

The PEACE Handbook

*People's Empowerment for Addressing Climate
Justice & Environmental Justice (PEACE)*

Building Climate Resilience & Mainstreaming Adaptation



Avoiding the Unmanageable

Managing the Unavoidable

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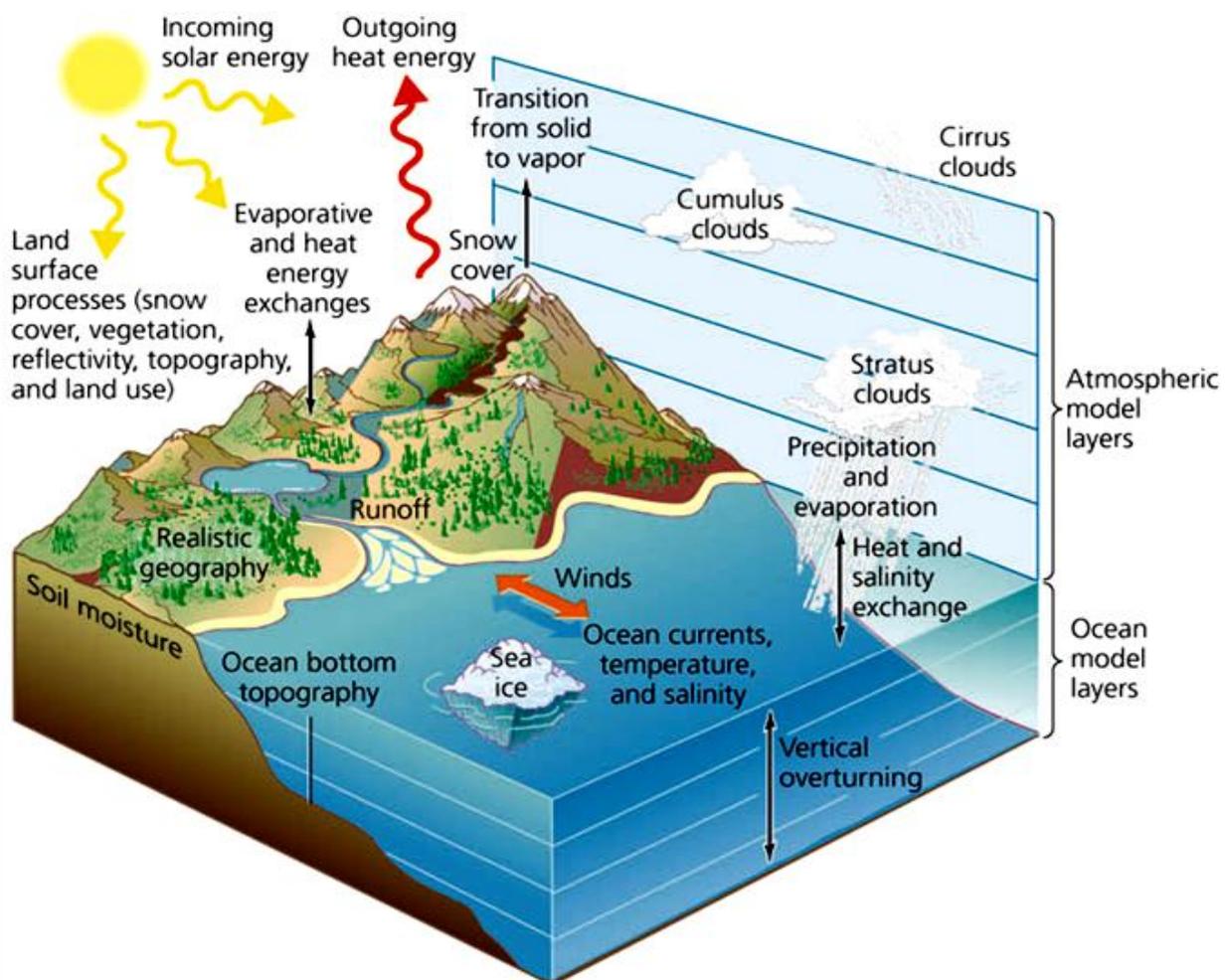
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What is Climate Change?

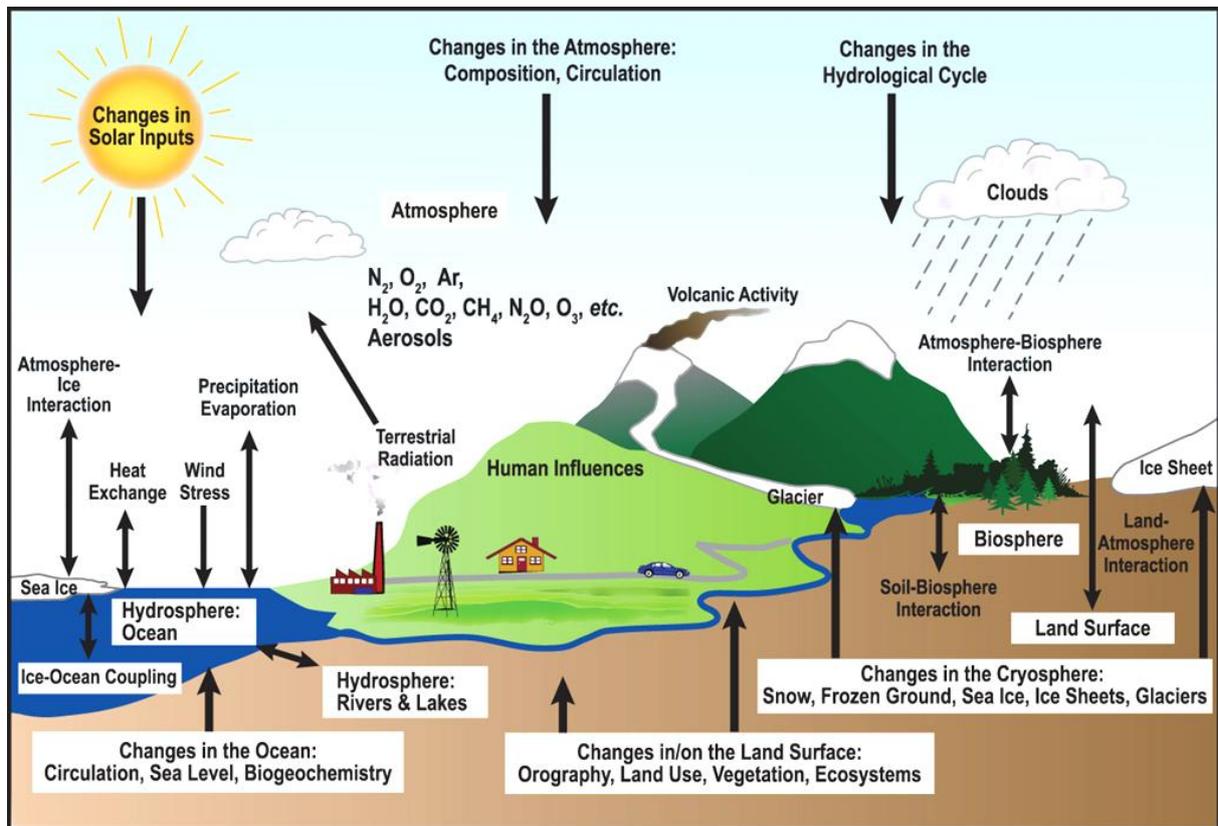
Weather is a set of all the phenomena occurring in a given atmosphere at a given time. Weather refers to current activity, and not long-term atmospheric activities. Climate is the long-term average weather conditions for a region. Over the past few centuries the climate of the earth has varied significantly from average weather conditions. Such significant departures in climatic conditions are referred to as 'climate change'

Climate in a narrow sense is usually defined as the "average weather" or more rigorously as the statistical description in terms of the mean and variability of relevant quantities over a period of a time ranging from months to thousands or millions of years. The classical period is 30 years, as defined by WMO. These relevant quantities are most often surface variables such as temperature, precipitation, and wind.



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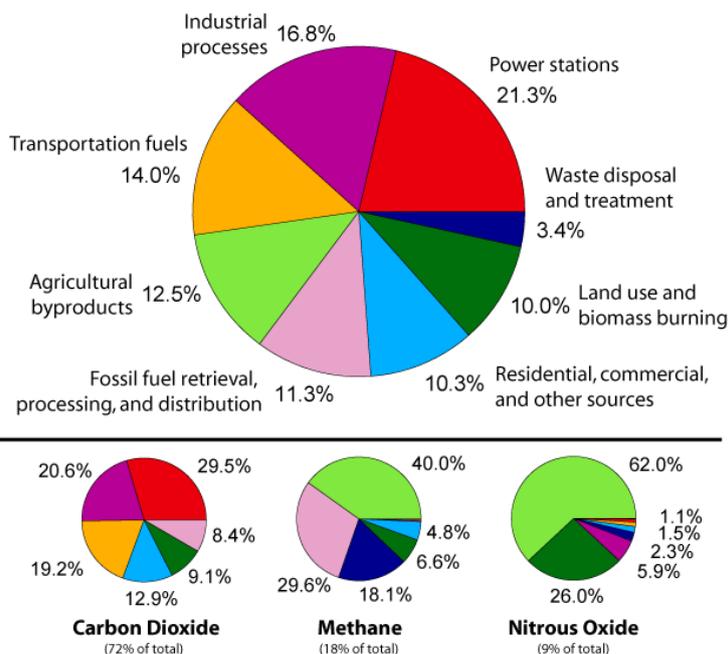
Climate in a wider sense is the state including a statistical description of the climate system. Climate change refers to a statistically significant variation in either the mean state of the climate or its variability, persisting for an extended period typically decades and longer.



What is the primary source of climate change?

Primary sources of climate change are increased greenhouse gases (GHG) in the earth's atmosphere.

Annual Greenhouse Gas Emissions by Sector



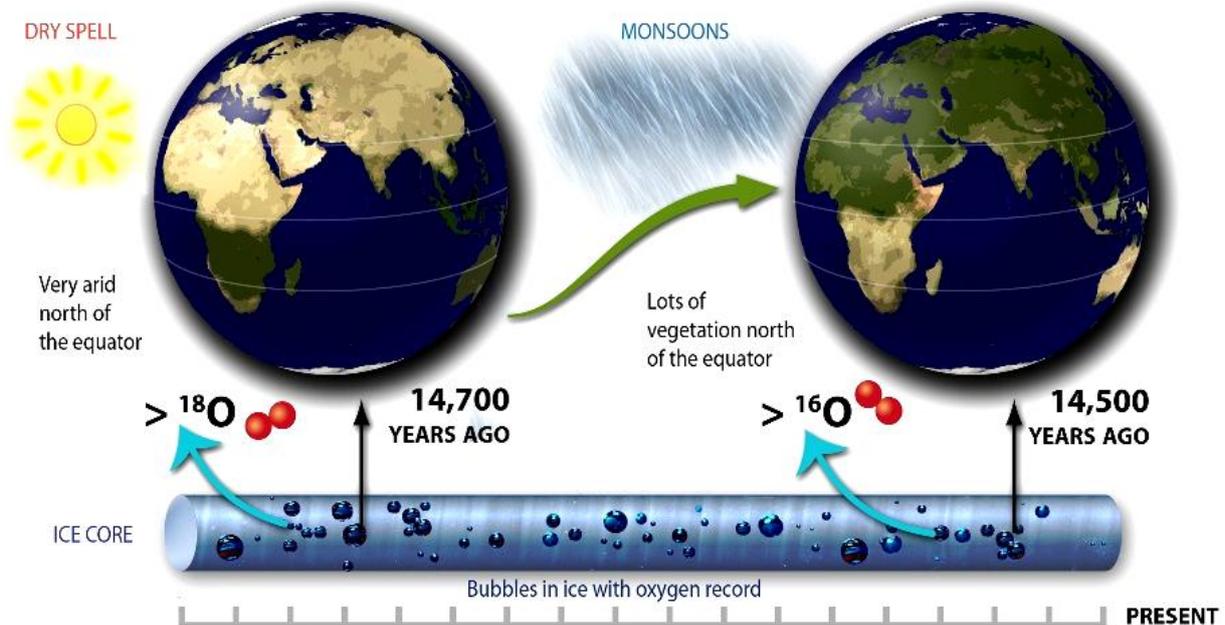
GHGs build up in the atmosphere and act like a greenhouse. GHGs capture heat and cause a rise in the average temperature of the earth's surface and related climate impacts. GHG come from water vapor, carbon dioxide, nitrous oxide & methane.

- 81% are from carbon dioxide produced by combustion of fossil fuels
- Transportation sector is the single largest producer of GHG emissions (41% of total emissions)
- Electricity generation is the second largest category of GHG emissions

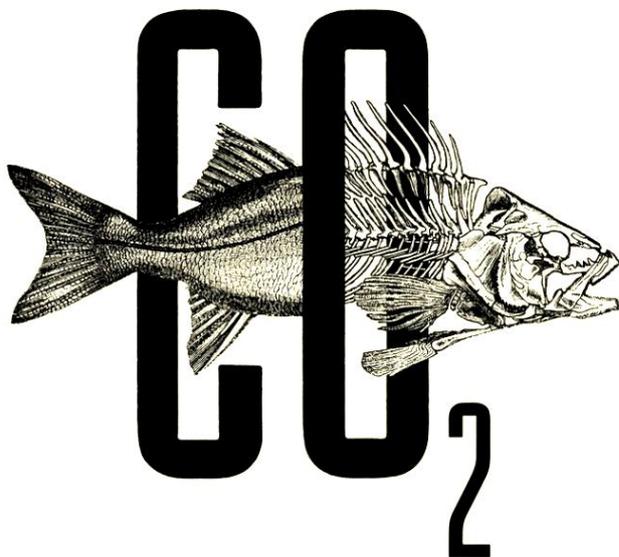
What are the Root Causes of Climate Change?

In technical point of view, the man-made emissions of Greenhouse Gases or GHGs through energy consumption or the exploitation & combustion of fossil fuels are the root cause of climate change. The global temperature increases if the GHGs increase in the atmosphere. The principle GHG is carbon

dioxide (CO₂). Carbon dioxide from the combustion of fossil fuels from cars, power plants, and factories accounts for about two thirds of the human induced warming effect. Methane, nitrous oxide and other gases emitted from industrial and agricultural activities account for the remaining third. Deforestation is another root cause of climate change. Trees filter the air of carbon by taking in carbon dioxide and releasing oxygen. Carbon dioxide causes about 70% of the global increase in temperature.



In economic context, industrialization for the economic development is the root cause of climate change. Every country wants to improve the living standards of its population through increasing speeding up industrialization. In social context, ignorance or insignificant knowledge of the people is the root cause of climate change.



If the relationship between human activity and climate had been widely understood many decades ago, we simply would not be facing the same magnitude of challenge that we face today.

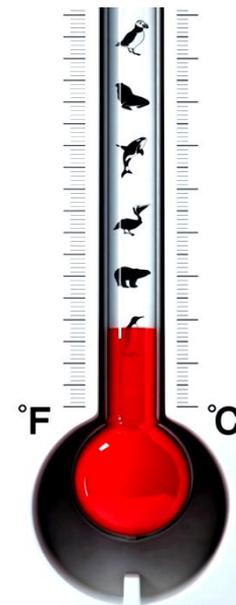
Public support and the related political will for taking action would have been available earlier, and many of those who influence climate change would have made different decisions.

The number of population and population density of the country increases the societal exposure to climate change risks. A relatively uneducated and illiterate people

are less capable of adapting to climate change, and thus have higher vulnerability. Although the poverty rate in Bangladesh has gone down by 10% since 1990, nearly half of the population still lives below the poverty line with food security being of vital importance to the poor.

How human activities influence climate change?

Although the change in climate may be due to natural variability, there is scientific evidence that human activities have contributed significantly more greenhouse gases such as carbon dioxide, methane, nitrous oxide that cause climate change. This has been mainly through use of fossil fuels and changes in land use patterns due to rapid increase in global human population. It is estimated that since the industrial revolution in the 1850s, carbon dioxide in the atmosphere has increased by more than 30%, methane by more than 150%, nitrous oxides by 17% and ozone by 35%. The average surface temperatures have increased by 0.3 to 0.6°C since the late nineteenth century.



Global warming makes them Disappear

What are the key adverse effects of climate change?

Climate change is predicted to have adverse effects on both natural ecosystems and humankind. Changes in weather patterns are likely to reduce food production and loss of biodiversity where for instance, rainfall patterns are predicted to decrease due to climate change. Floods, droughts, heat waves and storms are likely to adversely affect human and animal health. Where rainfall is predicted to increase, incidences of diseases such as malaria and gastro-intestinal infections will also increase.

What is Adaptation to Climate Change?

'Adaptation' refers to activities that address the impacts and opportunities resulting from the changing climate. 'Mitigation' refers to actions that reduce our contribution to the causes of climate change.

Adaptation to climate change is a process by which strategies to moderate, cope with and take advantage of the consequences of climatic events are enhanced, developed, and implemented. It is in general, an adjustment in ecological, social or economic systems in response to observed or expected changes in climatic stimuli and their effects and impacts in order to alleviate adverse impacts of change or take advantage of new opportunities. It involves both building adaptive capacity to increase the ability of individuals, groups, or organizations to adapt to changes, and implementing adaptation decisions, i.e. transforming that capacity into action. Both dimensions of adaptation can be implemented in preparation for or in response to impacts generated by a changing climate. Hence, adaptation is a continuous stream of activities, actions, decisions and attitudes that informs decisions about all aspects of life, and that reflects existing social norms and processes.

What is needed for Managing Climate Change?

Climate Change is complex and caused by an intricate interplay amongst various factors most of which are not restricted to national boundaries. For example, deforestation of tropical rain forests reduces trees that are a carbon 'sink', thus reducing the capacity of trees to absorb carbon dioxide emissions from the atmosphere, which leads to global warming. This in turn contributes to melting of ice at the poles with resultant increases in sea levels further away from the poles.

Knowledge of current climate risks and adaptation strategy and the development of scenarios of future climate, vulnerability, and socio-economic and environmental trends as a basis for considering future climate risks

- ✓ **Knowledge:** Develop a better understanding of the details of future climate change.
- ✓ **Mitigation:** Reduce emissions of carbon dioxide and other greenhouse gases.
- ✓ **Adaptation:** Increase the resilience of society to climate change.
- ✓ **Leadership:** Raise public awareness of the challenges posed by climate change and the need to mitigate and adapt.

What is Predicted about Bangladesh in the IPCC 4th Assessment report?

- ✓ 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.
- ✓ Long term decadal rainfall average anomalies since 1960s.
- ✓ More devastating floods have taken place during 2002, 2003, and 2004.
- ✓ Cyclones have noted to decrease since 1970 but the intensity has increased.
- ✓ Salt water from the Bay of Bengal is reported to have penetrated 100 km or more inland.
- ✓ The precipitation decline and droughts has resulted in the drying up of wetlands & severe degradation of ecosystems.

What is Mainstreaming Adaptation?

Mainstreaming is defined on integrating adaptation measures into practical actions, policies or initiatives to actually reduce vulnerabilities. Mainstreaming here refers to the incorporation of initiatives, measures, strategies to reduce vulnerability to climate change into other, existing policies, programs, resource management structures, disaster preparedness programs, livelihood enhancement activities, and other sustainable development initiatives, so that “adaptation to climate” becomes part of, or consistent with, other, well established programs, particularly sustainable development planning.

Mainstreaming of adaptation to climate change can occur at several levels, including international programs, national policies, regional activities, and local community actions.

Mainstreaming is mainly used to describe the consideration of climate change adaptation in national (and regional) decision making processes (planning, budgeting etc.). Integration is used when specific adaptation measures are added to the development plan or strategy.

Why Policy Advocacy is important for mainstreaming Adaptation?

Policy is a fundamental aspect for addressing climate change shocks. Climate Risk reduction cannot be viewed as a technical problem with technical solutions. It is also a matter of enacting policies and enforcing laws, building and maintaining accountable institutions, and producing an environment of mutual trust between government and the population. It is difficult to sustain community initiatives, if they do not become part of the government policies.

Adaptation is not something done separately from policies relating sectors (such as water, food, health, infrastructure), but it is an approach to the management of those sectors, that needs to be incorporated or mainstreamed in sector policies.

Adaptation to climate change should promote the integration (or mainstreaming) of adaptation into other programs and initiatives, for efficiency and effectiveness. If adaptation options are identified to address climate change effects in particular, then those options would need to be integrated into the existing or evolving national policy and management system.

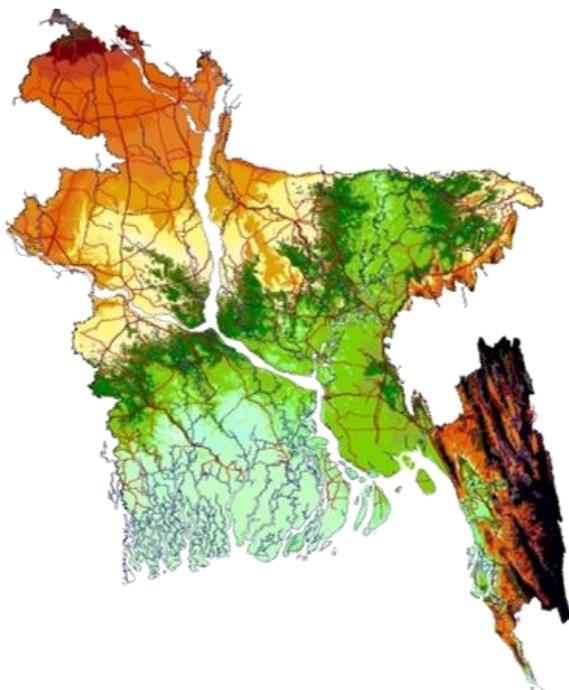
What is Community?

Community is defined as “A group of people with possibly diverse characteristics who are linked by social ties, share common perspectives, and are joined by collective engagements within a geographically confined area”. Four indicators:

- ✓ a state of organized society in small form (town, village, hamlet) that recognizes a single representative (leader, formal or informal)
- ✓ The people inside a confined geographical area; small enough to allow face-to-face interaction as the main form of contact between the individuals within the group
- ✓ Having a common good or a common interest and recognizing that, and been recognized as having that.
- ✓ A sense of common identity and characteristics ('we' versus 'them' feeling) on either/or social, cultural, economic, ethnic grounds.

Communities' are defined as all groups of people—including Indigenous Peoples, mobile peoples and other local communities—who live within or adjacent to the project area as well as any groups that regularly visit the area and derive income, livelihood or cultural values from the area. Indigenous Peoples' are defined as distinct, vulnerable, social and cultural groups whose members identify themselves as belonging to an indigenous cultural group. Community characteristics may include shared history, culture, livelihood systems, relationships with one or more natural resources, or the customary institutions and rules governing the use of resources.

What is Community Driven Adaptation Approach?



The community is sensitive to the impacts of climate change to varying degrees depending on specific local circumstances (nature and location of settlement; social and cultural systems; the ability of natural resources to meet human needs). The knowledge about the type of climate change impacts and the community exposure to climate change risks is a fundamental requirement for enhancing community resilience. Community resilience is also dependent on local observations of impacts (e.g. decrease in monsoon rainfall, increased droughts) and the frequency, magnitude and duration of the impact. The direct community involvement will provide greater community awareness regarding their potentialities. Enhancement of adaptive capacity represents a practical means of coping with changes and uncertainties associated with climate change, and hence of reducing vulnerabilities. This can be achieved through improved access to

resources, reduction of poverty, lowering of inequities, improved education and information, and improved infrastructure.

How to communicate climate change risks to the vulnerable community?

Despite awareness programmes, climate change is not well understood. Failure to relate some problems such as salinity encroachment, deforestation, declining fish stocks, and land degradation to climate change despite their knowledge, highlights the need for repackaging climate change messages in ways that stakeholders can identify with and relate to daily environmental problems that they

experience. The need to enhance synergies, through existing programmes and related environmental activities, cannot be overemphasised. Resource centres where climate change information may be obtained do not proactively disseminate the information. Rather it is left to interested stakeholders to come looking for the relevant climate change information. Since climate change is a new concept that is poorly understood even by trainers, access to relevant information and resources is essential.

Climate change must be presented in a way that enables stakeholders to relate specific activities that contribute to climate change to what is relevant in their daily lives. Being a new concept, it is important that climate change is communicated in a simple, easy to understand and relevant manner. A simple, climate change information sheet has to be developed so that many people can easily understand. Train environmental reporters/journalists in climate change and encourage the media to publish climate change information.

Why Local adaptive capacity is essential for improving local livelihoods and reducing vulnerabilities?

Development of eco-region specific local adaptive capacity is important for addressing & monitoring the actual impacts of climate change in different parts of the country to more accurately predict. This will help in more clearly targeting the problems for future coping strategies and actions. There is a need to identify regions in Bangladesh where food security is most threatened, where natural resources are most at risk, and where poor people are particularly vulnerable, as a result of likely climate change. Building adaptive capacity to climate change and managing climate risks requires awareness and understanding of climate change issues.

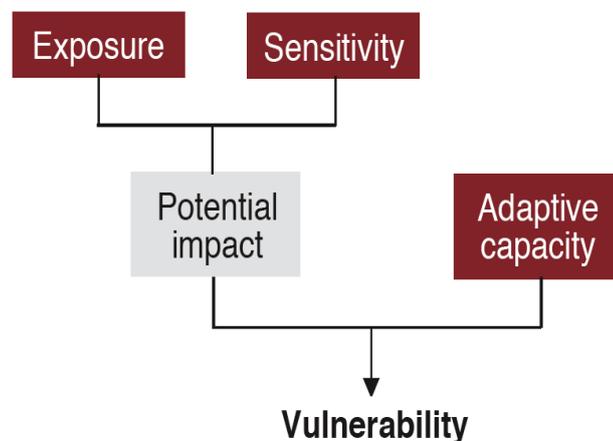
How better knowledge management contribute for People's empowerment?

The empowerment of any group depends on its capacity to generate and use knowledge, and to share it on an equal basis with other groups. Better knowledge management systems can greatly assist decision-making at all levels because information about climate change is vital for both individuals and institutions.

Nevertheless, information is useful only if it is available, in the appropriate form and language – i.e., if it is communicated, if it circulates among the various users with appropriate facilities, if it is exchanged or if the users have access to it.

A well-constructed knowledge management system, which is developed through participatory process, can embed most of these characteristics, if not all.

VULNERABILITY AND ITS COMPONENTS



Source: Adapted from D. Schroter and the ATEAM consortium 2004, *Global change vulnerability — assessing the European human–environment system*, Potsdam Institute for Climate Impact Research.

Why Vulnerability & Adaptation Capacity Assessment (VACA) is very important?

In climate change context, VACA is not only a diagnostic tool but also a capacity-building tool. It can provide people with greater awareness of their own potentialities.

The central concern of VACA is people who should be protected from the adverse consequences of present climatic variations and dangerous climate change.

- ✓ The nature of climate change itself, e.g., change in sea level, temperature, extreme events.
- ✓ **Social vulnerability:** demography, Settlements, health, education and work, governance, culture or personal that can be affected by climate change
- ✓ **Economic vulnerability:** capital value at loss, land loss, labor force, economic activity, and infrastructure that can be affected by climate change
- ✓ **Ecological vulnerability:** Ecosystem services, biodiversity and natural resources that can be affected by climate change

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Why Community-based climate adaptation & risk reduction approaches need to be developed?

Community-based initiative requires the collaborative effort to work with the local community, not merely providing service delivery to the targeted beneficiaries. Communities have their own mechanisms of coping with disasters, which may not be sufficient to cope due to the magnitude of the Climate change risks. Nevertheless, their coping mechanisms can form the basis for adaptation to climate change.

Community-based approaches will draw on local expertise and lead towards better articulation of problems and solutions. Only a few efforts are made to systematically gather information on climate change vulnerability on poor household in a form that would be directly useful to householders and the NGOs that work with them. Most of the information about climate change vulnerability is presented in a form suitable to reach specialists, and not to address ordinary people in their own terms. Since the worst sufferers of climate change impacts are the rural communities, it is important to re-establish the links among poverty, livelihood and environment.

Assessment of adaptation options may help the community decide on a range of actions, which they could undertake to either address issues relating to impacts of climate change or meeting community development objectives. The reliable estimates of the climate change impacts on water resources, crops and livestock at local levels is crucial to adapt and to mitigate climate change impacts on the rural poor.

Why the community based climate change adaptation must incorporate the gender dimension of climate change?

Deforestation, water scarcity, soil degradation, and exposure to agricultural and industrial chemicals and organic pollutants affect women and men in varying ways. Not only do women and men differ in the ways they use and manage environmental resources, the degradation of natural resources affects them differentially. Roughly half of Bangladesh's population is made up of women (48.9 percent in 2004, according to the World Bank gender profile), 80 percent of whom live in rural areas. This make the case stronger to give specific attention to build women's capacity by taking necessary steps locally, nationally and internationally.

Climate change will adversely affect women more than men in Bangladesh. Shortage of safe drinking water, especially in the coastal belt and in drought-prone areas in the north-west of the country will be very severe. This will impose hardship on women and children, who are responsible for collecting drinking water for their families. Increasingly saline drinking water may also result in health hazards, especially for pregnant women.

Women is yet virtually absent in the Climate leadership at all levels; whether it is local, national or international. The holistic understanding of whether the current coping strategies of poor households, and particularly of women, are significantly or sufficiently contributing to adaptation to climate change is very much needed.

A gender-sensitive response requires more than a set of disaggregated data showing that climate change has differential impacts on women and men. It requires an understanding of existing inequalities between women and men, and of the ways in which climate change can exacerbate these inequalities.

Why grassroots NGOs/CBOs are important stakeholder for building local adaptive capacity to climate change and managing grassroots climate risks?

Building adaptive capacity to climate change and managing climate risks requires awareness and understanding of climate change issues. Public awareness efforts are an important tool for developing domestic political constituencies for addressing climate change at the national and local level. Since, grassroots NGOs/CBOs interact closely with the local communities and local government, they could be important facilitator for greater understanding of environmental and social issues among the general public. They can enhance the participation of stakeholders at the community, local and national level by organizing forums and workshops to raise awareness and build consensus. They can also play a pivotal role in the production and dissemination of materials designed to increase understanding of climate change and its impacts as well as to provide analysis & choices for integrating climate change policies in national development strategies and plans. This envisage that grassroots NGOs/CBOs has potential in supporting, facilitating, implementing & monitoring community-based climate change adaptation but requires robust capacity building support prior to their involvement in community-based climate change adaptation.

Why does climate adaptation learning's need to be institutionalized and shared?

The climate change literature is rapidly getting quite exhaustive with respect to conceptualizing, defining and measuring different aspects and levels of climate change vulnerabilities. However, examples and guidance on how to plan and implement adaptation actions in the community level is quite rare due to the lack of ground tested adaptation lessons. Although Bangladesh has been in the forefront of awareness raising on adaptation and on-the-ground adaptation research, the knowledge and information generated remains scattered.

A major problem faced by the grassroots NGOs/CBOs is lack of appropriate and timely information on climate change and its possible adverse effects, so that they are not getting the scope to create climate change awareness among the communities. The lack of climate change information about the nature of change with locally variable impacts breeds uncertainty, preventing rural poor people and their supportive stakeholders from making the critical decisions that are necessary to adapt.

It is imperative to identify the existing local knowledge base of indigenous adaptation strategies within a community and develop a dynamic database with knowledge management approach. This local

adaptation database will assist to understand the spatial pattern of risks under projected scenarios of climate and social changes and to prioritize the local adaptive capacity building needs for managing climate risks at household and community level. Moreover, many specific adaptation actions based on existing coping methods are ongoing at community or individual level, the sharing of coping strategies between communities are virtually absent due to lack communication.



A Centre for Climate Change Training, Research, And Knowledge Management (CTRAK) and a dedicated web portal, which would track national and within country policies, rules and regulations, and news related to climate change debates has to be established. The information managed by the Centre will be available to the public. In essence, it would be a one-stop data and information bank on climate change for all related national activities. The Centre would also arrange training programmes on issues related to adaptation and mitigation and would support activities in collaboration with universities, research centres and other agencies to provide climate change adaptation education.

Education for climate change adaptation is about the development of adaptive capacity- thus increasing the abilities of individuals, groups or organizations to adapt to changes associated with climate change. Until people understand how their livelihoods and daily lives will be affected, they are not likely to demand information about climate change, or to participate in climate change-related activities.

What kind of policy approach is required for pro-poor climate governance & adaptation?

Climate Risk reduction cannot be viewed as a technical problem with technical solutions. It is also a matter of enacting policies and enforcing laws, building and maintaining accountable institutions, and producing an environment of mutual trust between government and the population.

Policy is a fundamental aspect for addressing climate change shocks. It is difficult to sustain community initiatives, if they do not become part of the government policies. The policy paradigm is consistently stressing on finding climate change adaptation strategies, though the importance of mapping the baseline status and situation analysis based on community knowledge base have not yet received the deserved attention. It is essential to have climate adaptation policies & planning in such a way that conserves and sustains the ecosystems and support the poor and ensures livelihood security for the growing population.

The national policy approach must follow the Principles of sustainable development to ensure for pro-poor climate governance. While development will provide for better livelihoods for the present generation, it should do so in a manner that does not compromise nature's ability to sustain such development in order to provide for future generations.

What is Adaptation Policy Frameworks (APF)?

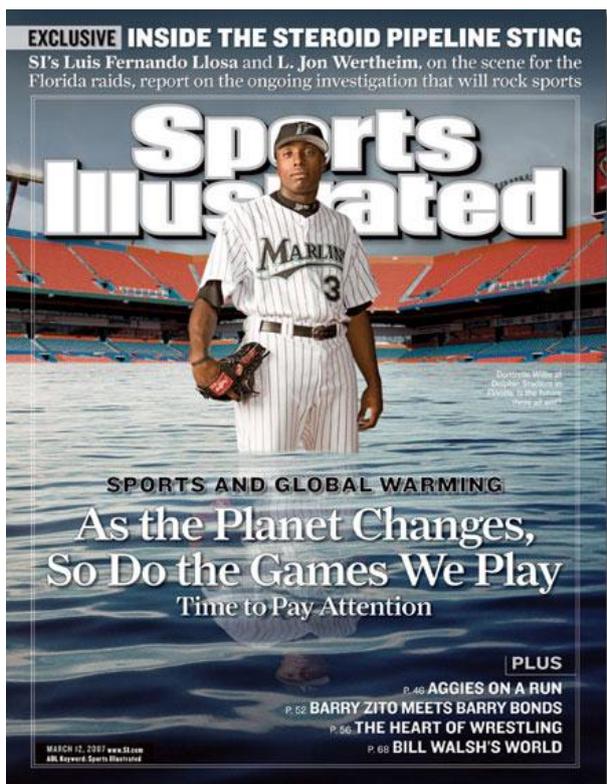
The United Nations Development Programme – Global Environment Facility (UNDP-GEF), with support from the Swiss, Canadian and Dutch governments, developed the Adaptation Policy Frameworks (APF) as an innovative set of guidance for the development and implementation of adaptation strategies. The

APF aims to help countries as they integrate adaptation concerns into the broader goals of national development. Ultimately, the purpose of the APF is to support adaptation processes to protect and, when possible, enhance human well-being in the face of climate change, including variability.

The APF has been designed as a methodological tool to guide adaptation studies, planning and policy exercises. The framework provides a structured approach to formulating and implementing adaptation at different scales. It suggests a suite of methods and tools for adaptation, in accordance with local context and coverage. The APF provides guidelines on the “Vulnerability-based approach” including improving access to new markets and supporting livelihood diversification under future climate, and the “Adaptive-capacity approach” focusing on awareness in and the resilience of communities to climate change and variability.

What role Media can play for adaption to climate change?

The media has always played significant role to generate humanitarian attention worldwide during any disaster. The media coverage also assists government and volunteer organizations to distribute relief as quick as possible. The media also contribute significantly to the early warning of floods and cyclones. However, media provides much attention to only those disasters that causes large casualties in terms of life and assets. On October 27, 2008 a medium scale cyclone "Reshmi" flooded many villages in three districts (Satkhira, Khulna and Bagerhat) and continued for 14 days. The media did not highlight this cyclone and consequently, the poor people virtually have not received any relief. This envisages that media can play an essential role in disseminating climate information to raise awareness and promote understanding about the climate change to broader audience. Nevertheless, media has to understand that climate information has time bound value; timely delivery can save people from damage. If it is not on time then that information is historical event.



What role Information & Communication Technology (ICT) can play for adaption to climate change?

The importance of Information & Communication Technology (ICT) in monitoring the climate, weather and in warning of natural disasters, using data from satellites & sensors on land and sea is already well-recognized. Information and Communication Technologies (ICTs) can play a key role in producing, storing, retrieving and comparing information related to climate change issues. The nature of adaptation interventions varies depending on a wide range of elements, such as the set of stakeholders, the sector and the scale of application. As a result, ICT support the implementation and management of adaptation strategies with a wide variety of tools: among the others, forecasting tools, early warning system and resource management systems. ICT tools also provide an effective way to communicate the impact of an adaptation strategy.

What do you want-Climate Adaptation Leader or Climate Adaptation Boss?

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Leadership is a complex process by which a person influences others to accomplish a mission, task, or objective and directs the organization in a way that makes it more cohesive and coherent. A person carries out this process by applying her leadership attributes (belief, values, ethics, character, knowledge, and skills). Although your position gives you the authority to accomplish certain tasks and objectives in the organization, this **power do not make you a leader...it simply makes you the boss**. Leadership makes people *want* to achieve high goals and objectives, while, on the other hand, bosses tell people to accomplish a task or objective.

What makes a person want to follow a leader?

People want to be guided by those they respect and who have a clear sense of direction. To gain respect, they must be ethical. A sense of direction is achieved by conveying a strong vision of the future. The basis of good leadership is honourable character and selfless service to your organization.

How Geographic Information System (GIS) will be linked with the Climate Change Adaptation process?

GIS is basically an information system designed to interact with spatially referenced data in order to perform spatial analysis and help decision makers solve complex environmental, planning and management problems.

Parameter	Data Required	Data Source
Physical Environment		
Climate and weather conditions	Climatological data (temperature, precipitation, wind directions and velocity, atmospheric pressure, relative humidity, storms, cyclones, floods, drought, evaporation and evapotranspiration etc.)	Research institutions and universities, national & international NGOs & Government
Biological Environment	Detailed field investigations are not justified unless no reliable baseline data are available	
Ecosystems	Types of ecosystems (terrestrial, aquatic, marine and coastal) and ecosystem functions, protected areas, ecosystem health and sustainability, pollution and degradation threats to ecosystem (natural or human pressures), Local, regional to national significance of ecosystems	Research institutions and universities, national and international NGOs & Government
Vegetation	Biodiversity, nature conservation significance (rare, vulnerable, threatened or protected species), species value (commercial, cultural or ecological etc.), pollution and threats affecting certain plant species (natural or human pressures). Conservation and protection measures at the national level.	

Parameter	Data Required	Data Source
Social Environment		
Population	Demographic data (population size, age and sex composition, geographic distribution, density, ethnicity, literacy and education, population growth, problems/pressures associated with demographic trends). migration patterns and associated problems, characteristics of poor vulnerable groups	national and regional government, NGOs and other civil society groups maps, field surveys,
Gender	Gender perspective in legal and policy framework, socio-cultural norms regarding gender (in)equality (labor, rights, access to and control over resources), participation in decision making at all levels, existence and capacity of CSOs and women's organizations, types of development programmes and projects targeting women. Women participation in political and community activities.	Geographic Information Systems (GIS) and video mapping
Health	communicable and non-communicable diseases, tropical diseases, data on malnutrition status, occupational health and safety, environmental health, mortality, hygiene and health awareness	Health department, national and international NGOs
Civil Society	Composition and size of the civil society (community-based organizations, NGOs, professional associations, etc) and their activities and dynamics, involvement in decision making at all levels. Organization of vulnerable groups (youth, elderly, ethnic groups.)	government and civil society organizations
Societal Framework	Country's position on human rights and gender equality and implementation level, national laws, policies and programs aiming to address social problems, government's priorities in terms of development and budgeting, governmental institutions and administrative structures (national and regional) Specific interest in capacities in the environment. and social sectors	government agencies & national/international NGOs
Cultural Environment	Data on cultural heritage (architectural, archaeological, landscape), right and use of natural resources related to cultural practices, major concerns, opinions and aspirations of local populations, environmental awareness	government, national & international NGOs, community consultation
Economic Environment	data on major economic activities and growth (primary, secondary and tertiary sectors), relative importance of the formal and informal sectors, right, use and dependence on renewable and non-renewable resources, inequality patterns (wealth distribution, male-female, rural-urban), national and regional employment levels and working conditions	government, national & international NGOs, Industry, industry federations, labor unions, etc.
Infrastructure and Services	Energy sector: electricity network, affordability, type of energy, use of renewable energy sources Communications: type and distribution Transportation: types and networks, affordability, private and public transportation means, seasonal reliability Water supply: facilities and coverage, water quality, affordability Waste and sanitation: facilities and coverage, mgmt practices, affordability Health services: facilities, personnel, ratio per capita, affordability Education: facilities, personnel, budgets, ratio per capita, affordability Social services: community centers, youth centers, service accessibility of poor and marginal groups	government, national & international NGOs, Industry, industry federations, labor unions, agricultural organizations, etc.
Land Use	Data on current and future land uses, land carrying capacity, traditional land use management practices, access to property, land tenure Development land policies, plans, zoning, municipal and regional regulations	government, national & international NGOs, agricultural organizations

GIS consists of hardware, software, and procedures designed to support the capture, management, manipulation, analysis, modeling, and display of spatial data. GIS allows information to be shared by providing a common geographic "language" to connect people worldwide, and provides almost limitless uses to decision makers.

Why we need People's Empowerment for Addressing Climate Justice & Environmental Justice (PEACE)?

“People's Empowerment for Addressing Climate Justice and Environmental Justice (PEACE)” is a long-term community-driven & ecosystem-based adaptation to climate change program of the CDP with the financial and technical support by the Evangelischer Entwicklungsdienst (EED).

The PEACE programme is one of the pioneer effort in Bangladesh to undertake a comprehensive bottom-up planning process on climate adaptation starting from village level, directly guided by the most

vulnerable groups (extreme poor, marginalized groups, specially women & indigenous people) within the community and are in line with national climate change policy goals and strategies. The PEACE process is as important as the results because it ensures active involvement of community (50% women) during the whole process.

Programme Name:	People’s Empowerment for Addressing Climate Justice and Environmental Justice (PEACE)
Programme Theme:	Community-based Adaptation, Climate Justice and Environmental Justice
Programme Goal:	Developing a climate resilient Bangladesh
Programme Objective:	Strengthening the local capacity & promote climate justice for a climate resilient Bangladesh

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) concludes that climate change due to human activities is now a virtual certainty and that even if the international community resolves itself to aggressively mitigate GHG emissions, climate change impacts will continue to increase in the future. The IPCC report envisaged the very urgent need for capacity-building in areas where negative effects from extreme climatic events are compounded by poverty, environmental degradation, inadequate social safety nets, and/or poor governance. However, effective capacity-building requires a long-term commitment to address capacity gaps in knowledge generation and dissemination, as well as in the processes that catalyze efforts to move from knowledge to action.

National Climate Theme	Relevance of the PEACE Program with the Bangladesh Climate Change Action Plan (BCAP) framework (2009-2018)
Food security, social protection and health	<ul style="list-style-type: none"> ✓ Livelihood protection of vulnerable socio-economic groups (including women) ✓ Prepare GIS maps of areas vulnerable to drought, changes in agro-economic zones and probable climatic parameters ✓ Comprehensive and participatory planning and investment for climate resilience against erosion in income, employment and human health ✓ Comprehensive and participatory actions to protect the livelihoods (income, employment, health) of groups who will be especially severely impacted by climate change including women and children, marginal and small farmers, fishermen particularly those fishing in estuaries and the seas, and elderly, people with physical and mental disabilities
Comprehensive disaster management	<ul style="list-style-type: none"> ✓ Awareness raising and public education towards climate resilience ✓ Train local communities on shelter management, search and rescue, and health issues
Research and knowledge management	<ul style="list-style-type: none"> ✓ Establish a centre for research on climate change and climate change impacts and their management ✓ Develop and maintain a dynamic web portal ✓ Develop training programmes for high and mid-level officials of the NGOs in collaboration with research centres and universities ✓ Develop participatory monitoring systems by involving local trained people such as school teachers, communities and academics ✓ Monitoring of ecosystem and biodiversity changes and their impacts ✓ Comprehensive study of the impact of climate change on women and gender relations ✓ Assessment of climate change and its impacts on migration
Capacity building and institutional	<ul style="list-style-type: none"> ✓ Mainstream climate change in government ministries and agencies, local government, the private sector, civil society and communities ✓ Strengthening human resource capacity ✓ Strengthening institutional capacity for climate change management ✓ Main-streaming Climate Change in the Media
Infrastructure	<ul style="list-style-type: none"> ✓ Monitoring existing infrastructure (e.g. cyclone shelters and embankments) to deal with the likely impacts of climate change.
Mitigation & low carbon development	<ul style="list-style-type: none"> ✓ Improved energy efficiency in production and consumption of energy ✓ Afforestation and reforestation programme

The climate change literature is rapidly getting quite exhaustive with respect to conceptualising, defining and measuring different aspects and levels of climate change vulnerabilities. However, examples and

guidance on how to plan and implement adaptation actions in the community level is quite rare due to the lack of ground tested adaptation lessons. It is widely recognized that the consequences of climate change will increase livelihood insecurity, malnutrition, unemployment, lack of safe drinking water and water-borne diseases in Bangladesh and about one third of the population would be vulnerable to climate change and sea level rise.

The Bangladesh National Adaptation Programme of Action (NAPA) identified education, training and public awareness as urgent need for adaptation to climate change. It is necessary to implement environmental education, training and public awareness programme in Bangladesh. In Bangladesh many common terms used differently by different community and sometimes terms specific to one community is unknown to the other community. Therefore, a community climate change glossary might be very helpful to share learning both horizontally and vertically. Moreover, sustainable livelihood activities are not homogeneous and vary from community to community, sector to sector and region to region. Different types of activities are required to enhance the community's capacity to cope with, combat the adverse impacts of climate variability, and change depending on the circumstances.

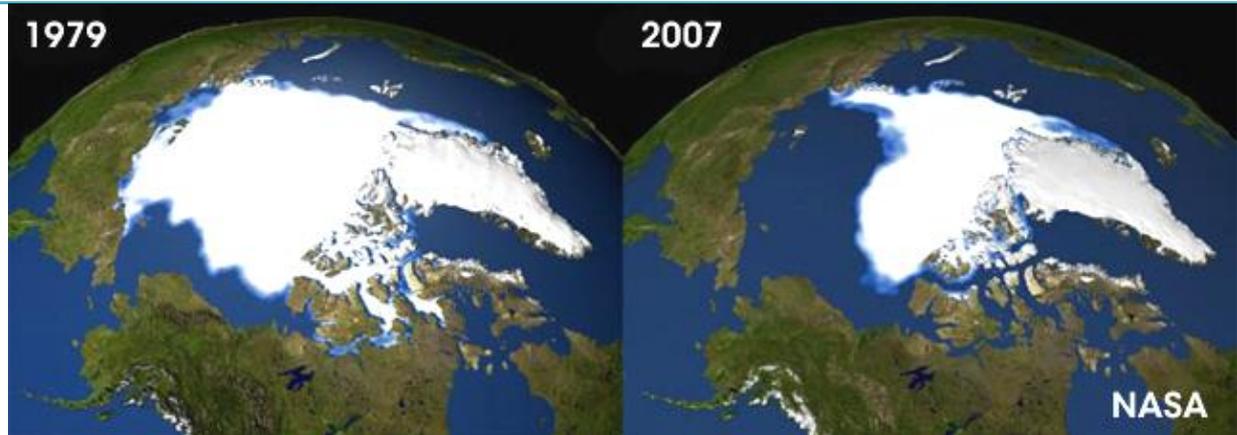
Accessing appropriate knowledge and realization of local ideas will enable poor communities to build on local resilience and adaptive capacity. Creating information dissemination space at community level would be a good starting point for adaptation. The knowledge support in appropriate mode with easy sharing option is needed for the community. The reliable estimates of the climate change impacts on natural resources, crops and livestock at local levels are crucial to adapt and to mitigate climate change impacts on the rural poor. This estimation will serve as the baseline data for adaptation. Assessment of adaptation options will help the community decide on a range of actions, which they could undertake to either address issues relating to impacts of climate change or meeting community development objectives.

Climate-related risks force people/communities into trade-offs that limit substantive freedom and crumble choice. Addressing future problems related to climate change & sea level rise appear to be a complex issue for Bangladesh as it involves various interactive production systems as well as human systems together with physical ecosystems. The climate change adaptation of the rural population is very important for Bangladesh because 75% of the country's total population and 85% of the total poor live in the rural areas and the rural economy as a whole contributes more than 60 percent of total GDP. In addition, agriculture generates two-thirds of total employment, contributes a quarter of total export earnings and provides food security to the increasing population. Given the contribution of agriculture to the livelihoods of general people of the country and its dependence on climate regime, any significant change in climate regime can have far reaching impacts on the overall socio-economic system of Bangladesh.

The PEACE program recognizes that adaptation as an ongoing process that occurs at different levels and follows the local to national direction (bottom-up approach) and promotes local projects by local communities. The inception phase of the PEACE project was 1-year (April 01, 2010 to March 31, 2011) and facilitated community to identify existing adaptation approaches to up-scaling and replication as well as to devise new ideas possible adaptation options within local communities for piloting and mainstreaming community-based adaptation into national policies, climate change strategies & action plans. In the inception phase, CDP and Project Partner NGOs (PNGOs) are working for the development of People's Climate Change Adaptation Action Plan (PCAP) to implement pilot appropriate adaptation projects developed by the community.

Is there any concrete evidence that Climate is changing?

NASA Satellite Images clearly shows large ice free area within 28 years



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Geological Evidence of Climate Change

The geological record contains abundant evidence on the ways Earth's climate has changed in the past and gives us vital clues on how it may change in the future. The most recent estimates suggest that between 5.2 and 2.6 million years ago, the carbon dioxide concentrations in the atmosphere reached between 330 and 400 ppm. During those periods, global temperatures were 2 to 3°C higher than now, and sea levels were higher than now by 10 to 25 meters, implying that global ice volume was much less than today. The Arctic Ocean may have been seasonally free of sea-ice. Human activities have emitted over 500 billion tons of carbon to the atmosphere since around 1750. In the coming centuries, continued emissions of carbon could increase the total to 1500 to 2000 billion tons - close to the amounts added during the 55 million year warming event. The geological evidence from the 55 million year event and from earlier warming episodes suggests that such an addition is likely to raise average global temperatures by at least 5 to 6°C, and possibly more. Recovery of the Earth's climate in the absence of any mitigation measures could take 100,000 years or more.

Source: <http://www.skepticalscience.com/Geological-Society-discuss-climate-change-evidence-from-the-geological-record.html>

During the High Level Event on Climate Change on 24 September 2007, Mr Ban Ki Moon, the Secretary General of the United Nations, stated *"I am convinced that climate change, and what we do about it, will define us, our era, and ultimately the global legacy we leave for future generations. Today, the time for doubt has passed. The United Nations Intergovernmental Panel on Climate Change has unequivocally affirmed the warming of our climate system, and linked it directly to human activity"*.

He also stated in the same address *"Today, the effects of climate change are being felt around the world. But they are being felt most by those who are the least able to cope. Indeed, the terrible irony for many developing countries is that, though they have contributed the least to the process of climate change, they are the ones most at risk from its consequences. For some island States and peoples this is a matter of survival. The moral imperative could not be clearer"*.

Why Climate Change is a Security Concern for Development.?

The security of individuals, communities, nations, and the entire global community is decreasing due to climate change. The human insecurity owing to climate change is perhaps the most wide spread non-military environmental threat the global community has ever faced.

Climate change is a security concern because it has the potential to destabilize global socio-economic system, displace populations, and lead to the collapse of global development. The climate change

directly and indirectly reduce securities for food, water, life, property, settlement, livelihood assets, livelihoods and others. Climate security is the integrated aspects of individual human security (e.g. livelihood security, food security, health security, water security and environmental security). Climate security may also be the capacity to survive against the climate change vulnerability or any adverse changes that may evolve due to climate change shocks. IPCC suggests that climate change vulnerability reflects the sum of the risks (hazards) to which a society or community is exposed, mitigated by its adaptive or coping capacity (its ability to respond effectively to risk) and compensated by the available alternative livelihood opportunities. In this form, the variability of vulnerability is seen to be driven locally mainly by socio-economic factors.

Conclusion

Life on Earth has survived large climate changes in the past, but extinctions and major redistribution of species have been associated with many of them. When the human population was small and nomadic, a rise in sea level of a few meters would have had very little effect. With the current and growing global population, much of which is concentrated in coastal cities, such a rise in sea level would have a drastic effect on our complex society, especially if the climate were to change as suddenly as it has at times in the past.

Nevertheless, climate change does not just bring threats; it also brings opportunities - new economic possibilities, improved environment or possibilities for enriching cultural change. If the new opportunities are more advantageous than the existing assets under threat, then it may not be necessary to "protect" the asset or process at risk. New opportunities may compensate for threats and reduce the need for that society to defend the existing livelihood.

