[20] Provide this assistance with a view to reducing risk and vulnerability, improving capacities and ensuring effective arrangements for international cooperation for urban search and rescue assistance.[21] Ensure that arrangements for prompt international response to reach affected areas are being developed at national and local levels and that appropriate linkages to recovery efforts and risk reduction are strengthened;

(h) Strengthen the international mechanisms with a view to supporting disaster stricken States in the transition phase towards sustainable physical, social and economic recovery and to reducing future risks. This should include support for risk reduction activities in post-disaster recovery and rehabilitation processes and sharing of good practices, knowledge and technical support with relevant countries, experts and United Nations organizations;

(i) Strengthen and adapt the existing inter-agency disaster management training programme based on a shared, inter-agency strategic vision and framework for disaster risk management that encompasses risk reduction, preparedness, response and recovery.

E. The International Strategy for Disaster Reduction

33. The partners in the International Strategy for Disaster Reduction, in particular, the Inter-Agency Task Force on Disaster Reduction and its members, in collaboration with relevant national, regional, international and United Nations bodies and supported by the inter-agency secretariat for the International Strategy for Disaster Reduction, are requested to assist in implementing this Framework for Action as follows, subject to the decisions taken upon completion of the review process[22] of the current mechanism and institutional arrangements:

(a) Develop a matrix of roles and initiatives in support of follow-up to this Framework for Action, involving individual members of the Task Force and other international partners;

(b) Facilitate the coordination of effective and integrated action within the organizations of the United Nations system and among other relevant international and regional entities, in accordance with their respective mandates, to support the implementation of this Framework for Action, identify gaps in implementation and facilitate consultative processes to develop guidelines and policy tools for each priority area, with relevant national, regional and international expertise;

[20] Defined by General Assembly resolution 46/182.

[21] Work towards the consistent implementation of General Assembly resolution 57/150.

[22] A review process regarding the institutional arrangements within the United Nations pertaining to disaster reduction is currently being carried out and will be completed, following the World Conference on Disaster Reduction, with an evaluation of the role and performance of the International Strategy for Disaster Reduction.

(c) Consult with relevant United Nations agencies and organizations, regional and multilateral organizations and technical and scientific institutions, as well as interested States and civil society, with the view to developing generic, realistic and measurable indicators, keeping in mind available resources of individual States. These indicators could assist States to assess their progress in the implementation of the Framework of Action. The indicators should be in conformity with the internationally agreed development goals, including those contained in the Millennium Declaration; Once that first stage has been completed, States are encouraged to develop or refine indicators at the national level reflecting their individual disaster risk reduction priorities, drawing upon the generic indicators.

(d) Ensure support to national platforms for disaster reduction, including through the clear articulation of their role and value added, as well as regional coordination, to support the different advocacy and policy needs and priorities set out in this Framework for Action, through coordinated regional facilities for disaster reduction, building on regional programmes and outreach advisors from relevant partners;

(e) Coordinate with the secretariat of the Commission on Sustainable Development to ensure that relevant partnerships contributing to implementation of the Framework for Action are registered in its sustainable development partnership database;

(f) Stimulate the exchange, compilation, analysis, summary and dissemination of best practices, lessons learned, available technologies and programmes, to support disaster risk reduction in its capacity as an international information clearinghouse; maintain a global information platform on disaster risk reduction and a web-based register "portfolio" of disaster risk reduction programmes and initiatives implemented by States and through regional and international partnerships;[23]

(g) Prepare periodic reviews on progress towards achieving the objectives and priorities of this Framework for Action, within the context of the process of integrated and coordinated follow-up and implementation of United Nations conferences and summits as mandated by the General Assembly,[24] and provide reports and summaries to the Assembly and other United Nations bodies, as requested or as appropriate, based on information from national platforms, regional and international organizations and other stakeholders, including on the follow-up to the implementation of the recommendations from the Second International Conference on Early Warning (2003).[25]

F. Resource mobilization

34. States, within the bounds of their financial capabilities, regional and international organizations, through appropriate multilateral, regional and bilateral coordination mechanisms, should undertake the following tasks to mobilize the necessary resources to support implementation of this Framework for Action:

[23] To serve as a tool for sharing experience and methodologies on disaster reduction efforts. States and relevant organizations are invited to actively contribute to the knowledge-building process by registering their own effort on a voluntary basis in consideration of the global progress of the Conference outcomes.

[24] General Assembly resolution 57/270B, follow-up to United Nations conferences, and the General Assembly resolutions on Implementation of the International Strategy for Disaster Reduction, which request the Secretary-General to report to the second committee of the General Assembly under "Sustainable development" (54/219, 56/195, 57/256 58/214, 58/215, 59/231).

[25] General Assembly resolution 58/214.

(a) Mobilize the appropriate resources and capabilities of relevant national, regional and international bodies, including the United Nations system;

(b) Provide for and support, through bilateral and multilateral channels, the implementation of this Framework for Action in disaster-prone developing countries, including through financial and technical assistance, addressing debt sustainability, technology transfer on mutually agreed terms, and public-private partnerships, and encourage North-South and South-South cooperation;

(c) Mainstream disaster risk reduction measures appropriately into multilateral and bilateral development assistance programmes including those related to poverty reduction, natural resource management, urban development and adaptation to climate change;

(d) Provide adequate voluntary financial contributions to the United Nations Trust Fund for Disaster Reduction, in the effort to ensure the adequate support for the follow-up activities to this Framework for Action. Review the current usage and feasibility for the expansion of this fund, *inter alia,* to assist disaster-prone developing countries to set up national strategies for disaster risk reduction.

(e) Develop partnerships to implement schemes that spread out risks, reduce insurance premiums, expand insurance coverage and thereby increase financing for post- disaster reconstruction and rehabilitation, including through public and private partnerships, as appropriate. Promote an environment that encourages a culture of insurance in developing countries, as appropriate.

Annex

Some multilateral developments related to disaster risk reduction

Among the multi-lateral frameworks and declarations that are of relevance to this document there are the following:[1]

The International Meeting to Review the Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States,[2] held in Mauritius in January 2005, calls for increased commitments to reducing the vulnerability of small island developing States, due to their limited capacity to respond to and recover from disasters.

The Agenda for Humanitarian Action adopted by the International Conference of the Red Cross and Red Crescent in December 2003 includes a goal and actions to "reduce the risk and impact of disasters and improve preparedness and response mechanisms".

The Johannesburg Plan of Implementation of the World Summit on Sustainable Development,[3] held in 2002, paragraph 37 requests actions under the chapeau: "An integrated, multi-hazard, inclusive approach to address vulnerability, risk, assessment and disaster management, including prevention, mitigation, preparedness, response and recovery, is an essential element of a safer world in the 21st century", supporting the International Strategy for Disaster Reduction as the first action. The theme of "vulnerability, risk reduction and disaster management" is included in the multi-year programme of work of the Commission on Sustainable Development in 2014-2015, and as a cross-cutting theme throughout the programme.

The third Action Programme for Least Developed Countries,[4] adopted in 2001, requests action by development partners in view of giving priority attention to these countries in the substantive programme and institutional arrangements for the implementation of the International Strategy for Disaster Reduction.

The Millennium Declaration[5] of September 2000, identified key objectives of "Protecting the vulnerable" and "Protecting our common environment", which resolve to "intensify cooperation to reduce the number and effects of natural and man-made disasters". A comprehensive review of the progress made in the fulfillment of all the commitments contained in the United Nations Millennium Declaration will be held in July 2005.[6]

The International Strategy for Disaster Reduction was launched in 2000[7] by the Economic and Social Council and the General Assembly as an inter-agency framework and mechanism (inter-agency task force on disaster reduction and an inter-agency secretariat) to serve as a focal point within the United Nations system with the mandate to promote public awareness and commitment, expand networks and partnerships, and improve

[1] For a more comprehensive listing of relevant frameworks and declarations, see information document: Extracts Relevant to Disaster Risk Reduction From International Policy Initiatives 1994-2003, Inter-Agency Task Force on Disaster Reduction, ninth meeting 4-5 May 2004.

[2] General Assembly resolution 58/213. Further implementation of the Programme of Action for the Sustainable Development of Small Island Developing States.

[3] A/CONF. 199/20

[4] A/CONF.191/11

[5] General Assembly resolution 55/2

knowledge about disaster causes and options for risk reduction, building on the Yokohama Strategy and Plan of Action and as follow-up to the International Decade for Natural Disaster Reduction.

The Johannesburg Plan of Implementation of the World Summit on Sustainable Development[8], held in 2002, requested the Intergovernmental Panel on Climate Change to "improve techniques and methodologies for assessing the effects of climate change, and encourage the continuing assessment of those adverse effects…". In addition, the General Assembly[9] has encouraged the Conference of the Parties to the United Nations Framework Convention on Climate Change,[10] and the parties to its Kyoto Protocol[11] (entering into force in February 2005) to continue to address the adverse effects of climate change, especially in those developing countries that are particularly vulnerable. The United Nations General Assembly[12] also encouraged the Intergovernmental Panel on Climate Change to continue to assess the adverse effects of climate change on the socio-economic and natural disaster reduction systems of developing countries.

The Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations of 1998 entered into force on 8 January 2005.

The Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and its Plan of Action[13] (1994), was adopted at the World Conference on Natural Disaster Reduction, building on the mid-term review of the International Decade for Natural Disaster Reduction.

The United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa,[14] was adopted in 1994 and entered into force in 1996. The United Nations Convention on Biological Diversity[15] was adopted in 1992 and entered into force in 1993.

The General Assembly[16] (1991) requested strengthening of the coordination of emergency and humanitarian assistance of the United Nations, in both complex emergencies natural disasters. It recalled the International Framework of Action for the International Decade for Natural Disaster Reduction (resolution 44/236, 1989), and set out guiding principles for humanitarian relief, preparedness, prevention and on the continuum from relief to rehabilitation and development.

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[6] General Assembly resolution 58/291

[7] General Assembly resolutions59/231, 58/214, 57/256, 56/195, 54/219

[8] A/CONF. 199/20, paragraph 37 e).

[9] General Assembly resolutions on natural disasters and vulnerability (59/233, and 58/215)

[10] United Nations, *Treaty Series,* vol. 1771, No. 30822.

[11] FCCC/CP/1997/7/Add.1, decision 1/CP3, annex.

[12] General Assembly resolutions on natural disasters and vulnerability (59/233, and 58/215)

[13] A/CONF. 172/9

[14] United Nations, *Treaty Series,* vol. 1954, No. 33480

[15] United Nations, *Treaty Series,* vol. 1760, No. 30619

SAARC Comprehensive Framework on Disaster Management

I. Context

South Asia with its population of about 1.3 billion is one of the regions in the world highly exposed to a variety of natural as well as human induced hazards. Countries in the SAARC region experienced a number of major disasters[1] in the last one and a half decades, which took lives of about half a million people and caused huge economic losses and massive destruction in the countries' economy. Among others the major reasons in increasing vulnerability of people in the region is largely related to the demographic conditions, rapid technological and socio-economic changes, fast expanding urbanization and development within high-risk environment.

Recurring disasters pose a great development challenge for all SAARC countries. In that context, a SAARC Comprehensive Framework on Disaster Management and Disaster Prevention is articulated. The SAARC Centre for Disaster Management and Preparedness (New Delhi)2 , SAARC Coastal Zone Management Centre (Male) and SAARC Meteorological Research Centre (Dhaka) will implement the Framework in context of regional cooperation within the mandate of the respective Regional Centres.

The Framework is also aligned with the implementation of the Hyogo Framework of Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters.

II. Regional Objectives, Expected Outcomes and Strategic Goals

A. Objectives

The Framework provides a platform for South Asian countries to:

- Establish and strengthen the regional disaster management system to reduce risks and to improve response and recovery management at all levels;
- Identify and elaborate country and regional priorities for action;
- Share best practices and lessons learnt from disaster risk reduction efforts at national levels;
- Establish a regional system to develop and implement regional programmes and projects for early warning;
- Establish a regional system of exchanging information on prevention, preparedness and management of natural disasters;

[1] *Major disasters in the region - Flood in Nepal (1993), Bangladesh flood in 1988, 1998, 2004 and cyclone in 1991,cyclone in Orissa (1999), earthquake in Latur (1996) and Gujrat (2001) of India,oil spill in Karachi (2003), the Indian Ocean Tsunami in December 2004 and the Kashmir Earthquake (2005), Pakistan and India.*

[2] As approved by the Heads of States and Governments during the 13th SAARC Summit (Dhaka, 12-13 November 2005).

- Create a regional response mechanism dedicated to disaster preparedness, emergency relief and rehabilitation to ensure immediate response; and
- Create a regional mechanism to facilitate monitoring and evaluation of achievements towards goals and strategies.

B. Expected Outcome

- An efficient Disaster Management System;
- Mainstreaming disaster risk reduction into the development policies and practices of the government at all levels;
- Disaster resilient communities that have enhanced coping capacities in relation to all hazards;
- Development of policies and programmes that recognizes all risks to the communities, and mitigation strategies that are based on a risk management assessment;
- Greater levels of coordination and cooperation at national, regional and international levels; and
- Enhanced information, warning and reporting systems within governments at all levels.

C. Strategic goals

1. Professionalising the disaster management system;
2. Mainstreaming disaster risk reduction;
3. Strengthening of community institutional mechanisms;
4. Empowering community at risk particularly women, the poor and the disadvantaged;
5. Expanding risk reduction programming across a broader range of hazards (all hazards approach);
6. Strengthening emergency response systems; and
1. 7. Developing and strengthening networks of relevant national, regional and international organizations.

III. Priorities for Action 2006-2015

A. General considerations

In determining appropriate actions to achieve the expected outcomes and strategic goals, the framework takes into account the following:

- To proactively pursue national and international agenda for poverty reduction and sustainable development.
- To align national service delivery with the vision and priorities of national governments.
- To strongly advocate the adoption of a comprehensive approach to risk reduction and disaster management.

- To promote the integration of research outputs within development planning and community risk reduction strategies.
- To engage the governmental system at all levels in risk reduction and disaster management through mainstreaming and advocacy strategies.
- To develop policy and operational frameworks for sustainable coordination, collaboration and information management across governments, and with key stakeholders.
- To establish partnerships of government agencies with civil society, private sector and other stakeholders for effective and sustainable service delivery.
- To have a community focus with a strong emphasis on issues of gender and the disadvantaged embedded in all programmes.
- To establish and maintain strong regional partnerships and networks, and to actively contribute to national, regional and international agenda.
- To pursue the standardization of training curriculum and its adaptation to suit local context by aligning with best practice standards, models and competencies and exchange of expertise.
- To build and maintain high level competencies of the professionals involved in disaster risk management.
- To learn from traditional and indigenous coping mechanisms of the communities and further improve the same.

B. Priorities for action

Taking into account the recommendations of the HFA, and directives of SAARC meetings including the Dhaka Declaration 2005 of the 13th SAARC Summit, the framework envisages the following priority areas of action:

1. Develop and implement risk reduction strategies which include:

a) development of methodologies and standards for hazard and vulnerability assessments;

b) development of strategies to make a right balance across prevention, preparedness, response and recovery (PPRR) programming

c) development and implementation of risk reductions programmes

2. Establish Regional and National Response Mechanisms which include:

2.1. Establish, strengthen and improve Regional Early Warning Systems to:

a) define national and regional needs and priorities;

b) identify national organizations responsible for early warning;

c) identify their current procedures during normal working hours and after hours;

d) identify their linkage with regional centres or of other countries;

e) share real-time data relating to natural hazards

f) find out the best possible options to strengthen the national systems as well as to integrate them regionally.

2.2. Develop systems and procedures to establish an effective Community Alerting System.

2.3. Establish and improve Search and Rescue Mechanism.

2.4. Develop and standardize Damage, Loss and Impact Assessment Methodologies and Relief Management Procedure.

2.5. Establish a post-disaster recovery and reconstruction mechanism

3. Establish a Regional Information Sharing and Develop Network of Institutions and Organizations including, but not limited to, the followings:

a) Mainstreaming and advocacy

b) Community risk assessment

c) Geo-information technologies

d) Research information database

e) Emergency response management

f) Networking with relevant national, regional and international systems

4. Develop and implement Disaster Management training, education, research and awareness programmes which will include the following:

a. Conduct training need assessment

b. Develop strategies for HRD

c. Develop training modules for various stakeholders

d. Standardize training curriculum

e. Mainstream disaster risk reduction in education curriculum at all levels

f. Exchange trainers and experts

g. Conduct research, documentation and publication

h. Compile best practices and indigenous knowledge

i. Develop indicators for measuring the impact of training

5. Apply the ICT for disaster management.

6. Establish an effective monitoring and evaluation mechanism.

IV. Implementation and Follow-up .

A. General considerations

i. The implementation of and follow-up to the strategic goals and priorities for action should be addressed by different stakeholders in a multi-sectoral approach, including the development sector. Members States and regional organizations will integrate disaster risk reduction considerations into their sustainable development policy, planning and programming at all levels. Civil society, including volunteers and community-based organizations, the scientific community and the private sector are vital stakeholders in supporting the implementation of disaster risk reduction at all levels.

ii. While each Member State has primary responsibility for its own economic and social development, an enabling regional environment is vital to stimulate and contribute to developing the knowledge, capacities and motivation needed to build disaster resilient nations and communities.

iii. All the Member States will be encouraged to apply a holistic approach and maintain consistency in programming and building multi-stakeholder partnerships at all levels, as appropriate, to contribute to the implementation of this Framework for Action.

iv. Member States and other actors are encouraged to promote the strengthening or establishment of volunteer corps, which can be made available during disasters.

B. Specific considerations

- Member countries shall develop their own plan of action for implementation of this framework.
- The regional cooperation components of this framework shall be implemented by the concerned regional mechanisms.

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National Commitments for Mainstreaming Disaster Risk Reduction in Development

Afghanistan: Disaster Risk Reduction in Social and Economic Developments

Objective: To have in key sectors of government disaster mitigation measures that will minimise or prevent disaster impacts on social and economic development programmes within these sectors

Adoption of measures that prevent or reduce the impact of hazards is internationally accepted as much cheaper than responding to disasters after they have occurred. However, because this has less visibility because it is part of the normal process of development, it does not get the same attention as humanitarian relief. Implementing mitigation measures require a coordinated approach by the numerous development partners as most have development implications. Apart from their lower costs compared to the combined relief activities, the community empowerment and involvement that they encourage will help to reduce existing vulnerability and hopefully stem the apparent growth of risk from a number of hazards. There will be a need for international assistance with the early stages of implementing mitigation activities – particularly in mitigation planning, and public education and training phases. Afghanistan is rebuilding its devastated infrastructure and economy, and there is no better time than now to design and implement mitigation options that will establish a more resilient, sustainable and less vulnerable community to the impacts of disasters and other external factors. These are some recommended mitigation options for Afghanistan:

Output 1: Reduced disaster vulnerability in the agriculture sector through implemented mitigation measures Indicators: The Ministry of Agriculture have adopted the project activities in principle and are progressively implementing them as resources are available.

Activities:

i. Produce Land Use Regulations and Zoning to begin the process of control and legislation for the long-term reduction of the impact of floods, soil erosion, drought through better and controlled and sustainable land use.

ii. Research and implement relevant agriculture and forestry programmes or farming systems that reduces the risk to natural hazards in particular drought

iii. Implement a community-based programme on locust management programme that reduces infestations through community effort

iv. Improving irrigation and water management systems through community based watershed management and redevelopment programmes (agro-forestry), water harvesting and improvement and maintenance of irrigation systems that are owned, implemented and managed by local communities

v. Baseline data and information gathering in the agriculture sector for particularly vulnerable communities and regions to support mitigation and response planning

Output 2: Emergency health and medical services significantly improved Indicators: Medical services improved significantly and EHTF are effectively operational

Activities:

i. Conduct needs assessment in emergency health services at the national, subnational and community levels

ii. Develop contingency plan for disaster preparedness and response for the health sector

iii. Set up "emergency health task forces" (EHTF) in disaster prone regions

iv. Conduct training and capacity building activities for the EHTF, emergency health response teams, and relevant medical personnel in government, medical NGOs and other stakeholders, in disaster-related subjects

v. Develop and conduct public education and awareness materials and campaigns

Output 3: Increased knowledge of the social, economic, environmental and management

aspects of disasters and emergencies through implementation of relevant research and development activities that are specific to Afghanistan and its environment Indicators: The research activities have been completed and follow-on long-term activities are ongoing

Activities:

i. Conduct applied research on the social, economic and environmental impact of disasters to increase knowledge and understanding and to provide relevant recommendations and activities to implement best practices for recovery at all levels of the community (for example the impact of Nahrin earthquake, and the ongoing drought)

ii. Carry out a historical study of past significant disasters events, occurrences, locations, intensity and impact to establish a base for disaster information in the country

iii. The role of Afghanistan women in disasters with specific focus on humanitarian relief and disaster rehabilitation and long-term development

iv. Develop disaster-related text books and curriculum for primary and secondary schools introduce these into normal education programmes

Bangladesh: Mainstreaming Risk Reduction – The Strategies

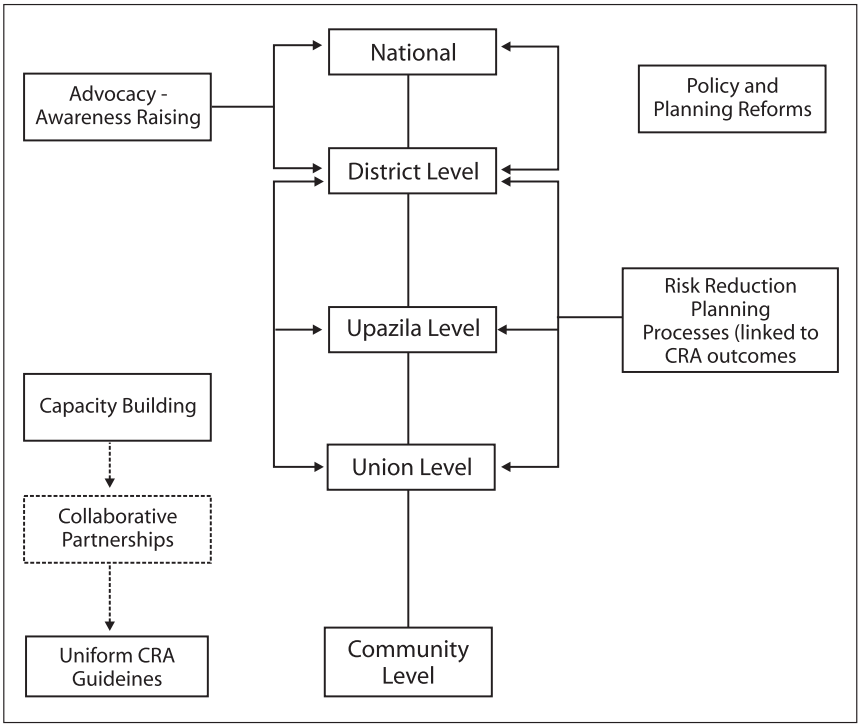
Mainstreaming risk reduction efforts within government, NGOs and private sector is viewed as being the key to achieving sustainable all hazards risk reduction interventions across the whole country. In Bangladesh mainstreaming is seen in much the same light as poverty reduction in that it is the outcome of many top down and bottom up interventions. These are summarized below and articulated briefly within Figure 16.

Advocacy: Awareness raising among Political, Senior Policy and Government Department Officials, Media and Academic Institutions is a priority strategy for building knowledge and understanding on the benefits of risk reduction and the roles these organizations play in implementing risk reduction programmes.

Policy and Planning Reform: A significant review of disaster management and development planning policy is being undertaken to ensure that they facilitate mainstreaming and promote a comprehensive risk reduction culture.

Capacity Building: This strategy has targeted a complete review of the roles and responsibilities of disaster management committees (DMCs) at all levels to ensure they reflect risk reduction as well as emergency response functions. A national training curriculum is being developed to ensure that committees receive capacity building training to ensure they understand and can fulfill their functions effectively.

Planning Frameworks: Disaster management planning at all levels is being significantly overhauled to ensure that DMC plans accommodate risk reduction mainstreaming at all levels.



Uniform CRA Guidelines: Uniform CRA processes are being established to ensure consistency in the conduct of community risk identification and compatibility with the risk reduction planning processes of the respective DMCs. The guidelines also have steps to ensure strong linkages with scientific analysis information.

Poverty Reduction Strategy Paper (PRSP), Bangladesh

Poverty-disaster interface in Bangladesh is quite perplexing. Disasters have had adverse long-term impact on economic and social activities of the poor. Additionally, the poor are more vulnerable to any kind of disaster due to a) depletion of assets, b) income erosion due to loss of employment, c) increased indebtedness and d) out migration. Moreover, cost to cope with disaster is disproportionately higher for the poor.

Poverty Reduction Strategy Paper is a policy and strategy document prepared by World Bank and the IMF member countries in broad consultation with stakeholders and development partners, including the staffs of the World Bank and the IMF to be updated every three years with annual progress reports. It describes the country's macroeconomic, structural and social policies and programs in support of growth and poverty reduction, as well as associated external financing needs and major sources of financing. For WB and the IMF financing it is the basis for confessional lending from IMF and the WB for the low-income countries and debt relief under the WB-IMF Heavily Indebted Poor Countries (HIPC) initiatives.

The principal goal of the Bangladesh Government's economic policy is to reduce poverty so as to gradually lift the vast majority of the people above the poverty line and improve the quality of life for the average citizen. Developing homegrown poverty reduction strategies (PRSs) along with operational plans suited to the particular circumstances and needs of Bangladesh with a focus of long-term vision was thus the objective of Bangladesh PRSP.

The core principle of the Bangladesh PRSP include the following:

- It is country-driven and promotes national ownership of strategies through broad based participation of civil society;
- It is result-oriented and focused on outcomes that will benefit the poor;
- It is comprehensive in recognizing the multidimensional nature of poverty;
- It is partnership-oriented and involves coordinated participation of development partners (government, domestic stakeholders, and external donors); and
- It is based on a long-term perspective for poverty reduction.

The poverty reduction strategy framework in Bangladesh is as follows:

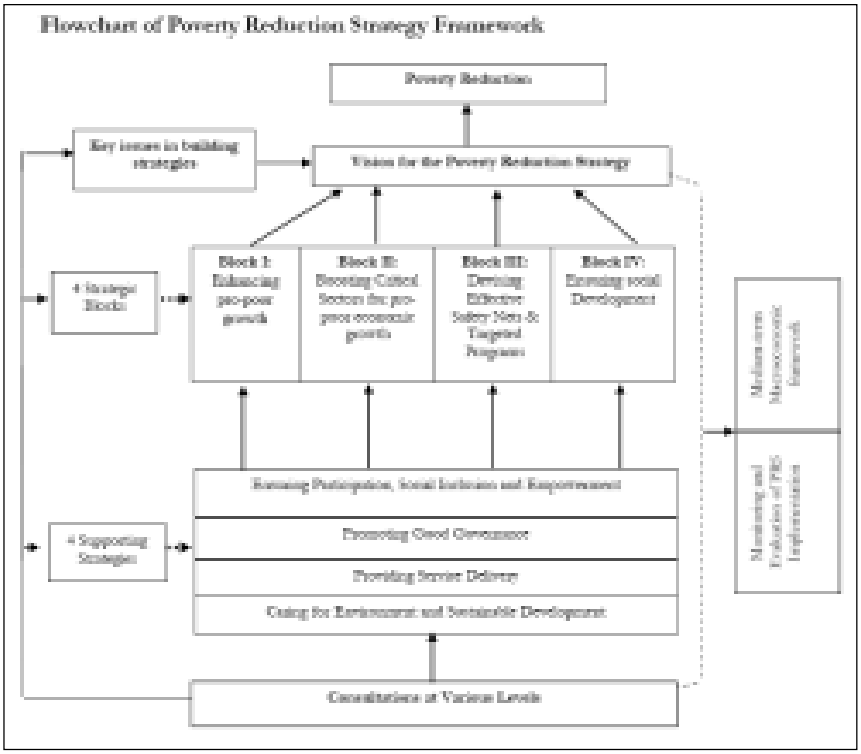


Figure- 2: Poverty Reduction Strategy Framework

Considering the direct poverty disaster linkages the Bangladesh PRSP included one separate policy matrix on Comprehensive disaster management towards poverty reduction and growth. Disaster Management as a cross-cutting issue being included in the following three other policy matrices:

a. Policy Matrix 1: Food security

b. Policy Matrix 2: Promote use of ICT in Disaster Management

c. Policy Matrix 3: Ensure social protection for women against vulnerability and risks

The Policy Matrix envisages:

- Mainstreaming disaster management and risk reduction into national policies, institutions and development processes (introduction of Disaster Impact and Risk Assessment (DIRA)
- Strengthening disaster management and risk reduction capacity
- Ensuring knowledge management (acquiring, storing, sharing and applying) on disaster risk reduction
- Enhancing community level capacity for disaster risk reduction (community level preparedness, response, recovery and rehabilitation)
- Ensuring social protection of women, children, elderly, people with disability and other vulnerable groups against vulnerability and risk.

Bhutan: Mitigation and Integration of Disaster Risk Management in Development Sector

The objective of this component is to reduce loss of life and property in the event of potential hazard occurrences. The primary aim is to reduce the risk of death and injury to the population. Secondary aims include reducing damage and economic losses to public sector infrastructure and reducing private sector losses in as far as they are likely to affect the community as a whole. The objectives are likely to include encouraging people to protect themselves as far as possible.

Any mitigation strategy is likely to include a range of measures. A set of actions that includes engineering measures, spatial planning, and a degree of economic management and community participation will be needed to bring about effective mitigation. A mitigation programme that concentrates solely on any one of these five aspects will be unbalanced and is unlikely to achieve its aims.

Disaster Mitigation investment has to be seen in terms of the price of protecting existing and future infrastructure. The spending of a few percent extra on a new facility to build it a little stronger and protect it against a future threat is usually seen as prudent. The level of investment that is justified to protect society, its economic activities and its built environment is a matter of political decision making, and the economics of risk. Decision making on appropriate levels of investment in disaster mitigation depends on how likely the hazard is to occur, and what would be the impact of the hazard if it does occur. The costs and benefits of alternative investment strategies need to be carefully evaluated. The use of a systematic framework of risk assessment to establish which hazards are most likely to occur and the probable effects will help define the priorities of mitigation programmes.

Table-I: Mitigation and integration of DRR in Development sectors

Outputs	Activities
Mechanisms (such as mandatory risk assessments) developed to incorporate disaster risk concerns (mitigation measures) in all development projects	Reviews existing environmental impact assessment guidelines and explore the possibility of either integrating disaster risk assessment components to it or developing new set of disaster risk assessment guidelines for all new development projects. Appropriate budgetary allocation for ministries/departments involved in mitigation/prevention Evolve a robust risk transfer system to mitigate losses and damages
Earthquake risk mitigation	
Building codes/guidelines developed for earthquake resistant construction	Review and adapt building codes of other countries to the Bhutan context Review byelaws to examine possible gaps, and review ordinances which are not being implemented.
Hazard specific (landsli, flood, GLOF, fire etc) mitigation measures developed and implemented in vulnerable locations	
Some of the most vulnerable sites identified and hazard specific mitigation measures implemented	Identify the most vulnerable locations (with regards to GLOF, floods and landslides) that require structural mitigation measures on an urgent basis Develop detailed mitigation plans for the above Implemented the mitigation in a prioritized manner
Local level mitigation action plans developed and implementeed	
Mitigation assessments and programmes in risk prone areas	Identify some of the most vulnerable communities. Locate high and moderate disaster risk sites around these communities. Undertake detailed assessments to determine the most suitable and economically viable mitigation measures. Implement recommendations at the local level.

India: Disaster Management - The Development Perspective

Five Year Plan documents have, historically, not included consideration of issues relating to the management and mitigation of natural disasters. The traditional perception has been limited to the idea of "calamity relief", which is seen essentially as a non-plan item of expenditure. However, the impact of major disasters cannot be mitigated by the provision of immediate relief alone, which is the primary focus of calamity relief efforts. Disasters can have devastating effects on the economy; they cause huge human and economic losses, and can significantly set back development efforts of a region or a State. Two recent disasters, the Orissa Cyclone and the Gujarat Earthquake, are cases in point. With the kind of economic losses and developmental setbacks that the country has been suffering year after year, the development process needs to be sensitive towards disaster prevention and mitigation aspects. There is thus need to look at disasters from a development perspective as well.

Further, although disaster management is not generally associated with plan financing, there are in fact a number of plan schemes in operation, such as for drought proofing, afforestation, drinking water, etc., which deal with the prevention and mitigation of the impact of natural disasters. External assistance for post-disaster reconstruction and streamlining of management structures also is a part of the Plan. A specific, centrally sponsored scheme on disaster management also exists. The Plan thus already has a defined role in dealing with the subject.

Recently, expert bodies have dwelt on the role of the Planning Commission and the use of plan funds in the context of disaster management. Suggestions have been made in this regard by the Eleventh Finance Commission, and also the High Powered Committee on Disaster Management. An approach on planning for safe development needs to be set out in the light of these suggestions.

This chapter reflects the considerations outlined above. It briefly outlines the global context and the Indian experience of disasters, sets out the institutional and financial arrangements for disaster management and the response towards these in the country, looks at directions for improvement, and concludes with a strategy to facilitate planning for safe national development in the Tenth Plan period.

The Global Context

There has been an increase in the number of natural disasters over the past years, and with it, increasing losses on account of urbanisation and population growth, as a result of which the impact of natural disasters is now felt to a larger extent. According to the United Nations, in 2001 alone, natural disasters of medium to high range caused at least 25,000 deaths around the world, more than double the previous year, and economic losses of around US $ 36 billion. These figures would be much higher, if the consequences of the many smaller and unrecorded disasters that cause significant losses at the local community level were to be taken into account. Devastations in the aftermath of powerful earthquakes that struck Gujarat, El Salvador and Peru; floods that ravaged many countries in Africa, Asia and elsewhere; droughts that plagued Central Asia including Afghanistan, Africa and Central America; the cyclone in Madagascar and Orissa; and floods in Bolivia are global events in recent memory. However, what is disturbing is the knowledge that these trends of destruction and devastation are on the rise instead of being kept in check.

Natural disasters are not bound by political boundaries and have no social or economic considerations. They are borderless as they affect both developing and developed countries. They are also merciless, and as such the vulnerable tend to suffer more at the impact of natural disasters. For example, the developing countries are much more seriously affected in terms of the loss of lives, hardship borne by population and the percentage of their GNP lost. Since 1991, two-third of the victims of natural disasters were from developing countries, while just 2 per cent were from highly developed nations. Those living in developing countries and especially those with limited resources tend to be more adversely affected. With the alarming rise in the natural disasters and vulnerability per se, the world community is strengthening its efforts to cope with it.

As a number of the most vulnerable regions are in India, natural disaster management has emerged as a high priority for the country. Going beyond the historical focus on relief and rehabilitation after the event, we now have to look ahead and plan for disaster preparedness and mitigation, in order that the periodic shocks to our development efforts are minimized.

The Indian Experience

Regional Vulnerabilities

Physical vulnerability relates to the physical location of people, their proximity to the hazard zone and standards of safety maintained to counter the effects. For instance, some people are vulnerable to flood only because they live in a flood prone area. Physical vulnerability also relates to the technical capacity of buildings and structures to resist the forces acting upon them during a hazard event.

INDIA'S KEY VULNERABILITIES

Costal States, particularly in the East Cost and Gujarat are vulnerable to cyclones, 4 crore hectare land mass is vulnerable to floods. 68 percent of new sown area is vulnerable to drought, 55 percent of total area is in Seismic Zones-III-V, and vulnerable to earthquakes. Sub-Himalayan/Western Ghat is vulnerable to landslides.

The extent to which a population is affected by a calamity does not purely lie in the physical components of vulnerability, but is contextual also to the prevailing social and economic conditions and its consequential effect on human activities within a given society. Research in areas affected by earthquakes indicates that single parent families, women, handicapped people, children and the aged are particularly vulnerable social groups. The geophysical setting with unplanned and inadequate developmental activity is a cause for increased losses during disasters. In the case of India, the contribution of over-population to high population density, which in turn results in escalating losses, deserves to be noted. This factor sometimes tends to be as important as physical vulnerability attributed to geography and infrastructure alone.

The continent of Asia is particularly vulnerable to disaster strikes. Between the years 1991 to 2000 Asia has accounted for 83 per cent of the population affected by disasters globally. While the number of people affected in the rest of the world were 1,11,159, in Asia the number was 5,54,439.Within Asia, 24 per cent

of deaths due to disasters occur in India, on account of its size, population and vulnerability. Floods and high winds account for 60 per cent of all disasters in India. While substantial progress has been made in other sectors of human development, there is need to do more towards mitigating the effect of disasters.

Many parts of the Indian sub-continent are susceptible to different types of disasters owing to the unique topographic and climatic characteristics. About 54 per cent of the sub-continent's landmass is vulnerable to earthquakes while about 4 crore hectares is vulnerable to periodic floods. The decade 1990-2000, has been one of very high disaster losses within the country, losses in the Orissa Cyclone in 1999, and later, the Gujarat Earthquake in 2001 alone amount to several thousand crore of Rupees, while the total expenditure on relief and reconstruction in Gujarat alone has been to the tune of Rs 11,500 crore.

Similarly, the country has suffered four major earthquakes in the span of last fifty years along with a series of moderate intensity earthquakes that have occurred at regular intervals. Since 1988, six earthquakes have struck different parts of the country. These caused considerable human and property losses.

Table1: Major Earthquakes in India, 1988-2001

Date	Location	Magnitude
August 21,1988	Bihar-Nepal Border	**6.4**
October 20,1991	Uttarkashi, Uttar Pradesh	**6.6**
September 30,1993	Latur- Osmanabad, Maharashtra	**6.3**
May 22,1997	Jabalpur, Madhya Pradesh	**6.0**
March 29,1999	Chamoli, Uttar Pradesh	**6.9**
January 26, 2001	Bhuj, Gujarat	**7.7**

Disasters lead to enormous economic losses that are both immediate as well as long term in nature and demand additional revenues. Also, as an immediate fall-out, disasters reduce revenues from the affected region due to lower levels of economic activity leading to loss of direct and indirect taxes. In addition, unplanned budgetary allocation to disaster recovery can hamper development interventions and lead to unmet developmental targets.

Disasters may also reduce availability of new investment, further constricting the growth of the region. Besides, additional pressures may be imposed on finances of the government through investments in relief and rehabilitation work.

In the recent earthquake in Gujarat, more than 14,000 lives were lost, ten lakh houses were damaged and the asset loss has been indicated to be worth 15,000 crore. Tables 7.2 to 7.5 give an indication of the magnitude of the damage and losses incurred by the country in recent natural disasters.

The dimensions of the damage, as evident in the tables and the diagram 7.1 emphasise the point that natural disasters cause major setbacks to development and it is the poorest and the weakest that are the most vulnerable to disasters. Given the high frequency with which one or the other part of the country suffers

due to disasters, mitigating the impact of disasters must be an integral component of our development planning and be part of our poverty reduction strategy.

Institutional Arrangements

The country with its federal system of Government has specific roles for the Central and State Governments. However, the subject of disaster management does not specifically find mention in any of the three lists in the 7th Schedule of the Indian Constitution, where subjects under the Central and State Governments as also subjects that come under both are specified. On the legal front, there is no enactment either of the Central or of any State Government to deal with the management of disasters of various types in a comprehensive manner.

INDIA'S KEY VULNERABILITIES

According to Reinsurance Company 'Munich Re' costs associated with natural disasters has gone up 14 fold since the 1950s. Each yearfrom 1991 to 2000, an average of 211 million people were killed or affected by natural disasters - seven times greater than the figure for those killed or affected by conflict. Towards the end of the 1990s the world counted some 25 million 'environmental refugees' - for the first time more people had fled natural hazards than conflict.

Source: World Disasters Report, 2001

Table 2 : Damage due to Natural Disasters in India

Year	People affected (Lakh) totally, damaged	Houses & buildings, partially of (Rs Crore)	Amount of property damage/loss
1985	595.6	2,449,878	40.06
1986	550.0	2,049,277	30.74
1987	483.4	2,919,380	20.57
1988	101.5	242,533	40.63
1989	30.1	782,340	20.41
1990	31.7	1,019,930	10.71
1991	342.7	1,190,109	10.90
1992	190.9	570,969	20.05
1993	262.4	1,529,916	50.80
1994	235.3	1,051,223	10.83
1995	543.5	2,088,355	40.73
1996	549.9	2,376,693	50.43
1997	443.8	1,103,549	n.a.
1998	521.7	1,563,405	0.72
1999 2000	501.7 594.34	3,104,064 2,736,355	1020.97 800.00
2001	788.19	846,878	12000

Annual Reports. NDM Division, Ministry of Agriculture

The country has an integrated administrative machinery for management of disasters at the National, State, District and Sub-District levels. The basic responsibility of undertaking rescue, relief and rehabilitation measures in the event of natural disasters, as at present, is that of the State Governments concerned. The Central Government supplements the efforts of the States by providing financial and logistic support.

Table 3 : Annual Damage due to Heavy Rains, Landslides and Floods

S No.	Year	District affected	Villaves affected No.)	Population affected (Lakhs)	Crop Area (Lakh Ha)	House Damaged (No.)	Human Life loss (No.)	Cattle loss (no.)	Estimated value of loss to houses (Rs in Cr.)	Estimated of value public properties (Rs. in Cr.)
1	1999	202	33,158	328.12	8.45	884,823	1375	3861	0.72	-
2	2000	200	29,964	416.24	34.79	2,736,355	3048	102,121	631.25	389.72
3	2001	122	32,363	210.71	18.72	346,878	834	21,269	195.57	676.05

Table 4 : Damage due to Cyclone in Orissa in October 2000

Date of occurrence	Total no. of districts	Districts affected	Villages affected (No.)	Population affected (Lakh)	Crop Area affected (Lakh Ha.)	Houses Damaged (No.)	Human life loss (No.)	Cattle (No.)
17-18.10.99	30	4	5181	37.47	1.58	331,580	199	10,578
29-30.10.99	30	12	14643	129.22	18.43	1,828,532	9,887	444,531

Source: Annual Reports. Natural Disaster Management Division, Ministry of Agriculture

Table 5 : Losses due to Droughts : 1999- 2001

S. No.	Year districts	Districts affected	Villages affected (No.)	Population affected (Lakh)	Damage Corp Area (Lakh Ha.)	Estimated value of damaged (Rs. rcores)	Cattle Population affected (in lakh)
1	1999	125	-	369.88	134.22	6.44	345.60
2	2000	110	54,883	378.14	357.00	371.87	541.67
3	2001	103	22,255	88.19	67.44	NA	34.28
	TOTAL	338	77,138	836.21	568.66	378.31	921.55

Source: Annual Reports. Natural Disaster Management Division, Ministry of Agriculture

Central Level

The dimensions of response at the level of the Central Government are determined in accordance with the existing policy of financing relief expenditure and keeping in view the factors like:

(i) the gravity of a natural disaster;

(ii) the scale of the relief operation necessary; and

(iii) the requirements of Central assistance for augmenting financial resources and logistic support at the disposal of the State Government.

The Contingency Action Plan (CAP) identifies initiatives required to be taken by various Central Ministries and Public Departments in the wake of natural calamities. It sets down the procedures and determines the focal points in the administrative machinery to facilitate launching of relief and rescue operations without delay.

The Ministry of Home Affairs is the nodal Ministry for coordination of relief and response and overall natural disaster management, and the Department of Agriculture & Cooperation is the nodal Ministry for drought management. Other Ministries are assigned the responsibility of providing emergency support in case of disasters that fall in their purview as indicated in Table 6.

Table 6 : Ministries Responsible for Various Categories of Disasters.

Disaster	Nodal Ministry
Natural Disasters Management (other than Drought)	Ministry of Home Affairs
Drought Relief	Ministry of Agriculture
Air Accidents	Ministry of Civil Aviation
Railway Accidents	Ministry of Railways
Chemical Disasters	Ministry of Environment & Forests
Biological Disasters	Ministry of Health
Nuclear Disasters	Department of Atomic Energy

The following decision-making and standing bodies are responsible for disaster management at the Central level:

- Union Cabinet, headed by the Prime Minister.
- Empowered Group of Ministers, headed by the Deputy Prime Minister
- National Crisis Management Committee (NCMC), under the chairmanship of the Cabinet Secretary.
- Crisis Management Group (CMG): under the chairmanship of the Central Relief Commissioner comprising senior officers from the various Ministries and other concerned Departments which reviews contingency plans, measures required for dealing with a natural disaster, and co-ordinates the activities of the Central Ministries and the State Governments in relation to disaster preparedness response and relief.
- Technical Organizations, such as the Indian Meteorological Department (cyclone/earthquake), Central Water Commission (floods), Building Material and Technology Promotion Council (construction laws), Bureau of Indian Standards (norms), Defence Research & Development Organization (nuclear/biological), Directorate General Civil Defence provide specific technical support to coordination of disaster response and management functions.

- The setting up of a National Disaster Management Authority (NDMA) is being contemplated by the Ministry of Home Affairs as the proposed apex structure within the government for the purpose. Amongst other major organizational initiatives, it is proposed to:

  a. establish a specialised and earmarked response team for dealing with nuclear/biological/ chemical disasters;

  b. establish search and rescue teams in each State;

  c. strengthen communication systems in the North Eastern Region.

State Government

The responsibility to cope with natural disasters is essentially that of the State Government. The role of the Central Government is supportive in terms of supplementation of physical and financial resources. The Chief Secretary of the State heads a state level committee which is in overall charge of the relief operations in the State and the Relief Commissioners who are in charge of the relief and rehabilitation measures in the wake of natural disasters in their States function under the overall direction and control of the state level committee. In many states, Secretary, Department of Revenue, is also in-charge of relief. State Governments usually have relief manuals and the districts have their contingency plan that is updated from time to time.

District and Local Level

The district administration is the focal point for implementation of all governmental plans and activities. The actual day-to-day function of administering relief is the responsibility of the Collector/ District Magistrate/ Deputy Commissioner who exercises coordinating and supervising powers over all departments at the district level. Though it may not be a common phenomenon, there exists by and large in districts also a district level relief committee consisting of officials and non- officials.

The 73rd and 74th constitutional amendments recognise Panchayati Raj Institutions as 'Institutions of self-government'. The amendment has also laid down necessary guidelines for the structure of their composition, powers, functions, devolution of finances, regular holding of elections and reservation of seats for weaker sections including women. These local bodies can be effective instruments in tackling disasters through early warning system, relief distribution, providing shelter to the victims, medical assistance etc.

Other than the national, state, district and local levels, there are various institutional stakeholders who are involved in disaster management at various levels in the country. These include the police and para-military forces, civil defence and home-guards, fire services, ex-servicemen, nongovernment organisations (NGOs), public and private sector enterprises, media and HAM operators, all of whom have important roles to play.

Armed Forces

The Indian Armed Forces are supposed to be called upon to intervene and take on specific tasks only when the situation is beyond the capability of civil administration. In practice, the Armed Forces are the core of the government's response capacity and tend to be the first responders of the Government of India in a major disaster. Due to their ability to organize action in adverse ground circumstances, speed of operational response and the resources and capabilities at their disposal, the Armed Forces have historically played a major role in emergency support functions such as communications, search and rescue operations, health and medical facilities, transportation, power, food and civil supplies, public works and engineering, especially in the immediate aftermath of disaster. Disaster management plans should incorporate the role expected of them so that the procedure for deploying them is smooth and quick.

External Linkages

The Government of India is a member of various international organisations in the field of disaster response and relief. While, as a policy, no requests for assistance or appeals are made to the international community in the event of a disaster, assistance offered suo moto is accepted. Linkages exist with the following organisations:

a) UN Office for Coordination of Humanitarian Affairs (UN OCHA), which has been made responsible by UN General Assembly mandate for all international disaster response.

b) United Nations Development Programme (UNDP), responsible for mitigation and prevention aspects of disaster management.

c) UN Disaster Assessment and Coordination (UNDAC) System. Streamlining Institutional Arrangements for Disaster Response

Institutional arrangements for disaster response are the heart of disaster management systems. There is no dearth of personnel, both civilian and military, experienced in handling situations arising out of natural disasters. However, there certainly is a pressing need for improvement and strengthening of existing institutional arrangements and systems in this regard to make the initial response to a disaster more effective and professional. Most of the resources and expertise needed already exist with the Government. What needs to be streamlined is how they should be integrated, trained and deployed. Some of the areas where improvement is urgently needed are:

a) Integrated planning for disasters, including the integration of relevant Armed Forces formations into disaster management planning at all levels from District to State and Central Government.

b) Setting up of a modern, permanent national command centre or operations room, with redundant communications and data links to all State capitals. The national command centre or operations room needs to be manned on a 24-hour basis by professionals to cater for instant integrated response. There needs to be a properly equipped operations room at the State level as well.

c) Establishment of a national stand by, quick reaction team composed of experienced professionals, both military and civilian, drawn from Central and State Government staff to respond immediately by flying in a matter of hours an experienced response team to the locations when a disaster strikes. This team can be organized and run professionally on the same lines as the United Nations Disaster Assessment and Coordination (UNDAC) teams.

d) Creation of urban search and rescue capacity at all levels, by establishing a fully equipped Search and Rescue unit, as part of the fire service in all State capitals, with trained staff and modern equipment such as thermal imagers, acoustic detection devices etc. This is of immediate relevance since a major weakness exposed in the Gujarat earthquake was a lack of specialized urban search and rescue capability in India.

e) Media policy geared to handling the growing phenomenon of real time television reporting, which generates enormous political pressures on a government to respond rapidly and efficiently. This needs attention since the effect is going to increase, not decrease in future.

f) Closer interface with and better understanding of the international system for disaster response, and putting in place, systems for dealing with international assistance once it comes in e.g., customs, immigration, foreign policy implications etc. A greater appreciation is needed of the speed and automation of modern international response to a natural disaster. Closer interaction is required between the Ministry of External Affairs and the relevant international agencies concerned with disaster response.

g) Standard procedures for dealing with domestic humanitarian and relief assistance from non government sources. Procedures and systems need to be set out to avoid confusion and ensure best utilisation of the assistance being offered, just as in the case of systems for international assistance.

h) Modern unified legislation for disaster management. In view of the current division of responsibilities between the State and Central Government into state, central and concurrent lists, there is a need to create a body of legislation dealing with response to natural disasters and other emergencies, clearly delineating responsibilities and powers of each entity and specifying what powers or actions would need to be triggered on declaration of a disaster by the Government of India or a State Government. This legislation should also incorporate the current legislation dealing with chemical emergencies that has been created by the Ministry of Environment so that all emergencies are dealt with under one law. The legislation should include clear definitions of what constitutes a disaster at a national level.

Financial Arrangements

Financing of Relief Expenditures

The policy arrangements for meeting relief expenditure related to natural disasters are, by and large, based on the recommendations of successive finance commissions. The two main windows presently open for meeting such expenditures are the Calamity Relief Fund (CRF) and National Calamity Contingency Fund (NCCF). The Calamity Relief Fund is used for meeting the expenditure for providing immediate relief to the

victims of cyclone, drought, earthquake, fire, flood and hailstorm. Expenditure on restoration of damaged capital works should ordinarily be met from the normal budgetary heads, except when it is to be incurred as part of providing immediate relief, such as restoration of drinking water sources or provision of shelters etc., or restoration of communication links for facilitating relief operations. The amount of annual contribution to the CRF of each State for each of the financial years 2000-01 to 2004-05 is as indicated by the Finance Commission. Of the total contribution indicated, the Government of India contributes 75 per cent of the total yearly allocation in the form of a non-plan grant, and the balance amount is contributed by the State Government concerned. A total of Rs. 11,007.59 crore was provided for the Calamity Relief Fund from 2000-05.

Pursuant to the recommendations of the Eleventh Finance Commission, apart from the CRF, a National Calamity Contingency Fund (NCCF) Scheme came into force with effect from the financial year 2000-01 and would be operative till the end of the financial year 2004-05. NCCF is intended to cover natural calamities like cyclone, drought, earthquake, fire, flood and hailstorm, which are considered to be of severe nature requiring expenditure by the State Government in excess of the balances available in its own Calamity Relief Fund. The assistance from NCCF is available only for immediate relief and rehabilitation. Any reconstruction of assets or restoration of damaged capital should be financed through re-allocation of Plan funds. There is need for defining the arrangements in this regard.

The initial corpus of the National Fund is Rs.500 crore, provided by the Government of India. This fund is required to be recouped by levy of special surcharge for a limited period on central taxes. An amount of about Rs.2,300 crore has already been released to States from NCCF. A list of items and norms of expenditure for assistance chargeable to CRF/NCCF in the wake of natural calamities is prescribed in detail from time to time.

Financing of Disaster Management Through Five Year Plans

Although not specifically addressed in Five Year Plan documents in the past, the Government of India has a long history of using funds from the Plan for mitigating natural disasters. Funds are provided under Plan schemes i.e., various schemes of Government of India, such as for drinking water, employment generation, inputs for agriculture and flood control measures etc. There are also facilities for rescheduling short-term loans taken for agriculture purposes upon certification by the District/ State administration. Central Government's assets/ infrastructure are to be repaired/rectified by the respective Ministry/Department of Government of India. Besides this, at the occurrence of a calamity of great magnitude, funds flow from donors, both local and international, for relief and rehabilitation, and in few cases for long-term preparedness/ preventive measures. Funds for the latter purposes are also available from multilateral funding agencies such as the World Bank. These form part of the State Plan.

There are also a number of important ongoing schemes that specifically help reduce disaster vulnerability. Some of these are: Integrated Wasteland Development Programme (IWDP), Drought Prone Area Programme (DPAP), Desert Development Programme (DDP), Flood Control Programmes, National Afforestation &

Ecodevelopment Programme (NA&ED), Accelerated Rural Water Supply Programme (ARWSP), Crop Insurance, Sampurn Grameen Rozgar Yojana (SGRY), Food for Work etc.

Initiatives Proposed by Various Bodies Regarding Financing Under the Plan

References have recently been made to the role of the Plan in disaster management by the High Power Committee (HPC) on Disaster Management, as well as by the Eleventh Finance Commission. The HPC was constituted in 1999 and submitted its Report in October 2001. The HPC took an overview of all recent disasters (natural as well as manmade) in the country and identified common response and preparedness mechanisms on the basis of a series of consultations with a number of government, non-government, national and international agencies and media organisations. An important recommendation of the Committee was that at least 10 per cent of plan funds at the national, state and district levels be earmarked and apportioned for schemes which specifically address areas such as prevention, reduction, preparedness and mitigation of disasters.

The Eleventh Finance Commission too paid detailed attention to the issue of disaster management and, in its chapter on calamity relief, came out with a number of recommendations, of which the following have a direct bearing on the Plan:

(a) Expenditure on restoration of infrastructure and other capital assets, except those that are intrinsically connected with relief operations and connectivity with the affected area and population, should be met from the plan funds on priority basis.

(b) Medium and long-term measures be devised by the concerned Ministries of the Government of India, the State Governments and the Planning Commission to reduce, and if possible, eliminate, the occurrences of these calamities by undertaking developmental works.

(c) The Planning Commission, in consultation with the State Governments and concerned Ministries, should be able to identify works of a capital nature to prevent the recurrence of specific calamities. These works may be funded under the Plan.

Planning for Safe National Development

Development programmes that go into promoting development at the local level have been left to the general exercise of planning. Measures need also to be taken to integrate disaster mitigation efforts at the local level with the general exercise of planning, and a more supportive environment created for initiatives towards managing of disasters at all levels: national, state, district and local. The future blue-print for disaster management in India rests on the premise that in today's society while hazards, both natural or otherwise, are inevitable, the disasters that follow need not be so and the society can be prepared to cope with them effectively whenever they occur. The need of the hour is to chalk out a multi-pronged strategy for total risk management, comprising prevention, preparedness, response and recovery on the one hand, and initiate development efforts aimed towards risk reduction and mitigation, on the other. Only then can we look forward to "sustainable development."

Disaster Prevention And Preparedness Measures Information and Research Network

Disaster prevention is intrinsically linked to preventive planning. Some of the important steps in this regard are:

(a) Introduction of a comprehensive process of vulnerability analysis and objective risk assessment.

(b) Building a robust and sound information database: A comprehensive database of the land use, demography, infrastructure developed at the national, state and local levels along with current information on climate, weather and man-made structures is crucial in planning, warning and assessment of disasters. In addition, resource inventories of governmental and non governmental systems including personnel and equipment help in efficient mobilisation and optimisation of response measures.

(c) Creating state-of-the-art infrastructure: The entire disaster mitigation game plan must necessarily be anchored to frontline research and development in a holistic mode. State-of-the art technologies available worldwide need to be made available in India for upgradation of the disaster management system; at the same time, dedicated research activities should be encouraged, in all frontier areas related to disasters like biological, space applications, information technology, nuclear radiation etc., for a continuous flow of high quality basic information for sound disaster management planning,

(d) Establishing Linkages between all knowledge- based institutions: A National Disaster Knowledge Network, tuned to the felt needs of a multitude of users like disaster managers, decision makers, community etc., must be developed as the network of networks to cover natural, manmade and biological disasters in all their varied dimensions.

Capacity Building, Training & Education

Personnel involved in the exercise have to draw upon knowledge of best practices and resources available to them. Information and training on ways to better respond to and mitigate disasters to the responders go a long way in building the capacity and resilience of the country to reduce and prevent disasters. Training is an integral part of capacity building as trained personnel respond much better to different disasters and appreciate the need for preventive measures. The directions in this regard are:

(a) The multi-sectoral and multi-hazard prevention based approach to disaster management requires specific professional inputs. Professional training in disaster management should be built into the existing pedagogic research and education. Specialised courses for disaster management may be developed by universities and professional teaching institutions, and disaster management should be treated as a distinct academic and professional discipline, something that the American education system has done successfully. In addition to separate diploma/degree courses in disaster management, the subject needs to be discussed and taught as a specific component in professional and specialised courses like medicine, nursing, engineering, environmental sciences, architecture, and town and country planning.

(b) The focus towards preventive disaster management and development of a national ethos of prevention calls for an awareness generation at all levels. An appropriate component of disaster awareness at the school level will help increase awareness among children and, in many cases, parents and other family members through these children. Curriculum development with a focus towards dissemination of disaster related information on a sustained basis, covering junior, middle and high schools may be worked out by the different school boards in the country.

(c) Training facilities for government personnel involved in disaster management are conducted at the national level by the National Centre for Disaster Management (NCDM) at the Indian Institute of Public Administration, in New Delhi which functions as the nodal institution in the country for training, research and documentation of disasters. At the State level, disaster management cells operating within the State Administrative Training Institutes (ATIs) provide the necessary training. Presently, 24 ATIs have dedicated faculties. There is a need for strengthening specialised training, including training of personnel in disaster response.

(d) Capacity building should not be limited to professionals and personnel involved in disaster management but should also focus on building the knowledge, attitude and skills of a community to cope with the effects of disasters. Identification and training of volunteers from the community towards first response measures as well as mitigation measures is an urgent imperative. A programme of periodic drills should be introduced in vulnerable areas to enable prompt and appropriate community response in the event of a disaster, which can help save valuable lives.

Capacity building for effective disaster management therefore needs to be grounded and linked to the community and local level responders on the one hand and also to the institutional mechanism of the State and the Nation on the other.

Community Level Initiatives

The goal of any disaster management initiative is to build a disaster resistant/resilient community equipped with safer living and sustainable livelihoods to serve its own development purposes. The community is also the first responder in any disaster situation, thereby emphasizing the need for community level initiatives in managing disasters. To encourage such initiatives, the following are required:

(a) Creating awareness through disaster education and training and information dissemination are necessary steps for empowering the community to cope with disasters.

(b) Community based approach followed by most NGOs and Community Based Organisations (CBOs) should be incorporated in the disaster management system as an effective vehicle of community participation.

(c) Within a vulnerable community, there exist groups that are more vulnerable like women and children, aged and infirm and physically challenged people who need special care and attention especially during disaster situations. Efforts are required for identifying such vulnerable groups and providing special assistance in terms of evacuation, relief, aid and medical attention to them in disaster situations.

Management of disasters should therefore be an interface between a community effort to mitigate and prevent disasters as also an effort from the government machinery to buttress and support popular initiatives.

Strengthening of Plan Activities

Given the pervasive nature of disasters and the widespread havoc caused by some of them, planned expenditure on disaster mitigation and prevention measures in addition to the CRF is required. The Central Sector Scheme of Natural Disaster Management Programmes has been implemented since 1993-94 by the Department of Agriculture and Co-operation with the objective to focus on disaster preparedness with emphasis on mitigation and preparedness measures for enhanced capability to reduce the adverse impact of disasters. The major activities undertaken within this scheme include the setting up of the National Centre for Disaster Management (NCDM) at the Indian Institute of Public Administration, creation of 24 disaster management faculties in 23 states, research and consultancy services, documentation of major disaster events and forging regional cooperation. The Eighth Plan allocation of Rs 6.30 crore for this scheme was increased to Rs. 16.32 crore in the Ninth Plan. Within this scheme, NCDM has conducted over 50 training programmes, training more than 1000 people, while 24 disaster management centres with dedicated faculty have been established in the states. Over 4000 people have been trained at the State level. In addition, some important publications and audio-visual training modules have been prepared and documentation of disaster events has been done.

Though limited in scope and outlays, the Scheme has made an impact on the training and research activities in the country. Creation of faculties in disaster management in all 28 states is proposed to be taken up in the Tenth Plan in addition to community mobilisation, human resource development, establishment of Control Rooms and forging international cooperation in disaster management. There is also an urgent need for strengthening the disaster management pedagogy by creating disaster management faculties in universities, rural development institutes and other organisations of premier research.

Sustainability is the key word in the development process. Development activities that do not consider the disaster loss perspective fail to be sustainable. The compounded costs of disasters relating to loss of life, loss of assets, economic activities, and cost of reconstruction of not only assets but of lives can scarcely be borne by any community or nation. Therefore, all development schemes in vulnerable areas should include a disaster mitigation analysis, whereby the feasibility of a project is assessed with respect to vulnerability of the area and the mitigation measures required for sustainability. Environmental protection, afforestation programmes, pollution control, construction of earthquake resistant structures etc., should therefore have high priority within the plans.

The aim of a mitigation strategy is to reduce losses in the event of a future occurrence of a hazard. Structural mitigation may comprise construction of individual disaster resistant structures like retrofitted or earthquake-resistant buildings or creation of structures whose function is primarily disaster protection like flood control structures, dykes, levees, infiltration dams etc.

Mitigation measures on individual structures can be achieved by design standards, building codes and

performance specifications. Building codes, critical front-line defence for achieving stronger engineered structures, need to be drawn up in accordance with the vulnerability of the area and implemented through appropriate techno-legal measures.

Mitigation measures need to be considered in land use and site planning activities. Constructions in hazardous areas like flood plains or steep soft slopes are more vulnerable to disasters. Necessary mitigation measures need to be built into the design and costing of development projects.

Insurance is a potentially important mitigation measure in disaster-prone areas as it brings quality in the infrastructure & consciousness and a culture of safety by its insistence on following building codes, norms, guidelines, quality materials in construction etc. Disaster insurance mostly works under the premise of 'higher the risk higher the premium, lesser the risk lesser the premium', thus creating awareness towards vulnerable areas and motivating people to settle in relatively safer areas.

The Path Ahead

For addressing natural calamities such as floods and drought, there already exist a number of plan schemes under which a lot is being done and can be done. State Governments need to make full use of the existing plan schemes and give priority to implementation of such schemes that will help in overcoming the conditions created by the calamity. In some cases this implies possible diversion of the funds from other schemes to those schemes the implementation of which will help meeting the situation. There may also be need in a crisis situation for certain re-appropriations/ reallocations among the different departments.

The Planning Commission will aim at responding quickly to the needs of the Central Ministries/Departments/States in matters relating to the Plan for meeting situations arising out of natural disasters, by enabling adjustment of schemes to meet the requirements as far as possible. A mechanism will be evolved to take expeditious decisions on proposals which involve transfer of funds from one scheme to another, or any other change which involves departure from the existing schemes/ pattern of assistance, new schemes and relaxation in procedures, etc. in the case of natural disasters.

As the first responder in any disaster situation, however, each State needs to build a team, skilled personnel, make provision for specialised equipments, efficient communication network, and relevant, intelligent and easily accessible database. There is also a need to consider creation of a plan scheme in each state basically to meet the minimum requirements for strengthening communications and emergency control rooms, thereby improving coordination and response to disasters. No new institutional structures need be created in such a scheme.

In particular, with regard to major disasters, it is also necessary for disaster mitigation components to be built into all development projects. In order to save larger outlays on reconstruction and rehabilitation subsequently, a mechanism would need to be worked out for allowing components that specifically help projects coming up in highly disaster prone areas withstand the impact of natural disasters as part of approved project cost for projects financed under the Plan.

The message for the Tenth Plan is that in order to move towards safer national development, development projects should be sensitive towards disaster mitigation. With the kind of economic losses and developmental setbacks that the country has been suffering year after year, it makes good economic sense to spend a little extra today in a planned way on steps and components that can help in prevention and mitigation of disasters, than be forced to spend many multiples more later on restoration and rehabilitation. The design of development projects and the process of development should take the aspect of disaster reduction and mitigation within its ambit; otherwise, the development ceases to be sustainable and eventually causes more hardship and loss to the nation.

Source: An extract of the Chapter in the Tenth Five Year Plan Document [2002-2007]

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Nepal : Tenth Five Year Plan of Nepal - Natural Disaster Management

Background

Man made and natural disasters are on the increase every day in Nepal owing to her specific geographical and geological formation as well as unmanaged settlements, increasing population, economic backwardness, lack of education and ignorance. On the one hand, natural disasters like floods and landslide are creating the destruction of development infrastructures like road, electricity irrigation, etc. resulting in the possibility of the wastage of investment. In addition to this, thousands of people have lost their lives and countless cattle have been destroyed, lots of agricultural land and crops have been damaged. In order to minimize the damages caused by earthquake and other natural disasters in a country like ours lying in the earthquake zone, it is necessary for us to prepare a comprehensive plan beforehand.

The main challenges to disaster management are the absence of adequate co-ordination among agencies involved in it; the reactive, not proactive nature of disaster management efforts, the absence of a modern technology to give prior information and warn us of disasters and the absence of making the maps of disaster prone areas. Similarly the lack of disaster evaluation at the time of project selection, absence of sufficient co-operation and rehabilitation programmes and non-compliance with building code at the time of constructing high rise buildings are some important disaster management problems.

a. Objective

The objective of the 10th Plan is to make disaster management more systematic and effective so as to contribute to making the construction and development projects of the country durable, sustainable and highly result-oriented.

b. Strategies

1. Emphasis will be given to the use and development technology that reduces the effects of natural disaster and its environmental impacts to the minimum level at the time of formulating plans and policies relating to disaster management.
2. The rescue and relief to be provided by the state to the families suffering from natural disaster will be made transparent.
3. A hazard map of earthquakes, floods and landslides will be prepared.
4. The seismic record centers of the country will be strengthened and used to monitor earthquakes regularly.
5. Timely reforms will be introduced in the existing law and organizational structure relating to disaster management.

c. Policy:

1. A long term disaster management action plan will be made, co-ordination between donors, the government, NOGs and the private sector will be established and the formulation and implementation of sectoral programmes based on the action plan will be made more effective.
2. The study of environmental impact and disaster evaluation study of infrastructure construction projects will be made compulsory.
3. Public awareness programmes will be launched to increase people's participation in the management of natural disasters including floods, landslides and earthquakes.
4. The institutional strengthening of organizations involved in disaster management will be emphasized and Disaster Management Department will be developed as the central co-ordinating unit.
5. On the basis of the evaluation of the past earthquake management and their effects, programmes like the mapping of earthquake prone zones, regular monitoring, early preparedness for and management of earthquakes, as well as the increase in awareness programmes of people living in such areas will be launched with a view to reducing the destructive effects of such earthquakes in the future.
6. In order to manage water induced disaster and to enhance the capacity of organizations involved in the formulation of its policy action plan and programme, the participation of the people in watershed management and river control will be enlisted.
7. A hazard map of flood, landslide, silt flow and glaciers will be prepared through the collection, exchange, storage and flow of information relating to water induced disaster and disaster prone areas will be classified.

d. Programme

1. Co-ordination will be established between different agencies involved in disaster management at national and international disaster management through the development of an integrated information system.
2. In order to increase people's awareness of disaster management, different types of awareness programmes including the inclusion of such reading materials in the curricula of classes up to the secondary school level will be launched.
3. A central Information Unit will be set up at the centre and District Information Unit at the district level will be established in a phased manner on the basis of the database system and the hazard map of disasters like earthquake, flood, landslide etc.
4. An inventory the existing institutional capacity for pre-disaster preparedness will be developed and the rescue and relief materials will be stored in the storage centres of all the five development regions.

5. The fire brigade services of the Kathmandu valley will be extended in the process of increasing the fire fighting capacity and the physical facilities for it will be made available; a bill relating to fire fighting service will be drafted and a national fire code will be prepared.

6. The development of mines and geology will be made to prepare a geological map of Nepal to explore mines to identify the potential areas of damage from disasters like floods, landslides, soil erosions and earthquakes, to prepare an inventory of landslides, and to give continuity to the task of making an epicentre map on the basis of the earthquake records of the past.

7. The task of collecting statistics, updating catalogues and informing the public about earthquakes above 4 ritchers scale after recording the earthquakes measured by 21 seismic stations established under national earthquake measurement centre will be made systematic.

8. Public awareness programmes to increase people's information about the damage from water induced disaster and its management will be launched.

9. A hazard map, geo-engineering map and geo-environment map of increasing urbanization, unmanaged settlement and unsuitable land use in city areas will be prepared and such maps will be utilized in urban area and infrastructure development as well as in natural resource management.

Expected Outcomes

1. Co-ordination will be established with different international agencies involved in disaster management, such information will be exchanged and the task of minimizing the effects of disaster will be made effective.

2. Such hazard map of disaster prone areas will help reduce the loss of life and property.

3. The system of storing relief materials at regional centres with the intention of making them available to the victims at a short notice according to their needs will make instant relief possible and contribute to the rehabilitation programme.

20.3.5. Probable Problems and Risks in Implementation and Achievements:

The limited budget is likely to be the main obstacle to achieve the objective. The practice of the release of the sanctioned budget only at the end of the fiscal year is likely to stand in the way of realizing the expected goal. If the concerned organization is not able to fulfil the need for necessary trained manpower in time it is also going to present many hurdles. Another main problem is the difficulty in collecting information owing to geographical remoteness.

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Pakistan: Mainstreaming disaster risk Reduction into Development

Key issues

An important priority of NDMA will be to promote the adoption of a risk sensitive approach in development planning and programming in all sectors. The purpose of this effort would be to ensure that all development infrastructures in hazard-prone areas is built to higher standards of hazards resiliency; e.g. schools, hospitals, roads, bridges, dams and telecommunications infrastructure etc. This can be done by incorporating risk and vulnerability assessment into project planning stage, and including vulnerability reduction measures in projects implementation in case the proposed projects are found vulnerable to hazards risks.

Strategy

NDMA will work with the National Planning Commission and the Ministry of Finance in order to integrate disaster risk reduction into the National Development Plan and the National Poverty alleviation Strategy. NDMA will also work with ministries on integration of disaster risk reduction into sectoral policy, planning and implementation. It would develop technical guidelines on incorporating risk assessment into sectoral project planning and sectoral vulnerability reduction. NDMA will also work closely with the National Planning Commission to develop criteria for assessment of development projects with a risk reduction lens. NDMA would conduct national and provincial workshops for selected line ministries to orient then on integrating risk assessment in programme planning and design, and to include vulnerability reduction in programme implementation. NDMA may initiate pilot projects with selected line ministries on mainstreaming of risk reduction in order to show case for others. Prior to initiating pilot projects, the NDMA will organize a review of current status on mainstreaming DRR within the line ministries and departments and produce case studies of good practice. Pilot projects on Mainstreaming DRR in five (5) selected ministries will be undertaken with following sub-activities

- Establish dialogue and working group with the sectoral ministry/department.
- Plan pilot activity to integrate DRM considerations in a planned or ongoing programme in the selected sector.
- Implement pilot activity
- Document experience and lessons learnt during the project implementation, and
- Identify ways to extend mainstreaming in other programmes of the Ministry and/ or other interested ministries/sectors

Insurance sector has played a very important role in many countries in promoting disaster mitigation at family and business levels. NDMA would work with insurance companies to explore the possibilities and develop schemes for promotion of insurance for shelter and business against natural disasters.

Outputs

A section on integrating disaster risk reduction included in the National Development Plan and in the National Poverty Reduction Strategy.

A set of sectoral guidelines on mainstreaming DRR, and criteria on assessment of development projects from a risk reduction perspective available for the use of development ministries and the Ministry of Planning and Development.

Curriculum of national and provincial workshops on mainstreaming DRR available;

Technical capacity of selected federal line ministries increased on integrating risk reduction into development plans and programmes; available;

Lesson learnt from pilot projects on mainstreaming DRM available;

Cost-benefit analysis of integrating risk reduction into development sectors available.

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Sri Lanka: Mitigation and Integration of DRR into Development Planning

The aim of a mitigation strategy is to reduce losses in the event of potential hazard occurrences. The primary aim is to reduce the risk of death and injury to the population. Secondary aims include reducing damage and economic losses to public sector infrastructure and reducing private sector losses in as far as they are likely to affect the community as a whole. The objectives are likely to include encouraging people to protect themselves as far as possible.

Any mitigation strategy is likely to include a range of measures. A set of actions that includes some engineering measures, some spatial planning, and a degree of economic, management and societal inputs will be needed to bring about effective mitigation. A mitigation programme that concentrates solely on any one of these five aspects will be unbalanced and is unlikely to achieve its aims.

Disaster Mitigation investment has to be seen in terms of the price of protecting existing and future infrastructure. Spending a bit more on a new facility to build it a little stronger and protect it against a future threat is usually seen as prudent. The level of investment that is justified to protect society, its economic activities and its built environment is a matter of political decision making, and the economics of risk. Decision making on appropriate levels of investment in disaster mitigation depends on how likely the hazard is to occur, and what would be the impact of the hazard if it does occur. The costs and benefits of alternative investment strategies need to be carefully evaluated. The use of a systematic framework of risk assessment to establish which hazards are most likely to occur and the probable effects will help define the priorities of mitigation programmes.

Strategy

In order to mitigate disasters and integrate DRR into development plans, identified activities are categorized into five main areas after consultations amongst the working group:

- Organizational and legal interventions
- Demonstration projects
- Physical interventions through projects and programme
- Research and development
- Awareness and training programmes

Activities proposed under the area of organizational and legal interventions are: the establishment of DRM committees; the development, regular review and update of DRM plans; and the development and review of guidelines, bylaws, regulations, procedures etc. to include DRM (mitigation) aspects.

There is a need to review the by-laws and approval procedures of local governments to reduce inappropriate construction and land use practices in hazard prone areas. Physical interventions through projects would include the implementation of Coastal Management Plan in 15 identified locations in coastal areas to minimize coastal erosion; implementation of dam safety programmes to mitigate floods and minimize damages in the downstream of dams; construction of upstream reservoirs across three major rivers, Kalu Ganga, Kelani Ganga and Nilwala Ganga; and the introduction of drought tolerant agricultural methods including micro irrigation facilities, seeds etc in drought prone areas.Landslides often take place in mountainous regions, and

in particular, in urban areas due to wrong practices, unavailability of retaining structures, cutting and filling operations etc. The demonstration projects can be implemented to showcase appropriate practices and also to train artisans and technicians in relevant construction techniques. In order to achieve the above, there is a need to undertake research activities through universities and other institutes to arrive at the most suitable methods of stabilizing landslide prone areas and genetic engineering research to develop drought resistant seeds. Training and awareness programmes will also be conducted to achieve the outlined objectives.

Key Interventions

In view of the above strategy, the projects prioritized for the next 10 years under this component entail:

- Review and revise the building approval procedures adopted by local government agencies to reduce the impact of natural disaster events.
- Integrate disaster risk mitigation into development processes through disaster mitigation plans, specific allocation for mitigation in all development budgets.
- Integrate disaster risk mitigation into development processes through disaster mitigation plans, and specific allocation for mitigation in all development budgets.
- Mitigate impact of drought and reduce drought risk through improved seed materials and introduction of micro-irrigation.
- Mitigate impact of landslides and reduce risk through improvements and recommendations for structural mitigation.
- Protect against and control floods through improvements and new protection systems.
- Reduce disaster risk in all physical planning processes by integrating DRR in decision making on national land use and physical planning policy.
- Protect against storm surges/ sea/ coastal flooding through green belt and incorporation of disaster risk considerations in coastal zone management.
- Increase disaster resilience in housing and other critical infrastructure through revisions inbuilding codes and bylaws.
- Reduce dam-related hazard risks through appropriate dam safety regulations.

The following projects has been prioritized in the short to medium term:

Minimize Loss of Life and Property Damage due to Floods

This project will be executed in major cities and villages in the downstream of Kalu Ganga in order to adequately protect Ratnapura and Kalutara districts from floods.

Mitigate and Stabilize Slopes in High RiskLandslide and Rockfall Sites

The objective is to stabilize rockfall and landslide sites from HaldumuUa to Haputale and

Kahagolla to Haputale respecti

Mitigation and Integration of DRR into Development

In the event of a future occurrence of a hazard, to reduce damage and economic losses, Risk of death and injury to the population.

Outcomes	Outputs/ Activities
1. Landslide Mitigation in Risk-prone areas	
Areas (slopes) categorized as moderate and high risk zones (landslides, slope failures, rock fall) stabilized	**Output:** i. Mitigation and Slope Stabilization programmes in High & Moderate Risk Land Slide Areas. ii. Updated Landslide Hazard Zoning (LHZ) maps with respect to land use pattern. **Activities:** - Locate High Risk and Moderate Risk sites within the landslide prone areas - Undertake detail studies to identify most suitable and economical mitigation measures - Implementation of Mitigation measures in 10 districts (M) - Undertake risk assessment in rock fall site at Haldumulla to Haputale and in landslide site at Kahagalla to Haputale (S) - Implement recommendations to minimize hazard due to rock fall and landslides (M)
2. Flood Protection for Major Cities	
Cities down stream of Kalani, Kalu and Nilwala rivers protected from floods	**Output:** i. Less flood damages in major cities (Colombo, Rathnapura, Galle, Matara and Kalutara districts **Activities:** - Construction of upstream reservoirs across major rivers - Kalani, Kalu and Nilwala - Study alternative options to mitigate floods in rivers
3. Disaster Mitigation Action Plans	
DM (Mitigation) action plans developed, regularly updated and implemented at all levels of government (Provincial Councils, Local Authorities and all public sector institutions.)	**Outputs:** i. DRM Plans and Projects developed and implemented to mitigate the disaster in Local Authorities and Provincial Council areas **Activities:** - Establishment of DRM committees at all levels. - Develop a methodology to prepare DRM plans (S) - Conduct awareness programmes for Heads other relevant officers of Institutions & organizations (S) - Develop & implement DRM (mitigation) plans considering the multi-hazard environment (M) - Develop and review regulations, bylaws and approval procedure relating to all development projects and introduce appropriate disaster reductionmeasures (S) - Develop guidelines to integrate risk management options in land use plans (M) - Integrate mitigation budget line item in annual budget of all governments (initially preferably to have 5% of the annual budget allocated for mitigation interventions) - Reviewed and revised with feedback planned by DRM once a year

Outcomes	Outputs/ Activities
4. Integrating Disaster Impact Assessment (DIA) into all Development Projects	
DIA integrated into approval process of all development projects	**Outputs:** i. Procedure in place for integrating DIA into approval process of all development projects is in place. ii. Guidelines developed to categorize projects needing DIA integration into EIA iii. Hazard prone areas, reservation boundaries of rivers, and lands with steep slopes, landslide effected areas identified as special areas and published in the gazette. iv. A total of 1250 persons trained in the DIA integration process **Activities:** - Prepare guidelines to categorize development projects that need to undertake DIA - Demarcate and publish in gazette hazard prone areas, reservation boundaries of rivers, and lands with steep slopes, landslide effected areas etc. within jurisdiction of Local Govt areas to discourage construction - Development of guidelines for integrating DIA into planning & approval process of all development projects - Establish procedure for project approval following DIA and incorporating reduction measures. - Capacity building of the personnel involved in project formulation, assessment & approval. - Implement DIA in the EIA process for selected projects with effect from Jan 2006
Provisions established for mainstreaming risk management as a component of development	**Outputs:** - DRR sector/cluster is established in the national and regional development plans **Activities:** - Discussions with National Planning Department for plan implementation. - Provide information relevant to implementation such as Road map for DM andmilestones to be achieved under the achieved under the National DRM plan
5. National Land Use and Physical Planning Policy	
Disaster Risk considerations integrated into national land use and physical planning policy and decision making	**Outputs:** i. Physical planning policy in place ii. 20 Urban Plans in disaster prone areas developed **Activities:** - Discussions with the National Physical Planning Department and Land use policy planning. - Development of physical planning policy and guidelines to integrate DRM into preparation of structure plans, urban land use plans etc. - Train Planning Officers and other relevant personnel to integrate DRM in to reparation of structure plans, urban land use plans etc. - Develop a structure plan incorporating DRR as a pilot project in 7 districts prone to natural disasters - Develop 20 Urban plans incorporating DRR as a pilot project in 7 districts prone to landslides and floods.

Outcomes	Outputs/ Activities
6. Coastal Zone Management (CZM)	
Disaster Risk considerations integrated in CZM policy and in decision making	**Outputs:** i. Implementation of Priority Risk Management Projects under CZM Plan 2004 to reduce impact of coastal hazards ii. Coastal Zone Management plans implemented in 15 locations **Activities:** - Discussions with the Coast Conservation Department and other stakeholder organizations such as NARA, fisheries department etc - Development of CZM policy with considerations on reduction of impact of coastal hazards through a consultative process with other stakeholders - Implementation of identified DM activities in CZM plan
Natural barrier along the coast created and coastal erosion reduced	**Outputs:** i. Selected trees are planted on 1000 ha in high risk coastal land **Activities:** - About 1000 ha of coastal land will be planted with selected plant species to control sea flooding (Green belt Project) - Selection of worst effected coastal areas - Select suitable plants in consultation with Dept of Forest and local communities, - Arrange nurseries of selected species of plants in suitable locations - Develop a tree planting & maintenance programme with PC, LAA, Education Dept. NGO and CBO
7. Development Controls, Building Bye-laws	
Disaster resilience through proper planning and safer housing construction in hazard prone areas	**Outputs:** i. Building codes/guidelines to increase hazard resilience ii. Revised byelaws of local government sector and provincial councils to increase resilience **Activities:** - Formation of Expert Group - Develop or introduce revisions to building codes/guidelines for construction in hazard prone areas - Study the existing bye- laws in local government sector and introduce revisions for construction in hazard prone areas
8. Housing, Education, Tourism and Infrastructure facilities	
Disaster risk vulnerability reduced by adopting mitigation measures in planning and onstruction of government housing schemes, industrial estates, tourist hotels	**Outputs:** Programme for planning & construction of housing schemes, industrial estates, tourist hotels by state and private sector in hazard prone areas to higher standards hazard resilience **Activities:** - Formation of an expert group. - Development of planning guidelines and building code/guidelines for settlements. - Implementation of guidelines and codes for hazard resistant construction for government housing scheme, industrial estates - Develop and introduce incentive programme for private housing

Outcomes	Outputs/ Activities
	- Technical and financial support to construction for higher standards of hazard resilience prescribed in the guidelines.
Disaster risk vulnerability reduced by adopting mitigation measures in planning and construction of high voltage towers, communication towers	**Outputs:** Guidelines for planning & construction of High voltage towers, Communication towers **Activities:** - Formation of Expert Group - Development of planning guide lines, building code/guidelines for theConstruction of hazard resistant High voltage towers, Communication towers in hazard prone areas
Schools and hospitals in hazard prone areas plannedand constructed to higher standards of hazard resilience	**Outputs:** Programme for construction of all new schools and hospitals in hazard-prone areas to higher standards of hazard resilience **Activities:** - Identify all new school and hospitals to be constructed in hazard prone areas - Review standard plans & design for adequacy of construction. - Conduct training programme for Engineers, Planners & Technical Officers.
Disaster risk vulnerability around gas, fuel and chemical storage facilities reduced	**Outputs:** i. List of vulnerable sites ii. People are made aware of risk **Activities:** - Review safety precautionary measures adopted. - Identify vulnerable areas near facilities. - Conduct awareness programmes for people residing close by.
Increased disaster resilience through provision of safer critical infrastructure in hazard prone areas	**Outputs:** i. A set of guidelines to increase hazard resilience for construction of Critical Infrastructure in hazard prone areas. **Activities:** - Identify critical infrastructure to be provided in hazard prone areas - Develop guidelines for construction of infrastructure in hazard prone areas - Review construction programmes to ensure adoption of hazard mitigation measures.
9. Drought Mitigation in Select Districts	
Crop failures minimized by introducing and promoting distribution of quality seeds, in time, to farmers in remote villages in drought prone districts	**Output:** i. Drought tolerant agricultural methods in use. ii. Ground Water Assessment maps **Activities:** - To promote research to develop drought tolerant crops and research on Genetic Engineering (M) - Train extension officers to transfer the research findings to farmers in 50 villages (M) - Develop a procedure to obtain quality seeds and distribute to farmers in time.(M)

Outcomes	Outputs/ Activities
	- Identify potential ground water sources in 500 villages in drought prone districts and promote ground water for irrigation (M) - Strengthen extension service to assist farmers in remote villages of drought prone districts that have limited access to quality seeds to ensure better growth by providing seeds in time. (M)
Soil rehabilitation programme promoted in drought prone areas.	**Output:** i. Soil rehabilitation programme **Activities:** Develop and implement a programme to encouragefarmers through an incentive scheme to produce and apply organic manure to rejuvenate the soil, reduce moisture stress and thereby reduce the crop loss.
Use of micro irrigation facilities by farmers in drought prone areas promoted	**Output**: i. Micro-irrigation scheme **Activity:** - Develop a scheme to provide micro irrigation facilities along with agro-wells and other appropriate water resources.
Drinking water demand and supply management is improved	**Output:** i. Minimum level of drinking water supply is sustained **Activities:** - Formation of user groups to control local water resources/ tanks, including hand pumps - Promotion of water conservation awareness - Augment water supply through bowsering/ dugwell - Promote community/ household rain water harvesting structures, for local drinking water security.
10. Dam Safety Enhanced	
Dam safety ensured through a proactive approach for regularM&E process.	**Output:** i. Database on main dams, which can create flood vulnerability due to sudden release of water. ii. List dams classified according to risk available iii. Procedure for dam inspection and monitoring of reservoir induced landslides & earth quakes **Activities:** - Constitute an expert group for dam inspection and monitoring. - Development of database on dams which can create floods due to sudden release of water - Develop procedure for dam inspection and monitoring of dams and areas around the reservoir - Assess all dams for spillway adequacy & other structural failures - Undertake periodic dam inspection and monitor mitigation programme and recommend further safety measures - Prepare inundation maps for down stream areas of all major reservoirs and identify risk areas. - Develop and introduce a proper warning mechanisms

Outcomes	Outputs/ Activities
	- Conduct awareness programme for relevant officials, residents & children in vulnerable areas - Introduce Rubber gates instead of flash boards presently used at Castlereigh reservoir.
11. Risk Transfer Mechanisms	
Effective economic & financial tools for reducing losses/ damages through increased participation of private sector in risk management activities made available	**Outputs:** i. Risk transfer mechanisms and safety nets (Insurance and Incentive schemes) established to reduce losses **Activities:** - Organize periodic seminars for banking sector, insurance sector and micro-credit facilitators. - Develop a resource group for developing schemesor government sector institutions to suit the audience in Sri Lanka - Facilitate participation of stakeholders in international networking events - Improve microfinance for DM
12. Research & Development in DRR	
Technical and scientific institutions and universities encouraged to undertake R & D activities in DRR	**Outputs:** i. Programme for Research and Development for DRR **Activities:** - Identification of needs - Undertaking priority research and development programs
13. Health Risk due to Polluted Groundwater	
Reduce the health risk of people in identified villages in North Central province due to the use of hazardous groundwater for drinking	**Outputs:** i. Capacity of WRB enhance to forecast hazardous ground regimes ii. Hazardous ground water areas in NCP identified iii. People are made aware of the effect of polluted ground water on health and the possible preventive actions **Activities:** - Enhancing the forecasting capability on hazardous aspect of ground water regimes (S) - Identification of hazardous ground water areas in North Central Province (S) - Conduct awareness programmes to make the people aware of drinking water quality health effect of dissolved chemicals and preventive measures (S & M) - Issue water purification kits to 1000 most affected families (M &L)



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