

Including General People Concern in Action for Climate Change in Bangladesh

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1. Introduction

Bangladesh is one of the South Asian Least Developed Countries. Geographical coverage of the country is about 147,570 sq. km with three broader categories of land - hills, uplifted land blocks, and alluvial plains. It extends between 20° to 26°38' North latitude and 88°01' to 92° 41' East longitude and has 4,685 km. long boundary unique geographical location in South Asia forming lower part of the basins of three mighty river systems - the Padma (Known as the Ganges in India), the Brahmaputra and the Meghna. The country is characterized by low per capita gross national product i.e., US\$ 370 dollars (WB, 2000), low natural resource base, high population density, and high incidence of natural disasters.

2. Climate Change situation in Bangladesh

The climate of Bangladesh is characterized by high temperature, heavy rainfall, often- excessive humidity, and fairly marked seasonal variations. Though more than half of the area is located in the north of the Tropics, the effect of the Himalayan mountain chain makes the climate more or less tropical throughout the year. The climate is controlled primarily by summer and winter winds, and partly by pre-monsoon and post-monsoon circulation. The Southwest Monsoon originates over the Indian Ocean and carries warm, moist, and unstable air. The pre-monsoon comes from the Siberian Desert, retaining most of its pristine cold, and blows over the country, usually in gust, during dry winter months. The country has an almost uniformly humid, warm, tropical climate throughout the country.

According to the Climate Change Country Study by Bangladesh Center for Advance Studies (BCAS), the average increase in temperature would be 1.3°C and 2.6°C for the years 2030 and 2070, respectively. It was found that there would be a seasonal variation in changed temperature: 1.4°C change in the winter and 0.7°C in the monsoon months in 2030. For 2070 the variation would be 2.1°C and 1.7°C for winter and monsoon, respectively. For precipitation it was found that the winter precipitation would decrease at a negligible rate in 2030, while in 2075 there would not be any appreciable rainfall in winter. On the other hand, monsoon precipitation would increase at a rate of 12 percent and 27 percent for the two projection years, respectively.

It was found that there would be excessive rainfall in the monsoon causing flooding and very little or no rainfall in the winter forcing drought. It was also found that there would be drastic changes in evaporation in both winter and monsoon seasons in the projection year 2075. It was inferred from the General Circulation Model (GCM) output that moderate changes regarding climate parameters would take place for the projection year 2030, while for the projection year 2075 severe changes would occur.

The results also reveal that there is a general increasing trend regarding temperature. In 2030, the increase is much pronounced in winter months, although the maximum change is observed for post-winter months (i.e. April, May and June). However, in 2075, the increase in temperature during April and May is much higher, about 4.0°C.

Editorial



Climate Change-Thinking of NIRAPAD

Bangladesh facing serious risk in climate change has to be understood by the mass people. This is the initiative of NIRAPAD to provide a scenario of the risks of climate change and adaptation practices. Climate change adaptation needs holistic approach in collaboration by different sectors and program. Bangladesh climate change cell thinking is similar to the thinking of the organization. NIRAPAD as a network organization of 21 non government organizations deeply concerned the climate change issue of Bangladesh. In this realization already taken the initiatives incorporate climate change issue in its strategic plan. Also try to build relationship with other actors who are playing vital role in this arena. This small initiative of this newsletter will provide headway of the organization to walk on the right path. In coming year NIRAPAD all work and approaches of disaster risk reduction will focus on climate change.

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Content

- Including General People Concern in Action for Climate Change in Bangladesh
- Editorial
- Climate Change Adaptation: Indigenous Knowledge Can Play Vital Role
- Climate Change and Bangladesh: Policy and Institutional Aspects
- NCA: A Timely Approach

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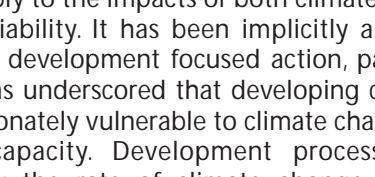
3. Vulnerability of Bangladesh to Climate Change

Low level of economic development of Bangladesh combined with other factors such as its geography and climate makes the country vulnerable to climate change. The country is highly vulnerable to climate change due to following reasons:

- High climate variability;
- High sensitivity of biophysical resources to climate variability;
- Extreme weather events: national and regional dimensions;
- High population density increases vulnerability to climate change because more people are exposed to risk and opportunities for migration within a country are limited;
- High incidence of poverty and social inequity;
- Poor institutional capacity: policy, human resources, technology adoption;
- Inadequate financial resources; and
- Poor infrastructure.

From the key climate change studies at national level it appears that the country is highly vulnerable to climate change particularly in the following sectors those are - water resources, coastal zone and resources therein, agriculture, and human health. The vulnerabilities include:

- Bangladesh may face many of the impacts of climate change in the form of severe floods, cyclone, droughts, sea level rise and salinity affecting agriculture, livelihoods, natural systems, water supply, health etc.;
- The possible sea level rise (expected to be up to 43 cm by 2050) will affect the country by inundating one-tenth of the land areas in the coastal belt displacing millions of people from their homes, occupations and livelihoods;
- Drainage congestions due to higher sea levels and flooding;
- Reduced fresh water availability;
- Disturbances to morphological processes (mainly in coastal zone);
- The General Circulation Model experiments on Bangladesh suggests that the country will be highly susceptible to:
 - Increased flooding, both in terms of extent and frequency;
 - Increased moisture stress during dry periods leading to increased drought both in terms of intensity and frequency; and
 - Increased salinity intrusions during the low flow conditions.



Climate Change Scenario:

Year	Sea Level Rise (cm)	Temperature Increase (°C)	Precipitation Fluctuation Compared to 1990 (%)
2030	30	+0.7 in monsoon; +1.3 in winter	-3 in winter; +11 in monsoon
2050	50	+1.1 in monsoon; +1.8 in winter	-37 in winter; +28 in monsoon

Source:
Adaptation to Climate Change and Sustainable Development: A Case Study of Bangladesh, Dr. Saleemul Huq, Director, Climate Change Programme, International Institute for Environment and Development, London, United Kingdom

4. Causes of climate change

Historically, there has always been a certain degree of warming up (climate change) due to the presence of natural Green House Gases in the atmosphere. Human activities since the industrial era has enhanced atmospheric accumulation of GHGs, giving rise to a faster global warming and global climate change. Causes behind Global Warming are -

- Partly natural
- Partly and for last more than 100 years largely due to GHG emission caused by human actions.
 - Such human activities mainly include:
 - Industrial fossil fuel burning;
 - Industrial processes;
 - Deforestation and land use changes;
 - Livestock feeding practices;
 - Wet paddy culture;
 - Use of synthetic products (e.g., refrigerants), and
 - Particular lifestyle and consumption behavior

5. Response to climate change

90% of global climate-related disasters affected the region and contributed to over half million deaths since the 1950s (DFID, 2004). Current evidence thus suggests that the key drivers of both social and economic developments are affected by climate change. Climate change thus considered to be one of the most serious threats to sustainable development. According to the Intergovernmental Panel on Climate Change (IPCC), the effects of climate change have already been observed, and scientific findings indicate that precautionary and prompt action is necessary. There are two approaches to facing the challenge of climate change - mitigation and adaptation.

a. Mitigation

Mitigation has traditionally been the pivotal issue for the climate change experts. Mitigation measures to prevent the concentration of GHGs in the atmosphere are must:

b. Adaptation

Adaptation to the effects of climate change is now acknowledged as necessary for responding effectively and equitably to the impacts of both climate change and climate variability. It has been implicitly and explicitly linked with development focused action, particularly as the IPCC has underscored that developing countries are disproportionately vulnerable to climate change and lack adaptive capacity. Development processes will be affected by the rate of climate change, and this is especially important for Least Developed Countries and developing countries who are the possible worst sufferers while they emit only a little GHG compared to developed countries.

b.i. Retreat, accommodation and protection.

In Bangladesh, we have three adaptive options those are - retreat, accommodation and protection. Considering the high population density, future population projections, and shortage of land, retreat is not possible. We should pursue the two other options.

b.ii. Protect the Mangrove Forest:

In the western coastal area of Bangladesh there is a large mangrove forest. Although that area is almost flat, damage due to storm surges there is still much less than it is in other areas that have less mangrove coverage. Thus one of the most immediate and useful adaptation strategies should be to protect the mangrove forest from degradation and implement a massive afforestation program all along the coastal belt. In fact, Bangladesh has a couple of ongoing projects aiming at that. Afforestation will also help stabilize the land, create more accretion leading to more land, and also raise the level of topography that will reduce inundation by sea level rise.

b.iii. Change in Cropping Practices:

New rice varieties may be developed to withstand higher salinity and higher temperatures and be grown and harvested during the non-cyclonic period.

b.iii. Increase Cyclone Shelters:

Bangladesh has undertaken a massive program of constructing cyclone shelters in the coastal area. These specially built shelters will be used as shelters for human beings, animals, and property during cyclonic periods and as community centers, schools, and so forth during normal times. The number of shelters necessary has been calculated on the basis of storm surge heights at the coast and the inland intrusion of surge water. The situation may change under the future temperature

b.iv. Construction of Embankments:

Construction of embankments in the coastal area is another adaptation and protection measure. Embankments will obstruct the penetration of surge water; and even if the surge overtops them, the water energy will then be greatly reduced.

b.v. Involve and aware the grass-roots level people:

One of the best ways to adapt to climate change is to involve people at the grass-root level. The people of Bangladesh have been living with disasters for a long, long time. Adapting to changing situations is a familiar traditional practice in Bangladesh. What is important is to carry out detailed scientific studies, to make the people aware of the impending dangers, and to develop, along with them, methods of adaptation.

C. Grassroots (coastal islands) voices:

Adaptations to climate change at grassroots level aiming to improve livelihood conditions could be considered through a broader area that is reducing the vulnerability context. For this following steps need to be addressed:

i. Reduction of vulnerability

The government has adopted a pro-poor strategy that involves development interventions that address vulnerability issues of the poor and the disadvantaged. Here vulnerability could be reduced through

- Improving the asset base of the poor, and
- Ownership or access.

ii. Changing resource base

Traditionally, people's livelihoods are natural-resource-based. Natural resources are becoming scanty and declining fast, as still many people continue to live on depleting natural resources and are aggravating the situation further. Hence, more investment in the development of human resources and the physical infrastructure that facilitates human resource-based activities is necessary as an alternative source of livelihood.

iii. Regional differentiation and island focus

The coastal zone of Bangladesh is different from the rest of the country not only because of its unique geo-physical characteristics, but also it is relatively disadvantaged in terms of several human and economic development indicators. Two major vulnerability issues are natural disasters and depletion of resources that forced the poor in a circle of perpetual poverty. Therefore,

any strategy for enhancement of livelihoods in the coastal zone calls for regional specific, need-based actions in priority to enhance the coping capacity of the poor.

iv. Priority to actions

Different social strata have different problems and needs. Some of the suggestions by different communities in coastal area are given below:

Group	Problem/issue	Suggestion
Agriculture laborer	Unemployment	Job facility; credit support
Small farmer	Lack of capital	Credit service
Salt farmer	Heavy rain/cyclone	Storage for salt
Fisher	Cyclone/bad weather	Improved warning system
	Loss incurred due to piracy	Improved law and order
	Declining fish resources	Restrict fishing/fish fry collection
Fish processor (dry fisher)	Lack of capital	Credit support; storage
Industrial laborer	Lack of cash	Credit support
Women	Lack of potable water	Support for tube well water
	Lack of sanitation	Support for sanitary latrine
	Poor health	Free medical service
	Law and order	Active police department
	Restricted mobility	Social awareness
	Cyclone	Strong house
	Land erosion	Land settlement

6. Use of technology to respond to CC:

Examples of establishing Rural Knowledge Centers (RKC) BNRC and Grameen Thatha Kendra by D-net in rural Bangladesh has already proven its importance in disseminating the vulnerability of Climate Change through using different media from these centre. DUS in co-operation and co-ordination with indifferent stakeholders has also taken initiatives to promote early warning system, awareness program at grass root level by using regional radio and print media.

7. Conclusion:

Bangladesh is one of the most sufferers of climate change due to the different activities of developed countries. To meet the problem or reduce the losses, effective and practical initiatives should be taken as early as possible by both government and private organizations and also by individuals. Government should prepare policy to mitigate the losses through climate change including grass-root voices. At the same time, government should establish a strong information system for climate change to aware the mass people along with professionals.

Climate Change Adaptation Indigenous Knowledge Can Play Vital Role

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Climate change refers to global changes in temperature, wind patterns, and precipitation. These changes are being driven by a gradual warming of the Earth's atmosphere (called global warming) due to human activities. Bangladesh is unique in the sense that unlike other vulnerable countries, this country will eventually face the multidimensional manifestations of climate change. Climate change, therefore, is not an 'environmental' concern but a real 'development' concern for Bangladesh.

Bangladesh is one of the poorest countries in the world, and ranks low on almost all measures of economic vulnerability to natural disasters and climate events. 20% of GDP come from agriculture but more than 60% of the population relies on agriculture as their main source of income making the entire economy vulnerable to climate change and natural disasters. High population density exacerbates the exposure to and effect of climate change, and increases the levels of vulnerability as does the poor institutional development of the country. The most vulnerable sectors to climate change impacts in Bangladesh are agriculture, coastal zones, water resources, forestry, fishery, health, biomass, and energy.

Rural communities, especially the rural poor, in all parts of Bangladesh are severely affected by the variability of volume, timing and duration of the monsoon rainfall and changes in the quantity of water entering Bangladesh from neighboring countries. Bangladesh suffers from many climate hazards including: riverine and coastal floods, riverbank erosion, tropical cyclones and droughts.

Climate Change Adaptations

Climate change adaptation practices refer to actual adjustments or changes in decision environments, which might ultimately enhance resilience or reduce vulnerability to observed or expected changes in climate. Climate change threat to Bangladesh is integrally related to the country's sustainable development. On the one hand, development might facilitate introduction of adaptation measures, but on the other hand, given the overriding importance of coastal and fresh water resources in the country, climate change poses a major threat to sustainable development. Rather than being mutually exclusive, adapting to climate change must be seen as a requirement for sustainable development.

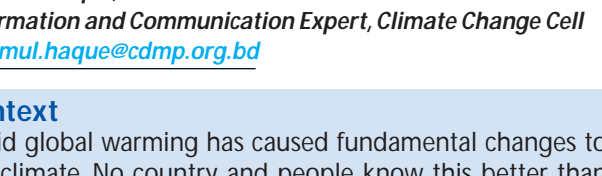
Community base adaptation strategy for assessing the local needs and opportunities is widely accepted strategy for adaptation. Bangladesh Government produce NAPA which also emphasizes the type of measures, the development of eco-specific adaptive knowledge (including indigenous knowledge) and adaptation to climate variability to enhance

adaptive capacity for future climate change.

Local Knowledge is a Climate Change Adaptation

Knowledge in a basic development resource and, ultimately, is the product of a learning process (Freire, 1973). The indigenous knowledge that is identified with rural livelihoods and natural resource management has been generated largely by experiential learning over generations, and enriched and amalgamated over time with external knowledge (Kolb, 1984). For most hundreds of years, local people developed adaptation techniques and innovations to address climatic vulnerability and as such, people's beliefs, practices and knowledge must be considered an integral part of development. The importance of the use of indigenous knowledge for sustainable development has been gaining recognition and momentum worldwide and to a limited extent in Bangladesh. Indigenous knowledge alternatives are readily adopted because they are congruent with local socio-cultural norms and are, in general, more affordable and sustainable.

Model of a local knowledge portfolio develop by Nonaka and Reinmoller (1998). In an attempt to understand the cultural dimensions of the endogenous generation of knowledge in Asian Economic Development, Nonaka and Reinmoller advanced a model with four modes of knowledge creation. The four modes are Externalization/ Articulation (transforming tacit into explicit knowledge); Internalization (transforming explicit into tacit knowledge); Socialization (formation of collective tacit knowledge); and Combination/ Systematization (integrating different forms of explicit knowledge). Tacit knowledge is experience-bound and either internalized in individually shared collectively. Explicit knowledge is exchanged through dialogue, making it accessible for DPC. An present there are around 100 organizations under this umbrella and having primary objective- increase adaptation capability of the affected community in climate change situation in Bangladesh. NC4 will be lead by collective leadership.



- A. Between explicit and tacit collective knowledge
- B. Between explicit and tacit individual knowledge
- C. Between the spheres of tacit knowledge

Climate Change and Bangladesh: Policy and Institutional Aspects

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Context

Global warming has caused fundamental changes to our climate. No country is immune to this better than Bangladesh, where millions of people are already suffering. 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. Climate change is making things worse. Sudden severe and catastrophic floods have intensified and taken place more frequently owing to increased rainfall in the monsoon.

In the last ten years, Bangladesh has been ravaged by floods of catastrophic proportion in 1998, 2004 and 2007. In November 2007, Cyclone SIDR ravaged our coast flattening the Sunderbans on its path of destruction. Heavy downpour over short spell has resulted in landslides. Cold spells claim 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 flood, cyclone and drought are phenomenal to the victims as well as the state. These are early signs of rapid global warming. In Bangladesh alone, sea level rise in the coming decades will push over 25 million people to become climate refugees.

The people and social system have knowledge and experience of coping with their effects - to some degree and extent. In a changing climate the pattern of impacts are eroding our assets, investment and future. This applies equally for families, communities and the state. Global warming and climate change threatens settlements and resource and effort of government and people are quickly drained affecting the impact of one event when another hazard strikes. The number of people displaced from their land due to riverbank erosion, permanent inundation and sea level rise is increasing rapidly every year. Global warming and climate change challenges our development efforts, security and the future of generations to come.

Vulnerable countries including Bangladesh must move on in their pursuit to develop and strive as a nation, taking into account their vulnerability, susceptibility and capacity to manage climate risks and adaptation. In this respect, Bangladesh has taken bold steps to prepare and respond to the challenge already on us.

Our hands hold our future. We must secure our well-being and development, utilizing necessary resource and support, both internal and external. By sharing each other's capacity, we can prepare better to address this challenge.

Future Strategy for Adaptation

Government already developed climate change cell for developing institutional capacity. The lack is greater coordinator within the donor, international and local organization. Government of Bangladesh should take the initiatives for adaptations recommended by NAPA by joint collaboration with local and international organization following the following strategy in adaptations:

Indigenous knowledge management aided by scientific knowledge

It is based on experience, often tested over centuries of use, and entails many insights, perceptions, and intuitions relating to local culture and the environment. It is both dynamic and complex, and is not confined to knowledge about uses and products but also about processes. Indigenous local knowledge should be collected and documented aided by scientific knowledge. Local knowledge and practice should be widely disseminated to the most vulnerable people and encourage them to adopt it for their suitability.

Support more resilient livelihood

Our activities include the rejuvenation of appropriate traditional knowledge, the promotion of innovative agricultural practices and the diversification of income sources.

Supporting social mobilization process

Need social mobilization for adapting the local indigenous knowledge practice by community. The factors that determine adaptive capacity include access to and control over resources, access to information, technology skills and infrastructure, the power to make decisions at the household and community level, sound policies; and institutional capacity. Therefore, a rights-based perspective is inherent in a holistic approach to reducing vulnerability to climate change.

Strengthening local capacity (household, community, institution)

Build partnerships with local non-governmental and community-based organizations as well as government agencies in practicing local knowledge. We learn from their experience and insights, while they get much needed capacity strengthening support to analyze climate risks, identify appropriate adaptation measures, and integrate this knowledge into planning and decision-making processes.

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6. Integration between government-NGO-private sector community

- Enhanced People's participation and synergies
- Enhanced community mobilization
- Increased access to the poor
- Increased services, support and investments

NC4: A Timely Approach

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We the human being, continuously destroying our environment and its balance by day and activities. So, the earth is becoming hotter day by day and bringing different types of problems, such as Climate Change, Environmental Imbalance, Ozone Layer Depletion, etc. Among these climate change is the most alarming for the world especially for the countries of third world. As a country of third world and disaster proneness, Bangladesh is very much vulnerable to climate change. Climate change will affect not only our nature but also our livelihood, health, food security and so on. Specially people of the coastal area of the country will be the victim, because changed climate increasing the number of natural disasters.

At present, concern people and organization of the world start to think about it and work for it. So it is our duty also to start working to reduce the vulnerability from climate change as early as possible. In this situation like minded organization especially National NGOs formed a coordination council in Bangladesh named 'NGO Coordination Council for Climate Change-NC4' facilitated by DPC. At present there are around 100 organizations under this umbrella and having primary objective- increase adaptation capability of the affected community in climate change situation in Bangladesh. NC4 will be lead by collective leadership.

Why NC4

Whenever adverse effects of Climate Change are now knocking our door and we should prepare to face the catastrophe. It is a rude reality for the people of Bangladesh, especially people of coastal zone that we should not be able to cope and adapt the situation. And this situation is not well considered in development works of the country. Even the Climate Change issue is not going to be recognized properly by the Bangladesh government and other development agencies. Considering the emergency situation and wish to do something for the affected community 17 partner NGOs initiate a network, known as NC4. And, now number of partner NGOs are increasing.

Possible Activities of NC4:

- Members of NC4 sort out some important possible activities for next 1 year. These are:
 - Information collection, sharing and dissemination including local and indigenous knowledge
 - Capacity Building of Partner NGOs

- Good governance at local and national levels
- Catalysts and connectors
- Enhancing and rewarding good practices in reducing vulnerability/adaptation to climate change and mainstreaming technology and practice

- Preparation of user friendly and effective learning and communication materials
- Awareness Campaign to face and adapt the climate change
- Strategic Paper (grass root and national level) preparation for NC4
- Organizational Structure preparation for NC4
- Establish an independent secretariat
- Establish a data bank
- Advocacy, lobbying Climate Change (local, national and international level)

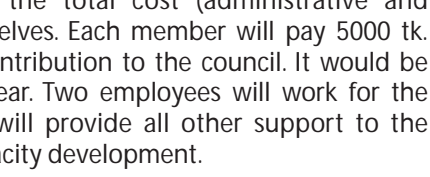
Role of PNGOs:

Local and national level like minded non-government organizations are/will be the partner of this council.

- Organizing as a member
- Helping in local resource use
- Sharing and disseminating the field experiences among all stakeholders
- Including climate change into their core activities

First Workshop of NC4 :

First workshop of NC4 was held on 8th June, 2008 at the conference room of BDS (Bangladesh Development Society). This workshop was arranged to disseminate the information about the formation of NC4 and its implications among the local level organizations. More than 80 organizations participated in the meeting and gave their willing consent to join the council and working together to combat the climate change impact. Participants openly express their opinions and give suggestions to make the council very effective and active.



FES Workshop of NC4

Cost-Sharing of NC4:

As a member based coordination council, members of the council will share the total cost (administrative and program) by themselves. Each member will pay 5000 tk.