

BANGLADESH

Reducing Development Risks in a Changing Climate

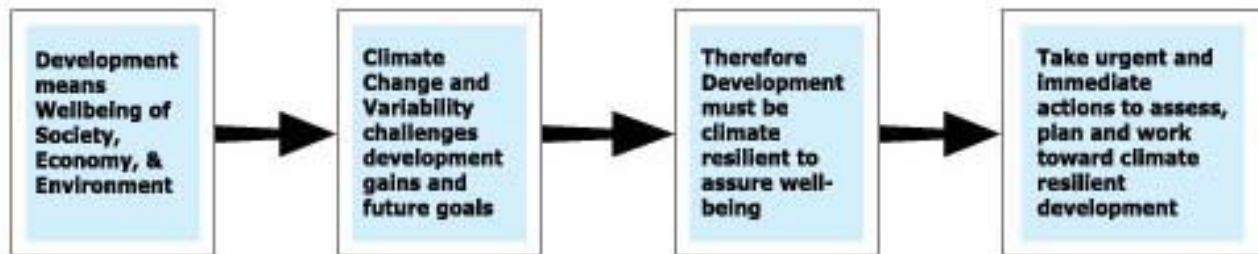
VISION | CHALLENGE | RESPONSE | FUTURE



Department of
Environment

BANGLADESH Reducing Development Risks in a Changing Climate

Development implies the well-being of people, and progress of the society. For a country, sustainable development rests on the improvement of welfare of its economy, environment and society over time. Efforts to address sustainable development goals in every country already are, and will be challenged more and more by climate variability and change. This is crucial for Bangladesh, a country recognized as one of the most vulnerable to adverse climate impacts. This calls for development efforts to integrate climate risk management such that development becomes resilient to climate changes. Thus mainstreaming risk management and adaptation to a changing climate into development planning and processes is critical and paramount.



KEY MESSAGES

Climate change threatens everyone. The poorest will be most affected, and already are suffering in Bangladesh. Climate change is challenge to our gains from past development efforts, and poses serious risk to our future development plans and aspirations.

To avoid the unmanageable, we must

- Take urgent and immediate action to reduce global emissions
- Invest in climate friendly sustainable energy,
- Develop sustainable consumption patterns, lifestyles and culture

To manage the unavoidable, we must

- Build national and community resilience
- Invest in making development efforts climate proof
- Address risks to specific threats

To reduce development risks

- The people most vulnerable must be prioritized
- Communities must be central to development planning and implementation
- National development planning must mainstream risk management and adaptation to climate change
- Public investment must be assured to protect those most vulnerable

Vision

The Vision of a 'Climate resilient Bangladesh' is where its people and institutional arrangements address current and emerging development risks systematically in the mainstream process.

To address and work toward achieving this vision, we must

- Overcome development challenges to build community resilience, to shift the paradigm of prevailing response and relief mode toward a culture of risk reduction addressing all risks, all hazards.
- Create conducive policy environment that enables reduction of climate risks and adaptation in to the development planning of the country adjusting existing relevant sectoral and national policies to support sustainable development in the changing climate.
- Create an enabling institutional environment so that stakeholders by large relevant to the development planning (community, Local Government Institutes, local level officers of the line agencies, NGOs, CBOs, civil societies) are aware and understand the risks of the climate change, appreciate their functional engagement, oriented and skilled to identify/select options and incorporate options to manage risks in to their respective working domains.
- Establish appropriate screening tools developed and are used at national planning authority level to ensure risk reduction, management and adaptation embedded into the development planning.
- Characterize country context including natural setting, human, social and economic conditions and institutional arrangements. Prepare vulnerability maps focusing hazard hotspots over time and space considering characterized context.
- Initiate and sustain a process to generate options through research to adapt with the changing climate.
- A knowledge base established that collect, archive, analyze and collate knowledge, information and data conducive to support development risks in a changing climate and ensure access to the stakeholders.



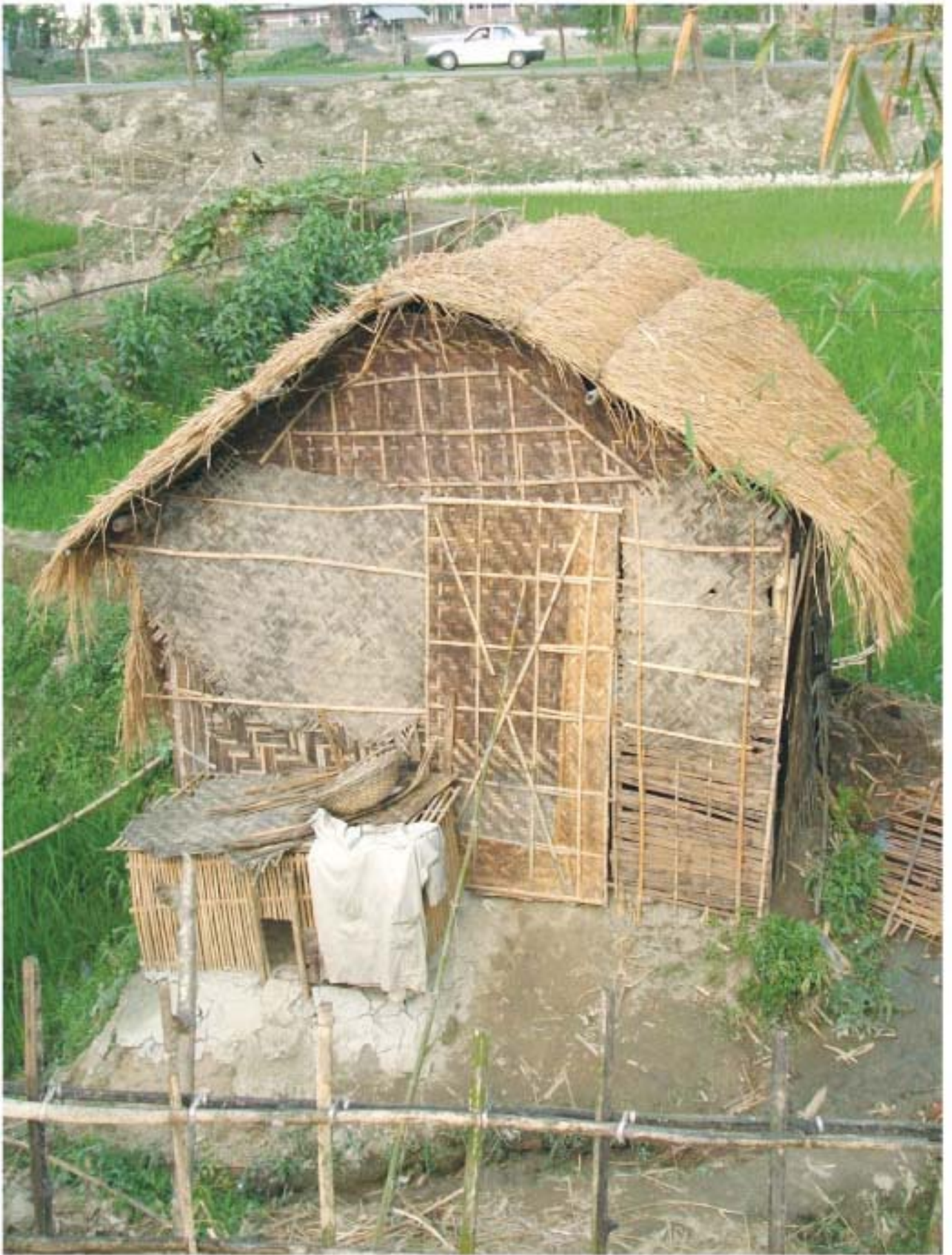
Challenge

Rapid global warming has caused fundamental changes to our climate. No country and people know this better than Bangladesh, where millions of people are already suffering. Sudden, severe and catastrophic floods have intensified and taking place more frequently owing to increased rainfall in the monsoon. Over the last ten years, Bangladesh has been ravaged by floods of catastrophic proportion in 1998, 2004 and 2007. Heavy downpour over short spell has resulted in landslides. Cold spell claims human lives as well as damage crops. Droughts often affect even coastal districts. Bad weather keeps the coastal waters risky for fishing expeditions. Damages and losses due to climatic extremes like floods, cyclones, tornados, drought are phenomenal to the victims as well as the state. These are early signs of global warming effects. Sea level rise in the coming decades will create millions of climate refugees. The challenges are well recognized by the global community.

This is due to its unique geographic location, dominance of floodplains, low elevation from the sea, high population density, high levels of poverty, and overwhelming dependence on nature, its resources and services. The country has a history of extreme climatic events claiming millions of lives and destroying past development gains. The people and social system have knowledge and experience of coping with their effects - to some degree and extent. Variability in rainfall pattern, combined with increased snow melt from the Himalayas, and temperature extremes are resulting in crop damage and failure, preventing farmers and those dependent from meaningful earning opportunities. In a changing climate, the pattern of impacts is eroding our assets, investment and future. This stands for families, communities and the state. Global warming and climate change threatens settlements and the number of people displaced from their land due to riverbank erosion, permanent inundation and sea level rise is increasing rapidly every year. Resource and effort of government and people are quickly drained addressing the impact of one event when another hazard strikes. Impacts of global warming and climate change have the potential to challenge our development efforts, human security and a future.

To understand how global warming and climate change will impact Bangladesh in future, influence its development aspirations and chart its roadmap for sustainable development, three considerations are critical. The location of Bangladesh is in a deltaic plain of a major river basin, making it susceptible to floods and cyclones. The country is extremely populated in a small area, and one of the most densely populated in the world. The country is also very poor and a majority live below subsistence level, making them already vulnerable. According to the UNDP Human Development Report 2006, population living on income of less than one US Dollar a day is 36 percent while 82.8 percent of the population is living on income below two US Dollars a day. Our unique geographical location, economic profile, social status and level of development infrastructure define or characterizes our level of development and state of vulnerability. Change in the climate parameters, for example, precipitation and temperature, results in flood, drought, storm surge, cyclone, etc. impacts depending on the specific geographic location, elevation, vegetation, water availability, etc. The impacts of floods, droughts, cyclone etc. will be felt most by people and their livelihood. Thus the socio-economic condition defines the level of vulnerability, among other things.

Understanding the present status of development and vulnerability is an essential precondition to determine how climate change will complicate our development challenges.



Geographic Location

The geographic location and geo-morphological conditions of Bangladesh have made the country one of the most vulnerable ones to climate change, particularly to Sea Level Rise. Bangladesh is situated at the interface of two different environments, with the Bay of Bengal to the south and the Himalayas to the north. This peculiar geography of Bangladesh causes not only life-giving monsoons but also catastrophic ravages of natural disasters, to which now are added climate change and SLR. The country has a very low and flat topography, except the northeast and southeast regions. About 10% of the country is hardly 1 meter above the mean sea level (MSL), and one-third is under tidal excursions. Bangladesh drains huge water of the GBM catchments to the Bay of Bengal.

Economic Profile

Bangladesh ranks low on just about all measures of economic development. This low level of development, combined with other factors such as its geography and climate, makes the country quite vulnerable to climate change. Bangladesh is a very densely populated country, where over 144.2 million people lives in a small area and with nearly three quarter of its population living in rural areas. Higher population density increases vulnerability to climate change because more people are exposed to risk and opportunities for migration within a country are limited. The per capita income in Bangladesh is US\$370. This ranks below average per capita income for South Asian countries as well as the per capita income for low income countries. More than a third of the people still lives in poverty; the majority of whom live in rural areas, risk prone locations and urban slums. About one-quarter of the country's GDP comes from agriculture, which makes the country's economy relatively sensitive to climate variability and change.

Social Status

The majority of population is still dependent for income and livelihood on agriculture. In 2006, Bangladesh ranked 137th in the Human Development Index. Access to income and employment is limited, with a large service sector, a climate sensitive agriculture sector and industry. Access to drinking water is also insecure in some parts all year round due to saline intrusion in the coastal area, while in a large part of the country groundwater is contaminated with arsenic. The country also has to ensure health and education service to its nationals to deliver a future generation that can cope effectively in tomorrow's world. With 40 percent of the active workforce unemployed, livelihood options disappearing, and limited options to diversify earnings. The society has demonstrated its will and effort to respond to national emergencies, particularly those with regard to natural hazards like floods, tornado, landslide, cyclone, storm surge, cold spell, etc. However, frequent and uncertain weather conditions and extremes have eroded the household and community safety nets. Local and national governments struggle to reallocate development resources or access external resources to help people and economy recover.

The rate of urbanization has been rapid in Dhaka, the capital as well as in other metropolitan areas in the country over the past few decades and has outpaced the facilities and infrastructure necessary to support and sustain the population. This is a direct consequence of lack of income and other livelihood opportunities in the rural areas as well as loss of property, home and access to natural assets due to natural hazards and their impacts. The number of families and villages who lose their homes permanently to rivers every year are perhaps one of the highest in Bangladesh. It has been reported that many of the slum dwellers in the metropolitan areas are the victims of riverbank erosion. The erosion victims are suffering severe economic and social consequences. Substantial numbers of communities are also being displaced from coastal islands, chars, and along the coastline as their settlements are destroyed due to frequent and intense storm surge and tidal bores.

Infrastructure

Infrastructure and facilities including road networks for transport, bridge and culverts, sea and airports, coastal and flood embankment for protection, industrial parks, public offices, public facilities including utilities, education, health centers, markets are all essential for a country to rapidly advance its people towards improved well being. Safe infrastructure ensures the development services and benefits it should provide and Bangladesh has been investing substantially to improve its physical infrastructure. Recurring severe to catastrophic floods have damaged and destroyed the physical infrastructure in many parts of the country making the protection weak and ailing.

Climate and Natural Hazards

Bangladesh has a humid, warm, tropical climate. Its climate is influenced primarily by monsoon and partly by pre-monsoon and post-monsoon circulations.

A Climate Hazards Calendar showing key climate related hazard risks for Bangladesh is summarized in the diagram. The darker shade identify the period of year when the risk is most critical.



Hazard risk intensity



Global warming makes it worse

Over the past 100 years (1906 - 2005), the earth's average surface temperature has risen by around 0.74°C, with the warming greater over land regions than over the oceans. A 2 degree Centigrade rise in the global mean temperature by the end of this century has been considered a possibility by many researchers. Very small changes in the temperature, rainfall or sea level rise can lead to severe consequences for a country already stressed environmentally, socially and economically. Also, the variations can be quite significant when downscaled for a location. In addition, there may be more than one impact at any given period which can lead to grave circumstances. Further, climate change induced impacts may trigger a chain of consequences due to non-climatic activities and their outcomes. For Bangladesh, a rise of global mean temperature by 0.74°C over one and half century has unleashed climatic nightmare putting survival and development in question. Global warming at 0.2°C per decade from now, unavoidable, will mean our struggle in this land will compound and reach challenging dimensions.

Observed changes in climate trends, variability and extreme events and their impact

Bangladesh is already evidencing the adverse impacts of global warming and climate change. The following impacts have been observed. Summers are becoming hotter, monsoon irregular, untimely rainfall, heavy rainfall over short period causing water logging and landslides, very little rainfall in dry period, increased river flow and inundation during monsoon, increased frequency, intensity and recurrence of floods, crop damage due to flash floods and monsoon floods, crop failure due to drought, prolonged cold spell, salinity intrusion along the coast leading to scarcity of potable water and redundancy of prevailing crop practices, coastal erosion, riverbank erosion, deaths due to extreme heat and extreme cold, increasing mortality, morbidity, prevalence and outbreak of dengue, malaria, cholera and diarrhea, etc.

Climate change impacts are already adding significant stress to our physical and environmental resources, our human ability, and economic activities.

Impacts of observed changes are felt most in the following sectors:

- Water resources
- Coastal resources
- Agriculture
- Health
- Livelihoods
- Food security
- Habitat/settlement security

According to IPCC in their recently published Fourth Assessment, the following changes have been observed in climate trends, variability and extreme events

- In Bangladesh, average temperature has registered an increasing trend of about 1°C in May and 0.5°C in November during the 14 year period from 1985 to 1998.
- The annual mean rainfall exhibits increasing trends in Bangladesh. Decadal rain anomalies are above long term averages since 1960s.
- Serious and recurring floods have taken place during 2002, 2003, and 2004. Cyclones originating from the Bay of Bengal have been noted to decrease since 1970 but the intensity has increased.
- Frequency of monsoon depressions and cyclones formation in Bay of Bengal has increased.
- Water shortages has been attributed to rapid urbanization and industrialization, population growth and inefficient water use, which are aggravated by changing climate and its adverse impacts on demand, supply and water quality.
- Salt water from the Bay of Bengal is reported to have penetrated 100 km or more inland along tributary channels during the dry season.
- The precipitation decline and droughts has resulted in the drying up of wetlands and severe degradation of ecosystems.

A major concern for Bangladesh are climate change victims who are increasing in number every day and must seek refuge due to loss of their homes, land, settlement to river erosion, coastal erosion, and permanent inundation. It is alarming that there is no obligation for states to recognize the internal and external displacement of people due to climate change or other environmental factors. Four major types of victims due to effects of climate change on human settlement and habitat need to be highlighted. *Victims of riverbank erosion, coastal erosion, permanent inundation and sea level rise.*

Tomorrow's climate and risks

The IPCC Working Group II has reported in their fourth assessment this year that the production of rice and wheat might drop in Bangladesh by 8 percent and 32 percent respectively, by the year 2050. Bangladesh is especially susceptible to increasing salinity of their groundwater as well as surface water resources, especially along the coast, due to increases in sea level as a direct impact of global warming. The Sunderban mangrove forest is under threat; Bangladesh would be worst affected by the sea level rise in terms of loss of land. Climatic changes in Bangladesh would likely exacerbate present environmental conditions that give rise to land degradation, shortfalls in food production, rural poverty and urban unrest. (IPCC, 2007)

Environmental Impacts

- Changes in rainfall patterns
- Increased frequency and severity of:
 - Floods
 - Droughts
 - Storms
 - Heat waves
- Changes in growing seasons and regions
- Changes in water quality and quantity
- Sea level rise
- Glacial melt

Socio-economic Resources & Sectors affected

- Water resources
- Agriculture and forestry
- Food security
- Human health
- Infrastructure (e.g. transport)
- Settlements: displacement of inhabitants and loss of livelihood
- Coastal management
- Industry and energy
- Disaster response & recovery plans

A very high rate of sedimentation is predicted due to the increased flow in the rivers from increased rainfall in the upper catchment and from rapid melt of glaciers during summer in the next few decades. This will cause further erosion of the riverbanks, islands and coastal Bangladesh.

The risks resulting from adverse impacts of climate change has the potential to undermine poverty reduction efforts and could compromise the Millennium Development Goals (MDGs), such as the eradication of extreme poverty and hunger by 2015. The OECD and the World Bank estimate that 40% of overseas development assistance to Bangladesh may be climate sensitive or at risk. Additionally, funding for humanitarian response to disasters (majority of which are climate related), which now cost donors millions of dollars per year, may result in the reallocation of funding from on-going development activities. This can set back the development process for decades.



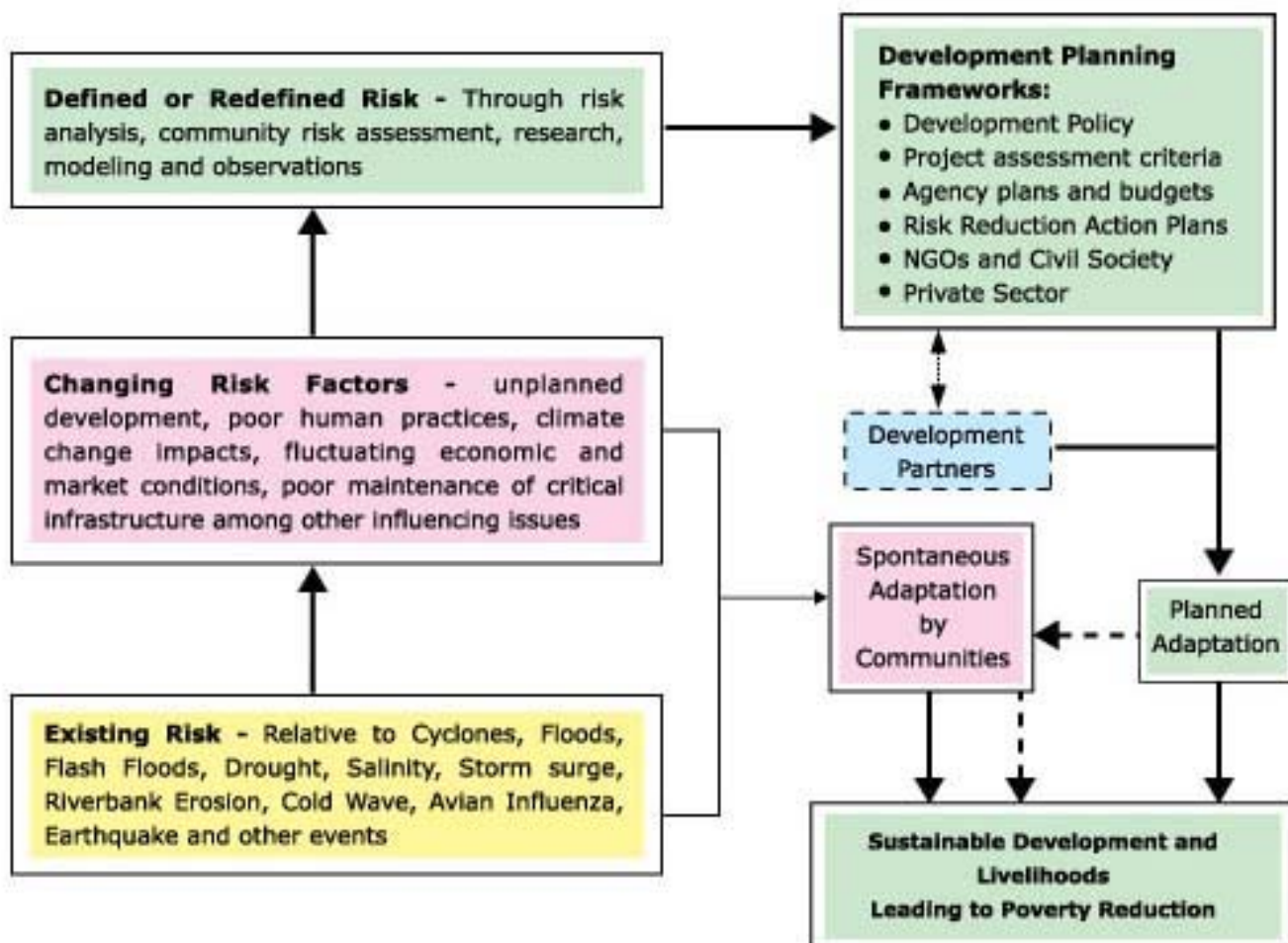
Response

Government

Bangladesh has taken a comprehensive approach in designing and implementing disaster management in a changing climate. Major conceptual significance of the Ministry of Food and Disaster Management through the Comprehensive Disaster Management Programme is to shift the prevailing paradigm of response and relief mode to a proactive risk reduction approach. Bangladesh disaster management model promotes defining and redefining risks incorporating technical knowledge and traditional knowledge, impacts of climate (and variability) change analyzing vulnerability and risk factors focusing all hazards; all risks and all sectors. To manage the risk environment CDMP intends to achieve a balance in risk reduction options (e.g. early maturing rice variety, plinths etc), treating risks through risk specific programs, ensuring service delivery, strengthen preparedness and response system including early warning. It includes emergency response to address residual risks after reduction.

Disaster management in a changing climate:

The climate change increases extreme weather events like cyclone, floods, storm surges, droughts, heavy downpour in smaller time, cold spell, and heat stress. Increased extreme events following the climate (and Variability) change have the potential to increase disasters. Climate change compounds the risks of the disasters which are already a threat to our development, wellbeing and future. The challenge is to reduce such risks of climate change.



Development Risk Reduction (DRR)



To reduce loss of disasters, in line with globally accepted philosophy, Bangladesh has taken the approach of shifting the prevailing paradigm of response and relief mode to a proactive risk reduction approach. Increased extreme weather events are immediate impacts of climate change needs attention and as such Bangladesh is practicing a holistic approach of reducing risks considering all hazards.

CDMP is a strategic institutional and programming approach that is designed to optimise the reduction of long-term risk and to strengthen the operational capacities for responding to emergencies and disaster situations including actions to improve recovery from these events.

Key benefits associated with this approach are that:

- The resources and expertise of government, NGO, private sector and the community are deployed according to national priorities, community risk reduction programming needs and not organizational preference.
- It provides a big picture of what needs to be done and as such, a mechanism for identifying gaps, monitoring and observing achievement.
- It provides the basis upon which formal collaborating partnerships are developed and nurtured.
- It facilitates the validation of new projects against country risk reduction needs
- It serves as a management tool for donor agencies and regional organizations to guide their inputs.

CDMP applies participatory planning at the community level to find out the community perceptions and aspirations of identifying risks and actions for reducing such risks. The community Risk Assessment (CRA) and Local level Risk Reduction Action Plans (RRAP) in the CDMP pilot districts at Union level has yielded RRAPs at Union levels. The RRAPs are being implemented through

Local disaster risk reduction fund (LDRRF) by CDMP. The CRA process involves community, Community Based Organizations, NGOs, Upazila Level Government Officers, Union Parishad (UP) and civil society at various stages of the participatory process. The process takes eight days in a specific location, e.g Union. Development risk reduction frame considers existing risks, future risks due to climate change and other factors and define the risks and integrate risk reducing actions in to the development planning process to be embedded in to the development persuasion of the country including sectoral plans, programmes and projects. The frame acknowledges and appreciates the spontaneous adaptation by the community and planned adaptation to climate change and variability.

Dealing climate change and disaster management involves risk assessment, risk analysis, identifying, locating risks over time and space, options to treat risks, awareness and skills to appreciate and address such risks into development planning of the country. On the other hand policy directives, adjustment of respective policies, plans, programmes and create an enabling institutional environment are required. At this end CDMP has developed a Corporate Plan for the MoFDM, drafted revised disaster management plan, drafted revised Standing Orders on Disaster. The ECNEC has already provided directive to the planning authority to introduce "risk reduction and disaster mitigation" in to the project planning.

Climate Change Cell

To address current impacts and manage future risks of climate change and variability at all levels in all stages toward a climate resilient Bangladesh, the government has established the Climate Change Cell. The Cell provides the central focus for the Government's climate change related work, operating as a unit of the Department of Environment (DoE). Its objective is to enable the management of long term climate risks and uncertainties as an integral part of national development planning.

Government has developed **A Country Framework for Climate Resilient Development** to ensure national development resilient to climate change and its impacts in such a way that the lives, livelihood and well being of its people is sustained over time. The objective of this country framework is to facilitate addressing climate risk management and adaptation holistically, practically and systematically in a country setting, thereby enabling development to take into account climate related risks and their management. It will chart a way for Bangladesh to integrate climate risk and adaptation practically. The framework will enable Bangladesh to assess and determine the scope and level of adaptation and risk management across different sectors on a continued basis, and over time, at each level of operation. This allows our country and its development process to address climate challenges holistically in its mainstream - a shift from ad-hoc, and segmented interventions.

The Climate Change Cell has established a mechanism that facilitates management of long term climate risks and uncertainties as an integral part of national development planning. The Cell also facilitates strengthening the capacity of the professionals, practitioners, policy makers to reduce unacceptable risks and improve preparedness for climate change impacts.

Addressing development risks

To understand development risks in a changing climate, some key questions need to be answered: Will these hazards become more frequent and intense? Will their magnitude increase? Which locations are most vulnerable? When will hazards occur? And what shall be possible impacts? For example: A farmer would like to know the likely rainfall patterns while planning his crop calendar, preparing his land, sowing, harvesting, etc. Obviously the development practitioners, professionals and policy makers need to gather this knowledge to provide extension and other services to such primary stakeholders who are at risk.

Network sharing knowledge services

Climate Change Cell collects, generate, archives and manages data, information and knowledge and provide support and services in making knowledge based decision to all stakeholders. A climate change database and a library archives not only

data but also reports and study findings in the arena of the climate change. The website offers a pool of resources, including news on events at home and abroad, progress and achievements.

Adaptation research

Climate Change Cell is facilitating key research actions to fill knowledge gaps in addressing adaptation to climate change and its impacts on the life and livelihoods; explore new adaptation options for the community to adapt with the impact of climate change; sharing experiences with relevant stakeholders on good practices for adaptation to climate change and variability. Through these research activities, a strong link between researchers, stakeholders and policy makers/planners has been established to share research results and needs and to formulate viable adaptation policies/strategies at national level to act upon. The research would also provide good practices or technologies that have shown better potential for adaptation to climate change and variability as well as improved livelihood options in the backdrop of climate change impact.

Cost of impacts and investment needs for adaptation

Climate change impacts can undermine countries' efforts to achieve the goals of sustainable development, including in particular by worsening poverty in developing countries, especially the Least Developed Countries like Bangladesh. Sustainable development depends on economic growth, social justice, and environmental integrity. Impacts in general and impacts due to climate change (and variability) on economic growth, social justice, and environmental integrity needs to be monetized to bring policy makers and planners on-board and provide them with an instrument that enables them in interpreting economical, social and environmental cost while planning development program. In this respect, the government seeks to assess the nature, size and spread of investment required in development plans and action to guide the country and its people toward climate resilience. Economic analysis and modeling for Bangladesh's vulnerability and susceptibility to climate change, disaggregated across sectors, could indicate investment requirements to protect past development gains and also assure climate resilient development in the coming decades. The



adaptation deficit for Bangladesh can contribute greatly to rationalize investment now to protect future.

Climate impact prediction

Worldwide, climate impact prediction modeling provides useful scenarios of impacts of climate change in seeking answers to the questions, and to help prepare the vulnerable to respond to the challenge. The Cell is applying models to predict climate impact, hazard scenarios and impacts on livelihood following predicted climate scenarios. This will provide climate hazards and trends (past hazards) necessary to assess climate risks at this point in time and applied in disaster risk reduction initiatives in the country. Modeling outputs will also provide vital information on climatic hazards and risks at local level which will be used to initiate and manage disaster risk reduction and climate risk management. The hazards scenarios will also benefit development planning and management process towards climate resilient development.

Meteorological and hydrological information

Systematic observations providing meteorological and hydrological information services are a precondition to estimate and forecast hazard risks and vulnerabilities. For Bangladesh, this is critical, as both climate variability and change are strongly evidenced. Weather patterns, seasonal variations are becoming increasingly erratic, hence uncertainty becoming the order of the day. Both amount and the timing of rainfall are vital information required for strategic decision making by a host of researchers, professionals, managers, development service providers, and most important, the practitioners on the ground, etc. Rainfall data is also essential and serves as important basis for hydrological data sets and requirements. The immediate and urgent priorities to ensure necessary hydro-meteorological information service are to obtain rainfall and water level data in the upper catchments of the major river GBM to give efficient and timely forecasts of flood, upgrade BMD radar systems and network to cover entire GBM catchment to obtain required precipitation data, use satellite data partially in real time basis for monitoring rainfall and flashfloods, networking between BMD and met stations outside the country, assess the impact of rainfall in catchments outside Bangladesh, prepare map on flood zoning, improve the flood information dissemination upto community level, and review

the flood response system continuously.

Capacity building and promoting partnerships

Climate Change Cell promotes partnership with both government and non-government agencies to service long term and immediate needs. In this respect, a total of 34 focal points have been established in different government agencies, academic institutes, research institutes and organizations. Government officers including the Focal Points have been provided orientation on climate change concerns and responses. The Climate Change Cell is inclusive and develops concepts, ideas, needs and frames with the partners by improving access to relevant knowledge timely and systematically. Research needs of each sector, good practices in the sector, impacts of climate change and damage to the sector, risks to the sector, climate risk management and adaptation for the sector and priority investment for the sector can be identified and addressed through meaningful and effective partnerships.

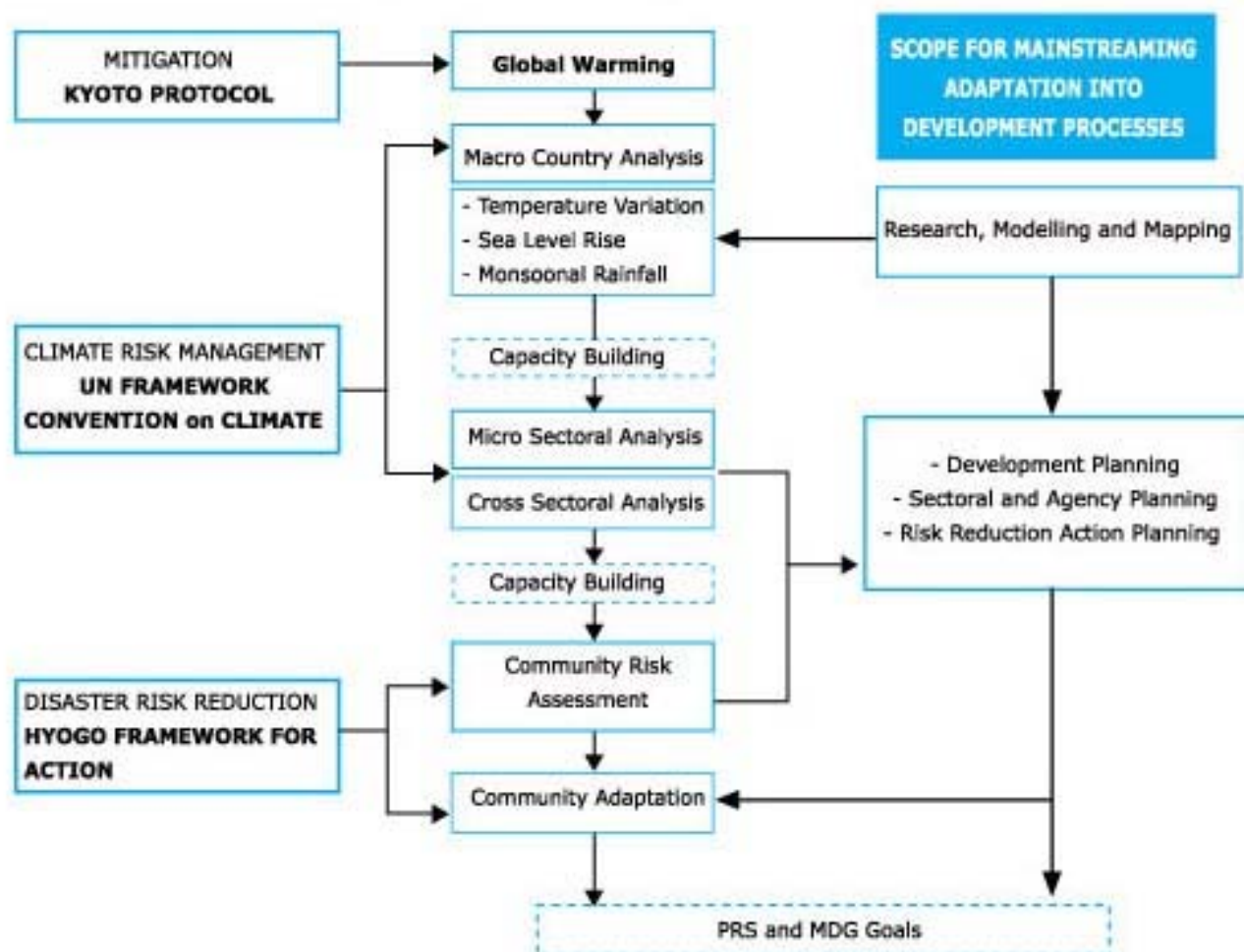
Mainstreaming climate change into development plans and processes

Mainstreaming climate change is to engage in a systematic, comprehensive effort to reduce the negative impacts of climate change through integration into overall national development and planning process of the country. The government has taken steps to facilitate achieving mainstreaming across all sectors and at every level of development. Some of the basic pre-requisites for mainstreaming are awareness, orientation, capacity building and advocacy at different levels and spheres of operation.

The mainstreaming process will emphasize on (a) coordination across institutions and tiers; (b) partnership among all stakeholders, including partnerships between agencies in charge of implementing development programs and local beneficiary groups; and (c) integration of local plans into meso-scale plans, of meso-scale plans into macro-level plans, and of macro-level sectoral plans into national development plans. It will consider whether climate change would (a) put investment for development activities at additional risk; (b) could aggravate vulnerability directly or indirectly; and (c) could pose a threat to local level resilience in any perceived way etc.

The relationship between development, climate change and disaster risk reduction within a country response framework is described in the following flow chart.

Climate Change - Disaster Management and Development Interface



Role of Civil Society

The civil society (environment scientists, NGOs, activists, academicians and researchers) are pioneer in understanding the climate risks and has championed communicating climate change issues and concerns, at home and abroad. During last 10-15 years Bangladeshi scientists, researchers, environmentalists, NGO activist carried large numbers of studies, observations, analysis and synthesis in the climate change arena. Climate change cell (CCC) has prepared an annotated bibliography that shows in the area of Agriculture and climate change a total of 7 reports are available that focuses on impacts, vulnerability and adaptation. Natural resources and climate change has 9 reports. Besides there are 30 reports on Climate Change Knowledge, 10 reports on Policy & Planning and 15 reports on Disaster Management. The stock taking is up to 2006 and is not exhaustive.

Civil society remains vigilant in advocating and raising voices in the respective platforms. They also contribute in generating knowledge through research and piloting at community level. They also play an important role in raising awareness, blending local and scientific knowledge and practices, etc. It is necessary to coordinate and work in partnerships between government, NGOs and other relevant stakeholders toward a climate resilient Bangladesh.

Future

Adaptation to reduce the impact of climate change is critical in Bangladesh. Bangladesh will be especially hard hit by climate change, with millions potentially pushed deeper into poverty.

We need to change the way we develop: From vulnerability toward resilience, Bangladesh needs to establish the basis to enable a long-term, comprehensive, systematic and iterative national planning and implementation process that integrates climate risk and adaptation.

- To manage the unavoidable
- To respond to development challenges and aspirations, and
- To avoid losses and damages many times what it will cost to avoid/minimize them through investments

Adaptation is central to reduce development risks. Much adaptation should be an extension of good development practice and reduce vulnerability by:

- Promoting growth and diversification of economic activity;
- Investing in health and education;
- Enhancing resilience to disasters and improving disaster management;
- Promoting risk-pooling, including social safety nets for the poorest.

Households, communities and organizations are encouraged and facilitated toward effective adaptation with the right policy frameworks in place. Poverty and development constraints will present obstacles to adaptation but focused development policies can reduce these obstacles.

Development policy and planning at every level should integrate adaptation actions. This will incur incremental adaptation costs relative to plans that ignore climate change. Ignoring climate change is not a viable option - inaction will be far more costly than adaptation.

Adaptation costs are hard to estimate, because of uncertainty about the precise impacts of climate change and its multiple effects. But they are likely to run into tens of billions of dollars. This makes it still more important for developed countries to honor both their existing commitments to increase aid sharply and help the world's poorest countries adapt to climate change. More work is needed in Bangladesh to determine the costs of adaptation.

Both the impacts and adaptation costs will be much larger without global action to mitigate climate change, and so will be the need for richer countries to help the poorer and most exposed countries. The costs of climate change can be reduced through both adaptation and mitigation, but adaptation is the only way to address impacts of climate change over the next few decades. Thus, development efforts that increase the resilience at community level must be emphasized.

Bangladesh needs to invest in climate resilient development because Climate Change is a growing challenge to our development efforts. Past gains are destroyed, current efforts at risk, future aspirations in question.

Challenges and Opportunities to Mainstreaming and Proposed Interventions

In Bangladesh, mainstreaming climate risks and adaptation has been limited until now, with Development Partners beginning to consider climate change risk factors as an integral part of their project planning¹. In terms of progress till date in mainstreaming climate risks and adaptation in developing countries, they are limited to few. However, developing countries are increasingly recognizing the need to mainstream, and taking necessary steps toward this end².

¹ Development Partners, particularly DFID, World Bank, Denmark, The Netherlands and the European Union are promoting and assessing their assistance portfolios/sectors with regard to climate risks and adaptation. CDMP is supporting the mainstreaming of



The following considers key challenges and opportunities, and proposed interventions for mainstreaming:

Awareness and Knowledge Management

There is a general lack of awareness among policy-makers and development practitioners about the risks posed by climate change and their implications on the development processes³. Raising awareness on the likely climate change impacts and risks is a key priority among policy makers and development practitioners, in all sectors, at all levels. To support emerging knowledge sharing and management needs, the government will need to mobilize a coordinated effort to ensure reliable flow of relevant information. In this respect, the scientific community will need to provide easily accessible and up-to-date climate risk information relevant to the demands of different sectors. Component 4b is addressing in-country capacity improvement to generate such information which will serve as a major building block to increase the effectiveness of information flow. Climate Change Cell already offer a range of services including a Bulletin, Website, Database and other knowledge tools and products dedicated to climate risk and adaptation, which can be strengthened to meet the evolving demands.

Communication

The government departments and agencies responsible for poverty and disaster risk reduction are in some cases aware of vulnerability to climate change extreme events, but have no means of coordination. Demand driven support to establish communication flow is essential. Component 4b is addressing this area through a range of services. This include a knowledge network, a number of forums, series of meetings/workshops, e-forum, etc.

Institutions

Successful mainstreaming depends very much on addressing key aspects of organizational and institutional learning, as evidenced from practice. A common barrier cited is that housing climate change in environmental or meteorology departments of government lead to limited leverage on the issue/concern⁴. **For Bangladesh, a systematic analysis is desirable to scope where housing climate risk and adaptation is appropriate, in line with the level of urgency and priority.** Effective identification of role and responsibilities different Ministries, Agencies, Departments need to discharge toward climate resilience through mainstreaming will be an important starting point. Also, the services necessary to support capacity strengthening may be tailored according to the gaps and needs identified in respective scope of work. Multi-stakeholder national coordination committees may be required, chaired by a ministry with sufficient ability and mandate for macro policy formulation, planning and implementation. This may facilitate managing the national adaptation strategy more effectively.

Disaster and Climate Risk Reduction into national development planning and practices. The Country Poverty Reduction Strategy has addressed climate risk and adaptation as a start, and this may provide a good example to refer to. An occasional paper The only policy/strategy at national level that considers and addresses climate risk and adaptation is the Integrated Coastal Zone Management Strategy, and could serve as a guide to good practice for other initiatives.

² Caribbean countries were among the first to start work on adaptation with the Caribbean Planning for Adaptation to Climate Change (CPACC) project in 1997. Elsewhere, the Pacific island of Kiribati has successfully integrated adaptation into national development strategies from within the Ministry of Finance and Economic Planning and later from the Office of the President. India is also taking similar steps through their Ministry of Finance and Planning. This year, Indonesia and China has prepared National Strategy and Action Plans.

³ Detailed findings of the Baseline Study on Climate and Disaster Risks, Climate Change Cell, CDMP, 2006 provides general guidance on state of knowledge and awareness in this respect.

⁴ Mainstreaming Climate Change Adaptation in Developing Countries, IDS In Focus, Issue 2, November 2007. www.ids.ac.uk

Inclusion A major weakness so far has been in ensuring the participation of the broad range of stakeholder groups in policy making related to climate change and adaptation . In particular, relevant stakeholder groups are often excluded or marginalized, with little or no voice and representation in national policy making. Identifying climate risks and addressing them through adaptation and risk reduction interventions should be inclusive. This will facilitate experience and knowledge sharing among different actors and stakeholders. On the other hand, adaptation strategies can benefit from an inclusive process promoting collaborative ownership through partnership.

Input and support for knowledge sharing, communication, coordination, planning and implementation will be necessary at individual, organizational and institutional levels.



When we speak about how climate change will compromise biodiversity let us always remember that hidden behind statistics on species loss is the face of the fisherman who will lose his livelihood as rising ocean temperatures destroy the coral and decimate the fish stocks. When we refer to the alarming decline in food production from increased drought and soil erosion let us remember the farmer who will no longer be able to feed his family. When we consider increased frequency and intensity of storms let us remember the families that will lose their homes and their possessions. And when we speak about sea level rises let us remember the bonds of family, community, and nationhood that will be irreversibly broken.

Statement by His Excellency Ahmed Abdullah Minister of Environment, Energy and Water of the Republic of Maldives, at the United Nations Thematic Debate "Addressing Climate Change: The United Nations and the World at work"

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**Ministry of Food and Disaster Management
COMPREHENSIVE DISASTER MANAGEMENT PROGRAMME (CDMP)**

The purpose of Comprehensive Disaster Management Programme of the Government of the People's Republic of Bangladesh and its development partners, Department for International Development (DFID), The European Union (EU) and United Nations Development Programme (UNDP), is to achieve a paradigm shift in disaster management from conventional response and relief to a more comprehensive risk reduction culture. Five strategic focus areas were identified for the Comprehensive Disaster Management Strategy (CDMP) by the Government and donors in order to achieve this paradigm shift in disaster management. They are Capacity building, Partnership development and mainstreaming, Community Empowerment, Research information management and Response management. CDMP represents a contemporary approach with genuine partnerships aimed at making a sustainable difference to the lives of the Bangladeshi people by mainstreaming disaster management into all sectors of the community and the government.

The Climate Change Cell has been established in the Department of Environment under the framework of the Comprehensive Disaster Management Program. The Cell provides the central focus for the Government's climate change related work, operating as a unit of the Department of Environment under the Ministry of Environment and Forests. Its Objective is to enable the management of long term climate risks and uncertainties as an integral part of national development planning. This will contribute to the primary objectives of the wider Comprehensive Disaster Management Programme, which aims to strengthen the capacity of the Bangladesh Disaster Management System to reduce unacceptable risks and improve response and recovery activities.

A major objective of the Climate Change Cell is providing necessary support to the Government in addressing climate change concerns and challenges through capacity development, knowledge management, and mainstreaming climate and disaster risks into development planning, policies and processes.

Prepared Climate Change Cell for the Bangladesh - U.K. Climate Change Conference, Dhaka on 25 March 2008

