

# Challenges of Climate Change: GO and NGO Approaches in Bangladesh

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## **Challenges of Climate Change: GO and NGO Approaches in Bangladesh**

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## **Certificate of Approval**

This is to certify that Karisma Amjad has effectively completed her dissertation entitled, “Challenges of Climate Change: GO and NGO Approaches in Bangladesh” under my supervision. To the best of my knowledge, it is a unique and original work done by her. I am recommending this dissertation to the University of Dhaka for final submission to the authority concerned.

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## **Declaration**

I would like to declare that the dissertation entitled, “Challenges of Climate Change: GO and NGO Approaches in Bangladesh” submitted to the University of Dhaka for the Degree of Master of Philosophy is an original work and has not been submitted to any where for any degree or publication.

(Karisma Amjad)

## **Abstract**

The study focus on the vulnerability to climate change and to show the direction how to attain sustainable development by identifying the major climate change related problems e. g. reduced fresh water availability, surface drainage congestion, sea level rise, increasing floods and costal storms etc. The study tried to examine the way GO and NGO working towards addressing this challenge and what are their lacking and how it can be improved. The study also focus on how the effective collaboration can be made by exchanging and sharing resources and expertise to better cope with the situation and to effectively address the problem. The findings of the study revealed that although plethora of GO and NGOs are working towards addressing the problem their needs to be better coordination among and between the organizations is needed. In this regard strategic partnership specially sharing of experiences, ideas and resources, taking insights from international and experiential knowledge, community involvement can play pivotal role in coping with the situation.

### **Acknowledgement**

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For my errors or inadequacies that may remain in this work, of course, the responsibility is entirely my own.

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### **Executive Summary:**

The research investigation about the climate change Approaches which used by GO and NGOs Activities in Bangladesh. Which Approaches the Go and NGOs needed to work on climate change, typical responses were: working with partners, working with workers or implementing the projects. Another question raises on the same issue how the organization selects the stockholders for this issue or how they select the project. Any response was not the perfect for making the actual answer or findings. On the other hand, it is also crucial to note that most of these GO and NGOs are not in the habit of using the internet for information searches or communication. Official documents are similarly inaccessible.

### **Community-Based Adaptation (CBA) Approach:**

CBA approach is especially salient for Bangladeshi NGOs and can be recommended.

The UNDP approach to adaptation is ultimately about doing development differently — integrating climate change risk management into MDG-focused initiatives. CBA projects add an adaptation layer to sound community-based development initiatives – ensuring that development gains are not threatened by climate change impacts. UNDP’s CBA programme officially began implementation in February 2008.

CBA focuses on communities that are most vulnerable to climate change and aims to understand how climate change will affect a community’s capacities and assets. The process is bottom-up and community-driven, placing a strong emphasis on incorporating indigenous knowledge, social capital, and local context in adaptation planning.

Over the past several years, ActionAid Bangladesh (AAB) has been pursuing projects at several sites across Bangladesh with the goal of piloting a model for participatory, community-based planning for climate change adaptation.

CNRS focuses on ecological management of floodplain ecosystem through community-based management approaches.

Practical Action believes that adaptation must focus on strengthening communities from the bottom up and build on local strategies for coping with climate change. Resource poor people are not passive, they are already using strategies to adapt and have extensive knowledge of local climate conditions. The problem is that further changes in climate may be beyond their capacities to adapt. So Practical Action is working with local communities in order to: strengthen their capacities to prepare for and respond effectively to climate-related hazards;

Oxfam is undertaking CBA efforts at the local level. As Oxfam staff explain, the organization’s approach involves the formation of large, inclusive village CBOs that bring together all households.



ARCAB conducts and researches CBA at locations from five major Ecosystem Zones and one urban site in Bangladesh, working through “action partners”, “research partners”, and “knowledge management partners.”

In order to provide safe drinking water, Climate Change and Health Promotion Unit (CCHPU) took an attempt to purify water for removing salinity in these regions. For this purpose, CBA was used.

### **Participatory Approach:**

IUCN believes, in order to develop an appropriate methodology it is very much essential to assess the potentials and limitations of the area under study in general. These include demographic, biophysical and socio-economic characteristics.

The basic approach of the project is participatory and encompassed both the both the top down and bottom-up approaches to development. Along with that, the eventual integration of the lesson learnt into the policy and decision-making cycle is the other main challenge that the project aimed to address.

CPRD emphasizes participatory and people-centered development by exchanging, transferring and maximizing knowledge among the different actors and stakeholders and, generates innovative ideas, approaches, and appropriate technologies through participatory research developing models, demonstration and implementation. CPRD also works as a platform of policy advocates and researchers working as a hub among the development actors.

### **Integrated Approach:**

The Climate Change Cell (CCC) established with the objective of “Establishing an Integrated Approach to Climate Change Risk Management at National and Local Levels”. Development and application of a research Strategy for Climate Change and Adaptation for Bangladesh is one of the major activities of CCC.

### **Holistic Approach/ Multi- Hazard Approach:**

CDMP II is driven by a multi- hazard approach to disasters including climate change risk management, to create and nurture the crucial paradigm shift in disaster management, away from relief and rehabilitation and to a more holistic approach towards reducing risks and vulnerabilities.

### **Ecosystem Zone Approach:**

By taking an ecosystem-zone approach, ARCAB ensures that lesson-drawing is undertaken and applied in a systematic way.

**Rights Based Approaches:**

CARE's work focuses deliberately and explicitly on people's efforts to achieve the minimum conditions for living with dignity. We work for building internal capacity to empower people to claim and exercise their rights and fulfill their responsibilities. We recognize the poor, the displaced and victims of violence as having inherent rights essential to livelihood security - rights that are validated by international law.

**Proactive Approach:**

IUCN believes, Climate change represents one of the greatest environmental and health challenges of our times. Bangladesh is one of the most affected countries due to this climate change phenomenon. Through this proposed monitoring process, long term disease surveillance will be maintained or established in suspected areas of climate change and health risks to enhance detection and prevention of diseases resulting in guidelines and recommendation for policy makers at government and international levels to tackle human health problems in Bangladesh due to climate change and variability. Apart from government agencies, public health and environmental health workers as well as clinicians should interplay in a nicely poised manner resulting in a proactive approach to combat the grave situation so that we can achieve long range and long lasting prevention of the impact of climate change and variability on health.

**Open Approach:**

BAPA and BEN believes, the Open Approach, furthermore, counteracts the river destabilizing effect of climate change by mitigating flood during summer, as river flow can spread over larger areas, and by conserving summer water and making it available during winter, so that the Open Approach can also act against rising salinity, which is expected to be more acute during the winter, when river flows diminish;

The Open Approach can therefore help counteract three (namely, submergence by rising sea level, destabilization of rivers, and salinity intrusion) of the five most adverse effects of climate change on Bangladesh; so that switching from the Cordon Approach to the Open Approach to rivers is the most important policy change that Bangladesh needs in order to face the climate change challenge.

**Territorial Approach:**

The Territorial Approach to Climate Change (TACC) works with local level governments (states, provinces, cities, municipalities) in developing countries and countries in transition to increase resilience to climate change impact and reduce their carbon footprint. The TACC is a partnership of five agencies that includes UNEP, UNDP, UNITAR, UN-Habitat and UNCDF.

### **Ecocentric Approach:**

Ecocentric Approach is argued that the natural world should be respected for its processes and products, and that low impact technology and self-reliance is more desirable than technological control of nature.

### **Technocentric Approach:**

Technocentric Approach has absolute faith in technology and industry and firmly believe that humans have control over nature. Although technocentrics may accept that environmental problems do exist, they do not see them as problems to be solved by a reduction in industry. Rather, environmental problems are seen as problems to be solved using science. Indeed, technocentrics see that the way forward for developed and developing countries and the solutions to our environmental problems today lie in scientific and technological advancement.

### **Climate Change Initiatives:**

It appears that in recent years a number of intentional agencies and development partners/donors including GEF, DFID/ British High Commission/ British council Bangladesh, UNDP, Danida/ Embassy of Denmark, EC- Bangladesh, JICA, NL, WB, ADB etc are more or less active in supporting both adaptation and mitigation. It shows that some of the mentioned donors provided/ on the process of providing funds to implement at least 24 adaptation projects in Bangladesh. Out of 24, 3 projects have already been completed, 11 are ongoing and the rest of them are on the process.

Brief of some of recent adaptation projects funded by different donors (detail are in annex)

1. National Adaptation programme of Action to climate change (2005)
2. Climate change and disaster Risk (2006-2007)
3. Climate change Cell (2004-2009)
4. Chars livelihoods programme (2004-2010)
5. Structured consultation on climate change strategy and Action Plan for Government of Bangladesh (2007-2008)
6. Economic Empowerment of the poorest Challenge Fund (2008-2015)
7. Community based Adaptation to climate change through costal Afforestation (2007-2010)
8. Community-based Adaptation (CBA) Programme under CDMP (2007-2009)
9. Climate management Plan for the Agricultural Sector (2008)
10. EC Support to NAPA implementation (2008- 2012)

## 11. Comprehensive Disaster Management (CDMP-II)

It also appears that about 16 mitigation projects on climate change are supported/being supported by different developing partners. Among them 3 projects are ongoing, 13 projects are in pipeline and there is no completed projects lying on mitigation, in fact, mitigation activities on climate change are a new concept for Bangladesh in terms of implementation and support. Almost all over these activities started at 2007 except “Ozone Depleting Substance Phase-out under montreal protocol” and “Initial National Communication under UNFCCC (INC)” project which were started in 1996 and 2000 respectively. However, some of the development partners for supporting mitigation activities in Bangladesh. Some of the major activities in resent time may include as follows:

1. Improving kin Efficiency in Brick Making Industries (2008- 2012)
2. Standard Labeling for Efficient Appliance and Equipment (2008-2012)
3. Second National Communication (2007-2009)

### **Climate Change: Reduce Vulnerability**

The organizations surveyed stated about their experience, lesson learnt and gaps/barriers during implementation of their climate change program and projects. Their responses have been summarized under following categories: (details are in findings of the survey)

1. Effective coordination and communication on climate change
2. Resources to implement climate change projects all the grass-root level
3. Climate change integration is crucial for sustainable development
4. Awareness on climate change issues at both policy & community level
5. In- depth research on different sectors including agriculture, water and health etc.
6. Dissemination of best practices and knowledge in light of climate change for national development policies, plan and awareness program
7. National advocacy, training and capacity building from grass root level
8. Networking among GO, NGOs & International organizations on climate change issues
9. Butter understand of micro-geographic, micro-climate, environmental & ecological study
10. Reintroduction of local crop variety and understanding local coping mechanisms
11. Legal frame work on pollution, exotic crops, GMO etc

12. Energy, transport sector need to be should involve in climate change

### **Climate Change: The Way Forward**

Many of the future measures were suggested by different organization during survey based on characteristics of short-term, medium-term and long-term approaches to climate change mitigation and adaptation. The main measures discussed by the organizations are listed below:

#### **Short-term:**

Mass awareness and advocacy programmes, research and study, tree plantation and afforestation, mainstreaming climate change issues into sectoral development, integrating and coordination with global network on climate change issues, training on climate change issues for people at all level, networking within people and organizations such as society as civil society, media etc. Effective implement existing policy and program.

#### **Mid-term:**

Awareness and advocacy into deeper climate change issues, all the plans and policy should integrate climate change issues, research on climate change issues, crops diversification, tree plantation/afforestation, renewable energy; improve water resource management, policy and program on food security issues.

#### **Long- term:**

Research On Climate Change Issue ( Various Sectors Including Agriculture, Water, Health Etc), Afforestation, Development Of Sustainable Crop Varieties, In Depth Research On Climate Change\ Climate Change Issues In Educational Curriculum, Generate Fund For Climate Change And Disaster Management, Awareness, Advocacy And Training About Climate Change Issues, River Dredging, Infrastructure Development.

## **List of Abbreviations**

AAB: Action Aid Bangladesh

AAI: Action Aid International

ALRD: Association of Land Reform and Development

ANU: Australian National University

AR4: Assessment Report 4

AMRF: Alternative Movement for Resources and Freedom

APWLD: Asia Pacific Forum on Women, Law and Development

APACPH: Asia Pacific Consortium for Public Health

ARWF: Asian Rural Women Forum

ARCAB: Action Research for Community Adaptation in Bangladesh

AOSIS: Alliance of Small Island States

AWG-KP: Ad-hoc Working Group on Kyoto Protocol

AWG-LCA: Ad-hoc Working Group on Long-term Cooperative Action

BAP: Bali Action Plan

BAI: Bangladesh Agricultural Institute

BARI: Bangladesh Agricultural Research Institute

BARC: The Bangladesh Agricultural Research Council

BAPA: Bangladesh Poribesh Andolon

BCAS: Bangladesh Centre for Advanced Studies

BCCSAP: Bangladesh Climate Change Strategy and Action Plan

BDRC: Bangladesh Development Research Center

BEN: Bangladesh Environment Network

BIDS: Bangladesh Institute of Development Studies

BIDE: Bangladesh Institute of Development Economics

BNHSDP: Bangladesh National Health Service Delivery Project

BRRI: Bangladesh Rice Research Institution  
BRAC: Bangladesh Rural Advancement Committee  
BDPC: Bangladesh Disaster Preparedness Centre  
BELA: Bangladesh Environmental Lawyers Association  
BIDS: Bangladesh Institute of Development Studies  
BMKS: Ballaverkhas Manob Kallyan Sangstha  
BAEC: Bangladesh Atomic Energy Commission  
BUP: Bangladesh Unnayan Parishad  
CBA: Community-based adaptation  
CBOs: Community-based organizations  
CC: Climate Change  
CDM: Clean Development Mechanism  
CO<sub>2</sub>: Carbon dioxide  
CH<sub>4</sub>: Methane gas  
COP: Conference of Parties  
CPD: Centre for Policy Dialogue  
CPS: country partnership strategy  
CIS: Commonwealth of Independent States  
CNRS: Center for Natural Resource Studies  
CSP: Country Strategy Paper  
CVCA: Community Vulnerability and Capacity Analysis DoE: Department of Environment  
CCC: Climate Change Cell  
CCU: Climate Change Unit  
CPRD: Center for Participatory Research and Development  
CCHPU: Climate Change and Health Promotion Unit  
CORR: Christian Organization for Relief and Rehabilitation

CIS-ILO: Center of the International Labour Organization

CODEC: Community Development Centre

CNRS: Center for Natural Resource Studies

CEGIS: Center for Environmental and Geographic Information Services

CERs: Certified Emission Reductions

CDM: Clean Development Mechanism

COP: Conference of Parties

CO<sub>2</sub>eq: Carbon Dioxide Equivalent

CoS: Church of Sweden

CCDB: Christian Commission for Development in Bangladesh

CERDI: Central Extension Resource And Development Institute

DRTMC: Disaster Research Training & Management Centre

DPHE: The Department of Public Health Engineering

DMB: Bangladesh Disaster Management Bureau

DMRD: Disaster Management and Relief Division

DDM: Department of Disaster Management

DAE: Department of Agriculture Extension

DECC: Disaster, Environment and Climate Change

DPF: Doel Pathikapara Federation

DEBTEC: Development of Biotechnology & Environmental Conservation Centre

DF: Disaster Forum ECDO: Ethnic Community Development Organization

EIG: Environmental Integrity Group

EITs: Economies in Transition

EGTT: Expert Group on Technology Transfer

E-LAW: Environmental Law Alliance Worldwide

EMPHASIS: Enhancing Mobile Populations' Access to HIV & AIDS Services, Information and Support



EPA: Environmental protection Agency  
ERRI: East Pakistan Rice research Institute  
EU: European Union  
EC: European Commission  
EBA: Everything but Arms  
EED: Evangelischer Entwicklungsdienst  
EJF: Environmental Justice Foundation  
EMS: Emergency Medical Service  
FEJB: Forum of Environmental Journalists of Bangladesh  
FSUP-H Project: Food Security for Ultra-Poor in the Haor Region  
FIAN: Food First Information and Action Network  
FCA: Finn Church Aid  
FNB: Federation of NGOs in Bangladesh  
G77: Group 77  
GDP: Gross Domestic Product  
GCM: Global Circulation Model  
GCM General Circulation Model  
GHG: Green House Gas  
Gt: Gigatonnes  
GWP: Global Warming Potentials  
GWEEI: Global Women's Economic Empowerment Initiative  
GSP: Generalised System of Preferences  
GUK: Gana Unnayan Kendra  
GB: Grameen Bank  
HIF: Humanitarian Innovation Fund  
HYVs: High Yielding Varieties

IRW: Islamic Relief Worldwide

IAPAL: International Air Passenger Adaptation Levy

IDUs: Injecting Drug Users

INC: Inter-governmental Negotiating Committee

IPCC: Inter-governmental Panel on Climate Change

IPR: Intellectual Property Rights

IWHEEL: Improving Women's Health and Education through Effective Learning

IWRM: Integrated water resources management

IMDMCC: Inter-Ministerial Disaster Management Coordination Committee

IFPRI: International Food Research Policy Institute

IUCN: International Union for Conservation of Nature

ICMA: Institute of Cost Management and Accounting

Ji: Joint Implementation

JUSKS: Jatrapur Union Samajkallayan Sangstha

LCS: Low Carbon Strategy

LIFE: Livelihood Recovery for flood affected people in South- East of Bangladesh

LiLAC: Light of Life, A Change

LDC: Least Developing Country

LDCs: Least Developed Countries

LULUCF: Land Use Land Use Change and Forestry

MoEF: Ministry of Environment and Forest

NAPA: National Adaptation Programme of Action

MCTF: Multilateral Climate Technology Fund

MPH: Master of Public Health

MSTL: Mobile Soil Testing Laboratories

MJUS: Manusher Janno Unnayan Sangstha

MYCNSI: Maternal and Young Child Nutrition Security Initiative

NAMA: Nationally Appropriate Mitigation Action

NAMC: Nationally Appropriate Mitigation Commitments

N<sub>2</sub>O: Nitrous Oxide

NACOM: Nature Conservation Management

NARS: National Agricultural Research System

NARRI: National Alliance for Risk Reduction and Response Initiatives

NIPSOM: The National Institute of Preventive and Social Medicine

NCA: Norwegian Church Aid

NOAA: National Oceanic and Atmospheric Administration's

NU: Nagorik Uddyog

ODA: Official Development Assistance

OECD: Organization for Economic Co-operation and Development

OPEC: Organization of Petroleum Exporting Countries

OSHE: Bangladesh Occupational Safety, Health and Environment Foundation

P.A.C.E: Personal Advancement and Career Enhancement

PCTFI: Patsy Collins Trust Fund Initiative

PCVA: Participatory Capacity and Vulnerability Assessment

PKSF: Palli Karma-Sahayak Foundation

PRDI: Participatory Research and Development Initiative

PAN AP: Pesticide Action Network Asia & Pacific

PTF: Progoti Tushbandhar Federation

PWDs: Person with Disabilities

REDD: Reducing Emissions from Deforestation and Forest Degradation

REE-CALL: Resilience through Economic Empowerment, Climate Adaptation, Leadership and Learning

SAARC: South Asian Association for Regional Cooperation

SAR: Second Assessment Report

SAWTEE: South Asian Watch on Trade, Economics and Environment

SBI: Subsidiary Body on Implementation

SBSTA: Subsidiary Body on Science and Technological Advice

SDC: Swiss Agency for Development and Cooperation

SIDS: Small Island Developing States

SRES: Special Report on Emission Scenarios

SST: Sea Surface Temperature

SALE: Sustainable Access to Land Equality

SaFaL: Sustainable Agriculture, Food Security and Linkages

SAMMOW: Stimulating Agricultural Management & Marketing Opportunities for Women

SETU II: Social Economic Transformation of the Ultra Poor II

SEEMA: Solidarity and Empowerment through Education, Motivation and Awareness

SHEBIKA: Sustainable Healthcare by Enabling Improved Knowledge and Access

SHOUHARDO II: Strengthening Household Ability to Respond to Development Opportunities II

SMPP: Safe Motherhood Promotional Project

SEHD: The Society for Environment and Human Development

SHA: Swiss Humanitarian Aid Unit

SRDI: Soil Resource Development Institute

SANGAT: The South Asian Network of Gender Activist & Trainers

TACC: Territorial Approach to Climate Change

TNA: Technology Needs Assessment

UN: United Nations

UNCED: United Nations Conference on Environment and Development

UNCTAD: United Nations Conference on Trade and Development

UNFCCC: United Nations Framework Convention on Climate Change

USA: United States of America

WARPO: Water resources planning Organization

WaSH: Water, Sanitation & Hygiene

WHEEL: Women's Health & Education through Effective Learning Project

WMO: World Meteorological Organization

YPSA: Young Power in Social Action

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## 1.1: Introduction

Climate change is no longer something to happen in the future, it is here and now. Bangladesh is among the countries that are expected to be worst effected by climate change. Rapid global warming caused fundamental changes to our climate. No country and people know that better than Bangladesh, where millions of people are suffering. Sudden, severe and catastrophic floods have intensified and taking place more frequently owing to increased rainfall in the monsoon. 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, and droughts 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 over 25 million climate refugees. This is twice the entire population of the Netherlands.

Bangladesh is one of the most climate vulnerable countries in the world and will become even more so as a result of climate change. Floods, tropical cyclones, storm surges and droughts are likely to become more frequent and severe in the coming years. These changes will threaten the significant achievements Bangladesh has made over the last 20 years in increasing incomes and reducing poverty, and will make it more difficult to achieve the MDGs.

Over the last 35 years, the Government of Bangladesh, with the support of development partners, has invested over \$10 billion to make the country less vulnerable to natural disasters. These investments include flood management schemes, coastal polders, cyclone and flood shelters, and the raising of roads and highways above flood level. In addition, the Government of Bangladesh has developed state-of-the-art warning systems for floods, cyclones and storm surges, and is expanding community-based disaster preparedness. Climate resilient varieties of rice and other crops have also been developed.

The challenge Bangladesh now faces is to scale up these investments to create a suitable environment for the economic and social development of the country and to secure the well-being of our people, especially the poorest and most vulnerable groups, including women and children.

The Government of Bangladesh's is to eradicate poverty and achieve economic and social well-being for all the people (MoEF, 2008).

Bangladesh is already experiencing the impact of global warming and climate change. The following impact has been observed. Summers are becoming hotter, monsoon irregular, untimely rainfall, heavy rainfall over shot period causing water logging and landslides, very little rainfall in dry period, 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. IPCC in its AR4 described with confidence climatic anomalies and their impacts on Bangladesh.

The climate change in Bangladesh creates insecurities for food, water, life, property, settlement, livelihood assets, livelihood assets, livelihoods and others. Climatic impacts reduce securities directly and indirectly. Environmental degradation, degradation of land resources ultimately reduces food securities, health securities etc and at same time increases conflicts securities, health securities etc and at the same time increases conflicts over resources and livelihood persuasions.

Climate change has been recognized as the greatest threat to mankind. According to David A King, chief Scientific Advisor to the British Government, “climate change is the most severe problem that we are facing today—more serious even than the threat of terrorism” (2004). Bangladesh is very vulnerable to climate change due to its geographical location, dense population and socio-economic condition.

Climate change is vital concern for Bangladesh because the major environmental components including plants and animals depend on climate system to which they are exposed. These components get benefited when conditions are favorable, and they suffer when conditions become extreme. Humans are one of the examples. Bangladesh is mainly an agriculture based society. The crops and water resources that we use to sustain our communities are linked to the climate, and the economic as well as human losses that we experience from hail storm, cyclones, floods, droughts, and bushfires are a remainder of our ever present vulnerability to the climate to the climate system.

According to available literature, natural hazards cause more than 100,000 deaths every year and inflict billions of dollars in damage. About 97 of deaths due to natural disasters occur in developing countries with an estimated 256 million people affected in 2000 (Irish Aid, 2006). It is believed worldwide that the poorest suffer from the greatest losses (at least in relative terms) science they do not have the resources and capacity to cope and adapt to climate change impacts.

Bangladesh, with a population of about 144 million, is one of the poorest and is most vulnerable countries in the world to disaster and climate change impacts (CDMP, 2003). Different types of natural hazards including flood (e.g. river flood, urban flood and flash flood), cyclone and storm surges, drought, river bank erosion, tornadoes etc strike the country almost every year. These catastrophic events significantly obstruct the economic and social development of the country through two phases—firstly damaging the resources, establishments and infrastructure and secondary pulling back the on-going development, business and trade at local, national, regional and even global levels.

Apart from natural hazards, the community is susceptible to other environmental problems like pollution, water logging, rapid and intense urbanization etc. climate change is the added factor for substantial increase of the frequency and intensity of some of the events like floods, droughts, cyclones etc in future (CDMP, 2003).

## 1.2: Research and Country Context: Bangladesh

“Climate Change is the biggest global health threat of the 21st century.” This statement opens and sums up the final report of a year-long Commission held jointly between *The Lancet* and University College London (UCL) Institute for Global Health. Climate change will have its greatest impact on those who are already the poorest in the world: it will deepen inequities and the effects of global warming will shape the future of health among all peoples. Yet this message has failed to penetrate most public discussion about climate change (Horton, 2011).

During this century, earth's average surface temperature rises are likely to exceed the safe threshold of 2°C above preindustrial average temperature. Rises will be greater at higher latitudes, with medium-risk scenarios predicting 2—3°C rises by 2090 and 4—5°C rises in northern Canada, Greenland, and Siberia (Horton, 2011).

The average temperature of today's world has already increased by 0.6°C from the middle of the 1800s. In the last century, average temperature of earth has increased by 1.5 to 4.5°C leading to melting of polar and mountain ice and thus sea level rise. It has also been shown that if climate change continues unabated, in the year 2050, production of rice will decrease by 8% and that of wheat by 32% (Daily Star, 2011).

An update on the IPCC's fourth assessment, identified that if there is no action to cut emissions, there is a potential for a temperature rise as much as 7°C by 2100. The fourth assessment report of the IPCC in 2007 also concluded that it was "unequivocal" that the Earth is warming and that human activities play a role in this change. Over the last 50 years, “cold days, cold nights, and frost have become less frequent, while hot days, hot nights, and heat waves have become more frequent.” The linear warming trend over the last 50 years of, on average 0.13°C per decade, is nearly twice that for the last 100 years. The total temperature increase from the period 1850 to 1899 to the period 2001 to 2005 has been 0.76°C. Hasnain (2000) and WWF(2005) mentioned in their studies that since the mid 1970s, the average air temperature measured at 49 stations of the Himalayan region rose by 10°C with high elevation sites warming the most (Steiner, 2011).

Climate change affects different regions, generations, income groups and genders differently. Developing countries, such as Bangladesh and the Pacific Region have already been highly affected. Poor people, a disproportionate amount of which are female are particularly vulnerable, and at the same time key actors. All too often, gender issues have been neglected so far in local and national climate policy-making. Women and communities have their own visions and knowledge on how to build and strengthen their resiliency to climate change. And

such visions are tied to the broader realities of power relationships that are informed by class, gender, ethnicity and citizenship (Gender CC 2012).

Bangladesh is trapped between the Himalayas in the north and the encroaching Bay of Bengal to the south. Bangladesh is most vulnerable to natural disasters due to the frequency of extreme climate events and its high population density. Floods are frequent and cause the greatest economic and human losses to the country. The flooding problems are exacerbated by sediment transported by three major rivers- the Ganges, Brahmaputra and Meghna.

**Climate change poses significant risks for Bangladesh.** The impacts of higher temperatures, more variable precipitation, more extreme weather events, and sea level rise are already felt in Bangladesh and will continue to intensify. The impacts result not only from gradual changes in temperature and sea level but also, in particular, from increased climate variability and extreme events, including more intense floods, droughts, and storms.

These changes are already having major impacts on the economic performance of Bangladesh and on the lives and livelihoods of millions of poor people (world Bank). Any publication on climate change in Bangladesh starts with an overview of the terrifying scenario that the country will face when the effects of global warming and climate change take hold: sea level rise, flooding and salination, more intensive cyclones, disrupted river flows, increased temperatures and irregular weather patterns. Of course Bangladesh faces other ongoing challenges as a country, and climate change stands to exacerbate current problems such as land distribution, urban planning, environmental degradation and corrupt distribution of resources. Climate change is far from only an environmental problem. Bangladesh faces the challenge to plan ahead for its already vulnerable population as weather-related risks increase. However, the effects of climate change on Bangladesh are not estimated with any certainty. The most reliable source for climate change information, the IPCC or Intergovernmental Panel on Climate Change, uses analysis grids that are too large to model effects in Bangladesh – much less regionally in Bangladesh. The closest we can get with IPCC (International Panel for Climate Change) data is the South Asian subcontinent. This lack of exact data should be kept in mind when designing suitable interventions. Bangladesh stands to suffer a high risk of damage from climate change for several reasons. Geologically and geographically, Bangladesh is a low-lying active delta interlaced by rivers and waterways, the outlet of three gigantic Himalayan rivers into the Bay of Bengal. It lies on a geological faultline and has a high risk of earthquakes. It is prone to tropical cyclones. In the southern coastal belt, cyclones are often accompanied by storm surges or tidal bores where sea water travels up canals and rivers with deadly force. Near the coast saltwater also seeps up the freshwater channels and makes potable water scarce. Such risks are set to increase with climate change. However, the demographics of Bangladesh also stand to exacerbate its effects. Interview with Mr Abu M. Kamal Uddin, Programme Manager, Climate Change Cell on 2.11.09 Shortcut to the frontline: supporting local NGOs on climate change in Bangladesh © INTRAC and PRIP Trust 2010 4Being a small country with fertile alluvial

soil, the population of Bangladesh is close to 150 million people at present, which equates a population density of more than 1000 persons per square kilometre. Bangladesh is the most densely populated country in the world. The majority – 60% - of Bangladeshis live in rural areas and make a living from agriculture, either directly from farming, or attendant processing and services. Hence economic policy is often formulated to support agriculture, the mainstay of the population. Although fertility rates are falling, the population is projected to grow to 208 million by 2025. Currently more than 43% of the population are estimated to live beneath the poverty line, of whom 32% live in extreme poverty – that is, they are unable to consume the 1750 kCal a day needed to sustain their bodies. This backdrop means that there is great pressure for people to settle wherever they can, including on marginal land – a great many Bangladeshis live in high-risk areas. The frequent natural disasters (the most destructive recently being super-Cyclone Sidr in 2007 and Cyclone Aila in May 2009) give a taste of what is likely to come as climate change impacts gather momentum. The high winds of Cyclone Sidr killed an estimated 15,000 people. The sudden onset and tidal waves of Cyclone Aila killed fewer than 1000 persons, but its wider impacts have been more devastating. Those people who lived on reclaimed farmland, depending on embankments to keep their land safe from rivers or the sea, suffered the experience of the embankments breaking and the rivers surging in to inundate their land and homes. It is estimated that 40,000 people were displaced and sought refuge on roadsides and embankments. Thousands of them (the common figure is 10,000) are still displaced, while the tidal rivers wash over their former farmland twice a day through the breached embankments, six months after the storm. Many of the inhabitants in areas that are already at risk from natural disasters, exacerbated by various man-made interventions, have very little to fall back on when disaster strikes. Climate change would increase the many pre-existing risks for this population. Hence, poverty alleviation – making sure that people have options to survive and thrive - is an important aspect of climate change resilience. The sections below outline the various climate risks that threaten southwest Bangladesh (Huda, 2010).

### **1.3: The Statement of the Research Problem**

Climate change is one of the greatest threats to mankind in the twenty first century. Climate change is a complex, multifaceted, multidimensional, long-term, slow onset phenomenon with enormous impacts that touches many aspects of human society including most of its production- consumption processes. Further the impacts of climate change are likely to enhance the vulnerability of many of the societies and communities, particularly those are already vulnerable to climate vulnerability as well as lack of development. Climate change is likely to threaten many development investments and effort (UNDP, 2008).

The Intergovernmental Panel on Climate change (IPCC) IN 2007 asserted that “the balance of evidence suggests a discernible human influence on global climate”. Rising global temperatures due to climate change poses significant risks for Bangladesh. The context magnitude of the change in the global climate is still uncertain and subject of worldwide



scientific studies. (Galib, 2008). It is being said that, one third of Bangladesh will go under sea-water in next 50 years due to the sea level rise being caused by the climate change. Droning of Bangladesh is now a hot topic in the International arena (Hasan, 2008).

According to the third Assessment report of IPCC, South Asia is the most vulnerable region of the world to climate change impact (McCarthy *et al*, 2001). The international community also recognizes that Bangladesh ranks high in the list of most vulnerable countries on earth, that is climate change poses significant risks for Bangladesh. Bangladesh's high vulnerability to climate change is due to a number of Hydro-geological and socio-economic factors that include; a) its geographical location in South Asia; b) its fact deltaic topography with very low elevation; c) its extreme climate variability that is governed by monsoon and which results in acute water distribution over space and time; d) its high population density and poverty incidence; and e) its majority of population being dependent crop agriculture which is highly influenced by climate variability and change (Ahmed, 2006).

The people of Bangladesh chars are actually vulnerable to disasters, yet they are the least visible and most marginalized within the national warning and shelter system. The frequency and magnitude of natural disasters has been increasing rapidly in coastal belt due to climate change impacts. People living in the coastal belts are becoming more vulnerable day by day. The increase frequency of cyclone and that wave not only destructs the houses, embankments, streets and resources of around 710 kilometers area. It also hampers the livelihood of the people living there. Saline water that entered the cultivable land following two cyclones 'Sidr' and 'Aila' has increased salinity of the land which will not be able for cultivation even after two to three years. Furthermore, around 200 ship- breaking yards continue to pollute the environment of coastal belt and leads to increase disasters (Daily Star, 2011). Bangladesh is highly vulnerable, because it is low-lying, located on the Bay of Bengal in the delta of the Ganges, Brahmaputra and Meghna and densely populated. Its national economy strongly depends on agriculture and natural resources that are sensitive to climate change and sea level rise.

This study focuses on the vulnerability to climate change and not only the possibilities for adaptation but also it shows from the aspect of sustainable development in Bangladesh. The study first identifies the major climate change related problems: reduced fresh water availability, surface drainage congestion, sea level rise, increased floods and coastal storms, and how they affect the country. Secondly, the study aims to provide direction on how the potential effects of climate change and adaptation options can be factored into policy making. Thus the study looks at the strategic implications of climate change. Finally, this study illustrates how dealing with climate change could be incorporated in ongoing initiatives through analyzing the factors and components. The study will look how the GOs and NGOs are working for climate change. The research will look the approaches and strategies of their work and then find the gaps of these approaches. Finally the research will point out some areas for policy implications.

#### **1.4: The Objectives of the Study**

##### **Principle Objective:**

The principle objective of this study is to know the approaches of the GO-NGO activities for the challenges of the climate change.

##### **Specific Objectives of this Study:**

1. To look the approaches of the GO-NGO activities for the challenges of the climate change in Bangladesh.
2. To know what are those lack of approaches between the GO-NGO activities for the challenges of the climate change in Bangladesh.
3. To look how will those lack of Approaches over come.
4. To know what are the general strategies are being taken for such kind of activities.

#### **1.5: Research Questions**

##### **Main Question:**

What are the approaches of the GO and NGO activities for the challenges of the climate change in Bangladesh?

##### **Specific Questions:**

1. What are the approaches of the Go and NGO activities for sustainable the challenges of the climate change in Bangladesh?
2. What are the gaps of these approaches?

#### **1.6: The Significance of the Study**

The risk of climate change issues have become a serious threat to the lives, livelihoods and sustainable development of Bangladesh. It is predicted that by the year 2030, an additional 14.3% of the country would become extremely vulnerable to floods, while the existing flood prone areas will face higher levels of flooding. Analysis of past floods suggests that, about 26% of the country is subject to annual flooding and an additional 42% is at risk of floods with varied intensity (IPCC, 2002).

On the other hand, it has been predicted that by 2030 and 2050 at least 30 and 50 cm sea level will rise respectively This may seriously affect Bangladesh (World Bank,2000). The resent report shows that if 25 cm sea level rises then 40 percent of Sundarban will be submerged. Climate change will also exacerbate saline intrusion through several means such as the intrusion of the saline waterfront in the rivers, saline water interface in the groundwater

aquifers, and percolation from the increased saline surface waters into the ground water systems and increased storm surges, which carry seawater inland.

Some coping strategies generally reduce the adverse impacts on the system due to climate change vulnerable- temperature, rainfall, sea level rise, extreme events and other secondary various. For example, through different techniques and technologies artificial management of temperature such as the use of wet jute bags over the shade for poultry and livestock, use of exhaust fans (during hot weather), electric bulbs for heating the room ( in winter season) is common (MoEF, 2005). Long- term, mid-term and short-term better strategies or adapting modes should be taken for the development of the existing living beings. There are government, non- government and international organizations, academicians, researchers, etc working for this purpose. The resources, skills and expertise of this partnership platform will facilitate to strengthen the capacity of all in general that is the entire population of this country and or all the citizens of this earth. There are projects/ activities with a planning horizon of 30 year or less, while few have a planning horizon of 50 years or more ( World Bank, 2000).

Adaptation and mitigation are considered as the main strategies to deal with climate change. Earlier experts had advocated that adaptation was the only mean by which poor, vulnerable countries such as Bangladesh can face the onslaught of adaptation and mitigation to successfully and comprehensively deal with climate change.

So it is easily imaginable that challenges of climate change effects the people of Bangladesh. This study is significant because of how GO and NGO worked on climate change and what approach they used for their projects and identifies the major climate change related problems. On the other hand this study provides direction on how the potential effects of climate change and adaptation options can be factored into policy making. Besides, researchers have also realized the importance of increasing awareness regarding the science of climate change and its associated impacts. Hence awareness raising and capacity building have to be integrated along with adaptation and mitigation activities to make them more effective.

### 1.7: Definition

In this study are many terms used relevant to the field. Some of the terms have been given below with a brief description so that the readers can understand easily:

**Adaptation:** Adjustment in natural or human systems in response to actual or expected climate stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory, autonomous and planned adaptation.

**Atmosphere:** The gaseous envelope surrounding the Earth. The day atmosphere consists almost entirely of nitrogen and oxygen, together with trace gases including Carbon dioxide and ozone.

**Biodiversity:** The total diversity of all organisms and ecosystems and ecosystems at various at various spatial scales.

**Capacity building:** In the context of climate change, capacity building is developing the technical skills and institutional capabilities in developing countries and economies in transition to enable their participation in all aspects of adaptation to, mitigation of, and research on climate change, and in the implementation of the Kyoto mechanisms, etc.

**Climate:** Climate in a narrow sense is usually 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 time ranging from months to thousands or millions of years. These qualities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense in the state, including a statistical description, of the climate system. The classical period of time is 30 years, as defined by the World Meteorological Organization. (WMO).

**Climate change:** Climate change refers to any change in climate over time, weather due to nature variability or as a result of human activity. This usage differs from that in United Nation Framework Convention on Climate Change (UNFCCC), which defines ‘climate change’ as: ‘a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods’.

**Climate (change) scenario:** A plausible and often simplified representation of the future climate, based on an internally consistent set of climatologically relationships and assumptions of radioactive forcing, typically constructed for explicit use as difference between a climate scenario and the current climate.

**Extreme weather event:** An event that is rare within statistical reference distribution at a particular place. Definitions of ‘rare’ vary, but an extreme weather event would normally be as rare as rarer than 10<sup>th</sup> or 9<sup>th</sup> percentile. By definition, the characteristics of what is called ‘extreme weather’ may vary from place to place. Extreme weather events may typically include floods and droughts.

**Food security:** A situation that exists when people have secure access to sufficient amounts of safe and nutrition food for normal growth, development and an active and healthy life. Food insecurity may be caused by the unavailability of food, insufficient purchasing power, inappropriate distribution, or inadequate use of food at the household level.

**Globalization:** The growing integration and interdependence of countries worldwide through the increasing volume and variety of cross border transactions in goods and services, free international capital flows, and the more rapid and widespread diffusion of technology, information and culture.

**Greenhouse effect:** The process in which the absorption of infrared radiation by the atmosphere warms the earth. In common parlance, term ‘greenhouse effect’ may be used to refer either to the natural greenhouse effect, due to naturally occurring greenhouse gases, or

to the enhanced anthropogenic greenhouse effect, which results from gases emitted as a result of human activities.

**Gross Domestic Product:** Gross Domestic Product (GDP) is the monetary value of all goods and services produced within a nation.

**Gross National Product:** Gross National Product (GNP) is the monetary value of all goods and services produced in a nation's economy, including income generated abroad by domestic residents, but without income generated by foreigners.

**Climate change Impact assessment:** The practice of indentifying and evaluating, in monetary and/or non-monetary terms, the effects of climate change on natural and human system.

**Climate change impacts:** The effects of climate change on natural and human systems. Depending on the consideration of adaptation, one can distinguish between potential impacts and residual impacts:

**Potential impacts:** All impacts that may occur given a projected change in climate, without considering adaptation.

**Residual impacts:** The impacts of climate change that would occur after adaptation. See also aggregate impacts, market impacts, and non-market impact.

**Infrastructure:** The basic equipment, utilizes, productive enterprises, installations and services essential for the development, operation and growth of an organization, city or nation.

**Livelihood:** Livelihood is a term defined by the Oxford English Dictionary as an individual's "course or progress through life or a distinct portion of life". It is usually considered to remunerative work and sometimes also formal education.

**Reforestation:** Planting of forests on land that have previously contained forested forests but that have been converted to some other use. For a discussion of the term forest and related terms such as afforestation, reforestation and deforestation and deforestation, see the IPCC special report on land se, Land use change and Forestry (IPCC, 2000).

**Salinisation:** The accumulation of salts in soils.

**Salt- water intrusion/ encroachment:** Displacement of fresh surface water or groundwater by the advance of salt water due to its greater density. This usually occurs in costal and estuarine areas due to reducing land based influence either from reduced runoff and associated groundwater recharge, or from excessive water withdrawals from aquifers or increasing marine influence relative sea level rise.

**Scenario:** A plausible and often simplified description of how the future may develop based on a coherent and internally consistent set of assumptions about driving forces and key

relationships. Scenarios may be derived from projections, sometimes combined a ‘narrative storyline.’

**Sea level rise:** An increase in the mean level of the ocean. Eustatic sea- level rise is a change in global average sea level brought about by an increase in the volume of the world ocean. Relative sea- level rise occurs where there is a local increase in the level of ocean relative to the land, which might be due to ocean rise and/or land level subsidence. In areas subject to rapid land level uplift, relative sea level can fall.

**Socio-economic scenarios:** Scenarios concerning future conditions in terms of population, Gross Domestic product and other socio- economic factors relevant to understanding the implications of climate change.

**SRES:** The storylines and associated population, GDP and emissions scenarios associated with the Special report on Emissions Scenarios (SRES) (Nakicenovic, 2000)

and the resulting climate change and sea- level rise scenarios. Four families of socio-economic scenario (A1, A2, B1 and B2) represent different world futures in two distinct dimensions: a focus on economic versus environmental concerns and global versus regional development patterns.

**Stakeholder:** A person or an organization that has a legitimate interest in a project or entity, or world be affected by a particular action or policy.

**Sustainable Development:** Development that meets the cultural, social, political and economic needs of the present generation without compromising the ability of future generations to meet their needs.

**Tsunami:** A large wave produced by a submarine earthquake, landslide or volcanic eruption.

**United Nation Framework convention on climate change (UNFCCC):** The convention was adopted on 9<sup>th</sup> May 1992, in New York, and signed at the 1992 Earth Summit in Rio de Janeiro by more than 150 countries and the European Community. Its ultimate objective is ‘stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system’. It contains commitments for all parties. Under the convention, Parties included in Annex I am to return greenhouse gas emissions not controlled by the Montreal protocol to 1990 levels by the year 2000. The convention entered in force in March 1994.

**Vulnerability:** Vulnerability is the degree to which a system is susceptible to and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.

**Welfare:** An economic term used to describe the state of well-being of humans on an individual or collective basis. The constituents of well-being are commonly considered to include materials to satisfy basic needs, freedom and choice, health, good social relations and security.

**Mitigation:** Climate change mitigation is actions to limit the magnitude and/or rate of long-term climate change (Fisher, 2007). Climate change mitigation generally involves reductions in human (anthropogenic) emissions of greenhouse gases (GHGs). Mitigation may also be achieved by increasing the capacity of carbon sinks, e.g., through reforestation (IPCC, 2007).

**Adaptation to global warming** is a response to climate change that seeks to reduce the vulnerability of biological systems to climate change effects (UNFCCC, 2010).

Even if emissions are stabilized relatively soon, climate change and its effects will last many years, and adaptation will be necessary (Farber, 2007).

Climate change adaptation is especially important in developing countries since those countries are predicted to bear the brunt of the effects of climate change (Cole, 2008).

That is the capacity and potential for humans to adapt (called adaptive capacity) is unevenly distributed across different regions and populations and developing countries generally have less capacity to adapt (Schneider, 2007).

Adaptive capacity is closely linked to social and economic development (IPCC, 2007).

The economic costs of adaptation to climate change are likely to cost billions of dollars annually for the next several decades, though the amount of money needed is unknown. Donor countries promised an annual \$100 billion by 2020 through the Green Climate Fund for developing countries to adapt to climate change. However, while the fund was set up during COP16 in Cancún, concrete pledges by developed countries are so far missing (Müller, 2008).

**Ecosystem:** An ecosystem is a community of living organisms (plants, animals and microbes) in conjunction with the nonliving components of their environment (things like air, water and mineral soil), interacting as a These biotic and a biotic component are regarded as linked together through nutrient cycles and energy flows (Odum, 1971).

**Ozone layer:** The ozone layer is a layer in Earth's atmosphere that absorbs most of the Sun's UV radiation. It contains relatively high concentrations of ozone (O<sub>3</sub>), although it is still very small with regard to ordinary oxygen, and is less than ten parts per million, the average ozone concentration in Earth's atmosphere being only about 0.6 parts per million. The ozone layer is mainly found in the lower portion of the stratosphere from approximately 20 to 30 kilometres (12 to 19 mi) above Earth, though the thickness varies seasonally and geographically (NOAA, 2010).

**Budget:** An estimate of costs, revenues, and resources over a specified period, reflecting a reading of future financial conditions and goals (Business Dictionary, 2012).

**Climate:** The climate of a region or city is its typical or average weather. (NASA, 2011)

**Climate change:** Climate change is identified as an average weather condition of an area characterized by its own internal dynamics and by changing in external factors that affect climate (Trewartha et al., 1980).

**Weather:** The weather is a set of all the phenomena occurring in a given atmosphere at a given time (IAC, 2011).

**IPCC:** The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change. It was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988 to provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socio-economic impacts. In the same year, the UN General Assembly endorsed the action by WMO and UNEP in jointly establishing the IPCC (IPCC, 2012).

**Rio Declaration on Environment and Development:** 178 countries met in Rio de Janeiro, Brazil for the first International Earth Summit on June 1992, convened to address urgent problems of environmental protection and social-economic development. The assembled leaders signed the Convention on Climate Change and the Convention on Biological Diversity, endorsing the Rio Declaration and the Forest Principles, and adopted the Agenda 21.

**Kyoto Protocol:** The Kyoto Protocol is an agreement closed by industrialized countries, adopted in 1997 and entered into force in 2005. The states plan to reduce their collective emissions of greenhouse gases by 5.2 percent compared to the year 1990. The objective of the involved countries is to lower overall emissions of six greenhouse gases – carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons – averaged over the period of 2008-2012 (UNDP, 2012).

### 1.8: Limitation of the Study

1. It is difficult to access to information about the approaches of NGOs activities. If more data or information about NGOs activities can be found about their actual approaches, it would better write down this study outcomes.
2. The respondents of sampled organizations were not found outspoken and failed to adequately reveal the fact lying within their work place.
3. Fifteen organizations are not enough for representing the actual scenario of approaches of climate change activities status.



4. It is expected that the result of this research would be more effective and widely applied if could access implementing areas of the approaches of GO and NGOs activities on climate change.

However, in spite of all these limitations, attempts have been made to elicit the truth by way of thematic analysis of the situation in the light of the empirical data and the study tried to show the present challenges of climate change: Approaches of GO and NGO Activities in Bangladesh.

## 2.1: Climate Change History

Climate is the significant change of Nature. In current world, climate Change is frequently pronounced word which indicates that change is occurred in natural stability due to uncontrolled human activities. The temperature of atmosphere, wind pressure varies due to climate change, and planet is also affected for it. In large scale we see the change of glacier due to temperature change in the earth which is visualized in decade to million year times. Change of glacier is considered a significant indicator of climate change. When atmosphere become cold, ice size is increased and other way around. During the glacial period, a large part of the earth's surface was covered with ice, due to the advance of glaciers, as in the late carboniferous period.

Around three million years back, suddenly a rotation period was started of cold and hot era. There are different opinions about rotation in the atmosphere.

In 1827 *Jean Baptiste Joseph Fourier* who was the first French Physicist first used the word green house as a parallel ward of global warming, long before when the general people was concerned about global warming. In addition, Scientists mention greenhouse gases is the number one cause of global warming. Carbon dioxide, methane, Nitrous Oxide, simulation, chloro foro Carbons were main factors for worming. The main things 'Carbon dioxide' produced by the burning of fossil fuels. To develop civilization, people depend on fossil fuels. It affects Earth from long years before.

In 1861 Irish physicist proved water vapor and some specific air ultimate result of the green house effect.

In 1886 Carl Bengh discovered 'Motorvagon' for nation. Generally it was the first invention of motor car.

From world nature climate-change-history, "Swedish scientist Svante August Arrhenius built on Fourier's work in 1896 and correctly determined that carbon dioxide produced by the combustion of fossil fuels would augment the Earth's natural greenhouse effect and produce global warming."

Arrhenius's calculations were uncertain. But it considered into a larger debate over whether atmospheric changes had caused the ice ages. Early experiment found that absorption by carbon dioxide giving out little climate effects. But later found change that thought. Many scientists thought that the oceans would quickly absorb any excess carbon dioxide.

In 1927 fossil burned and amount of Carbon dioxide result from industry enhanced one million ton in a year.

James Fleming found different thought from *The Life and Work of Guy Stewart Callendar*, in Callendar work it highlighted that *the Scientist Who Established the Carbon Dioxide Theory of*

*Climate Change*. “In 1938 a British engineer, Guy Stewart Callendar, attempted to revive Arrhenius's greenhouse-effect theory. Callendar presented evidence that both temperature and the CO<sub>2</sub> level in the atmosphere had been rising over the past half-century, and he argued that newer spectroscopic measurements showed that the gas was effective in absorbing infrared in the atmosphere. Nevertheless, most scientific opinion continued to dispute or ignore the theory” (Fleming, 2007).

In the beginning, many scientists struggled to accept Arrhenius's theory until the late 1950s, when studies of carbon dioxide measurements were conducted in Hawaii. The research definite the increase of carbon dioxide in the atmosphere in 1967, computer simulations determined that global average temperatures might increase by more than four degrees Fahrenheit if carbon dioxide levels were not controlled. Above the next 20 years after, further studies confirmed Arrhenius's theory and it helped to make confident the international community to take action or step about global warming.

In 1960 aerosol pollution had become a serious problem in many cities and country. Besides, some scientists considered this as pollution affect for global warming.

The book named ‘*The Population Bomb*’ Poul R. Ehrlich wrote in 1968 about the green house effect mainly increased due to enlarge level of carbon dioxide. "the greenhouse effect is being enhanced now by the greatly increased level of carbon dioxide. This is being countered by low-level clouds generated by contrails, dust, and other contaminants. At the moment we cannot predict what the overall climatic results will be of our using the atmosphere as a garbage dump." (Ehrlich, 1968).

In 1972 UNO first organized environmental conference at Stock home. However, climate change got slight importance about their discretions. Besides, Concise the topic of that session was Organic pollution, Hydrazine pollution, Examine Hydrazine boom and seize see fish. After that UNO founded Environmental Activities (UNEP).

In 1975 Scientist Warles Braker who introduced two word “Climate Chang” into the general people.

In 1979 from hole around the world scientist gathered in Geneva at the world Meteorological Organization's first major global warming conference. During that conference scientist discussed about the climate data and how to help countries from cope climate change.

Eleven years later, in 1988 the United Nations founded an Intergovernmental Panel on Climate Change (IPCC) and warned that strong measures would be necessary to prevent significant global warming. IPCC had set up for collecting data ingredients and evaluation of climate change effect.

In 1987 Montreal Protocol signed to control effective chemical elements of Ozone layer. Nevertheless, this contract not considered climate change. But the contract could make a large consequence than Kyoto protocol.

In 1989 outcome of Industrial carbon dioxide and burned fossil fuel increased 1million ton in ear.

In 1990 IPCC made first report and said humidity increased 0.3 to 0.6 in Earth during last 100 year. It included air surface due to green house gas and usually enhance warming.

From world nature climate-change-history, -In 1992 Rio de Janeiro hosted the Earth Summit, a gathering of representatives from 145 nations. During the summit, representatives signed the United Nations Framework Convention on Climate Change, a non-binding document that challenged countries to set voluntary targets for reducing the emission of greenhouse gases. Developed countries could control the outcome percentage level of green house gas within 1990.

In 1995 second report of IPCC proposed that human activities on Earth climate are measurable. Where climate change is specific caused by human activities.

According to [www.worldnature.org](http://www.worldnature.org) information, - the IPCC has announced that the Earth's average temperature has risen by 0.8 degrees Celsius. Even in the face of this alarming discovery, over one third of the world's population remains unaware of global warming.

On that time around the world create misunderstanding about the reason behind climate change. Many people reject the fact that most global warming is caused by human activities. Others believe that the serious consequences global warming has had and will continue to have on the planet's ecosystems.

In 1997, the Kyoto Protocol was signed by 178 countries. The legally-binding document required signatory nations to cut emissions beginning in 2005. On that current time senate of USA declare to discount this contract.

In 1998 effect of Nino strongly including with the climate change which made the year tepid. Average temperature of this year was more than 0.52 degree of 1961-90 year.

In 1998 published Haque Stafen's debatable graph where indentify increased the temperature of North Pole is natural than last thousand years.

Since then, the IPCC has announced that the Earth's average temperature has risen by 0.8 degrees Celsius. Even in the face of this alarming discovery, over one third of the world's population remains unaware of global warming. Misunderstandings abound about the cause of climate change, and many people around the world reject the fact that most global warming is caused by human activities. Others believe that the media exaggerates the problem and therefore

underestimate the serious consequences global warming has had and will continue to have on the planet's ecosystems, weather patterns and wildlife (WNO, 2012).

Climate change is considered to be one of the most serious threats to sustainable development, with adverse impacts expected on the environment, human health, food security, economic activity, natural resources and physical infrastructure. Global climate varies naturally, but scientists agree that rising concentrations of anthropogenically produced greenhouse gases in the earth's atmosphere are leading to changes in the climate. 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.

While mitigation has traditionally been the pivotal issue for many climate change experts, 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. In recent years, adaptation has become a key focus of the scientific and policy-making communities and is now a major area of discussion in the multilateral climate change process. Adaptation 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 and trajectories will be affected by the rate of climate change, and this is especially important for developing countries with growing economies. Particular attention will need to be paid to the management of water and other natural resources, agricultural activities, and the sources and generation of energy.

Under the UNFCCC, adaptation appears as a cross-cutting theme. While the first Conference of the Parties (COP 1) in 1995 addressed funding for adaptation (decision 11/CP.1), it was not until the adoption of the Marrakesh Accords in 2001 that adaptation began to be more widely seen as a prominent area for action, as set out in decision 5/CP.7 (adverse effects of climate change). Following the conclusion of consideration of the IPCC's Third Assessment Report, COP 9 requested the UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA) to initiate work on scientific, technical and socioeconomic aspects of, and vulnerability and adaptation to, climate change (decision 10/CP.9).

Parties reached a milestone at COP 10 in 2004 with decision 1/CP.10, known as the Buenos Aires Programme of Work on Adaptation and Response Measures. COP 10 set up two complimentary tracks for adaptation: the development of a structured five-year programme of work on the scientific, technical and socioeconomic aspects of vulnerability and adaptation to climate change under SBSTA, which was adopted at COP 11 in 2005 (decision 2/CP.11); and the improvement of information and methodologies, implementation of concrete adaptation activities, technology transfer and capacity building under the Subsidiary Body for Implementation (SBI). At COP 12 parties concluded the initial list of activities to be undertaken under the five-year SBSTA programme of work and renamed it the "Nairobi Work Programme

on Impacts, Vulnerability and Adaptation to Climate Change.” Parties also made progress on the governing principles of the Adaptation Fund, which was established by the Kyoto Protocol to fund adaptation activities through a two-percent levy on emission reduction projects undertaken under the Clean Development Mechanism (CDM). A decision on ways forward on adaptation is expected at COP 13, to be held in Bali, Indonesia, in December 2007 (Mead, 2007).

**Bangladesh:** Since the country's independence in 1971, has included war, famine, disease, killer cyclones, massive floods, military coups, political assassinations, and pitiable rates of poverty and deprivation—a list of woes that inspired some to label it an international basket case. Yet if despair is in order, plenty of people in Bangladesh didn't read the script. In fact, many here are pitching another ending altogether, one in which the hardships of their past give rise to a powerful hope.

For all its troubles, Bangladesh is a place where adapting to a changing climate actually seems possible, and where every low-tech adaptation imaginable is now being tried. Supported by governments of the industrialized countries—whose greenhouse emissions are largely responsible for the climate change that is causing seas to rise—and implemented by a long list of international nongovernmental organizations (NGOs), these innovations are gaining credence, thanks to the one commodity that Bangladesh has in profusion: human resilience. Before this century is over, the world, rather than pitying Bangladesh, may wind up learning from her example (Belt, 2011).

As a result of this long exposure to natural disasters, Bangladesh benefits from a long history of designing and implementing various types of adaptation activities (both policies and capital investment) especially as they pertain to floods and cyclones. Over the last three decades, the Government has invested over \$10 billion (at constant 2007 prices) to make the country more climate resilient and less vulnerable to natural disasters. Since the 1970s, the Government of Bangladesh with the support of development partners, has invested in:

- Flood management schemes to raise agricultural productivity in low lying areas
- Flood protection and drainage in urban areas
- Coastal embankment projects to prevent tidal flooding and incursions of saline water
- Cyclone shelters
- Disaster management projects.
- Building cyclone shelters.
- Irrigation schemes to enable dry season crop.
- Agriculture research programs to develop saline, drought and flood adapted high yielding crop varieties.
- Coastal ‘greenbelt’ projects.

Recognizing the increased future vulnerability of its development objectives to climate change, the Government of Bangladesh prepared the National Adaptation Program of Action (NAPA) in

2005. This was followed by the adoption in 2008 of the **Bangladesh Climate Change Strategy and Action Plan** (BCCSAP) prepared by the Ministry of Forests and Environment in consultation with all relevant stakeholders.

The BCCSAP is the main basis for the Government's efforts to combat climate change over the next ten years. The plan lays out a 10-year program to build the capacity and resilience of Bangladesh to meet the challenges of a changing climate change. The plan envisions a financing need of about \$5 billion during the first 5 years through 2014.

The government of Bangladesh has recently established a Climate Change Fund from its own resources with an initial capitalization of \$45 million. To complement this initiative and to ensure donor harmonization, development partners in Bangladesh have agreed to establish a Multi Donor Trust Fund for Climate Change. The latter will be administered by the World Bank with a proposed initial contribution of about \$100 million.

Bangladesh has also been an active participant in the international discussions on climate change and will be the **leader of 47 Least Developed Countries at the 15th Conference of the parties of the UNFCCC at Copenhagen** in December 2009(World Bank, 2012).

**First International Workshop on Community-Based Adaptation:** The first international workshop on community-based adaptation took place two years ago on 16-18 January 2005, also in Dhaka. Jointly organized by BCAS, IIED, RING and the World Conservation Union (IUCN), the workshop was attended by more than 80 experts, policymakers, NGO representatives and grassroots practitioners who discussed possible impacts of climate change on local communities living in vulnerable areas and how to enable them to adapt to climate change in the future.

**The second international workshop on community-based adaptation to climate change was held at the Radisson Water Garden Hotel in Dhaka, Bangladesh**, from 24-28 February 2007. Organized jointly by the Bangladesh Center for Advanced Studies (BCAS), International Institute for Environment and Development (IIED) and RING Alliance of Policy Research Organizations, the workshop consisted of two days of field trips to visit community-based adaptation initiatives followed by three days of discussions in Dhaka. The workshop aimed to share the latest developments in community-based adaptation programmes, priorities and solutions with a view to integrating the lessons into national and international development programmes. More than 110 policymakers and representatives from non-governmental organizations (NGOs), research and policy institutes, as well as development practitioners and media were in attendance.

During the first two days, site visits to four different locations in Bangladesh were organized to give participants a closer look at local adaptation initiatives and to enable the communities to share their knowledge of adaptation and climate change. Locations included: drought-prone areas in Parbatipur in the Chapai Nawabgonj District of northwest Bangladesh; flood and river erosion

areas in Gidari and Kamarjani in the Gaibandha District, also in northwest Bangladesh; flood and water logging areas in Kotalipara and Rajoir in the Madaripur and Gopalganj Districts in south-central Bangladesh; and regions prone to increased salinity and cyclones in Munshigonj in the Satkhira District in the southwest coastal region of Bangladesh.

The subsequent three days of discussions in Dhaka were structured around two themes: climate change science and adaptation, and mainstreaming and partnership. Introductory panels were followed by parallel technical sessions consisting of presentations and discussions. Reports from the technical sessions were then presented to plenary, and followed by observations by panelists. Under climate change science and adaptation, technical sessions addressed: agriculture, drought and food security; extreme events; and health and climate change. Under mainstreaming and partnership, technical sessions addressed: tools and methods; extreme events; communication and knowledge; and mainstreaming and partnerships. A final panel discussion revolved around two themes: scaling up, capacity building, partnership and mainstreaming; and supporting community-based adaptation. This was followed by concluding remarks from keynote speakers and guests. Workshop outputs include: a two-page summary with key points from the discussions; a 10-15 page report; an edited volume of collected papers presented at the workshop; and the formation of a community-based adaptation network (CBA Network) (Mead, 2007).

**National and International Policies:** Given the frequent climate change based catastrophes, Bangladesh needs to enhance food security by drafting and implementing new policies such as the 2006 National Food Policy. The Food and Agriculture Organization (FAO) supported this policy through the 'National Food Policy Capacity Strengthening Program' (NFPCSP). There is also an initiative for the start of a 'Food Security Country Investment Plan' enabling the country to secure around USD 52 million under the 'Global Agriculture and Food Security Program' (GAFSP), making it Asia's first recipient. More work and better implementation from the government's side is necessary for the activities to reach fruitful outcomes. Already, there are a cumulative of 11 Ministries and Government divisions involved in this integrated endeavor. In the aftermath of the 'East Pakistan Coastal Embankment plan' (CEP) in the mid-twentieth century, Bangladesh has recently started work on the 'Master Plan for the South'. The southern coastal area is vulnerable to the ill-effects of global climate and a huge threat to crops, livestock and fisheries of the southern delta. There are plans of a USD 3 billion multi-purpose bridge named 'Padma' in order to transform the agriculture sector in the region. The government even estimates a GDP increase of around 2% implying that the investment will ultimately lead to economic growth for the country.

In an effort to be a 'Middle Income Country' by 2021, the country is focusing on increasing agriculture production, productivity, water management techniques surface water infrastructure irrigation, effective fisheries and promoting poultry and dairy development. Bio fuels fit into this scenario by acting as machinery fuel as in 2006 the Ministry of Agriculture provided 30%



subsidy for diesel to run irrigation for farming, further proposing 7,750 million BDT fiscal disbursement to help almost a million farmers with machinery fuel. This attempt needs social science researchers identifying constraints, agricultural understanding of the complex processes, resilience and indigenous skills of the farmers and technical understanding of efficiency and the role of infrastructure in a combined effort to feed the hungry and provide only additional income by utilizing the available resources at hand, for both food and energy, sustainably with responsible government support and cooperation.

**Mitigation policies:** As a Least developed country (LDC), Bangladesh is exempt from any responsibility to reduce GHG emissions, which primarily causes global warming. But lately this has been the rallying factor for policy makers to give off higher amounts of emissions in nearly all sectors with disregard for the environment. Large developed industrial nations are emitting increasing quantities of GHGs. The country cannot go far in their struggle with reducing emissions and fighting global warming with the considerable scantily supported funding and help it receives from the international community. There exist plans such as the 'National Action Plan on Adaptation' (NAPA) of 2005, and the 'Bangladesh Climate Change Strategy and Action Plan' (BCCSAP) of 2009.

BCCSAP states that an integrated approach is necessary and the only way to gain sustainability is where economic and social development is perused to the exclusion of disaster management, a one major calamity will destroy any so called socio-economic gains. Around 40% – 45% of GHG emissions are required to be reduced by 2020 and 90–95% by 2050. This is using the 1990 GHG concentration levels as a benchmark. With higher population and rapid industrialization, Bangladesh should be on its way to developing a low-carbon path given it initially receives significant financial and technical support from the international community and national goals of economic growth and social development is not hampered. But a more holistic short-term plan is also necessary. Bangladesh has established the Bangladesh Climate Change Trust Fund (BCCTF) and the Bangladesh Climate Change Resilience Fund (BCCRF) allocating \$200 million and cumulating around further \$114 million respectively. Although 3000 cyclone shelters were constructed with over 40,000 trained volunteers and 10,000 km of embankments erected, Bangladesh should not only place emphasis on capacity building and disaster management but also institutional and infrastructure strengthening, development of research and low carbon technologies in order to create an inclusive and truly comprehensive mitigation scheme. Even though it is agreed that the willingness and cooperation of the current UNFCCC parties (194 member states as of 2011) is necessary to help the nation, funds like the Special Climate and LDC, Adaptation Fund should be easily made available.

**Foreign Aid and Funding:** Various countries have pledged to provide funding for adaptation and mitigation in developing nations, such as Bangladesh. The accord committed up to \$30 billion of immediate short term funding over the 2010-2012 period from developed to developing countries to support their action in climate change mitigation. This funding is

available or developing nations to build their capacity to reduce emissions and responds to impacts of climate change. Furthermore, this funding will be balanced between mitigation and infrastructure adaptation in various sectors including forestry, science, technology and capacity building. Moreover, the Copenhagen Accord (COP 15) also pledges \$100 million of public and private finance by 2020, mostly to developing nations. The advisory group comprises high level officials, researchers, professionals and academics, and they constantly study ways to fund this global initiative.

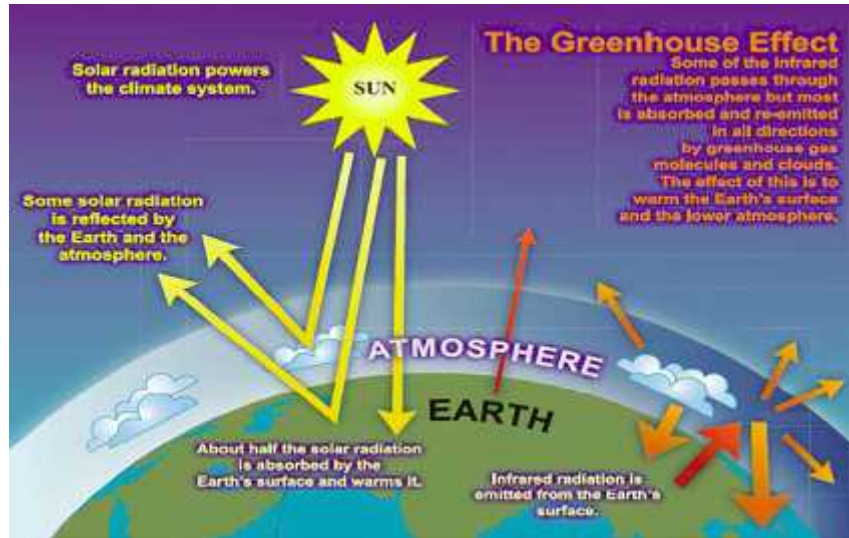
Another misconception is that this accord's commitments will divert funding from poverty reduction. The private sector alone contributes more than 85% of current investments for a low carbon economy. In order to maximize any future contributions from this sector, the public sector needs to overcome the political and bureaucratic barriers the private sector has to face towards a low carbon future (Sunny, 2011).

## **2.2: Climate and Climate Change**

Climate is often defined as 'average weather' and is usually described in terms of the mean and variability (maximum and minimum) of temperature, precipitation and wind speeds over a period of time, normally over 30-50 years. In its strict sense, such averages therefore cannot be taken for a smaller number of years say 10-15 or so which is often done in popular parlance. Climate change obviously therefore signifies a change in the pattern of any or all or a sub-set of these elements of the climate. Usually one observes a change in all and these are set in motion by a change or rise temperature due to what is often called the Greenhouse Effect.

### **The Greenhouse Effect**

A greenhouse is a covered space which allows the heat to be trapped so that this may be usefully utilized generally for growing of vegetables and flowers in temperate or colder countries and regions. Certain gases such as carbon di-oxide (CO), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), even water (H<sub>2</sub>O) vapour when these are in the atmosphere works a kind of blanket around the earth. Much of the heat (energy) that the earth receives from the sun is usually reflected back to space. But the existence of the gases mentioned allows some of the heat to be trapped within the earth systems (surface, atmosphere, oceans) and thus warm up the earth as a whole. In fact, without the natural greenhouse effect the earth would have been a very cold planet and not fit for human habitation. The average temperature of the earth is 15 C with large variation across regions. The greenhouse effect is shown schematically in Figure. 2.2.1 below.



**Figure 2.2.1:** A schematic diagram of the greenhouse effect  
 Source: <http://www.global-greenhouse-warming.com/>

{1. There is a difference in the usage of the term "climate change" by IPCC and the UNFCCC. (see later for the discussion on these two international institutions). IPCC, a scientific body, refers to climate change as any change in climate over time thus including both human induced and natural changes. UNFCCC, a quasi administrative cum political body refers to climate change due to direct or indirect human actions. The reasons are clear for the difference in emphasis. The scientific body has to look into the phenomenon in its totality for understanding the relative importance and the differentials in causes between human-induced and natural climate change. The administrative/political body can only take international action on only those related to human activity.}

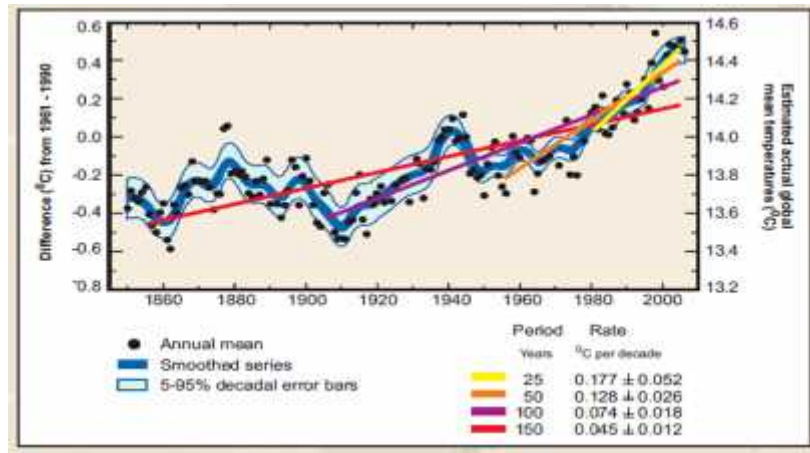
### Record of Rise in Global Temperature

When accumulation of the gases mentioned earlier, called greenhouse gases (GHG), increases in the atmosphere, the temperature rises above what one would expect to occur naturally. And exactly this had been happening over the last one hundred and fifty years or so particularly since the time of the Industrial Revolution in the nineteenth century (see Figure 3.2.2 for the trend in global mean temperature).

The global average surface temperature has increased by about  $0.74^{\circ}\text{C}$  over the past hundred years between 1906 and 2005. There was not much overall change from 1850 to about 1915, aside from ups and downs associated with natural variability and possibly due to poor sampling. An increase  $0.35^{\circ}\text{C}$  occurred in the global average temperature from the 1910s to the 1940s, followed by a slight cooling ( $0.1^{\circ}\text{C}$ ), and then a rapid warming ( $0.55^{\circ}\text{C}$ ) up to the end of 2005.

Over the 50 years since 1950, the average rise in temperature per decade had been  $0.026$ , but the second half of these 50 years witnessed a rise of  $0.052^{\circ}$  degrees per decade, i.e., double the rate for the first half. The rise in average global temperature has been characterized by fall in the number of cold nights and rise in warmer ones as well as heat waves which became more frequent.

The warmest years over these 100 years or so are 1998 and 2005. In fact, 11 of the 12 warmest years have occurred in the 12 years from 1995 to 2006. Warming, particularly since the 1970s, has generally been greater over land than over the oceans. Cities in general are warmer than the countryside and this is often termed as urban heat island effect.



**Figure 2.2.2:** Trend in global mean temperature and rates of change  
Source: Technical summary of WG 1 report for AR4

### Changes in Rainfall Patterns

The rise in temperature is the prime driver for the consequent changes in wind and ocean currents, cloud formation and their timings and subsequently changes in rainfall patterns over geographic space and time (between and within years). The patterns of observed changes in precipitation indicate that substantial increases in heavy precipitation have occurred in the past. At the same time more intense and longer drought periods have been recorded since the 1970s. Over-all there had been much more deviation in terms of days with heavy rainfall from the normal rainy days in more recent times.

### Bangladesh Situation

The present temperature patterns for Bangladesh are shown in Figure 3.2.3 while this shows an expected pattern of maximum and minimum temperatures, there had been changes over time indicating that the lowest minimum temperature had demonstrated a clear upward trend over the period 1951-90. On the other hand in case of precipitation levels, there had been a rise, albeit small, in the total rainfall. But this trend was not the same in every region. There is a tendency for the north-eastern part of the country to experience more rain (by 1.15% per year) while the

southeastern part shows a falling tendency (by 0.74% per year). The north-western part shows an upward trend while the trend in the southwest is unclear. Very limited evidence (limitations due to the length of data as well as number of stations) indicates a remarkable decrease in heavy rainfall days.



**Figure 2.2.3:** Present temperature patterns for Bangladesh

Source: Based on data from the Bangladesh Meteorological Department website

### 2.3: Impacts of and Vulnerability to Climate Change

Climate change is primarily due to global warming and associated changes in the precipitation patterns over time and space. These changes impact on various natural and physical systems such as hydrological cycles and associated phenomenon such these include: floods, drought, storm surges, sea surface temperature, biodiversity, glacial and polar ice melts and the like. One particular cause of concern is the sea level rise which may happen due to thermal expansion of sea water, larger volume of oceanic water due to polar ice melt and also some time exacerbated by tectonic dynamics which is not related to climate change as is the case with Bangladesh coast.

The initial changes and their second round impact finally influence upon the human systems of agriculture and food security, health and nutrition, industry and infrastructure, risk and disaster management. Many of these changes reinforce each other and also interact with the initial and second round changes in complex ways. The over-all upshot of all these is that the people may become vulnerable in terms of livelihood, income, consumption and employment due to the instability in the human systems and additional risks of their operation. The impact is likely to be felt by men and women, poor and nonpoor, coastal and inland people in different ways and intensity. However, what the exact magnitude of these impacts may be depends upon what

happens to GHG emission over time. The IPCC has tried to sum up these likely impacts both upon the physical and the human systems. These are shown in Table 2.3.

Even if the expected impacts materialize only partly, this is going to be an extremely difficult future for those who would be vulnerable to them. Mostly it is the developing countries that would bear the brunt and among them, the least developed ones and the poorest will suffer most because they would have little fallback position to cushion the adverse impacts on their lives and livelihood.

**Table 2.3: Probable impacts of climate change on physical and human systems  
Likelihood of future trends based on projections for 21<sup>st</sup> century using SRES scenarios**

Phenomenon and direction of trends	Likelihood of future trends based on projections for 21 <sup>st</sup> century using SRES scenarios	Example of major projected impacts by sector			
		<b>Agriculture, forestry, and ecosystems {WGII 4.4, 5.4}</b>	<b>Water resources {WGII 3.4}</b>	<b>Human health {WGII 8.2, 8.4}</b>	<b>Industry, settlement and society {WGII 7.4}</b>
Over most land areas, warmer and fewer cold days and nights,	Virtually certain b	<b>Examples of major</b> Increased yields in colder environments; decreased yields in warmer environments; increased insect outbreaks	Effects on water resources relying on snowmelt; effects on some water supplies	Reduced human mortality from decreased cold exposure	Reduced energy demand for heating; increased demand for cooling; declining air quality in cities; reduced disruption to transport due to snow, ice; effects on winter tourism
Warm spells/heat waves. Frequency increases over most land areas	Very likely	Reduced yields in warmer regions due to heat stress; increased danger of wildfire	Increased water demand; water quality problems, e.g., algal blooms	Increased risk of heat related mortality, especially for the elderly, chronically sick, very young and socially isolated	Reduction in quality of life for people in warm areas without appropriate housing; impacts on the elderly, very young and poor
Phenomenon and direction of trends	Likelihood of future trends based on projections for	<b>Agriculture, forestry, and ecosystems {WGII 4.4, 5.4}</b>	<b>Water resources {WGII 3.4}</b>	<b>Human health {WGII 8.2, 8.4}</b>	<b>Industry, settlement and society {WGII 7.4}</b>

	21 <sup>st</sup> century using SRES scenarios				
Heavy precipitation events. Frequency increases over most areas	Very likely	Damage to crops; soil erosion, inability to cultivate land due to water logging of soils	Adverse effects on quality of surface and ground water; contamination of water supply; water scarcity may be relieved	Increased risk of deaths, injuries and infectious, respiratory and skin diseases	Disruption of settlements, commerce, transport and societies due to flooding; pressures on urban and rural infrastructures; loss of property
<b>Examples of major projected impacts by sector</b> Areas affected by drought increases	Likely	Land degradation; lower yields/ crop damage and failure; increased livestock deaths; increased risk of wildfire	More widespread water stress	Increased risk of food and water shortages; increased risk of malnutrition; increased risk of water and food borne diseases	Water shortage for settlements, industry and societies; reduced hydropower generation potentials; potential for population migration
Intense tropical cyclone activity increases	Likely	Damage to crops; wind throw (uprooting) of trees; damage to coral reefs	Power outages causing disruption of public water supply	Increased risk of deaths, injuries, water and food borne diseases; post-traumatic stress disorders	Disruption by flood and high winds;
Increased incidence of extreme high sea level (excludes tsunamis)c	Likelyd	Salinisation of irrigation water, estuaries and fresh water systems	Decreased fresh water availability due to saltwater intrusion	Increased risk of deaths and injuries by drowning in floods; migration related health effects	Costs of coastal protection versus costs of land use relocation; potential for movement of populations and infrastructure; also see tropical cyclone above

**Notes:**

- See WGI Table 3.7 for further details regarding definitions ([http://www.ipcc.ch/publications\\_and\\_data/ar4/wg1/en/ch3s3-8-5.html](http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch3s3-8-5.html)).
- Warming of the most extreme days and nights each year.
- Extreme high sea level depends on average sea level and on regional weather systems. It is defined as the highest 1% of hourly values of observed sea level at a station for a given reference period.
- In all scenarios, the projected global average sea level at 2100 is higher than in the reference period. The effect of changes in regional weather systems on sea level extremes has not been assessed. {WGI 10.6}

Source: IPCC, Climate Change 2007: Synthesis Report, 2007

## **Vulnerability due to Climate Change**

### **Vulnerability of Agriculture**

According to IPCC findings, due to climate change, crop productivity is projected to increase slightly at mid to high latitudes for local mean temperatures, increases of up to 1-30 C depending on the crop, and then decrease beyond that in some regions. While at lower latitudes, especially seasonally dry and tropical regions, crop productivity is projected to decrease for even small local temperature increases (1-2<sup>0</sup> C), which would increase the risk of hunger.

In Bangladesh various studies have found that high temperature will reduce the yields of HYVs of *Aus 8*, *Aman9* and particularly *Boro 10* rice throughout Bangladesh. A 60% moisture stress on top of other effects might cause as high as 32% decline in yield. It was suggested by experts that a slight increase of temperature (1-2<sup>0</sup> C) will contribute positively to the production of wheat but temperature rise higher than that would reduce its yield. Corn could be better option in that scenario.

While estimating the costs or vulnerability, it may be borne in mind that the present climatic variability already imposes a cost. How far and rice may be affected is uncertain, but the potential decline for rice production is likely to be 3% by the 2030s and 5% by the 2050s. Compared to an “optimal” climate simulation—in which highest simulated yields are used, and sector productivity and factor supplies increase smoothly at average long-term growth rates with no inter-annual variations—current climate variability is estimated to reduce long-term rice production by an average 7.4% each year, over the 2005–50 simulation period.

Within the country, regions may vary in their exposure to the potential losses. Production in the southern sub-regions is most vulnerable to climate change. For instance, average losses in the Khulna region have been projected as follows, by the 2050s: -10% for and wheat; and -18% for due in large part to rising sea levels. These production impacts ignore economic responses to these shocks (such as land and labor reallocation and price effects), which may limit or exacerbate some of the effects.

Model results from other studies indicate that climate change will exacerbate the negative impacts of existing climate variability by further reducing rice production by a projected cumulative total of 80 million tons over 2005–50 (about 3.9% each year, ranging between 3.6% and 4.3%), driven primarily by reduced crop production. Climate change has particularly adverse implications for rice production and will limit its ability to compensate for lost and rice production during extreme climate events. Rice production in the southern regions of Patuakhali and Khulna is particularly vulnerable to them.

### **Vulnerability of Water Resources**



During this century, water supplies stored in glaciers and snow cover are projected to decline, reducing water availability in regions supplied by melt-water from major mountain ranges, where more than one-sixth of the world population lives.

By mid-century, annual average river runoff and water availability are projected to increase by 10-40% at high latitude and in some wet tropical areas, and decrease by 10-30% over some dry regions at mid-latitudes and in the dry tropics, some of which are presently water stressed areas.

According to IPCC Assessment Report 4:

- Glacier melting the Himalayas is projected to increase flooding, and rock avalanches from destabilized slopes, and to affect water resources within the next two to three decades. This will be followed by decreased river flows as the glaciers recede.
- Freshwater availability in Central, South, East and South-East Asia, particularly in large river basins, is projected to decrease due to climate change which, along with population growth and increasing demand arising from higher standards of living, could adversely affect more than a billion people by the 2050s.

Water related impacts due to climate change and sea level rise are likely to be some of the most critical issues for Bangladesh, not only in relation to coastal and riverine flooding, but also in relation to enhanced possibility of winter (dry season) drought in certain areas.

Due to sea level rise and increased flooding in the rivers, backwater effect in the low lying central regions of Bangladesh will experience water stagnation for longer period of time than usually observed.

The above AR4 projections indicate clearly that for Bangladesh, an added major concern is the sharing of water resources in flows of rivers coming down from the Himalayas. While a water-sharing treaty exists between Bangladesh and India, with water-scarcity developing it would be necessary to have new water-sharing rules among the co-sharers of the rivers among China, India, Nepal, Bhutan and Bangladesh. Work should begin for this from now on as its takes long to arrive at such rules as experience has shown.

### **Vulnerability of the coastal ecosystem**

Extensive areas along the low-lying coasts are likely to be inundated and millions of people are projected to be affected by flood each year, or permanently displaced, due to sea-level rise around the globe. The densely populated and low-lying areas, where adaptive capacity is relatively low, and which already face other challenges such as tropical storms or local coastal subsistence, are especially at risk. Coasts are projected to be exposed to increasing risks, including coastal erosion, due to climate change and sea level rise and the effect will be exacerbated by increasing human-induced pressures on coastal areas. The numbers affected will be largest in the mega-deltas of Asia and Africa, while small islands are especially vulnerable.

Four types of coastal vulnerability are expected in Bangladesh's coastal areas; these are saline water intrusion, drainage congestion, extreme weather events, and changes in coastal morphology. The combined effect of higher sea level rise, subsidence, silting of estuary

branches, and higher river bed levels will impede drainage and gradually increase water logging problems. Increased periods of inundation may hamper agriculture productivity, and will also threaten human health by increasing the potential for water borne disease (NAPA, 2005).

There are predictions for an increase in the probability of cyclone formation from depressions for an increase in 2 C in sea surface temperature (SST), but not so much for any shift in the cyclone tracks (Agrawala *et al.*, 2003).

The possibility to increase in peak intensities of cyclone may be 5-10% higher. Potential storm surge in the associated precipitation also projected to increase 20-30% than those observed currently.

The probability of an increased SST will cause an increase in the formation of low pressure and depressions in the Bay of Bengal, resulting in rough oceanic waves along the coastal zone. However, the magnitudes of such changes are yet uncertain.

Again for sea level rise, the scenarios have so far been largely speculative and not based on any detailed modelling. The net change in sea level is likely to be determined by interplay between sedimentation, compaction, tectonic subsidence, and actual rise in sea level along the coastline of the country. However, in absence of any specific datum, Bangladesh may probably prepare for a sea level rise of 30-100 cm by 2100. This is far higher than that predicted globally by the AR4 as discussed earlier.

### **Economic costs of adverse impacts**

Based on plausible scenarios, the Stern Review (Stern, 2006) has tried to value the above adverse impacts and costs to the global society. The human costs under a world with 3-4<sup>0</sup> C rise in average temperature could mean up to 200 million people involuntarily displaced due to flood, drought and rising seas and seriously affect global food production. Warming of 2 C could leave 15-40% of species facing extinction which may put under peril indirectly existence of others. The economic costs of these physical and human systems impact could be anywhere between 5-20% of world GDP if nothing is done to limit these impacts through adaptation and mitigation. However, the costs of emission limitation could be only up to 1% of GDP. According to the Stern review, each tonne of CO emitted cause damages of at least \$85 but such emission can be cut at a cost of less than \$25 giving a benefit cost ratio of at least 3:1. What can be done now will have limited effect during the next 40-50 years. But what can be done in the next 10-20 years will have profound beneficial effect on the climate in the second half of the 21 century.

### **Modeling economic costs of climate change in Bangladesh**

Existing climate variability can have pronounced detrimental economy-wide impacts. Future climate change will exacerbate these negative effects. The simulated variability is projected to cost the agriculture sector (in discounted terms) US\$26 billion in lost agricultural GDP during the 2005–50 period (the gap between “optimal” and “climate variability” scenarios). Through the linkage effects within the economy, existing climate variability is estimated to cost Bangladesh \$121 billion in lost national GDP during this period (\$3 billion per year). This is 5% below what

could be achieved if the climate were “optimal.” the projected climate change will further exacerbate these negative impacts.

Overall, agricultural GDP is projected to be 3.1% lower each year as a result of climate change (\$7.7 billion in lost value-added). Climate change also has broader economy-wide implications. This is estimated to cost Bangladesh \$26 billion in total GDP over the 45- year period 2005-50, equivalent to \$570 million overall lost each year due to climate change -an average annual 1.15% reduction in total GDP. Average loss in agricultural GDP due to climate change is projected to be a third of the agricultural GDP losses associated with existing climate variability. Uncertainty surrounding global climate models (GCMs) and emission scenarios means that costs may be as high as \$1 billion per year in 2005-50, under less optimistic scenarios. Moreover, these economic losses are projected to rise in later years, thus underlining the need to address climate-change related losses in the near term.

These climate risks will also have severe implications for household welfare. For both the climate variability and climate change simulations, around 80% of total losses fall directly on household consumption. Much of the economic losses occur outside of agriculture, particularly in the downstream agriculture processing sectors. This means that both rural and urban households are adversely affected, and per capita consumption is projected to fall for both farm and non-farm households.

The southern and northwest regions are the most vulnerable. These areas are expected to experience the largest decline in rice production due to climate change, for three reasons. First, these regions already experience significant declines in and rice production due to climate variability, which is expected to worsen under climate change. Second, yields are severely affected by changes in mean rainfall and temperature, and by mean shifts in the flood hydrographs. Consequent reductions in production limit the ability for these regions to compensate for lost and rice production during extreme events. The south is also most affected by rising sea levels, which permanently reduce cultivable land. The largest percentage declines in per capita consumption are projected in these regions. Finally, the northwest is also vulnerable, as the lost consumption represents a large fraction of current household consumption. Adaptation measures should therefore focus on these areas.

Much of what would happen and how livelihood would change depends on the complex interplay of many factors which vary from place to place within Bangladesh. An analysis of livelihood changes due to adverse impacts has recently been shown to be different from one agro-ecological zone to another (Centre for Global Change and CSRL, 2009).

## **2.4: The Origin and the Role of GO and NGO**

### **❖ National Adaptation Programme of Action (NAPA) 2005**

The National Adaptation Programme of Action (NAPA) for Bangladesh has been prepared by the Ministry of Environment and Forest (MOEF), Government of the People’s Republic of

Bangladesh as a response to the decision of the Seventh Session of the Conference of the Parties (COP7) of the United Nations Framework Convention on Climate Change (UNFCCC). The preparation process has followed the generic guiding principles outlined in the NAPA Annotated Guideline. The whole preparation process was guided by the a high powered Project Steering Committee headed by the Secretary, Ministry of Environment and Forests and member from other key ministries, department and agencies including Ministry of Finance and Planning. The basic approach to NAPA preparation was along with the sustainable development goals and objectives of the country where it has recognized necessity of addressing environmental issue and natural resource management with the participation of stakeholders. Policy makers of Government, local representatives of the Government (Union Parishad Chairman and Members), scientific community members of the various research institutes, researchers, academicians, teachers (ranging from primary to tertiary levels), lawyers, doctors, ethnic groups, media, NGO and CBO representatives and indigenous women contributed to the development of the NAPA for Bangladesh. The NAPA of Bangladesh draws upon the understanding gathered through discussion with relevant stakeholders in four sub-national workshops and one national workshop, prior research, background papers prepared by Six Sectoral Working Groups (SWG) i.e. a)

Agriculture, Fisheries and Livestock coordinated by Bangladesh Agricultural Research Council (BARC), b) Forestry, Biodiversity and Land-use coordinated by IUCN, Bangladesh, c) Water, Coastal Zone, Natural Disaster and Health coordinated by Water Resources Planning organization (WARPO), d) Livelihood, Gender, Local Governance and Food Security coordinated by Bangladesh Institute for Development Studies (BIDS), e) Industry and Infrastructure coordinated by Department of Environment (DoE), and f) Policies and Institutes coordinated by Bangladesh Centre for Advanced Studies (BCAS), and expert judgments (MoEF, 2005).

#### ❖ **Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2008**

The BCCSAP takes the NAPA forward and will provide the main basis for the climate change efforts of Bangladesh for 2009-2018. The two parts of the BCCSAP include a background of physical, social and policy bases for a climate change strategy for Bangladesh, followed by a set of 37 programmes based on six ‘pillars’, or areas of intervention. It envisages tasks for a wide range of actors, of whom NGOs are only one. These programmes reflect current and future concerns, and “should be implemented even if there is no climate change”, according to Dr Datta, Head of Environmental Sciences at the University of Khulna. The BCCSAP pillars or themes are:

1. Food security, social protection and health – for vulnerable groups
2. Comprehensive disaster management – building on existing systems
3. Infrastructure – including maintenance of embankments and cyclone shelters
4. Research and knowledge management

5. Mitigation and low carbon development – an area where Bangladesh has lots of potential
6. Capacity building and institutional strengthening.

“The BCCSAP programmes should be implemented even if there is no climate change.”

The BCCSAP includes a wide range of climate change responses, many of them non-traditional and innovative. Examples include developing digital elevation models (DEM) of Bangladesh; initiating micro-insurance schemes; improving the drainage capacity of urban sewers; exploring coal reserves and investing in clean coal energy; assessing the macro-economic impacts of climate change; and revising the Planning Commission pro formas to include climate change information in proposed government programmes. The contributions from NGOs that are outlined in the BCCSAP are in section (Practical implementation questions)

The implementation of the BCCSAP rests with the ministry of Environment and Forests: “The Climate Change Action Plan will be implemented under the overall guidance of the National Environment Committee, chaired by the Chief Adviser. It will be coordinated by concerned Ministry of Environment and Forests. Programmes funded under the Plan will be implemented by Ministries or their agencies, with the involvement, as appropriate, of civil society and the private sector” (BCCSAP, p. xvi). The BCCSAP outlines 37 programmes to be implemented by different stakeholders. The funding for implementing BCCSAP – estimated at \$5 billion a year - is not yet confirmed.

The BCCSAP takes a more holistic view of climate change than the NAPA and shows how climate change policy thinking has changed from 2005 to 2008.

#### ❖ **Department of Environment (DoE)**

##### **About MOEF**

Before partition of Indian sub-continent in 1947, Bangladesh forests were administered under Forest Circles of the Bangal and Assem Forest Departments. From 1947 to 1962, the Provincial Forest Department was the authority with a Conservator of Forests, and subsequently until 1971 by a Chief Conservator of Forests. With the formation of Bangladesh in 1971, reserved and proposed reserve forests passed to the Bangladesh Forest Department. From 1971 to 1989, BFD fell under the Ministry of Agriculture. The Department enjoyed varying interest in terms of attention from Government. For a brief spell, there was an Inspector General of Forests, in addition to the Chief Conservation of forests, to coordinate forestry activities. During 1987-89, Forestry was a Division of Agriculture Ministry, with a Secretary to Government in charge of the Forestry Division.

The Department of Environment (DoE) established in 1977 under the Environment Pollution Control Ordinance, 1977 still functions under the ECA.

With the formation of the new Ministry of Environment and Forests, in 1989, both the departments were transferred to this new Ministry. The DoE has been placed under the MoEF as its technical wing and is statutorily responsible for the implementation of the Environment Conservation Act, 1995.

Besides these two departments, MOEF controls the Bangladesh Forest Industries Development Corporation (BFIDC), Bangladesh Forest Research Institute (BFRI) and Bangladesh National Herbarium (BNH).

The Ministry of Environment & Forests is the nodal agency in the administrative structure of the Central Government, for the planning, promotion, co-ordination and overseeing the implementation of environmental and forestry programmes. MOEF oversees all environmental matters in the country and is a permanent member of the Executive Committee of the National Economic Council.

The Ministry is also plays a pivotal role as participant of United Nations Environment Programme (UNEP). The principal activities undertaken by Ministry of Environment & Forests consist of conservation & survey of flora, fauna, forests and Wildlife, prevention & control of pollution, forestation & regeneration of degraded areas and protection of environment, in the frame work of legislations. The main tools utilized for this include surveys, impact assessment, control of pollution, regeneration programmes, support to organizations, research to solve solutions and training to augment the requisite manpower, collection and dissemination of environmental information and creation of environmental awareness among all sectors of the country's population. The organizational structure of the Ministry covers number of Divisions, Directorate, Board, Subordinate Offices, Autonomous Institutions, and Public Sector Undertakings. In short, Ministry of Environment and Forest (MoEF) has the following major functions:

- Management of environment and ecology.
- Matters relating to environment pollution control.
- Conservation of forests and development of forest resources (government and private), forest inventory, grading and quality control of forest products.
- Forestation and regeneration of forest extraction of forest produce.
- Plantation of exotic cinchona and rubber.
- Botanical gardens and botanical surveys.
- Tree plantation.
- Planning cell is responsible for preparation of schemes and coordination in respect of forest.
- Research and training in forestry.

- Mechanized forestry operations.
- Protection of wild birds and animals and establishment of sanctuaries.
- Matters relating to marketing of forest produce.
- Liaison with international organizations and matters relating to treaties and agreements with other countries and world bodies relating to subjects allotted to this Ministry.

Apart from two major departments, i.e., Department of Environment and Department of Forest, working under this ministry, there are three other

### **BFRI**

Bangladesh Forest Research Institute (BFRI) was established in 1955 and mandated to provide research support to the Forestry sub-sector of the country, including Forest Department, Bangladesh Forest Industries Development Corporation, NGO and other private enterprises. BFRI's research activities aim to develop appropriate technologies to maintain sustainable productivity of forest land and of forest industries without resource depletion.

### **Bangladesh National Herbarium (BNR)**

Bangladesh National Herbarium is a plant survey, collection, identification and conservation organization. It documents the plant biological diversity of the country and its collections are accessible samples of natural population. The collection of the herbarium is a national property that goes down to the posterity through generation for hundreds of years and work as reference materials on the flora of the country. The National Herbarium serves as repository of technical information on plant genetic resources and advises the Government on technical aspects of question dealt with by the herbarium. It also provides direction required in the implementation of policies laid down by the Government in relation to plant biodiversity conservation.

### **BFIDC**

Bangladesh Forest Industries Development Corporation (BFIDC) has mandated to rubber plantation, processing and has also mandate to extract timber from inaccessible Forest areas. After sawing, Seasoning and treatments, these timbers are used in wood based industries for production of quality furniture, electric poles, anchor logs, cross arms, railway slippers, doors & windows, woodtex, tea chest and plywood etc. In addition to this BFIDC have been raising Rubber plantation in the district of greater chittagong, Sylhet, Mymensingh and Tangail since 1961 in order to increase the productivity of the fellow forest land through producing row rubber in the country. BFIDC so far has raised 32,625 acres of started plantation in its 15 (fifteen) Rubber Estate in greater Chittagong, Sylhet, Tangail and Mymensingh districts and 10 (ten) acres experimental rubber plantation in Barind tract (Rangpur district ) to test the viability rubber plantation. Besides, about 33000 acres rubber plantation has been raised in private sector with technical assistance of BFIDC (MoEF).

❖ **Climate Change Cell**  
**Department of Environment**  
**Ministry of Environment and Forests (MoEF)**  
**Establishing an integrated approach to climate risk management in Bangladesh**

Bangladesh is one of the most vulnerable countries to climate change due to global warming. According to current scientific understanding, the state of well being and survival of the people in Bangladesh will be under serious threat from climate change over the coming decades.

As a pioneer initiative of the government to combat climate change the *Climate Change Cell* was established in the Department of Environment (DoE), Bangladesh in 2004 under the Comprehensive Disaster Management Programme (CDMP). On successful completion of its first phase, the second phase started in 2010 under CDMP II with “Support to the Department of Environment’s Climate Change Cell, Bangladesh” project.

The objectives of this project are to enhance the technical capacity of DoE in supporting the Government in climate change related policy and programme development, to integrate climate change considerations into existing development interventions and to support the Government in its role in coordination and negotiation efforts.

The mandated work of the Cell is to prepare technical papers for the MoEF to support international negotiations, prepare documentary on climate change vulnerable sectors of Bangladesh; publish quarterly online newsletters, formulate climate change mainstreaming guidelines, develop sectoral training modules etc. Major on-going studies under this project/Cell include: Study on sea level rise impact in the coastal zone of Bangladesh; sectoral vulnerability and financial need assessment in Fisheries and Livestock sector and in biodiversity and marine ecosystem of Bangladesh. Development of an updated and web enabled Climate Change Database is under process. A Climate Change Knowledge Network (CCKN) was established which is active in dissemination of research findings of the Cell as well as other line agencies on climate change issue.

**Bonn Climate Change Conference - May 2012** The 36th sessions of the Subsidiary Body for Implementation (SBI) and of the Subsidiary Body for Scientific and Technological Advice (SBSTA), the fifteenth session of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA), the seventeenth session of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP) and the first session of the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) takes place concurrently from 14 to 25 May. All sessions are held at the Maritim Hotel in Bonn.

**The Cell is currently engaged with the following activities**



Awareness raising, informing, influencing, capacity building and partnership building with agencies across the sectors and facilitating horizontal and vertical coordination Focal points in 34 Government agencies and academic institutions established and provided capacity building training.

Mainstreaming Climate Risk Management and leading to Climate resilient development country framework to mainstream climate risk management and adaptation developed;

Climate impact prediction, projections of hazard scenarios, Contextualization and Vulnerability assessment, damage assessment, environment cost of the climate change;

Adaptation research to find options: Climate Change Cell supports adaptation research to find options for climate risk management and adaptation through facilitating demand driven research identification and implementation. The broader user community shall access these results in planning their sectoral or any level planning;

Models of good practice in CRM and adaptation: Climate Change Cell also documents good practices in risk management and adapting to climate change to promote replication as option to CRM and adaptation

### **Institutionalization of Climate Change Modeling (BUET)**

A thorough consultation with the stakeholders including modeler community and the users community facilitated by the Climate Change Cell reached to a consensus that there is a need to establish institutional homes separately for Climate modeling housed at BUET (repository of technical wisdom) and in association with BMD and BWDB: climate modeling shall yield future scenarios or precipitation, temperature and humidity;

Water modeling should be housed at IWM with WARPO and SPARSSO as technical associate and BWDB, as model developing associate, SMRC as regional associate and DHI as international associate: Water modeling shall use climate scenarios as input and yield flood inundation, storm surge, cyclone, river bank erosion;

Application modeling should be housed at CEGIS with BARC as technical associate and IWM as model developing associate: Application model shall use water model and climate output as input and shall deal with impacts of flood and drought on livelihoods including agriculture and others

### **Grass root awareness**

#### **Awareness Development**

The people of Bangladesh are already suffering from climate impacts. It is scientifically established that some of the changes in motion are irreversible, that some impacts will be unavoidable, and some unmanageable. The objective of the awareness development program is

to address the immediate need of different stakeholder groups and communities with regard to climate risks and concerns, and motivating them to recognize risks, and explore options to manage and reduce risks and impacts through better access to relevant knowledge, capacity and services to prepare for climate change. A number of key areas and stakeholder needs have been identified from recent review and stocktaking exercise on awareness level of CDMP stakeholders which covers and represent the broad range of stakeholders, actors and institutions at national as well as local level.

### **Understanding the challenge to play our part**

Climate change is happening now. Bangladesh is already suffering from its present impacts. According to current scientific understanding, the state of well being and survival of the people in Bangladesh will be under serious threat from climate change over the coming decades. Particularly, the poorest are the most vulnerable to the climate threats and they already are and will continue to suffer most.

Extreme weather and events like cyclone, flood, storm surges will intensify, become more frequent and unpredictable. Changes in the temperature and rainfall pattern will be significant, with grave implications on our natural resource base, putting agriculture and related livelihood at risk. Droughts and flash foods, untimely hailstorm, mists will increase and take place more frequently. In addition, changes that take place gradually over years and sometimes decades, such as salinity intrusion, desertification and sea level rise will compound our risks and national development goals, particularly poverty reduction.

As a nation we must face up to this challenge. For Bangladesh, climate change is everyone's concern. Therefore we must all understand the challenge and act now. Everyone has a stake and therefore a role to play in their respective capacity. Adequate and appropriate understanding of climate challenges begins with accurate information, knowledge and communication.

We need to help people understand that climate change is a serious challenge, but one that we can do something about. We want to communicate a positive vision of what we are collectively trying to achieve. Our goal is that working together this generation will prepare and address climate change challenges.

Initially we need to focus on making climate change easily understood and a 'here and now', 'front of mind' issue. We also want people to have an increased awareness of what needs to be done to tackle it. We want to avoid giving the impression that it is solely the responsibility of individuals to take action. Everyone in society – government and its agencies, business, industry and the public – needs to tackle climate change together.

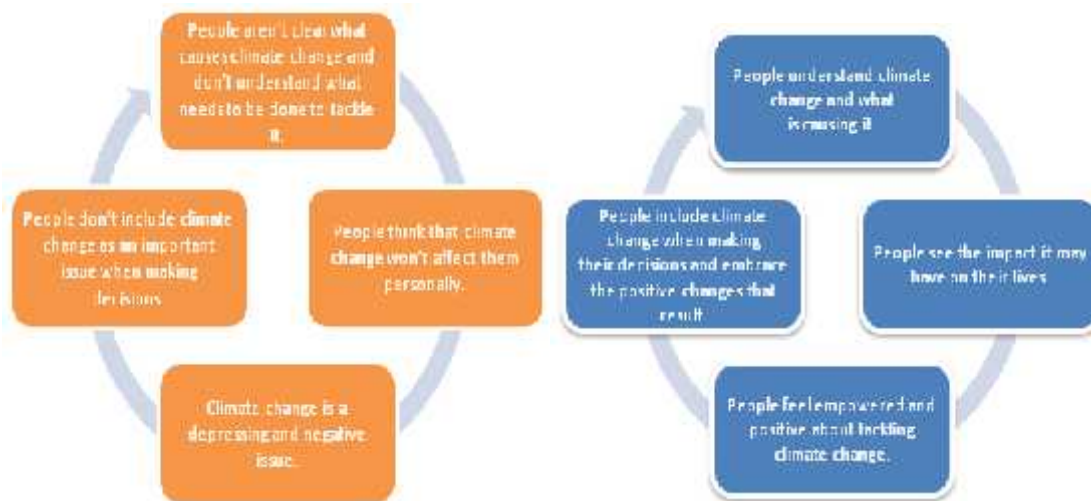
Research shows that among the general public, few people understand what is actually causing climate change. The first and most important thing is to change the way people think about climate change. Then we can try to change their behavior.

Most people in Bangladesh think that climate change is confusing; they can't see how it relates to them; think won't affect them personally; is a problem for the future, not now; and can't be affected by their individual actions, because the problem is so big.

These are the challenges we need to face, but something can be done. Firstly, we need to change these attitudes.

Some of the most important attitudes we need to address are presented in the following diagram

**Figure 2.4.1: Current Attitude and Ideal Attitude**



### Description of the Assignment

Climate risks and impacts vary from location to location. Further, the vulnerability of ecosystem and human society and their respective capacity to cope is also different from place to place. Different stakeholder groups at the local level will need to be aware of climate risks to be able to prepare for them.

The objective of the assignment will be to develop awareness messages with regard to local climate risks based on current knowledge, emerging findings and response practices; and demonstrate how the messages can be effectively communicated locally across different stakeholder groups, particularly the poor and vulnerable.

The assignment covered the Upazila Shyamnagar, under Satkhira which is a pilot district of CDMP. The primary stakeholder group included local government officials and agencies, community based organizations who service development needs and concerns at the grassroots.

Drawing on the findings of the Community Risk Assessment (CRA) and subsequent Risk Reduction Action Plan for Shyamnagar, Satkhira conducted recently under CDMP, relevant and appropriate messages will be developed, and communication media selected. An orientation has

been provided to nominated/selected participants demonstrating how to communicate what, and to whom.

Following the orientation activity, a report will be prepared on the process, orientation event, and way forward. The report will include a guide for awareness raising for Shyamnagar Upazila, to enable local people to continue this practice.

- **Tasks**

Review CRA, RRAP, RVCC and other relevant community based adaptation experience on Shyamnagar to identify climate risks, management and adaptation options therein (stakeholder wise);

Develop awareness messages (stakeholder wise);

Organize Upazila level workshop covering relevant/targeted grass root stakeholders, sharing climate risks and adaptation priorities;

Develop Awareness Action Plan, identifying messages, media, channels and mechanisms.

- **Deliverables**

Awareness messages/materials on local climate risks, management and adaptation;

Farmers and other grass root members (school teachers, religious person, NGO worker, local volunteers etc.) are exposed to the messages and how to communicate them in their respective neighborhood;

The participants demonstrate their capacity at grassroots;

Report containing a description of the implementation process, the event, and a guide for action on climate risk awareness for Shyamnagar (Climate change cell, 2012).

### **Development partners**

CDMP, UNDP, DFID, EC

### **Development Cooperation:**

### **Focal Areas**

The Country Strategy for 2007 – 2013 addresses three focal areas identified in the PRSP where the EC's policies, strengths and experiences are best able to contribute to delivering outcomes broadly expressed in the MDG targets.

### **Non-Focal Area**

## Environment and disaster prevention

In addition, the food security programme will continue to support the provision of effective safety nets to the poorest and most vulnerable groups and other actions.

EC commitment to gender and environment remains unchanged and will be woven into the design of programmes in all three categories. The PRSP recognises that discrimination against women is an intrinsic component of poverty and exclusion in Bangladesh (Climate change cell, 2012)

### **Implementation partner**

The CCC has formed a Technical Advisory Group (TAG) to obtain expert advice in areas such as climate change science, climate change vulnerability, climate change adaptation, gender and livelihoods, risk assessment, preparedness and reduction, and communications.

The TAG assists the CCC in:

- Defining research gaps and priorities in the areas of climate variability and climate change prediction, impacts and adaptation, in coordination with related processes such as NAPA and CDMP;
- Developing strategies for addressing research priorities and awareness raising initiatives respectively;
- Defining communication needs and information gaps as the basis for awareness raising campaigns;
- Preparing Terms of Reference for projects to address agreed priorities and related tender processes.

The TAG gives recommendations/advice for research and project priorities to the CCC. The CCC initiates tender processes for agreed projects. Tender processes will be managed by UNDP and UNOPS (Climate change cell, 2012).

### **❖ WAPRO**

Water resources planning Organization (WARPO) created in 1991 is an exclusive government institution for macro level planning for management and integrated development of water resources of the country. The water resources planning Act No. 12 of 1992 provides the legal framework of WARPO as statutory Body.

### **Mission**

The mission of WARPO is to achieve sustainable water resources development in Bangladesh by pursuing integrated water resources management (IWRM).

### **Vision**

The vision of WARPO is become an apex organization is macro level planning, -a center of excellence for the management and integrated development of water resources in the country, the central coordinating body for all relevant activities in the water sector, the custodian of National and regional water Resources Databases and Information systems and to act as secretariat to the ECNWRC. (Source: WARPO bruiser).

#### ❖ **NIPSOM**

The National Institute of Preventive and Social Medicine (NIPSOM), the only national level public health institute under the University of Dhaka, Bangladesh was established in 1978 with the aim to produce post-graduates capable of satisfying the needs of the community in promoting and restoring health.

The institute is also supporting in the different health policy formulation of the government and community health programs through research, training and services. It conducts 8 (eight) Master of Public Health (MPH) courses of one-year duration each and 1 (one) M. Phil course of 2 years duration. The institute was accredited by the University of California (1978) and Liverpool University (1982). WHO / SEARO has also recognized NIPSOM as an institute of excellence in 1978 and started sending its fellows for public health degrees. The institute became member institute of International Association of School of Public Health (1990) and Asia Pacific Consortium for Public Health (APACPH, 1990). The mission of this institute is to develop NIPSOM as a center of high credibility in academic, research, training and service delivery to support the government in the field of public health activities in order to improve the quality of health care. It also strives for continuous updating of the curriculum to keep pace with international standards so that students both local and foreign are attracted to be enrolled in the institute, which is intended to be a Collaborative Center of WHO/UNFPA. Considering the economic situation of the country NIPSOM is also trying to find out ways and means for generation more revenues and sharing of costs through teaching, training, research and service delivery for enabling the institute to perform more efficient academic and research activities (NIPSOM, 2012).

#### ❖ **SRDI (Soil Resource Development Institute)**

SRDI is a government organization under the administrative control of Ministry of Agriculture. Director is the chief executive of the institute. He is assisted by CSO's, PSO's of HQ based Sections and Regions and Assistant Director (Admin.) for smooth functioning of the institute. The institute has four Divisions, 9 sections including Administration, Cartography, Data Processing & Statistical and Publication and Record Sections, 4 Regional Offices, 4 Regional Laboratories, 20 District Offices and 2 research centers. It has also 5 laboratories (Central Lab. 1 and Regional Lab. 4) under revenue set up and another 11 laboratories under Development

Project. Besides these 6 Mobile Soil Testing Laboratories (MSTL) is also providing on farm soil testing facilities including balanced fertilizer recommendations to the farmers. **Objective:** SRDI aims to achieve self-sufficiency in food and ensure food security for all through appropriate Land & soil (the ultimate resource of Bangladesh) management for sustainable as well as environmentally friendly agriculture.

### **Mission/ Vision**

- Inventory of soils of Bangladesh and generate information for sustainable crop production through improved soil management and preservation of environment.
- Soil conservation by managing hilly and saline soils

### **Activities**

- Soil Survey of the whole country on the basis of aerial photo interpretation, field and laboratory investigation of soils
- Detailed/Semi-detailed soil surveys of development project areas and research farms for various beneficiary agencies
- Soil surveys to evaluate irrigation command areas and cropping potentials.
- Soil surveys for locating areas of problem soils (e.g., toxic, saline, alkaline or peat soils), soil degradation and erosion (in watershed region) for planning reclamation or watershed management.
- Correlation of soils conducted under various surveys.
- Chemical analysis of soil, water and plant samples to verify and clarify the field observation.
- Analysis of chemical and organic fertilizers to ensure the quality of fertilizers as backup for policy makers
- Physical and mineralogical and microbial analysis of soils of the country.
- Interpretation of aerial photos, land sat imageries and topographic maps for soil and land use surveys.
- Preparation of various maps and reports on the above-mentioned surveys for publication.
- Services to the development agencies by providing basic data on soils, land capability and crop suitability for preparation of both short and long-term agricultural development plans.
- Coordination with the beneficiary agencies at local, regional or national levels regarding planning and execution of land use development program.
- Provision of simplified guides on soils and agricultural development possibilities for each Upazila for agricultural extension and research workers.
- Provision of soil data for planning irrigation, drainage and reclamation projects.
- Selection of suitable sites for specific research/development activities.
- Imparting in-service training to the newly recruited technical officers on soil survey, land use planning, cropping potential, etc. and refreshers training to keep the technical officers of the department apprised and acquainted with the up-to date knowledge.

- Training of agricultural extension and research workers of various levels on proper utilization of soil survey information. Imparting basic training on various aspects of soils to the students of the agricultural institutions. (Source: Gazette Notification, October, 1983).
- Render services to farmers and others by analyzing soil, plant, water and fertilizer samples and recommend location specific fertilizer doses on the basis of soil testing and crop requirements.
- fertilizer recommendation services for farmers by Grameen and banglalink operators MOBILE PHONE as well as grameen phones CIC centers.
- On line fertilizer recommendation service [www.frs-srdi.gov.bd](http://www.frs-srdi.gov.bd) user name - srdi. Password ? srdi.
- Assist in introducing and executing the 'Soil Health Card Programme' proposed by the Ministry of Agriculture.
- Provide assistance in regular monitoring of soil fertility and land productivity activities throughout the country.
- Study the soil moisture characteristics in the laboratory to ascertain irrigation needs of different crops.
- Launch a regular programme for the training of field level extension workers regarding soil analytical results, 'Soil Health Card Programme', Use of Upazila Guide for the recommendation of fertilizers on the basis of soil analytical data.
- Investigate soil fertility degradation problem, nutrient related problems of crops, soil moisture stress and constraints in crop production etc (SRDI, 2012).

#### ❖ **Metrological Department/ SAAR**

Shaheed Ziaur Rahman was the pioneer to propose South Asian Association for Regional Cooperation (SAARC) in 1980 and all the Seven Member States (Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka) agreed to the proposal to bring the SAARC in reality. On the 8th December 1985, the South Asian Association for Regional Cooperation (SAARC) was born with the signing the Charter by the Heads of Government; in the history first SAARC summit meeting. The Heads of State or Government welcomed the entry of the Islamic Republic of Afghanistan into SAARC at the Fourteenth Summit meeting of the South Asian Association for Regional Cooperation (SAARC) held in New Delhi, India on April 3-4, 2007. Now the number of member states has become eight. They considered the SAARC to be a tangible manifestation of their determination to cooperate regionally, to work together towards finding solutions towards their common problems in spirit of friendship, trust and mutual understanding and to the creation of an order based on mutual respect, equity and shared benefits. The Heads of States of Government reaffirmed that their fundamental goal was to accelerate the process to economic and social development of their respective countries through the optimum utilization of their human and material resources, so as to promote the welfare and prosperity of their people and to improve their quality of life. They were conscious that peace and security was an



essential prerequisite for the realization of the objectives. The Heads of States of Government reaffirmed that their fundamental goal was to accelerate the process to economic and social development of their respective countries through the optimum utilization of their human and material resources, so as to promote the welfare and prosperity of their people and to improve their quality of life. They were conscious that peace and security was an essential prerequisite for the realization of the objectives. SAARC Member States are frequently affected by various phenomena of meteorological, hydrological, oceanographic, seismological origin natural disasters such as monsoon rain, tropical cyclones, storm surges, severe thunderstorms, tornadoes, floods, droughts, earthquake, El Nino, La Nina etc. almost every year. As a result a large number of people in the SAARC region are affected by these meteorological events, causing huge loss of lives and properties worth millions of dollars. These natural disasters cannot be controlled or stopped. But the loss of lives and damage to properties caused by natural disasters can be reduced considerably by issuing timely and accurate forecast of the impending disasters. So, weather forecast plays a vital role and there is no doubt that weather forecasts are of immense economic value and are useful in all aspects of economic activities of human being. Besides these, SAARC Member countries are mainly agricultural countries. Agriculture and weather/ climatic conditions are closely related. Climate analysis assumes a great significance in nearly every phase of agricultural activity, from the selection of sites to the harvesting and from long term planning to daily operation. Farmers require the ideal time for sowing and planting to minimize the losses as well as maximize production. Each crop has optimum maximum and minimum temperature conditions.

Plant growth ceases when the temperature drops below a certain minimum value or exceeds a certain maximum value. Between these limits, there is an optimum temperature favouring the most rapid growth. The climate water balance provides an assessment of water surplus, water deficit and run-off. The analysis of climate balance is required for estimating water requirements of crops. Detail analysis of climatic data enables to

- a) Determine the maximum and minimum temperature condition for optimum production of crop.
- b) Determine the most suitable time for sowing and planting etc. Accurate and timely forecast for proper timing for sowing, planting, harvesting, irrigation and applications of fertilizer and pesticides will greatly help to increase crop production, reduce losses and decrease costs. This needs to strengthen the agro-metrological forecast over the SAARC Member countries

Meteorology knows no geographical and political boundaries. This subject demands global cooperation. Almost every weather event affects the SAARC Member countries every year. This disastrous weather causes colossal loss of lives and damages to properties over this region, which can be reduced by issuing accurate, dependent and timely weather forecast. We are therefore, dependent on each other for meteorological observation, prediction and warning. So, it was felt

to establish a common platform to carry out research, mitigation of these disasters and to help this region to achieve and continue the sustainable socio-economic development of SAARC Member countries, meteorology was one of the proposition to be agreed upon by the Member States.

The SAARC Group of Experts Meeting on the establishment of the SMRC was held during 25-26 November 1992 in Dhaka, Bangladesh. The Group had before them the revised version of the proposal, which was earlier submitted by Bangladesh to the Technical Committee on Meteorology (TCM) meeting held in April 1992 at Karachi. The Group discussed the revised proposal in detail and considering the cost involved towards the establishment of the Centre in the original form and considering the financial constraints of the member countries and the existing facilities in the region, the Group recommended that SMRC, as offered by Bangladesh, be established in Dhaka and should concentrate more on the research aspects of weather forecasting rather than on the operational aspects of the medium and long-range forecasting. While doing so, the existing scientific and technical facilities in the region should be availed of through networking arrangements with the Centre (SAARC, 2012).

### Source of fund

The budget of SMRC has three components:

- a) Capital Cost Budget: 100% borne by the host country.
- b) Institutional Cost: This cost is borne by the SAARC Member countries in the following ratio:

**Table 2.4.1: Institutional Cost**

Sl.#	Country	Share of Contribution
1.	Afghanistan	3.00%
2.	Bangladesh	46.43%
3.	Bhutan	3.00%
4.	India	18.19%
5.	Maldives	3.00%
6.	Nepal	6.43%
7.	Pakistan	13.52%
8.	Sri Lanka	6.43%
Total		<b>100%</b>

**c) Programme Cost Budget:** The Programme cost is shared by the SAARC Member countries as per following ratio:

**Table 2.4.2: Programme Cost Budget**

Sl.#	Country	Share of Contribution
1.	Afghanistan	5.00%
2.	Bangladesh	10.72%
3.	Bhutan	5.00%
4.	India	30.32%
5.	Maldives	5.00%
6.	Nepal	10.72%
7.	Pakistan	22.52%
8.	Sri Lanka	10.72%
<b>Total</b>		<b>100%</b>

(SAARC, 2012).

### **Department of Public Health Engineering**

The Department of Public Health Engineering (DPHE) is the national lead agency for provision of drinking water supply and waste management in the country excepting Dhaka, Narayanganj and Chittagong cities where WASAs operate.

With the challenges generate by the discovery of arsenic in incremental areas since its first detection in 1993, DPHE with its development partners is trying to ameliorate the sufferings caused by the lack of safe water. Alternative options for safe water supply are being catered in worse affected areas.

Similarly for excreta and other waste management DPHE is implementing different projects to achieve an improvement environment.

DPHE was established in 1936.

### **Mandate of DPHE**

- DPHE is responsible exclusive for water supply and sanitation facilities throughout the country excluding Dhaka & Chittagong cities and Narayanganj and Kadamrasul Pourashavas where WASAs operate.
- Provide advisory service to GoB in framing policy and action plans for WSS

- Provide support to the local government institutions (LGIs) in the development and O&M of the
- Water and sanitation facilities (DPHE, 2012).

### **Introduction**

Ground water is predominant source of water supply system in Bangladesh. In rural areas, water supplies are generally provided by hand pump tube wells which tap water from underground. But in many places, water supplying with hand pump tube wells are facing severe problems due to various reasons. The major reasons are: Lowering of Water Table.

- Water Quality Problem.
- Absence of Suitable Water Bearing Formation.
- Arsenic Contamination Problem

DPHE is therefore, has been conducting Research and Development activities to improve existing technologies, develop cost effective alternatives and develop alternative technological option to provide water in the problematic areas.

### **Historical Background**

Considering the problem encountered in rural water supply a technical committee comprising experts from different organizations started their work on Research and Development activities before 1982. Because of water table depletion, hand pump other than #6 was very essential to be introduced in Bangladesh. After a series of discussions, workshop and field verification, TARA hand pump technology for low water table area has been developed in Bangladesh in the year of 1984.

Considering the importance and the magnitude of the R&D activities, it was felt necessary to establish a separate setup of manpower to be engaged in Research & Development activities. Accordingly, DPHE Research and Development Division was created in 1989 under GOB-Unicef project. The R&D committee headed by Superintending Engineer, DPHE Ground Water Circle comprising members from academic institutions, development partner has been playing advisory role on R&D activities since 1992.

In early nineties, detection of arsenic in ground water has caused a threat for ground water based water supply system in Bangladesh. On growing concern over arsenic contamination, a number of studies has been fielded to identify the causes of arsenic contamination, its magnitude and to find out the ways of arsenic mitigating technologies. Apart from this, a number of alternate water options are being explored in the field to evaluate the performance of the options in terms of technical and social aspect (DPHE, 2012).

### ❖ **Bangladesh Disaster management Bureau (DMB)**

DMB is a small dynamic professional unit at national level in Bangladesh to perform specialist support functions working under the authority of high-level Inter-Ministerial Disaster Management Coordination Committee (IMDMCC). It is a technical arm to the Disaster Management and Relief Division (DMRD); to overview and co-ordinate all activities related to disaster management from national down to the grass-root level (DMB, 2012).

#### **DEPARTMENT OF DISASTER MANAGEMENT**

##### **Government of people's Republic of Bangladesh Ministry of Disaster management and relief**

Department of Disaster Management (DDM) under the Ministry of Disaster Management and Relief was set up in November 2012 following enactment of the Disaster Management Act 2012. The Department has the mandate to implement the objectives of Disaster Management Act by reducing the overall vulnerability from different impacts of disaster by undertaking risk reduction activities; conducting humanitarian assistance programs efficiently to enhance the capacity of poor and disadvantaged as well as strengthening and coordinating programmes undertaken by various government and non-government organizations related to disaster risk reduction and emergency response. DDM is responsible to execute the directions, recommendations by the Government in connection with disaster management as well as the national disaster management principles and planning.

DDM headed by the Director General focuses on networking and collaborating with the various Ministries, Departments and Scientific, Technical, Research, Academic institutions, Development Partners, UN Agencies and non-government Organizations within and outside the Government working on various aspects of disaster risk reduction and response management. DDM conducts research, organizes workshops and training programmes, publishes its reports and documents and provide various policy advisory services to the concerned Ministry of the Government of Bangladesh.

DDM has the vision to be recognized as a vibrant Centre of Excellence for knowledge, research and capacity building on disaster management for the Disaster Management professionals across level.

#### **Mission & Vision**

The Vision, the Mission, the Function and the Modalities for setting up the Department of Disaster Management (DDM) were determined in the light of Disaster Management Act 2012 and in consultation with the Ministry of Disaster Management and Relief.

#### **Vision**

The Department of Disaster Management (DDM) would be a vibrant department of excellence for Disaster Risk Reduction (DRR) mainstreaming into Disaster Management Programme; vulnerability reduction of peoples, specially the poor and disadvantaged from different impacts of disasters; knowledge, research and capacity building on the whole cycle of disaster management in the light of DM act 2012.

### **Mission**

The Department of Disaster Management (DDM) would serve the Ministry of Disaster Management and Relief to implement the objectives of Disaster management Act 2012 by undertaking risk reduction activities; responding to disaster events efficiently as well as strengthening and coordinating programs undertaken by different stakeholders related to DRR and DRM (DDM, 2012).

#### **❖ The Climate Change Cell**

The Climate Change Cell (CCC) is a DFID- and UNDP-funded body under the Ministry of Environment and Forests and the Comprehensive Disaster Management Programme (CDMP) that is tasked with integrating climate change considerations into various aspects of national planning. They lobby the Planning Commission to include climate change directives in the national development plans (to be implemented by professionals and funded by the line ministries). They also conduct training, capacity building and disseminate information to local government councils – publishing a range of information booklets in Bangla, also available for free online. The CCC also provides climate modelling on the local scale, for a fee.

### **Practical implementation questions**

The government's climate change policy only deals with the Upazila level – or intermediate local government. Unusually, in this case it appears that the government has abdicated responsibility for grassroots – that is, people-level – development and left the responsibility for the population's welfare to the third sector. According to the CCC, the role of NGOs is to bridge this gap and bring climate change information and adaptation to communities. Civil society is not discussed in a central position in the BCCSAP. NGOs are mentioned as implementers in some of the 37 (Increased to 40 programmes by the end of 2009) BCCSAP programmes in collaboration with the responsible line ministries. NGOs are needed for the following programmes. (BCCSAP 2008: Annex 1)

#### **Theme 1: Food Security, Social Protection and Health**

- T1P1 – research on climate-resistant cultivars. NGOs to field-test new varieties.
- T1P2 – climate-resilient cropping systems: NGOs to support R&D with the Bangladeshi Rice Research Institute (BRRI)

- T1P4 – adaptation in fisheries. NGOs to work with the Ministry of Fisheries and Livestock on threats and adaptation mechanisms for fish.
- T1P5 – adaptation for livestock. NGOs to work with the Ministry as above.
- T1P7 – water and sanitation for climate-vulnerable areas. NGOs to work with the Ministry of Local Government to monitor access to safe water and forecast future needs. Investing in additional water and sanitation facilities.
- T1P8 – livelihoods. NGOs to work with various line ministries on climate resilience towards eroding income, employment and health.
- T1P9 – protecting the livelihoods of vulnerable groups. Various line ministries with NGOs to safeguard the livelihoods of vulnerable groups and study the effects of climate change on women.

## Theme 2: Comprehensive disaster management

- T2P1 – improving flood forecasting and early warning systems. CSOs to work on community awareness raising.
- T2P2 – improving cyclone and storm-surge warnings: community awareness, as above.
- T2P3 – public awareness on climate resilience: NGOs, with ministry and the Red Crescent.
- T2P4 – risks management against loss of property: NGOs can take part in running insurance system.

NGOs are not expected to work on the themes of infrastructure (T3) (except for the option to construct cyclone shelters), research and knowledge management (T4), or mitigation and low carbon development (T5).

Under T6, capacity building and institutional strengthening, NGOs are listed under:

- T6P3, Strengthening Human Resource Capacity, to improve capacity to access international climate change funds
- T6P4, Strengthening Institutional Capacity, to conduct organisational reform of various institutions (including government - not only other NGOs) and to set up mechanisms for intra-institutional coordination to manage new adaptation and mitigation funds.

The bulk of the role for NGOs as envisaged by policymakers in BCCSAP is in community liaison, awareness-raising, crop demonstration etc. But it is interesting to see the BCCSAP invites NGOs to improve linkages between institutions and perhaps improve the capacity of government officials to deal with climate change. Such a view reflects an opinion that NGOs

deal mostly with service delivery and micro-finance; they are not seen in the role of credible research institutions or activists/lobbyists (Lönqvist et al., 2010).

## **Background**

Climate change constitutes a critical challenge for development. Since climate change cannot be prevented there are no choices but to adapt as well as continue efforts to mitigate. In practice, adaptation will work best if it is integrated into policies, which deals with climate induced risks, in the context of sustainable development and disaster risk reduction. Preparedness for climate change across levels is therefore critical.

The importance of climate change and of better understanding its impact for disaster risk reduction was recognised as a key element in the design of CDMP I which prompted the establishment of the Climate Change Cell in the Department of Environment (DoE), Ministry of Environment and Forests. The Cell was involved in a number of important activities including conduction of 6 adaptation researches, building national capacity to carry out climate (Climate change Cell, 2012).

Bangladesh is one of the most vulnerable countries to climate change due to global warming. According to current scientific understanding, the state of well being and survival of the people in Bangladesh will be under serious threat from climate change over the coming decades.

As a pioneer initiative of the government to combat climate change the *Climate Change Cell* was established in the Department of Environment (DoE), Bangladesh in 2004 under the Comprehensive Disaster Management Programme (CDMP). On successful completion of its first phase, the second phase started in 2010 under CDMP II with “Support to the Department of Environment’s Climate Change Cell, Bangladesh” project.

The objectives of this project are to enhance the technical capacity of DoE in supporting the Government in climate change related policy and programme development, to integrate climate change considerations into existing development interventions and to support the Government in its role in coordination and negotiation efforts.

The mandated work of the Cell is to prepare technical papers for the MoEF to support international negotiations, prepare documentary on climate change vulnerable sectors of Bangladesh; publish quarterly online newsletters, formulate climate change mainstreaming guidelines, develop sectoral training modules etc. Major on-going studies under this project/Cell include: Study on sea level rise impact in the coastal zone of Bangladesh; sectoral vulnerability and financial need assessment in Fisheries and Livestock sector and in biodiversity and marine ecosystem of Bangladesh. Development of an updated and web enabled Climate Change Database is under process. A Climate Change Knowledge Network (CCKN) was established which is active in dissemination of research findings of the Cell as well as other line agencies on climate change issue.



**Bonn Climate Change Conference - May 2012** The 36th sessions of the Subsidiary Body for Implementation (SBI) and of the Subsidiary Body for Scientific and Technological Advice (SBSTA), the fifteenth session of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA), the seventeenth session of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP) and the first session of the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) takes place concurrently from 14 to 25 May. All sessions are held at the Maritim Hotel in Bonn.

**Doha Climate Change Conference - November 2012** The 18th session of the Conference of the Parties to the UNFCCC and the 8th session of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol will take place from Monday, 26 November to Friday, 7 December 2012 at the Qatar National Convention Centre in Doha, Qatar.

**Consultation Workshop on Climate Change Database (CCD)** Climate Change Cell organized a Consultation Workshop on “*Climate Change Database Design, Structure and Framework Development*”, at Chamely Conference Room of Department of Environment held on 13 February, 2012. Mr. Monwar Islam ndc, DG DoE, chaired the CCD workshop. Mr. A.M.

Monsurul Alam, Director (Climate Change), DoE explained the objectives of the workshop to congregate experiences from the participants for updating a CCD at CCC of DoE. There were four presentations followed by open discussions & decisions. Participants from number of GO’s and NGO’s attended the workshop. The main objective of the workshop was to gather experiences and knowledge from the participants on how to develop a user friendly and web enabled climate change database at the Climate Change Cell to be widely used by the stakeholders. A total of 34 participants took part at the workshop. They tabled their valued comments and suggestions on climate change database development and management. Most of them greatly emphasized on raw, analyzed and impacts data on climate change to be included in the database (Climate change Cell, 2012).

#### ❖ Department of Agriculture Extension (DAE)

It is not known where or when the first extension activities took place. But it is known, however that Chinese officials were creating agricultural policies, documenting practical knowledge, and disseminating advice to farmers at least 2000 years ago. For example in approximately 800 BC, the minister responsible for agriculture under one of the Zhou dynasty emperors organized the teaching of crop rotation and drainage to farmers. The minister also leased equipments to farmer, built grain stores and supplied free food during times of famine. The birth of smodern extension service has been attributed to the events that took place in Ireland in the middle of the 19<sup>th</sup> century. Between the years 1845-51 the Irish potato crop was destroyed by fungal disease and a severe famine occurred. The British government arranged for Practical Instructors to travel to rural areas and teach small farmers how to cultivate alternative crops. This scheme drew the attention of government officials in Germany, who organized their own system of travelling instructors. By the end of 19<sup>th</sup> century the idea had spread to Denmark, Netherland, Italy, and France.

In the year between 1862 -65 our country had to face a severe famine. Government formed a famine commission. This commission first advocated forming an Agriculture Department. Consequently in 1870 the agriculture department was formed as a revenue department. In 1960 a separate Agriculture Department was established. At that time an agriculture farm covering 1000 acres of land was set up at Monipur area of Dhaka city (present Jatyo Sangshad area). This agriculture farm was attached to the Agriculture Department. For conducting agriculture research a laboratory was established in the year 1909. In 1914 Government employed an Agriculture Extension Officer in each district. Their academic background was not agriculture. In 1943 agriculture graduates were appointed to the agriculture department. In 1950 the then East Pakistan government initiated the extension and development program among the farmers through the VAID project. Government established Plant Protection Wing (1956), Bangladesh Agriculture Development Corporation (1961), Agriculture Information Center (1962), DAEM and DARI (1970). After the independence of Bangladesh government took initiatives to strengthen agriculture extension program and established cotton development board, tobacco development board, horticulture board. In 1975 agriculture directorate (Extension and Management) and Jute directorate were established. In 1982 Six agencies responsible for technology transfer DAE (E and M), DA (jp), plant protection directorate, horticulture board, tobacco development board and central extension resource and development institute (CERDI) were merged to form the present Agriculture Extension Department (DAE). From 1977 to 1990 the DAE conducted the agriculture extension activities under the concept of Training & Visit (T&V) approach. But since 1990 the agriculture extension programs have been going on successfully under the concept of group approach. In 1996 government adopted the New Agriculture Extension Policy (NAEP) to conduct a well planned Agriculture Extension Service in Bangladesh. The Department of Agricultural Extension's mission is to provide efficient and effective needs based extension services to all categories of farmer, to enable them to optimize their use of resources, in order to promote sustainable agricultural and socio-economic development (DAE, 2012).

**Table No: 2.4.3 List of On-going Projects for 2013-2014 with Fund allocation of DAE (Total Nos. 22)**

S.N.	Name of the Project / Programmes
1.	Second Crop Diversification Project(July, 2010 – June, 2016)
2.	Integrated Agricultural Productivity Project(DAE Part)(July, 2011-June,2016)
3.	Tuber Crops Development Project(DAE Component) (July, 2010 – June, 2014)
4.	Yield Gap Minimization of Rice Project(January, 2011 -December, 2013)
5.	Strengthening Phytosanitary Capacity in Bangladesh Project(July, 2012 – June, 2017)
6.	Eastern Integrated Agricultural Development Project(2nd Phase) (July, 2012 – June, 2015)

7.	Integrated Agricultural Extension Approach for Poverty Reduction & Food Security Project(July, 2011- June, 2014)
8.	National Agricultural Technology Project – PIU, DAE Component- (July, 2007 – December, 2013)
9.	Farmers Training at Upazila level for Transfer of Technology (2 <sup>nd</sup> Phase) Project(July, 2011-June, 2015)
10.	Emergency 2007 Cyclone Recovery and Restoration Project (August, 2008 – June, 2014)
11.	Up-gradation of Araihasar Horticulture Centre to ATI Project(July, 2011 – June, 2014)
12.	Strengthening Mushroom Breeding & Post Harvest Laboratory in National Mushroom Development & Extension Centre Project (December, 2012 – November, 2013)
13.	Pirojpur-Gopalganj-Bagerhat Integrated Agricultural Development Project -PCU(July, 2012 – June, 2017)
14.	Integrated Quality Horticulture Development Project(2 <sup>nd</sup> Phase) (July, 2010 – December, 2013)
15.	Construction of Rubber Dams in Small and Medium Rivers for Increasing Food Production Project( July, 2009 – June, 2016)
16.	Food Security through Enhanced Agricultural Production, Diversified Sources of Income, Value addition & Marketing in Bangladesh Project(July,2011-June, 2015)
17.	Establishment of Krishibid Institution of Bangladesh Project ( March, 2010 – December, 2013)
18.	Mujub Nagar Integrated Agricultural Development Project(DAE Component)(July, 2011-June, 2016)
19.	Farm Machinery Technology Development & Dissemination Project(July, 2010-June, 2015)
20.	Excavation of Joining Canal of Gaznar Bill, Irrigation Facilities Improvement & Fish cultivation Project in Sujanager Upazila of Pabna District(DAE Component)(July, 2010-June, 2014)
21.	Char Development & Settlement Project(DAE Component)(January, 2011- December, 2016)
22.	Pirojpur-Gopalganj-Bagerhat Integrated Agricultural Development Project-DAE(July, 2012 – June, 2017)

**Table No: 2.4.4 List of On-going Programmes for 2013-2014 with Fund allocation of DAE (Total Nos. 08)**

1.	Information & Communication Technology Support Development Programme(ICTDP)(July, 2008- June, 2015)
2.	Special Programme on Exportable Citrus & Vegetables Production(July, 2011- June, 2014)
3.	Establishment of Horticulture Centre at Kashiani Upazila of Gopalganj District Programme(January,2011-December,2013)
4.	Agricultural Extension Programme on Saline & Fallow land in 7 Districts of Coastal Area(July, 2011- June, 2014)

5.	Programme on Establishment of Citrus Orchard & Management of old Orange Tree (July, 2011 - June, 2013)
6.	Programme on Production, Storage & Distribution of Quality Rice, Wheat & Jute Seed (July, 2012- June, 2014)
7.	Programme on Production, Storage & Distribution of Quality Pulse, Oil & Onion Seed (July, 2012- June, 2014)
8.	Agricultural Training Institute Hathazari, Khadimnagar, Rahmatpur & Begumganj Maintenance & Development Programme (July, 2012- June, 2015)

(DAE, 2012)

### ❖ Bangladesh Atomic Energy Centre

Bangladesh Atomic Energy Commission (BAEC) was established in February 1973 through the promulgation of the Presidential Order 15 of 1973. Since then BAEC has been keeping itself engaged in the planning and development of acquiring nuclear technology for possible peaceful applications in the fields of Food, Agriculture, Health, Industry and Environment ensuring nuclear safety and radiation protection. Accordingly, BAEC has undertaken a good number of R&D programs in its various research establishments and developed indigenous expertise to achieve the cherished goal of self-reliance through national efforts and international cooperation. The Vision and Mission of BAEC are stated below:

#### **Vision**

Promotion of nuclear science and technology for peaceful uses of atomic energy to achieve self-reliance for overall socio-economic development.

#### **Mission**

- Promotion of nuclear science and technology based fundamental and applied as well as advanced research programmes in various fields of physical, biological and engineering disciplines;
- Implementation of nuclear power programme;
- Transfer of nuclear technology based services to various stakeholders;
- Application of nuclear technology in agriculture, industry, health and environment;
- Development of human resources in the area of nuclear science and technology;
- Establishment of radiation safety culture;
- Application of nuclear technology in exploration and exploitation of mineral resources (BAEC, 2012).

### ❖ Climate Change Unit

#### **Ministry of Environment and Forest**

### Background of Bangladesh Climate Change Trust Fund

- Established under the **Climate Change Trust Act 2010**
- **Block budgetary allocation in the form of an endowment by the government;**
- **Funding Source is from revenue budget of the Government**

#### BCCSAP 2009 SIX THEMATIC AREAS (44 Programmes)

1. Food security, social protection and health
2. Comprehensive disaster management infrastructure
3. Research & knowledge management
4. Mitigation & low carbon development
5. Capacity building & institutional strengthening



BCCTF supports implementation of the BCCSAP 2009

### BCCTF Objectives

- **To develop adaptive capacity of vulnerable communities exposed to climate change impacts by improving their livelihoods and minimizing risks:**
- **To address climate change adaptation and mitigation through technology development and transfer and financing for building capacity to reduce its impacts on people, biodiversity and environment; and**
- **Respond to climate change induced post disaster emergency activities.**

Figure 2.4.2: BCCTF Governance Achitecture

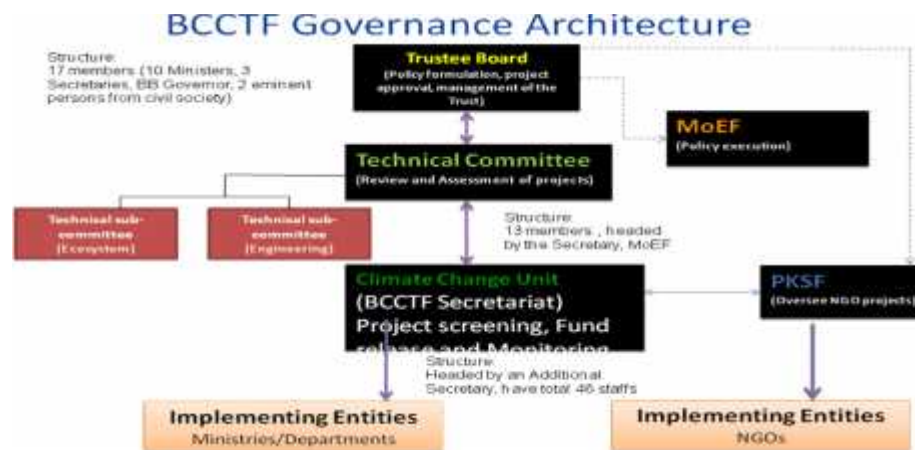
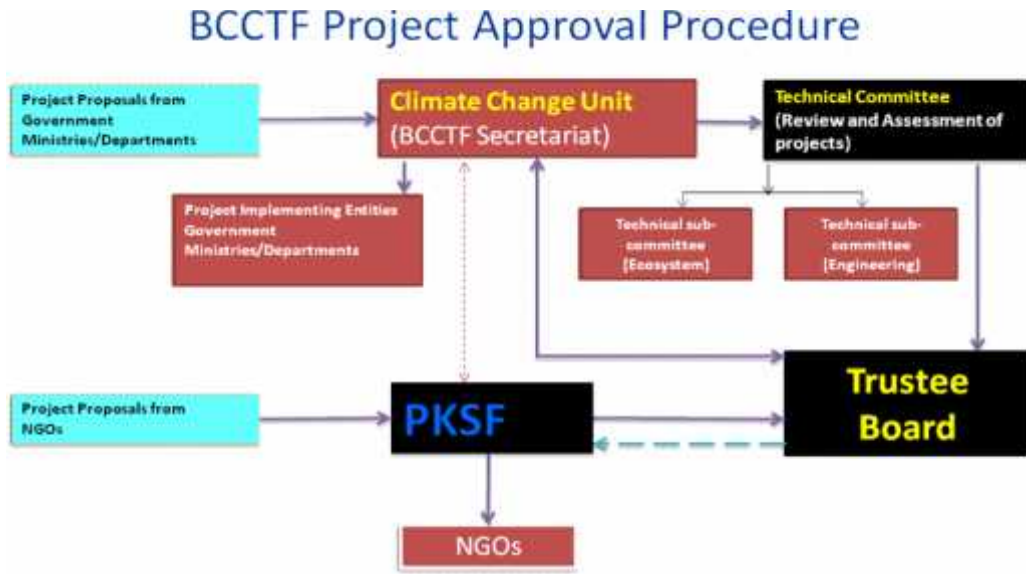
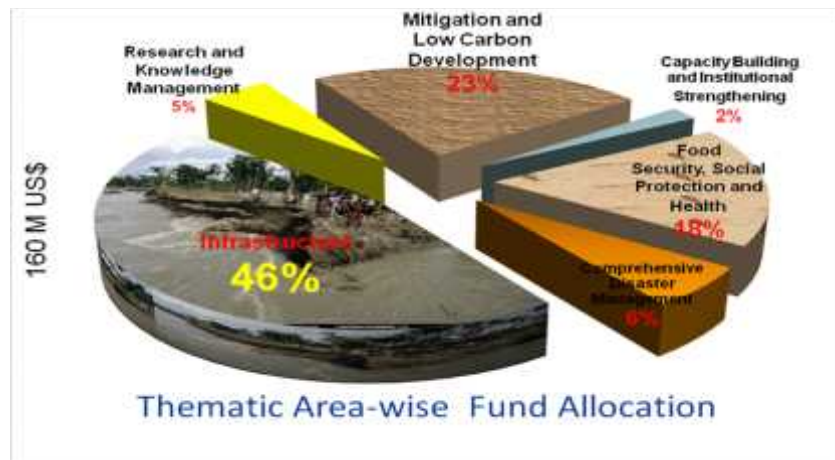


Figure 2.4.3: BCCTF Project Approval Procedure



- #### BCCTF Fund Status
- 350 Million US\$ allocated during 4 fiscal years;
  - 106 Government and 63 NGO projects approved;
  - Total cost of the approved projects is 160 Million US\$;
  - 119 Million US\$ is deposited to respond future emergencies (34%)

Figure 2.4.4: Thematic Area- wise Fund Allocation



### Beneficiaries

- Most vulnerable communities;
- People living in Coastal Areas;
- Farming Communities;
- Researchers; and
- Above all those who are fighting with cyclone, flood, drought for their survival

### Achievements and Way Forward

- Fund Management experience is only 3 years; too early to evaluate achievements
- Climate Change requires preparation for the uncertain future; BCCTF needs continuous flow of funds;
- Technology support



### ❖ Climate Change and Health Promotion Unit (CCHPU)

#### Ministry of Health & Family Welfare

Bangladesh in recent years has experienced some severe effects of climate change. The destructive paths left by Sidr and Aila are just to begin with. But other natural disasters like flood and draught are also having their drastic effects throughout the years in the lives of the people of Bangladesh.

The current and emerging climate change-related health risks in Bangladesh include heat stress and water- and food-borne diseases (e.g. cholera and other diarrhoeal diseases) associated with extreme weather events (e.g. heat waves, storms, floods and flash floods, and droughts); vector-borne diseases (e.g. dengue and malaria); respiratory diseases due to air pollution; aeroallergens, food and water security issues; malnutrition; and psychosocial concerns from displacement.

These risks and diseases are not new, and the health sector is already tackling these problems. However, the capacity to cope with potentially increasing levels of these risks and diseases are still limited in Bangladesh.

The availability of relevant hydro-meteorological, socioeconomic and health data is limited and available data are often inconsistent and seldom shared in an open and transparent manner.

Furthermore, there is insufficient capacity for assessment, research and communication on climate-sensitive health risks in many countries, as well as insufficient capacity to design and implement mitigation and adaptation programmes.

There is an urgent need to incorporate health concerns into the decisions and actions of other sectors while they plan to mitigate and adapt to climate change, to ensure that these decisions and actions also enhance health. By promoting the use of non-motorized transport systems and fewer private vehicles, greenhouse gas emissions would be reduced, air quality would improve and more people would be physically active. Such an approach would produce associated benefits (i.e. reduce the burden of disease while lowering greenhouse gas emissions) and needs to be promoted.

**Goal of the Unit:**

To build capacity and strengthen health systems to combat the health impact of climate change and to protect human health from current and projected risks due to climate change.

**Objectives of the Unit:**

- (1) To coordinate all Health Promotional activities of Intra and Inter Ministerial initiatives.
- (2) To increase awareness of health consequences of climate change;
- (3) To strengthen the capacity of health systems to provide protection from climate-related risks through e-Health and Telemedicine;
- (4) To ensure that health concerns are addressed in decisions to reduce risks from climate change in other key sectors;
- (5) To conduct research, evaluate and monitor programmes related to health promotion and climate change;
- (6) To coordinate emergency medical services and school health promotion to reduce health hazards during disasters and emergencies (CCHPU, 2012).

**Activities**

1. Health Promotional activities coordination (DGHS, DGFP, NNP)
2. Capacity building for health consequences of climate change
3. Using e-Health and Telemedicine for effective networking in health systems throughout the country



4. Research, Monitoring, Evaluation and Coordination of Emergency Medical Service (EMS) and School Health Promotion to reduce health hazards. During disasters and emergencies related with climate change.

5. Planning, formulation and implementation of projects on Climate Change impact on health (CCHPU, 2012).

❖ **Ministry of Food and Disaster Management  
Disaster Management and Relief Division  
The Comprehensive Disaster Management Programme (Phase II)**

The project aims to further reduce Bangladesh's vulnerability to adverse natural and anthropogenic hazards and extreme events, including the devastating potential impacts of climate change. It will do so through risk management and mainstreaming. CDMP II is a natural expansion and a logical scaling up of its first phase. That pioneering phase laid the foundations for institutionalising the risk reduction approaches and frameworks developed through pilot testing. CDMP II aims to institutionalise the adoption of risk reduction approaches, not just in its host Ministry of Food and Disaster Management, but more broadly across thirteen key ministries and agencies.

CDMP II (2010-2014) is a vertical and horizontal expansion of its Phase I activities designed based on the achievements, lessons learned and the strong foundation laid during CDMP I by continuing the processes initiated, deriving actions from the lessons learned, utilizing knowledge resources generated and knowledge products published. The approach of CDMP II is to channel support through government and development partners, civil society and NGOs into a people-oriented disaster management and risk reduction partnership. That partnership will promote cooperation, provide coordination, rank priority programmes and projects, and allocate resources to disaster management activities, risk reduction activities and climate change adaptation activities in Bangladesh.

CDMP II offers an outstanding opportunity to improve linkages with, and synergies between, disaster risk reduction and adaptation to climate change. This applies both at the community and at the general stakeholder level. The linkages are clearly expressed in many of the activities outlined in the operational outcomes of the project design, as well as through strengthened institutional capacities.

CDMP II is designed around the following six interrelated outcome areas:

**Outcome 1:** Development of strong, well-managed and professional institutions in Bangladesh that is able to implement a comprehensive range of risk reduction programmes and interventions at the national level, as well as contributing to regional actions, international learning and best practice.

**Outcome 2:** Reduced risk to rural populations through structural and non-structural interventions, empowerment of rural communities and improved awareness of, and planning for, natural hazard events, including the likely impacts of climate change.

**Outcome 3:** Reduced risk to urban populations through structural and non-structural interventions, improved awareness of natural hazard events and the piloting of urban community risk reduction methodologies targeting the extreme poor.

**Outcome 4:** Improved overall effectiveness and timeliness of disaster preparedness and response in Bangladesh by strengthening management capacity and coordination as well as networking facilities at all levels.

**Outcome 5:** Better disaster-proofing of development funding across thirteen ministries. This will be achieved by generating increased awareness of hazard risks and the provision of technical information, advisory services and resources to stimulate positive changes in planning and investment decisions over the long-term.

**Outcome 6:** Community-level adaptation to disaster risks from a changing climate is effectively managed (CDMP, 2012).

## **Background**

CDMP II (2010-2014) is a vertical and horizontal expansion of CDMP I (2004-2009) activities, designed based on the achievements, lessons learned and the strong foundation laid during CDMP I. By continuing the legacy, processes have been initiated for deriving actions, utilizing knowledge generation, resource implications and published knowledge products.

## **Vision**

Reduce Bangladesh's vulnerability to adverse natural and anthropogenic hazards and extreme events, including the devastating potential impacts of climate change to a manageable and acceptable humanitarian level.

## **Mission**

To strengthen national capacity to reduce risks, improve response and recovery from the impacts of disasters and climate change in Bangladesh.

## **Goal**

To further reduce Bangladesh's vulnerability to adverse natural and anthropogenic hazards and extreme events, including the devastating potential impacts of climate change.

## **Partners**

CDMP II is a collaborative effort by the Disaster Management & Relief Division of the Ministry of Food and Disaster management with the partnership of the United Nations Development Programme (UNDP), the UK Development for International Development (UKaid), the European Union (EU), Swedish International Development Agency (Sida), Australian Aid (AusAID) and the Norwegian Embassy.

## **Stakeholders**

### **Citizens**

All citizens, particularly the vulnerable, at risk population, marginalized, socially and geographically disadvantaged, women & children and communities who are victims of different hazards and already suffering from the consequences are at the centre of CDMP II activities.

### **Local Governments, City Corporations, Urban Municipalities**

CDMP II put particular emphasis to work with the rural local government systems, city corporations and urban municipalities.

### **Practitioners and Professionals**

A large number of development practitioners and professionals' are engaged with CDMP II initiatives to enhance share knowledge, join community networks and contribute to information resource.

### **Non- Government Organizations (NGOs) and Humanitarian Agencies**

While working with NGOs and Humanitarian Agencies CDMP II ensures that programs and activities are risk sensitive and provide for complimentary support, avoid duplicity and harness coordination

### **Development Partners**

A wide range of donors and stakeholders are working together to translate the commitment into tangible community level actions and facilitating evidence based policy.

## **Outcome Areas**

### **Climate change Adaptation**

Community- level adaptation to disaster risks from a changing climate is effectively managed. This is being implemented through establishment of climate change adaptation capacity within the MoFDM as well as Disaster Management Committee (DMCs) and local government in

partnership with various institutions for wide range of livelihood options and support community risk assessment including follow- up action plan.

## **How CDMP II Work**

### **Coordinate**

National effects in disaster risk reduction and provide guidance for the national level implementation and monitoring of the Hyoga Framework for Action

### **Undertake**

Initiate various Disaster Risk reduction (DRR) & climate change Adaptation (CCA) activities including capacity development and training, create evidence through research piloting project and demonstration, innovations and local solution, best practices and behavior changes, linkage between policy markers, researchers and grassroot realities with community etc.

### **Advocate**

For greater investment in disaster risk reduction and CCA actions to pro-poor policy advocacy.

### **Organize**

Bringing together all relevant parties and stakeholders involved in disaster risk reduction to assess progress on policy implementation.

### **Campaign**

To build national awareness on disaster risk reduction benefits and empower people to reduce community vulnerabilities to hazard impacts. Campaign on disaster preparedness at family & community level for safer society.

### **Encourage**

The establishment of district and local level platforms for disaster risk reduction, comprising multi-stakeholder committees or mechanisms as well as thematic platforms on key topics like early warning, recovery, capacity development, education, environment and others.

### **Inform**

Connect people by providing services and practical tools- such as our website ([www.cdmp.org.bd](http://www.cdmp.org.bd)), National Disaster Management information Center (DMIC) portal ([www.dmic.org/dmin](http://www.dmic.org/dmin)), publications on different DRR practices, country profiles and policy advice.

## **Provide**

Strive for providing knowledge, capacity building, timely information and practical opportunities to DRR and CCA. Provide ICT equipment & training to PIO, DRRO at Upazila and district level, DMRD officials and other agencies.

## **Promote**

The effective reduction of disaster and climate risk through the integration and mainstreaming of disaster risk reduction and climate change adaptation into policies and programmes. Source: Towards Resilience, Reducing the Risk of Disaster and Climate Change, Brochure (CDMP II)

### **❖ Bangladesh Unnayan Parishad (BUP)**

The Bangladesh Unnayan Parishad (BUP) is a non-profit organization devoted to the promotion of basic as well as action research on socioeconomic development and environment. It was established in 1980 and is registered with the Government of Bangladesh under the Societies Act 1860. The year 2005 is thus the BUP's Silver Jubilee year.

In the field of independent development research and dialogue activities, the BUP has played the pioneering role in this country. When it was established in 1980, it was virtually the first job kind in the country and represented a new vision. It has conducted many seminal research works on key national development issues and played a key role in popularizing roundtable discussions and dialogues on important issues of policy relevance.

It also pioneered public opinion research in Bangladesh, initiating the activity in 1994. Nationally and internationally, the organization is usually known as BUP, which is the abbreviation of its full name. It is now well-established as a leading think-tank of Bangladesh. The BUP's research areas include a wide range of issues relating to sustainable development, covering social, economic, environmental and cultural aspects of development efforts. It has also earned wide recognition for its planning forum which organizes policy debates on not only national issues but also regional and international issues.

The mission of BUP is to foster a people-centred culture of development. In pursuit of this mission, it seeks to generate ideas and policy directions through research and dialogue on a continuing basis. The vision that inspires BUP's work is the vision of Bangladesh as a democratic, economically self-reliant, just, and vibrant society in which every citizen will have access to opportunities for achieving their full human potential in an environment of individual and collective security. Internationally, it envisages a sustainable and equitable global order as the collective broader goal of humanity (CAN).

### **❖ IUCN (International Union for Conservation of Nature)**

The Government of Bangladesh joined IUCN as a State Member in 1972. IUCN started its operation in Bangladesh as a “liaison office” in 1989 and a fully operation Country Office was established in Bangladesh on 22 November 1992.

A Memorandum of Understanding was signed between the Government and IUCN on 22 November 1992.

### **Overview**

The Bangladesh Country Office aligns its activities with the current IUCN thematic areas: Conserving the diversity of life, changing the climate forecast, naturally energizing our future, managing nature for human well-being, and Greening the world economy.

To achieve its goals and objectives, IUCN Bangladesh parallels the vision and mission of IUCN globally, with well set strategic directions. IUCN Bangladesh Country Office works in close association with its members formed from a collective of national non-government organizations with key support from the Ministry of Environment and Forest, a State member. Support, advice and encouragement is also received valued from partners, donors and commission members, and volunteer scientists at home and abroad.

### **We strive for**

- An environmentally aware, educated and willing society capable of conserving and managing its natural resources sustainably and judiciously
- Empowerment of communities to work with local government agencies to collectively manage natural resources and implement sustainable-use practices
- Documentation and application of traditional knowledge and local expertise to manage modern-day conservation challenges
- Promotion of conservation and biodiversity messages throughout school and community networks
- Community awareness and appreciation of the heritage value and cultural significance of iconic wildlife
- Identification and implementation of practical strategies to adapt to changing climatic conditions and the increasing risk of natural disasters

### **IUCN - Who We Are**

- IUCN, International Union for Conservation of Nature, is an international organization concerned with the protection and sustainable use of the Earth's resources. The Union is a

unique partnership of States, Government agencies, and NGOs, representing the world's largest environmental democracy. Since 1948, IUCN has been a convenor, bringing together members and stakeholders to develop and negotiate solutions to environmental and development challenges globally. In many instances, this has led to collective agreements for the benefit of both people and nature. IUCN believes that conservation will succeed where there is capacity to act collectively and where actions are based on the best available scientific information.

- IUCN has recently celebrated the admission of its 1000th members of which 75 are States, 109 are government agencies and 792 are NGOs. Furthermore, IUCN has a volunteer network of some 10,000 technical and scientific experts working in six global Commissions: protected areas; species survival; ecosystem management; environmental education and communication; environment, economics and social policy; and environmental law.
- IUCN is the only environmental organization to which Member States of the United Nations accorded the status of an Observer at the UN General Assembly. It works closely with international governmental organizations such as the UN agencies and international financial institutions (i.e., the World Bank and regional development banks). It has memoranda of agreement, for example, with the three GEF implementing agencies- UNEP, World Bank and UNDP.
- "The IUCN mission is to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable"(IUCN, 2012).

## **Climate Change**

### **Climate Change Adaptation**

Climate change will magnify existing risks and vulnerabilities to disasters due to changing patterns of some hazards and due to increased population exposure and land-use changes.

Human and natural systems are influenced by climate variability and hazards, with the negative impacts most severely felt in developing countries. Increased climate variability is associated with climatic change, and climate change effects will intensify significantly in the future.

Adaptation occurs in physical, ecological and human systems. Adaptation to climate change takes place through reducing vulnerability or enhancing resilience in response to climate change.

The 16th Conference of the Parties of the UNFCCC in 2010, agreed on the establishment of the Cancún Adaptation Framework, elevating adaptation to parity with climate change mitigation. This has raised the importance of adaptation globally.

The Cancun Framework Principles relate to transparency, stakeholder participation, gender sensitivity, consideration of vulnerable groups and ecosystems, use of indigenous knowledge and best available science, and the integration of adaptation into social, economic and environmental policies and plans. The priorities defined include national adaptation planning and implementation, assessments of vulnerability and adaptation, institutional capacity-building, enhancement of socio-economic and ecological resilience, disaster risk reduction, and technology transfer.

The term EbA refers to ‘the use of biodiversity and ecosystem services to help people adapt to the adverse effects of climate change’, and was added at CBD COP10, Nagoya, 2010, with decision X/33 on Climate Change and Biodiversity. It stated that ecosystem-based approaches for adaptation may include sustainable management, conservation and restoration of ecosystems.

Since 2009, IUCN has promoted the use of EbA as a practical tool for climate change adaptation. They are intended for use by decision makers; by financial institutions; and in project and research design. While there is not full agreement on definitions related to ecosystem approaches to adaptation, the term EbA is used as this resonates with the CBD and embraces ecosystem-based approaches to adaptation as well as components of community based adaptation (IUCN, 2012)..

#### ❖ **BRAC**

BRAC is a development success story, spreading solutions born in Bangladesh to 10 other countries around the world – a global leader in creating opportunity for the world’s poor. What started out as a limited relief operation in 1972 in a remote village of Bangladesh has turned into the largest development organisation in the world. Organising the poor using communities’ own human and material resources, BRAC (formerly Bangladesh Rural Advancement Committee) catalyses lasting change, creating an ecosystem in which the poor have the chance to seize control of their own lives. We do this with a holistic development approach geared toward inclusion, using tools like microfinance, education, healthcare, legal services, community empowerment, social enterprises and BRAC University. Our work now touches the lives of an estimated 135 million people, with staff and BRAC-trained entrepreneurs numbering in the hundreds of thousands, a global movement bringing change to 11 countries in Asia, Africa and the Caribbean

#### **Who Are BRAC**

BRAC is a development organization dedicated to alleviate poverty by empowering the poor, and helping them to bring about positive changes in their lives by creating opportunities for the poor.



Our journey began in 1972 in the newly sovereign Bangladesh, and over the course of our evolution, we have been playing a role of recognizing and tackling the many different realities of poverty. We believe that there is no single cause of poverty; hence we attempt tackling poverty on multiple fronts.

### **BRAC Disaster, Environment and Climate Change Programme**

BRAC Disaster, Environment and Climate Change (DECC) programme works alongside the government, other non-governmental organizations and the community to build resilience, foster adaptation and respond holistically to the effects of climate change and natural disasters.

The programme's fundamental goals are to enhance BRAC's institutional capacity to respond to natural disasters, build competence at the community level on disaster preparedness and increase coping ability during natural disasters by conducting predictive research, information transfer and education in relation to environment, climate change and natural disasters (BRAC, 2012).

#### **❖ Grameen Bank**

Grameen Bank (GB) has reversed conventional banking practice by removing the need for collateral and created a banking system based on mutual trust, accountability, participation and creativity. GB provides credit to the poorest of the poor in rural Bangladesh, without any collateral. At GB, credit is a cost effective weapon to fight poverty and it serves as a catalyst in the over all development of socio-economic conditions of the poor who have been kept outside the banking orbit on the ground that they are poor and hence not bankable. Professor Muhammad Yunus, the founder of "Grameen Bank" and its Managing Director, reasoned that if financial resources can be made available to the poor people on terms and conditions that are appropriate and reasonable, "these millions of small people with their millions of small pursuits can add up to create the biggest development wonder."

As of October, 2011, it has 8.349 million borrowers, 97 percent of whom are women. With 2,565 branches, GB provides services in 81,379 villages, covering more than 97 percent of the total villages in Bangladesh.

Grameen Bank's positive impact on its poor and formerly poor borrowers has been documented in many independent studies carried out by external agencies including the World Bank, the International Food Research Policy Institute (IFPRI) and the Bangladesh Institute of Development Studies (BIDS) (Grameen Bank, 2012).

#### **❖ BDPC**

The Bangladesh Disaster Preparedness Centre (BDPC) was established in 1992 as Bangladesh's first independent, local NGO focused solely on disaster risk reduction (DRR). Devastating floods in 1988 and a cyclone claiming 138,000 lives in 1991 highlighted the need for a shift from post-disaster response to pre-disaster preparedness. Although billions had been spent on relief and recovery, communities remained vulnerable and under prepared for the next disaster. BDPC set out to put vulnerable communities at the centre of disaster management, adopting a community-based approach, complemented by advocacy, policy advice and knowledge sharing.

Twenty years later, change is evident. Disaster risk reduction has been integrated into policies and practices, disaster management committees have been formed from national to local levels of government and public awareness programs have been established. BDPC has been one of many players in this process of change, alongside the Government of Bangladesh and numerous local and international NGOs.

But there is still a long way to go, with millions of people being affected each year by floods, cyclones, drought, riverbank erosion and storm surge.

BDPC is continuing its strategy of community empowerment, knowledge promotion and advocacy. We work with national and international donor agencies to ensure that communities drive their own disaster preparedness, best practices are shared across the disaster management field and the Government of Bangladesh is well-informed of the needs and capacities of disaster-prone communities.

1. Reducing the Risk of Disaster through promotion of Rights and Governance
2. Documentation and Promotion of Transferable Indigenous Knowledge and Coping Strategies for Disaster Risk Reduction
3. Shelter Based Community Risk Reduction Project
4. Adaptation to the Impact of Climate Change through Community-based flood Warning System
5. Notun Jibon
6. Community Based All Hazards Early Warning and Dissemination Systems
7. Dissemination of flood warning at community level
8. Operationalization of an Effective Local Disaster Risk Reduction Action Plan (LDRRAP)
9. Improved Dissemination of Flood Forecasting and Warning
10. Disaster management training for the members of Union and Upazila disaster management committee
11. Mainstreaming disability into disaster Management policies and practices
12. Community based Earthquake Preparedness
13. Implementation of Disaster Preparedness and Management Plans for Meghna-Dhanagoda Irrigation Project (MDIP) and Pabna Irrigation & Rural Development Project (PIRDP)
14. Training on disaster management, first aid, TOT, etc.

15. Need Assessment for the Disaster Risk Reduction through Long-term Livelihood Development Pilot project
16. Implementation of Disaster Risk Reduction through Long-term Livelihood Development Pilot project at Lalmonirhat District
17. Participatory Vulnerability Appraisal (PVA) for Community based Disaster Risk Management Project (CDRMP)
18. Community based Flood Information Systems (CFIS)
19. Empowerment of Coastal Fishing Communities in Disaster Preparedness
20. Planning and implementing the Disaster Response Plan for Meghna – Dhonagoda Irrigation Project (MDIP) & Pabna Irrigation and Rural Development Project (PIRDP)
21. Development of a training manual - Handbook on “Family and Community Level Disaster Preparedness” for flood and cyclone-prone areas.
22. Study on Problems of Co-ordination in Disaster Relief Operations in Bangladesh
23. Impact evaluation of Oxfam’s disaster preparedness programmes on the enhancement of capacities of the people to face disasters.
24. People-Oriented Flood Warning Dissemination Procedure
25. Promotion of Family and Community Level Flood Preparedness through public awareness program.
26. Conducted two massive programmes for screening of tubewells contaminated by arsenic.
27. Study on “Cyclone Proofing” in the cyclone-prone areas of Bangladesh.
28. TOT on Disaster Management, First Aid and Orientation to Community based Organisations of OXFAM-GB program partners
29. Massive Public Awareness Programme for developing the capacity of all the people in the flood-prone Upazila of Chowhali under the District of Sirajganj for promoting the concept of integration of disaster preparedness into normal day to day life of common people.
30. Development of 3 training modules on Disaster Management
  - Upazila Disaster Management Committee
  - Union Disaster Management Committee
  - Grass root level implementers
31. Study for "Strengthening Flood Warning And Preparedness Systems both at National and Local Levels"
32. Empowerment of Coastal Fishing Communities in Disaster Preparedness
33. Development of 3 training modules on Disaster Management
  - Upazila Disaster Management Committee
  - Union Disaster Management Committee
  - Grass root level implementers
34. Training for promotion of Public Awareness and Community Action Plans for members of local government and local community in cyclone prone area

35. Study on “Indigenous Coping Mechanisms of People Against Cyclone” and production of proposal titled “Family and Community Level Disaster Preparedness Through Outreach Public Awareness Programme.”
36. Need Assessment for the Disaster Risk Reduction through Long-term Livelihood Development Pilot project
37. Implementation of Disaster Risk Reduction through Long-term Livelihood Development Pilot project at Lalmonirhat District
38. Conducted two massive programmes for screening of tubewells contaminated by arsenic.
39. People-Oriented Flood Warning Dissemination Procedure
40. Planning and implementing the Disaster Response Plan for Meghna – Dhonagoda Irrigation Project (MDIP) & Pabna Irrigation and Rural Development Project (PIRDP)
41. Study on “Cyclone Proofing” in the cyclone-prone areas of Bangladesh.
42. Preliminary Research on People’s Knowledge, Belief and Misconception About Natural Disasters.
43. Program for Hydro-Meteorological Risk Mitigation in Secondary Cities in Asia (PROMISE)
44. Development of a training manual - Handbook on “Family and Community Level Disaster Preparedness” for flood and cyclone-prone areas.
45. Hand book on “First Aid in Disaster Emergencies”
46. Massive Public Awareness Programme for developing the capacity of all the people in the flood-prone Upazila of Chowhali under the District of Sirajganj for promoting the concept of integration of disaster preparedness into normal day to day life of common people.
47. Participatory Vulnerability Appraisal (PVA) for Community based Disaster Risk Management Project (CDRMP)
48. Study on Problems of Co-ordination in Disaster Relief Operations in Bangladesh
49. Promotion of Family and Community Level Flood Preparedness through public awareness program.
50. Impact evaluation of Oxfam’s disaster preparedness programmes on the enhancement of capacities of the people to face disasters.
51. TOT on Disaster Management, First Aid and Orientation to Community based Organisations of OXFAM-GB program partners
52. Disaster Management Training and Training of Trainers for NGO workers in cyclone and food-prone areas. The emphasis of the courses was on public awareness, response planning and integration of disaster management components into development programmes.
53. “Disaster Management Handbook for Bangladesh” in four volumes, both in English and Bengali
54. Disaster Management Training (flood and cyclone) to local level NGOs

55. Study for formulation of the strategy of Public Awareness Component for Flood Proofing Pilot Project
56. Appraisal of disaster management programmes of RDRS (BDPC, 2012).

❖ **BELA (Bangladesh Environmental Lawyers Association)**

Dr. Mohiuddin Farooque was born on 25 June 1954 at Gopalganj. He did his Masters in Law from the University of Dhaka and was the University Prize Man for the year 1979. Dr. Farooque obtained his doctoral degree from the University of Manchester on International River Law in 1988.

He established BELA in 1992 and devoted his career to the cause of environment. He unveiled a new field for activism and chose environmental law as subject for his advocacy. He fought for establishing the right of the downtrodden people within a very short period could set exceptional trend of performing public duty to protect the interest of the common people.

A bright academia and researcher Dr. Farooque had a long list of publication on environment and environmental law including 69 articles and 7 books. A teen-age freedom fighter Dr. Farooque breathed his last on 2 December 1997 at the National University Hospital in Singapore.

In his absence, his colleagues in both are still pursuing his mission.

**Introducing BELA**

As a group of lawyers, BELA was established in 1992 with the broad objective of promoting environmental justice and contributing to the development of sound environmental jurisprudence. Environment and natural resources support the lives and livelihood of majority of the people in Bangladesh in numerous invaluable ways. Two third of the Gross Domestic Products (GDP) comes from agriculture whereas sixty percent of the people have their only protein intake from the rich sweet water fishery of the country. Bangladesh shares with India the largest mangrove forest of the world and the largest unbroken coastline. The country has an extensive network of about 300 rivers with a flow of 25, 000 kilometres. The hill areas of Bangladesh are known for their rich biodiversity and cultural diversity.

While Bangladesh could have been known in the world for its rivers, coastal areas, forests, biodiversity and related culture, the country instead has been portrayed as a land of dense population, disasters and miseries. This has happened mainly due to faulty policy priorities and approaches and of course poor governance that also accounts for non-implementation of environmental laws. A narrow and isolated law/policy making trend resulted in over exploitation of resources nullifying

The notion of sustainable use and utilization and undermining peoples' dependence on the same. The environment in Bangladesh is also challenged by some regional activities and vulnerability

to global environmental crisis like climate change, sea level rise, trade in hazardous wastes and so on.

In such a backdrop, BELA started its mission as a legal advocacy group of young lawyers working out techniques and strategies in dealing with the legal regime for the protection of environment. Founded by Dr. Mohiuddin Farooque, the organization has led the pathway for environmental legal activism in the country and has been the pioneer of public interest litigation in Bangladesh. BELA has adopted various means to create awareness amongst major the actors and the common people about their environmental rights and duties. BELA has published books and other awareness materials, all having relevance to the concept of environmental protection. It is also active in promoting the concept of participatory law making in the country.

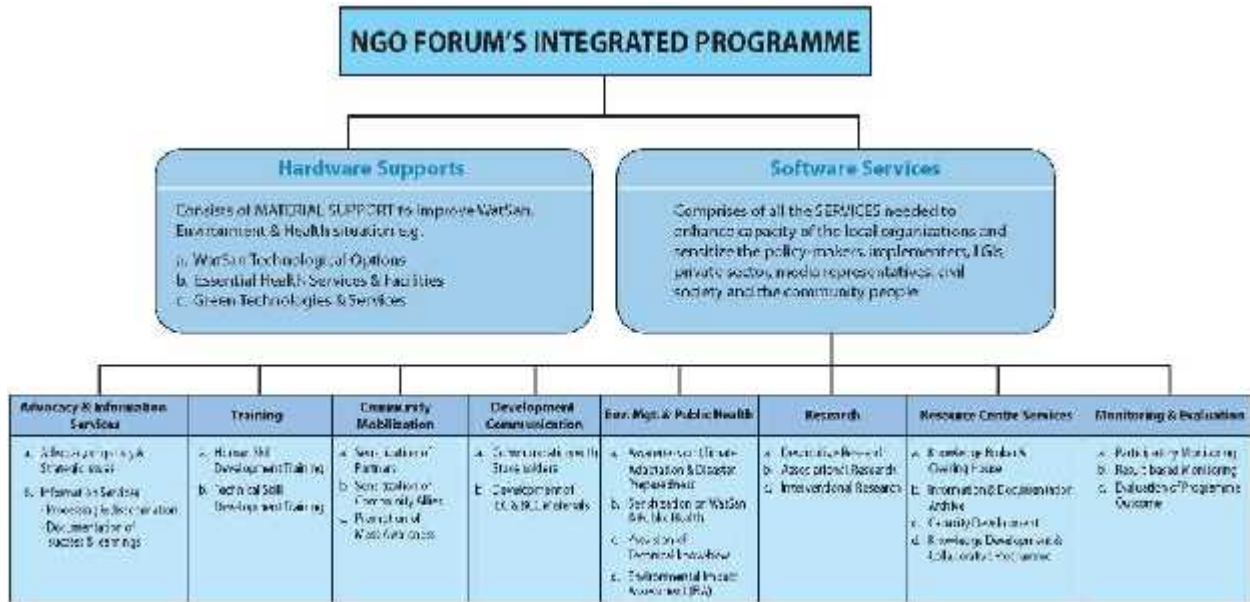
BELA is a member of IUCN-the World Conservation Union, Environmental Law Alliance Worldwide (E-LAW) and the South Asian Watch on Trade, Economics and Environment (SAWTEE).

In 2003 BELA has received the Global 500 Role of Honors of the United Nations (BELA, 2012).

#### ❖ **NGO Forum**

Being launched as the UN-brainchild in 1982, NGO Forum has been involved as the apex networking and service delivery body of NGOs, CBOs and private sector operators in the WatSan sector of Bangladesh. Over the years it has been contributing to the improvement of Public Health situation by reducing mortality and morbidity, and conserving sound environment. In order to implement its programmes as a process of holistic transformation of the society towards development, the Forum has emphasizingly stepped forward maintaining a perfect balance among WatSan, health and environment. Combining hardware & software supports and networking efforts, NGO Forum materializes its integrated programmes directly and in association with its partners countrywide (NGO Forum, 2012).

#### **Figure 2.4.5: NGO Forum's Integrated Programme**



(NGO Forum, 2012).

### ❖ CEGIS

Center for Environmental and Geographic Information Services (CEGIS) is a center of excellence situated in Dhaka, the Capital City of Bangladesh in Southeast Asia. The working domain of CEGIS span over Resource Management Planning (Natural and Intellectual), System Development, Capacity Building and Research activities.

In brief, Center for Environmental and Geographic Information Services (CEGIS) is:

- a public trust and center of excellence established by the Government of Bangladesh under the Ministry of Water Resources (MoWR)
- a “Not-for-Profit” organization guided by a Board of Trustee headed by the Secretary of the MoWR
- an organized pool of experts and resources to serve the humanity by excelling the state of art technology in resource management planning, system development, study and research and capacity building.
- CEGIS target towards green environment, blue water and balanced development for better well-being (CEGIS, 2012).

### Climate Change Study Division

Center for Environmental and Geographic Information Services (CEGIS), from its beginning, is engaged in research projects on climate change issues in Bangladesh focusing on the physical phenomena and their impacts on communities and livelihoods.

### Divisional Activities

- Studying the physical phenomena of climate change
- Assessment of Climate Change impacts on environment communities, livelihoods, etc.
- Climate modeling
- Down-scaling of climate parameters from larger scale General Circulation Models

### **Resources**

- Open Source Climate Model
- Climate Change Impact Models (CEGIS, 2012).

### **Climate Change services**

CEGIS is pioneer in developing technology related to analysis and study of climate change impact in Bangladesh. It conducts research on climate change issues, focusing on the physical phenomena and their impacts on communities and livelihoods. It specializes on:

- Sea level rise analysis within Bangladesh
- Climate change and sea level change impact economic modeling
- Providing adaptation solutions for physical infrastructures
- Climate change coping mechanism for the communities and their livelihoods
- Crop model (CEGIS, 2012).

### **❖ CNRS (Center for Natural Resource Studies)**

CNRS is a non-government, non-political development organization formed in 1993 focuses on ecological management of floodplain ecosystem through community-based management approaches.

CNRS desires to be forerunner of nature conversation efforts at the local and national context, which would support the government strategies and initiatives, CNRS, with all its limitations and opportunities, sets a mission to restore, conserve, enhance and wise use of natural resources, involving users communities and stakeholders, which the country once proudly possessed in affluence.

The goal of CNRS is to join with others in influencing the national development strategy in direction that support for building sustainable development approach rather than destroying the nation's environmental resources.

### **Partners of CNRS**



To achieve its goal, CNRS has been working in collaboration with various partners in implementing projects, such as:

#### **FORD FOUNDATION**

- Community-based Fishers Management and Habitat Restoration Project during 1994 to 1997.
- Community-based Wetland Management during 1998 to 2002.

#### **DFID**

- NRSP Project (R6756) on "Investigation of livelihood strategies and resource use patterns in floodplain production systems based on rice and fish in Bangladesh" during 1996-2000 with New Castle University-UK.
- NRSP Project (R7562) on "Methods for consensus building for management of common property resources" during 2000-2001 with New Castle University-UK, WorldFish Center, BCAS.
- NRSP Project (R7868) on "Maximization of joint benefits from multiple resource use in Bangladesh floodplains" during 2000-2001 with Reading University-UK and MRAG-UK.
- NRSP Project (R8195) on "Integrated floodplain management - institutional environments and participatory methods" during 2002-2004 with ITAD-UK, WorldFish Center.
- NRSP Project (R8223) on "Consensus building in common pool resources: a learning and communications program for the PAPD methodology" during 2002-2003 with ITAD-UK.
- NRSP Project (R8306) - Better options for Integrated Floodplain Management (IFM) : Uptake promotion 2003-2005 with ITAD MRAG, WorldFish Center, Reading University-UK.
- NRSP Project "Promotion of sustainable institutions for integrated floodplain management" May 2005-Sept. 2005.
- DoF and WorldFish Center 5-year long CBFM-2 (Community-based Fisheries Management, phase-2) project since 2001.
- Fourth Fisheries Project/DoF: Participatory Assessment of Social and Institutional Aspects of Fish Pass and Fish Friendly Regulators in July-August 2002 with IUCN.
- Fourth Fisheries Project/DoF: "Fish-Pass and Fish Friendly Regulators Community Participation phase-I: Opinion Survey" in August-September 2002.
- Fourth Fisheries Project/DoF: Community Mobilization in Fish Pass sites in 2003-2004.

#### **USAID**

- CARE: Flood Proofing Project (FPP) in the haor basin (Jamalgonj upazila) during June 2002 to September 2004.
- CARE: Baseline and seasonal surveys on the socioeconomic and flood vulnerability of Flood Proofing Project (FPP).
- CARE: "Long Term Environmental Impact Monitoring of Rural Roads" in 1996-1999.

- Biodiversity Support Program/USAID: Year long study on Fish Diversity in 2 Wetlands in Tangail during 1993 to 1994.
- BREAD Project/Winrock International USDA: Environmental Awareness activity during 1999-2000.
- MACH Project with Winrock International, BCAS and Caritas since 1998.

### **ACTION AID**

- Action Aid Bangladesh: Hoar Elaka Unnayan Nagorik Oikka (HUNO) project during mid 2002 to mid 2004.
- Implementing 3-year long Advocacy Campaign on people's rights and access to Hoar Resource since January 2005.

### **UN ORGANIZATIONS**

- UNDP/MoEF/IUCN: Wetland Component of Sustainable Environment Management Project (SEMP) in 1998-2005.
- UNESCO: Study on the cultural heritage and indigenous knowledge of tribals in Chittagong Hill Tracts' 2001.
- FAO/DoF: Empowerment of Coastal Fishing Communities for Livelihood Security (ECFC) Project in 4 Upazilas of Cox's Bazar district, during 2003-2004.
- UNDP/MoEF: Community Mobilization in Hakuluki Haor (with 2 local partners IDEA and PROCHESTA) under Coastal & Wetland Biodiversity Project of GEF since April 2005.

### **WORLD BANK**

- With ITAD Ltd,UK: Process Monitoring of Social Investment Program Project (SIPP) of SDF since January 2004.
- Netherlands government.
- MES-II Project: "Impact Study on Hilsha in the Mokteria Channel between Hatia and Nijhum Dwip" in 2000.
- Netherlands Embassy-Dhaka: Biodiversity Conservation Planning in the coastal area of Noakhali district in 1998-1999.
- IUCN-Netherlands: Bio-physical and Socio-economic characterization of Hakaluki Haor in 2001-2002.
- WARPO/ICZMP: Participatory District Development Plan in two Coastal districts with CEGIS in 2005.

### **SDC-SWISS DEVELOPMENT CORPORATION**

- Relief Operation in Sunamgonj district during flood-2004.
- Derai Small Embankment Project in 2005.
- Implementing LEAF (Livelihood, Empowerment and Agro-Forestry) Project in Jamalgonj, Sunamgonj since March 2005 with Inter Cooperation.

- FRRAS (Flood Risk Reduction Activities in Sunamganj) with CARE Bangladesh.

### **ORiental bird Club, UK**

- Pallas's Fish Eagle conservation planning and nesting tower building in Jamalgonj upazila in 2001-2002 and 2003-2004.

### **Cairn Energy PLC and its JV partner Halliburton Inc**

- Implementing Sea Turtle Conservation activities in the southeastern coastal areas of Bangladesh during 2001 to date.

### **Projects**

During its sixteen-year lifespan, CNRS has worked on many projects with the support of donor, governmental and non-governmental agencies. The list below shows our current ongoing projects. for a list of our previously implemented projects. Click on the name of each project for a summary.

#### **Ongoing Projects**

- Management of Aquatic Ecosystems through Community Husbandry (MACH) follow-up
- Process monitoring of the Social Investment Program Project (SIPP)
- Livelihood Recovery project
- Environmental Governance project
- Sanitation, Hygiene, Education, Water supply in Bangladesh (SHEWAB)
- Disaster Assistance Response Team (DART)
- SHARIQUE – Local Governance project
- Flood Risk Reduction Activities of Sunamganj (FRRAS)
- SHAOUHARDO program
- Coastal & Wetland Biodiversity Management (CWBMP)
- Livelihood, Empowerment and Agro-forestry (LEAF)
- Haor Unnoyon Nagorik Oykka (HUNO)
- Sea Turtle Conservation and Community Environmental Awareness
- Livelihood Right of Fishers
- Jatka Fishers Income Generation Program
- Adaptive Learning Network for the wetland-based Community Based Organizations (CBOs)
- Community Based Management of Tanguar Haor Program
- Building Adaptive Capacity to address climate change risks
- Local Disaster Risk Reduction Fund (LDRRF)
- Community Based Fisheries Management 2 (CBFM2) follow-up

- Development of Advocacy Strategy for Disaster Management in Bangladesh

### Previous Projects

- Support to Restoration of Fisheries Activities in two Cyclone Sidr Affected Districts
- Support to develop National Climate Change Strategy and Action Plans
- Management of Aquatic Ecosystem through Community Husbandry (MACH)
- Process Monitoring of Social Investment Program Project (SIPP)
- Natural Resource System Programme (NRSP): Better options for Integrated Floodplain Management (IFM)
- Sustainable Environment Management Program (SEMP-2.2.1/A)
- Community Based Wetland Management (CBWM)
- Opinion Survey: Fish Pass and Fish Friendly Structures
- Environmental Impact Monitoring of Rural Road Development
- Community Consensus on Sustainable Wetland Resources Management
- Conservation of Wetlands and Biodiversity through Generation of Environmental Awareness
- Land Water Interface (LWI)
- Baseline Socio-economic and flood vulnerability Survey
- Community-based Fisheries Management and Habitat Restoration
- Fish Biodiversity Study (CNRS, 2012).
- Cyclone Affected Aquaculture Rehabilitation Project (CAARP): Environmental Management of Coastal Aquaculture training
- Adaptive farming in Haor area to reduce climate change impacts
- Community Risk Assessment (CRA)
- Empowerment Coastal Fishing Communities (ECFC)
- Community Based Fisheries Management Phase-2 (CBFM-2)
- Conservation planning of Pallas's Fish Eagle
- PAPD on Fish Pass and Fish Friendly Structures management
- Learning and communication materials on Consensus Building for Management of Common Property Resources (CPRs)
- Fishermen Community Survey
- Marine Resource and Hilsha Spawning Impact Assessment
- Participatory Biodiversity Conservation Planning in the South-central Coastal Area of Bangladesh
- Seasonal Surveys on socioeconomic, livelihood and flood vulnerability
- Resource Inventory
- Environmental Monitoring Design

### ❖ Gono Unnayan Kandro (GUK)

GUK started its endeavors back in 1985 through organizing for the disadvantaged poor women and men of the remote village of Radhakrishnapur of Boali Union of Sadar Upazila in Gaibandha District. At that time the total area of the greater Rangpur District was one of the most backward places of the country. As a part of that, Gaibandha District was out of focus from any mainstream development initiative.

More than 25% of the area of Gaibandha District is the islands of the rivers Tista, Brahmaputra and Jamuna. Including these islands, about 50% of the area of the District gets flooded almost every year. People of the area have to lead their life by struggling against flood and river bank erosion. Drought and severe cold spells frequently make their life more miserable. The economy of the area is completely dependent on agriculture which cannot provide working opportunities for the large number of landless day laborers round the year. As a result, the wages of day laborers are a lot less here than in other places in Bangladesh. In the 1980's when the average daily wage of a laborer was BDT 25/day in Bangladesh, day laborers of Gaibandha district were getting only BDT 10 to 15/day. The work of women did not have any economic value at that time. During the lean period of work (September – November), when there were almost no opportunities to work, poor and extremely poor people did not have any other option than to sell their labor in advance. Many adolescent boys and men had to go to other places of the country in search of work leaving the women and children of their families behind in great uncertainty. They had to survive by eating unconventional foods e.g. wild vegetables, *kaun*, *cheena* etc. or they starved.

The social status of women was quite grave at that time. Although they had to work day and night to take care of the children and does other homestead work, they did not have any recognition. They had very limited health support and any sort of rights awareness was just unimaginable for them. Different types of superstitions, religious fanaticism and backward social dogmas had dominated the life of women completely.

To bring about a change in this situation, a concerted effort was needed, and GUK evolved to help meet this need. At the beginning, organizers and staff of the organization mostly worked as volunteers. Through the continuous and sincere efforts of last two decades, it has been possible for GUK to achieve significant success particularly in the strengthening of the leadership qualities of the extremely poor, the empowerment of women, ensuring employment and the livelihood of the poor and extremely poor, disaster management, health and sanitation, access to local resources, primary education and mass awareness. Efforts of GUK had been successful in creating multiplier effects on the endeavors of other development agencies in (of) the area. As a result, overall poverty in the area reduced considerably, which is reflected in various appraisals and studies.

However, according to a study by the UN, the number of people living on less than USD 1/day is supposed to be half by the year 2015. Bangladesh is far away from this target and about 40% of

people of the working area of GUK earn less than USD 1/day. It is evident that there is still a long way to go to ensure a dignified and secured life of the poor and extremely poor men, women and children. Considering this, GUK continues its struggle. Experience of the last 26 years, hardworking employees, support of the common people and the cooperation of donor agencies and the local administration have helped GUK in this struggle. Through analyzing the future challenges as well as the strength of the organization in 2007, the working area of the organization expanded in the Rangpur, Kurigram, Lalmonirhat, and Nilphamary districts. At present GUK is working with more than 120,000 families in 28 Upazilas of 5 Districts.

### **GUK Main Campus**

The head office of GUK is situated at Nashratpur village beside the Shaghata-Gaibandha Road, 4 kilometers to the south of Gaibandha district town. It is surrounded by natural beauty in a rural environment free from the clamor and bustle of town life. The campus is well decorated with modern facilities. There are modern training venues, accommodation facilities, a car parking zone, modern residential facilities with accommodation and catering facilities, an IT center, WiFi, a nursery and a warehouse. There is also a 7 acre farm next door (GUK, 2012).

### **❖ RDRS Bangladesh**

Established in 1972 to assist with relief and rehabilitation of greater Rangpur-Dinajpur immediately following the War of Independence, the RDRS programme evolved into a sectoral then comprehensive effort. Formerly the Bangladesh field programme of the Geneva-based Lutheran World Service, RDRS became an autonomous national NGO in 1997. RDRS however maintains strong international connections with LWF (as an Associate Programme); with ACT Alliance; with its core partner agencies mainly in Europe, North America and Japan; and with regional networks such as AZEECON, SAGA and others.

### **Origins of RDRS**



RDRS came into being at the time of Bangladesh's War of Independence, in 1971. Set up by the Lutheran World Federation (LWF) to help refugees fleeing conflict across the border, it returned with them after liberation to carry out much-needed rehabilitation in the devastated and long-neglected northwest – greater Rangpur - Dinajpur Districts.

In 1976, a sectoral development programme was launched to assist the poorest in agriculture, community development, health and women's economic activities. Construction of roads, bridges, markets and schools continued.

During these years, RDRS was the leading non-governmental agency in the northwest. It is also credited with introducing many major innovations: the treadle pump (its most famous invention, allowing crops to be grown in winter); wheat production and other crop diversification; vegetable gardens; and, women's advancement, not least the picture of women on bicycles.

By the late 1980s, an integrated Comprehensive programme superseded its sectoral work, focused on conscientisation and group organization of the poor, emphasizing social, educational and economic elements. Physical infrastructure development continued under the Rural Works Project.

Since then, RDRS successes have included the 'greening the north' through its roadside and homestead tree plantation programme; improving life on the chars (river islands on the Brahmaputra); raising awareness of women's rights; promoting savings, credit and skills training to improve the livelihoods of the poor and, the emergence of Union Federations - self-managed people's organisations of the rural poor.

The RDRS programme continues to evolve and innovate. Current realities mean the programme now comprises a range of various projects and financing, large and small, which all contribute to a common objective.

**Figure 2.4.6: RDRS Working Areas**



## **The RDRS Working Area**

RDRS is unusual in maintaining a concentrated geographic programme, focusing on 11 districts and 60 Upazilas (sub-districts) mainly in deprived northern Bangladesh and especially Rangpur Division, far from the overcentralized economic and political powerbase of Dhaka, Chittagong, even Rajshahi. In very recent years, the programme has expanded to a few north and south-eastern regions.

Once the regions of Rangpur and Dinajpur were considered among remotest in the country, and their people among the poorest and least developed. But the years since Independence in 1971 have seen great changes in both physical and the social landscapes. The opening of the Jamuna Bridge in 1998 was a significant step forward in linking the northwest to the rest of the country.

This corner of Bangladesh remains one of its most vulnerable, with regular flooding and riverbank erosion of the Brahmaputra and other rivers dominating life, particularly in the east of the region. The climate is colder and drier than the rest of the country, also causing problems for the poor, and drought in the west.

RDRS working area now covers 16 districts – Panchagarh, Thakurgaon, Dinajpur, Rangpur, Nilphamari, Lalmonirhat, Kurigram, Gaibandha, Jamalpur, Rajshahi, Chapai Nawabganj, Natore, Pabna, Moulvibazar, Habiganj and Chittagong. The Central Coordination Office of RDRS is situated in Rangpur, while Head Office in Dhaka.

## **The Development Philosophy**

RDRS presently works with the rural poor: the landless and marginal farmers. Its development aim is to achieve sustainable increases in their living standards. With this aim, RDRS enables those who participate in its programme to gain the necessary skills, understanding, confidence, institutions and services; and ensure that the rural communities have the necessary economic, social and environmental resources.

## **RDRS' Development Programme**

RDRS reaches some over million rural dwellers through its various development interventions.

For its first 2-3 decades, RDRS was virtually the only NGO in the region, but today there are many other actors – large and small – promoting 'development' particularly micro-credit. The RDRS programme includes a range of approaches including direct service delivery (in fields such as microfinance and community health), indirect implementation (working with grassroots CBO partners) and rights-based empowerment and advocacy.

The RDRS programme continues to demonstrate innovation and dynamism. In 2011, practical measures to combat climate change, the use of community radio and popular drama, mobilisation



of local volunteers through federations, women's refuges and rehabilitation are among the new areas of work.

The RDRS programme operates through four main interventions:

- Civil empowerment
- Quality of life (health, education)
- Food security, environment and disaster risk reduction
- Economic empowerment



RDRS maintains an innovative programme - new approaches are applied to food security, capacity-building, practical adaptation to climate change, disaster risk reduction, women's rights, education and microfinance. RDRS seeks to operate at-scale to exert impact - its programme covers at least 0.5 million annually - and to influence duty-bearers to fulfil their responsibilities. RDRS launched its new Strategy 2011-2016.

**Civil Empowerment and Rights:** Over 360 Federations (CBOs) have become an effective local platform mobilising their marginalised membership as a positive force for empowerment. The RDRS women's rights programme seeks to reduce discrimination and gender-based violence in its working area.

**Health:** RDRS provides awareness and education on basic health issues as sanitation, nutrition, immunization. Its Community Health programme serves over 120,000 per year - mothers-and-children, TB and leprosy, eye care, and STDs.

**Food, Livelihoods & Disasters:** RDRS provides livelihood skills and opportunities through partnership approaches. Risk-reduction, preparedness and sustainable.

**Microfinance:** RDRS extends critical microfinance services – savings, loans and insurance - to over 350,000 households across its working area as a key instrument in poverty alleviation.

Since so many of the rural poor are vulnerable to natural disaster, disaster preparedness and response remain important elements of the RDRS programme. When disaster strikes, the entire RDRS programme, if necessary, can be mobilised for relief and rehabilitation (RDRS Bangladesh, 2012).

❖ **CCDB (Christian Commission for Development in Bangladesh)**

**CCDB** was formed in 1973, as a national level voluntary organization, to complete the relief and rehabilitation work initiated in 1972, by Bangladesh Ecumenical Relief and Rehabilitation Services (BERRS), for responding to the needs of the affected people during the war of independence in 1971 and to undertake development interventions.

Until 1975 CCDB mainly involved in massive relief and rehabilitation works that helped the war-ravaged people to a great extent in returning to a normal life. After that period, CCDB has increasingly emphasized in community and human development in the rural areas of Bangladesh. Huge investment was made on human resource development, but results were not achieved to the extent as expected.

During the late 1980's CCDB prepared first five-year plan and presented to the donors consortium. Main emphasis was given to unveil the human potentials through formal and non formal education. At the same time CCDB started focusing on people's participatory process to address the poverty.

Sustainable development is not possible without putting the people at the center of development, CCDB extensively practiced people's participatory process since 1980. Some changes both at program and management level and many of the responsibilities were transferred to the People's institutions (PI).

Since 1996, CCDB again brought some changes in programs. It introduced People's Managed Savings and Credit Program (PMSC), to optimize the benefit of the poor people. In addition Community Health Program and Community Based Disaster Management were also incorporated as major development initiatives.

Christian Commission for Development in Bangladesh (CCDB) as an organization went through a number of change process in development phases, for responding to the emerging issues and in search for better alternatives, for meeting the needs of the poor.

CCDB has been a learning organization, focusing on people's needs and aspirations through projects and programs, addressing emergency needs, through relief, rehabilitation and reconstruction followed by development programs, focusing on human resource development toward self reliance, collective growth and distributive justice for the promotion of good governance and peace through education, health, income generation through community managed organizations.

People have been the centre of all projects and programs initiatives taken. Their active participation has been the fundamental principle, where value based concepts, processes and practices are being emphasized.

New strategic initiative of CCDB has been to integrate several projects and programs, for a comprehensive approach to poverty reduction in locations where it is operating.

In the integration process several project like Human and Organizational Potential Enhancement Program, Participatory Rural Development Program, Ethnic Community Development Program, Women Local Organization Development Program, Traditional Birth Attendants' Skill Development Program, Community Based Disaster Preparedness Program, Community Based HIV/AIDS Prevention, Care and Advocacy Program has been merged, so that an holistic approach to poverty reduction can be integrated, to address the multi dimensions of poverty(CCDB, 2012).

#### ❖ **Rahim Afroz**

A man of strict religious values, yet a believer in progressive dynamism, and a dreamer who thought nothing is impossible – Late A C Abdur Rahim overcame numerous challenges and obstacles to become one of the most accomplished entrepreneurs of this country. Born on the 20th of January 1915, he lost both his parents by the time he was seven years of age. Deprived of formal schooling and a typically comfortable childhood, he grew up as a man with strong determination, hardworking diligence, and humane compassion.

By the early 1940s, Mr. Rahim started small scale commercial trading on his own. He moved to Chittagong in 1947 and started afresh with very little capital in hand, but with a whole world of courage and faith. In 1950, he established the small trading concern dealing in various items. This proprietary business was formally incorporated on April 15, 1954 as Rahimafrooz & Co. Till date, Rahimafrooz Group commemorates this as its “Foundation Day”.

The childhood hardship and the struggle in his young years only made Mr. Rahim a strong individual, a faithful human being, and a leader full of compassion and humanity. He was a caring father and an affectionate person throughout his life. Whoever, in his lifetime, came in touch with Mr. Rahim, fondly remembers him as a man of tremendous humility, dignity, and trustworthiness. His passion for continuously improving himself and his religious and ethical righteousness, and his dedication to please his customers – are still prevalent in today’s Rahimafrooz culture - shaping the Group’s present and its future.

Today’s Rahimafrooz is a dream that Mr. A C Abdur Rahim turned into reality. The business growth, the social commitment, and the great diversity in today’s Rahimafrooz are the outcome of one lifetime of hard work and compassion from Mr. Rahim. He breathed his last on March 14,

1982 in London. But his work and his virtue have kept him alive forever. May Allah grant him with eternal peace.



Over the decades, Rahimafrooz has grown in size, scale, and diversity. The Group today has Eight Operating Companies (SBUs), a few other business ventures, and a not for profit social enterprise. As of 2013, the Group currently employs more than three thousand people directly and a further twenty thousand indirectly as suppliers contractors, dealers and retailers. Rahimafrooz operates in four broad segments – Storage Power, Automotive & Electronics, Energy and Retail.

We have strengthened our market leadership at home while reaching out to international markets. Ranging from automotive after market products, energy and power solutions, to a world class retail chain – the team at Rahimafrooz is committed to ensuring the best in quality standards and living the Group’s five core values – Integrity, Excellence, Customer Delight , Innovation and Inspiring People.

Rahimafrooz has been a partner in the development journey of this nation for more than fifty-five years now. We set ourselves the highest standards in responsible corporate behaviour and our passion for success is aligned with the development of the country. We are committed to playing a leading role in driving growth, prosperity, ethical values and social responsibility. We continue to serve our customers through unparalleled quality excellence and service superiority. Our business success has been complemented by our commitment to the environment, society (Rahim Afroz, 2012).

#### ❖ **UBINIG**

UBINIG is a policy and action research organization in Bangladesh, formed in 1984 by a group of activists to support peoples' movement for social, economic, political and cultural transformation. It started as a study circles searching for alternatives to the mainstream development intervention. The objective was to make policy making oriented to people and the process more transparent and inclusive serving the interest of the majority of the people.

For us the re-search is a form of social activity that we use to achieve collective objective, and not to represent the 'other' as an object of study. We implement our observations, analysis and ideas in various community programmes. We are involved in our communities, in many different ways to transform the present for a positive future. In bangla, such engagement is known as creating conditions for the *samaj* to arrive. The ‘samaj’ literally means a community where every person develops equally and harmoniously with others. In short, our development practice is to resolve the contradiction and anatagonism our communities are facing in a globalised world.

## **Principle**

In simple words, our principle is to celebrate life. Life is beautiful both as nature and as spirit, evolving for millions of years as natural history and continued as the history of human communities culminating to the present point where we have a real possibility to articulate, celebrate and demonstrate the beautiful in us. We believe we can do it.

From the premise of this intense realisation we organise our activities according to the following five principles:

Caste, class, patriarchal, economic, political or cultural hierarchies and oppressions of any forms are not acceptable including politics of identities based on religion, ethnicity, biology, language, culture or others. Nevertheless, diversity within and among communities must be celebrated. We work relentlessly to generate new contexts where hierarchies, inequities and exploitations are impossible and so will be gone the premise for politicisation of difference.

Avoid and reject if necessary, overused and abused terms and discourses that have already been displaced from its intended meaning and has become a political tool for both low intensity operation and violent interventions in our communities, such as ‘development’, ‘growth’, ‘democracy’, ‘socialism’, ‘rights’, ‘gender’, etc., but only with the unshakable commitment to retain the value of the original project they all signify in various ways: celebrating the human spirit of freedom and joyful living. No force on earth could ever overturn this project – we must be the bearer of the torch.

Language and culture is the crucial area of work. Discover the global and the universal in local language, history, culture and various forms and struggles of the peoples and communities and not the other way around; beginning ‘globalization’, a very common practice, marginalises, distorts and undermines the local. Identify the areas of convergence as well as conflicts, antagonism and resistance. Global transformation begins at the level of local ideas and discourses when local communities develop capacity to articulate and reject what they consider wrong and assimilates what they consider positive in their own languages and in their own cultural context – global begins to appear in a community.

Defend and practice a lifestyle consistent with the principle we have adopted collectively but remaining respectful and responsible to others – peoples’ opinions, activities and diverse lifestyles. Never consider at any moment that we have the universal truth for every one to follow, there is nothing of this sort. Nevertheless, there is always something called that task of doing the right thing at the right time.

World is a gift to be cared and preserved and remain ethically committed to defend this value; we do not accept the consumerist illusion that world exists only for human beings, for consumption and destruction. The world is not simply ‘industry’, a means to make money, or

only a source of raw materials. The space, honour and integrity of each and every entity have sanctity and meaning.

### **Work**

Registered in 1984, UBINIG started its Dhaka office and since 1990 has been operating at the community level through *Biddaghors* or (Learning Places) in various districts of Bangladesh. These Biddaghors play very important role for our self-education; they are also powerful community means to undertake community-led research and practical actions.

We live and work with local communities; living, learning and interacting together is our strength; interacting with communities in real life situations and becoming the community is the most valuable empirical and social foundation of our investigation, analysis, knowledge formation and advocacy.

### **Sister organizations**

UBINIG inspired various ecological, social and cultural movements. Some movements have transformed the organisation itself. Movements maintain organic link with UBINIG while operating independently: Nayakrishi Andolon, Nobopran Andolon, Narigrantha Prabartana, Dai Samity, Sramabikash Kendra, Prabartana, Shashya Prabartana are some of the examples.

These organisations grew from UBINIG and eventually became independent with their own management system but guided by the philosophy, principle and objectives of the organization (UBINIG, 2012).

#### **❖ Young Power in Social Action (YPSA)**

The youth community makes up half of the world's population. With a view to create worldwide awareness about this youth community and to ensure youth participation in development programs, the UN General Assembly on 3<sup>rd</sup> November 1978, according to its resolution no. 33/7, declared the years 1981-90 as Youth Decade and 1985 as International Youth Year. Being inspired by spirit of International Youth Year some socially conscious youths of Sitakund Upazilla under Chittagong District of Bangladesh began to motivate and organize the youth community to establish a development organization. In this way on 20<sup>th</sup> May 1985 by active initiation of the socially conscious youth, a social development organization called YPSA began its course of participation in the development process.

### **Vision**

YPSA envisions a society without poverty where everyone's basic needs and rights are ensured.

### **Mission**

YPSA exists to participate with the poor and vulnerable population with all commitment to bring about their own and society's sustainable development ( YPSA, 2013).

### **Donors and Partners**

- Bangladesh Government
- PKSF
- Displacement Solutions
- DFID (BPHC)/PHD
- UNESCO
- ILO
- CARE
- Family Health International-FHI (USAID)
- HIV,AIDS and STD Alliance of Bangladesh (HASAB)
- GFATM
- UNFPA
- VSO
- The Netherlands Embassy
- Action Aid Bangladesh
- CIDA
- JOBS (USAID)
- Manusher Jonno Foundation (MJF)
- Oxfam GB
- BRAC
- PROSHIKA
- Save the Children-USA
- Save the Children- UK
- Save the Children- Australia
- CONCERN UNIVERSAL
- GTZ/GFA
- HOPE'87
- SAP/AED
- Basic Bank
- Sight Saver International (SSI)
- NIPPON foundation, Japan
- DAISY Consortium, Switzerland
- PATH Canada & BATA
- WBB Trust
- Refugee and Migratory Movements Research Unit (RAMRU)

- ECOTA Fair Trade Ltd
- CONCERN
- International Organization for Migration (IMO)
- Bangladesh NGO Foundation
- SONNE International
- Plan Bangladesh
- Friends of YPSA
- Harvard University
- Tobacco Free Kids
- Asian Development Bank ( ADB)
- Arannayk Foundation
- Irish Aid
- Winrock International
- DEG (Deutsche Investitions-Und Entwicklungsgesellschaft mbH of Cologne, Germany)
- SHAPLA NEER
- Handicap International
- Oxfam Novib
- Displacement Solutions
- Training & Assistance for Health & Nutrition (TAHN) Foundation
- The Government of Japan : Grant Assistance for Grass-roots Human Security Projects (GGHSP)
- NASP/World Bank
- HSBC Future First Security Fund
- Every Drop Matters
- Microsoft
- Sarvodaya-Fusion
- BSRM Foundation
- Counterpart International
- LaborVoices
- Prime Minister's Office/A2I
- World Intellectual Property Organisation (WIPO) (YPSA, 2012).

**Projects:**

Climate change adaptation by ensuring water and sanitation facilities in Cyclone shelter

**Project Area:** Climate Change Adaptation.

**Project Funded By:** Every Drop Matters

**Supported by:** UNDP Bangladesh



**Implemented by:** Young Power in Social Action (YPSA).

**Working/Project Area:** 5, 18,39,40,41 No ward of Chittagong City Corporation.

**Project Duration:** 12 Months, 1st February 2013 to 31<sup>st</sup> January 2014.

### **Stakeholders & Beneficiaries**

The main stakeholders of the project is 8,400 children of those schools and 25,000 poor and vulnerable people nearby the shelters from the catchments areas of the 12 vulnerable cyclone shelters. And around 50,000 community people of the project areas will be indirectly benefited from the project.

Background of the project: Due to climate change, Bangladeshis facing sea-level rising and frequent severity of cyclonic flooding. Being a coastal city it's in high risk of climate change effects and natural disasters.

Since 1960, 2000 cyclone shelters were built. But the water and sanitation facilities in these shelters are in poor condition. According the quick assessment conducted in 5, 18, 39, 40 and 41 no wards of Chittagong City Corporation it found that 80% shelter lack safe water, 60% latrines are useless, 60% are vulnerable in climate change events. As a result of it incidence of water borne diseases during and after any climate changes events are increased. Vulnerable groups including children and elderly were most affected by this situation. All the cyclone shelters used as primary schools where 90% children come from poor families. Due to absence of safe water and sanitation facilities, most of the time children effected by water born diseases and they couldn't attend school regularly and the poor families compel to spent money for treatment. There has no separate toilet facilities for women or girls as a result of it they do not want to use the existing facilities and they face urinary diseases.

### **Objectives**

Being a coastal area, Chittagongcity is highly vulnerable in terms of climate change effects. Water and sanitation facilities are in poor condition in cyclone shelters, causes incidence of water borne diseases. Considering the above situation, YPSA wishes to implement a project with the aim to improve quality of life through ensuring water supply and basic sanitation provision in cyclone shelters in targeted areas of Bangladesh's cyclone belt. The Project will strengthen the capacity of school management committee and volunteers to play an active role for ensuring safe water and sanitation in the shelters through community management mechanism. Through raising awareness on the uses of safe drinking water and sanitary latrine will increase which will contribute to reduce health risks and involve people in climate change adaptation mechanism.

### **Major Activities**

1. Installation of 12 safe water points and 12 six chambered sanitary latrines in selected 12 cyclone shelters
2. Organize 6 orientation and workshop to strengthen school management committee (SMC).
3. Develop 12 community volunteers groups in each cyclone shelter as a hands of SMC
4. Ensure gender sensitive sanitation schemes such as separate latrines in 12 cyclone shelters
5. Provide 06 training for School Management committee for planning, implementation.
6. Provide training for SMC and volunteers on safe water and hygienic sanitation context.
7. Develop 05 demonstration centers (Water and Sanitation) in 5 wards as a model
8. Organize court yard sessions for community people
9. Organize community meeting
10. Organize cultural activities
11. Organize school events like parents meeting, awareness sessions for students, teachers meeting, student's camp.
12. Publish and distribute poster, information board and pictorial fact sheet

### **Expected outcome**

1. Safe water and sanitary services are provided in 12 targeted cyclone shelters in coastal belt areas of Chittagong City Corporation
2. Community capacity on construction, operation and management water & sanitation facilities through inclusive and practical community based approaches are developed in 12 cyclone centers
3. Community awareness in 12 cyclone centers are increased to promote responsible water resource management and sanitation hygiene (YPSA, 2012).

### **❖ Nowzuan**

Before a human child takes birth, it has to go through an ordeal of difficult time, within the safe haven of mother's womb, when its hands, legs, eyes, nose, ears and other limbs grow until they give it the shape of a man. And at this crucial stage of embryonic development the child announces its arrival into the world with a shrieking sound of excitement. In the family horoscope though the day of delivery is recorded as the date of birth of a child, i.e. beginning of life; this very beginning has, in fact, an aspect of beginning which determines the future nature and direction of life. Now, looking with bewildering eyes, at NOWZUWAN beaming with youthfulness, we reminisce of the days, past 35 years when NOWZUWAN, yet to be formally recognized, like an unborn child, fired our imagination in building a bright and beautiful future.

Back in the year **1977** a group of young energetic people of Dengapara of Patiya Upazila felt distressed at the backwardness of their birth place in the field of education, culture, literature, sports and many other frontiers of life.

The dream of the youthful boys and their commitment to the humanity saw its fulfillment in the creation of NOWZUWNA on 10<sup>th</sup> July, the same year. Initially, though its activities were confined into sports, culture and literature soon the organizers would come to realize that without taking up income generating programs bringing change in the economic condition of the wretchedly poor people, development in other sectors of society is simply impossible. To give effect to the realization, the committee meeting in its unanimous resolution incorporated economic and social development into its programs. Further, the organization extended its area of operation to include **Chittagong, Cox`sbazar, Ranagmati**, Khagrachari Bandarban & Feni. NOWZUWAN Club that started as a social development organization is now one of the leading NGOs of the country. NOWZUWAN`s being recognized as a first ranking NGO is not accredited to its officers and staffs alone. It`s a pride that must be shared by all our donors,

workers, members, well-wishers, advisers and above all, the country men who are sympathetic to us and to our cause.

As, rivers in its onward march to the sea erodes the bank at some places and deposit mud at other, as life has its up and down, organizational activities also once gain momentum and then degenerates into inaction. NOWZUWAN is no exception to this universal law of nature.

The organization that flowed in full vigor and enthusiasm in 1977, its tide was on ebb in 1988, ten years having passed in between. As the organization began to suffer from inertia much alike the boat grounded in sands, there came up a band of self-determined, fearless people as rescuer of the sinking wreck with **Mohammad Imam Hossain Chowdhury**, an educated, intelligent, honest young man committed to the welfare of man, motherland & society as the leader of the team. Under his able leadership NOWZUWAN, literally means freshly young, showed-up again in full strength and energy.

The year 1990 witnessed a lackadaisical approach on the part of the organizers who once were so active in keeping the wheel of the organization moving. This short living temporary lethargy may be attributed to the college and university going students having to devote themselves in taking preparation for exams. Not much time went wasted and we saw in 1992 the selfsame youths jumping into work with an aim to finish the task left unfinished two years earlier. This time, they taking lessons from practical work experience extended membership to people from all social strata, educated, half-educated, uneducated men and women which gave the movement a new dimension. The new strategy paid its dividends and in a short span of time grass-root people peasantry, labor and marginalized class joined the movement. Truly speaking, NOWZUWAN made a new start from this episode.

Making way through vicissitudes of experience made up of wrong and right, change, amendment, addition NOWZUWAN, in the year 1996, got itself associated with worldwide NGO programs of poverty alleviation, democratization, climate change, environmental movement, protection and preservation of rivers, oceans, hills, forests, air and water. In addition to these NOWZUWAN takes delight in participating in the movement for empowerment of women, education for all, information rights of citizens etc. With the increase in variety and volume of works along with the expansion of operational area, NOWZUWAN establishes relation with mother organizations. In continuance of this relation, MS. Lintey, an International volunteer, Holland persuaded by YPSA, BWCA, extended economic assistance to our organization. The contribution made by MS. Lintey encouraged and inspired us so much so that we immediately got relieved of distress and disappointment taking hold of us so long. It is really the stepping stone on the path to our success. We remember those organizations and great souls with honor and gratitude which and who in our difficult times extended their unbridled help and cooperation to us.

Our words of appreciation will prove unwarranted and incomplete if we do not mention here the name of Mr. Shirajul Islam Chowdhury, Ex-MP from Patiya, but for whose generous help and proper guidance NOWZUWAN would have scarcely survived. . Under lying registration of NOWZUWAN is his power and personality which he exercised in its fullest capacity to the benefit of NOWZUWAN.

In Conclusion, we would like to quote a few words from an immortal poem “we, none of us have come here, to keep ourselves busy with personal gain. All of us are for the good of each and each is for the welfare of all.

### **Meaning of NOWZUWAN**

The meaning of **NOWZUWAN** is Young Hero. It refers young people who bring sustainable change combating injustice and illiteracy by challenging structural underpinning of underdevelopment.

### **Type of Organization**

**NOWZUWAN** is a local, non-political, non-profitable and non-Government Development Organization.

### **Logo Meaning**

**NOWZUWAN** is established with the companionship of inexhaustible strength of youth and heavenly beauty of mind to build a world of peace and tranquility. As each of the petal of the blooming lily represents the fully fledged power and beauty of life, so does the swimming pigeon

with its expanded wings in the background of blue sky speaks highly of the cherished dream of peace.

### **Vision**

Establishing a society based on Justice and opportunities for all.

### **Mission**

Taking initiative in developing underprivileged Children, Adolescents, Women and Poverty stricken people, ensuring participation and leadership of youths and disabled people in all development activities and to give it organizational shape.

### **Major On-Going Program / Project**

#### **Environment**

- Social Forestation
- Save the Halda & Karnafully River
- Disaster Management
- Waste Management.

### **Present Partners & Donors**

**Table: 2.4.5: Present Partners & Donors**

<i><b>FINANCIAL</b></i>	<i><b>Technical</b></i>
1)Palli Karma Sahayak Foundation (PKSF)	1)Environment Department,
2)Lilliane Fonds -Netherlands	2)Concern Universal Bangladesh,
3)Plan international	3) Water Partnership,
4) CSDF/Steps Towards Development	4) BATA,
05) WBB Trust	5) CDD,
06) Humanitarian International Service Group (HISG)	6) NFOWD,
7)Youth Development Department	7) International Association for Special Education (IASE),
8) Family Planning Department	8) Bangladesh Poribesh Andolon (BAPA),
9) Social Welfare Department	9) BSAF/SANB,
10) BASIC Bank Ltd	10) CAMPE,11) Forest Department,
11) South East Bank Ltd	
12) Pubali Bank Ltd.	12) United Nation Industrial Development Organization (UNIDO),
13) Mercantile Bank Ltd.	13) Narcotics Control Department,
14) One Bank Ltd.	14) Health Department,
15) General member fee/Local Contributions and income generating/enterprise	15) AYAD,
16)Allama Fazlullah Foundation	16) BWCA,
	17) CRP,

18) The Royal Danish Embassy, Denmark	18) UCBL Bank, 18) City Bank Ltd,
19) Rural Development Academy	19) Rupali Bank Limited,
20) Shinya	20) Agrani Bank Ltd
	21) Uttara Bank Ltd
	22) Janata Bank Limited and
	23) Shahjalal Islami Bank Ltd.
	24) Patiya Municipality

(Nowzuan, 2012).

## Climate Change and Disaster Management

### Working Area

Patiya Upazilla, Anwara Upazilla and Chittagong City Corporation

### Aim

- # To create awareness in the society about the importance to protect environment & the effect of climate change
- # To create awareness and prepare people about different natural disasters and management.

### Objective

- # To create awareness and conscious in people minds about the climate change.
- # Ensuring the proper action on Climate Change & different natural disasters
- # To provide in formations & ideas about proper disaster management.
- # Reduce risk at natural disaster

### Duration

From 1991- on going

### Target Group

People of Costal area, Hills, Earth Quack relevant Area, Rural & Urban Slum & residences, Flood Relevant area. Special emphases to PWDS, Women & Children and Old age people

### Activities

- # Social Awareness programs
- # Costal & Social forestation
- # Hill & Land Reform.
- # Pure water & sanitation support
- # Action to reduce air pollution and river safety
- # Orientation in Schools, Colleges and CBOs/Clubs
- # Meeting, Seminar, Workshop Arrangement
- # Local & Government level Advocacy & Networking on Disaster Management and Information system.
- # Technical & Financial Support on disaster
- # Relief and equipment support to the affected area
- # IGA loan support.

# Management and Resource development.

**No. of total Beneficiary**

About 14,800

**Highlight of Actions**

# Awareness raised in target area

# All leaders of the committee given training.

# Orientations have done with religious leaders (Imam, Monk and Ancestor) and in 15 school, college, madrasa students.

# Relief and equipment support in Cyclones and flood affected area.

# Forestation in hills, river-side and coastal areas.

# NOWZUWAN is the only NGO representative in Chittagong Hill a7 Land slide Disaster Management Group

**Technical financial supports**

# NOWZUWAN general fund

# World Vision

# Food for Hunger International (FHI)

# Forest Department (Nowzuan, 2012).

❖ **Community Development Centre (CODEC)**

Since its establishment in 1985 as a people centered development organization, CODEC has been growing and evolving into efficient and effective non-governmental development organization in the coastal area of Bangladesh.

CODEC has been pursuing its development as community efforts through getting involve and fully participate in the social, economic, cultural and environmental aspects of their development. CODEC learned through experience that poverty in coastal area is a composite syndrome of deprivation, discrimination, inequality, violence and non-accessibility to information, services and resources. Hence, its eradication requires a holistic development approach. As a community focused organization, CODEC realizes development is a complex process requiring a strong dedication to involve, learning, and being professionally responsive to the needs of disadvantaged men, women, children and adolescents.

**Vision:** A prosperous, empowered and healthy coastal communities with equal rights, dignity and social justice irrespective of caste, creed and gender.

**Mission:** CODEC is committed to;

- I. Empower the disadvantaged coastal communities by undertaking appropriate socio-economic development interventions such as community institution building and

leadership development, micro-finance programme, quality education, health awareness, environmental promotion, climate response activities and upliftment of social justice.

- II. Initiate and implement organization development and human resource development to enhance and develop organizational, technical and management skills of both CODEC staff members and community leaders.
- III. Undertake innovative activities as per situational needs and national priorities for the interest of the coastal communities.

## **Ongoing Project**

### **Environment and Climate Change**

1. Climate Resilient Ecosystem and Livelihood (CREL)
2. Emergency Rehabilitation and Early Recovery Support to Mahasen affected people in Barisal Division

### **Donor**

CODEC is operating its programme supported by Danish International Development Assistance (DANIDA) since the beginning, as such the long lasting collaboration with DANIDA is not only at asset to CODEC, but also allowed CODEC to be established as a strong organizational base for the future.

Apart from DANIDA, currently CODEC is proud to work with:

1. ACDI/VOCA
2. Department for International Development (DFID)
3. European Commission (EC)
4. Feed the Future (FtF)
5. Interchurch Organization for Development Cooperation (ICCO)
6. International Development Enterprises (IDE)
7. International Network of Alternative Financial Institutions (INAFI)
8. Palli Karma Shahayak Foundation (PKSF)
9. Practical Action
10. Production Service Network (PSN)-Sangu Santos Field Limited (SSFL)
11. Save the Children
12. STRØMME Foundation (Norway)
13. The Asia Foundation (TAF)
14. The United Nations Children's Fund (UNICEF)
15. Winrock international
16. WorldFish Center (CODEC, 2012).

### **❖ SHUSHILON**

Shushilan, a Bengali name signifying endeavors for a better future, is a Bangladeshi national non government development organization set up in 1991. The organization came into being in the



face of degradation of socio-ecological resources in the southwest coastal region with specific mission to redress the declining natural resource base, livelihoods and food security of the people. To uphold human rights and gender equity for the socially disadvantaged community with the focus on women is another major concern of Shushilan's development initiatives. Shushilan is a national agro-ecology and right based NGO working in the coastal region for ensuring livelihood security of the resource poor community through promoting sustainable agricultural farming system and environmental health. Wetland resource management with focus on aquaculture is one of the principal components of Shushilan's development initiatives in the region (SHUSHILON, 2012).

### ❖ **Nijera Kori**

During the early period of the Non-Governmental Organizations, the mainstream NGOs in Bangladesh concentrated on rural social mobilization to challenge the power structure which brought a strong backlash from the rural elites particularly during the martial law. This was one of the reasons why there was a general move by the NGOs away from working on social mobilization and towards micro-credit

### **Mission and Objective**

Nijera Kori works with downtrodden people. We continue to use the adjective "downtrodden" with deliberation. Our objectives, broadly speaking, are to come to point in time when we shall cease to use the said word...

### **PARTNERS**

Nijera Kori works hand in hand with a number of partners and people. These are our partners and friends...

- ASIA -- Asia Solidarity against Industrial Aquaculture, Campaign Partner
- Environmental Justice Foundation (EJF) -- Campaign Partner
- FIAN (Food First Information and Action Network) -- Campaign Partner
- ICCO -- Donor
- Evangelischer Entwicklungsdienst (EED) -- Donor
- Christian Aid -- Partner and Donor
- DFID -- Partner and Donor
- Interpares, Canada -- Partner and Donor
- The Swallows -- Partner and Donor
- PCFS-People's Coalition on Food Sovereignty
- APWLD-Asia Pacific Forum on Women, Law and Development
- ARWF-Asian Rural Women Forum
- Panos Institute South Asia
- CHRI-Commonwealth Human Right Initiative

- FNB- Federation of NGOs in Bangladesh
- PAN AP
- CSRL
- ALRD-Association of Land Reform and Development
- SANGAT
- Human Rights Forum
- Alliance on the Enactment and Implementation on RTI (Right to Information) (Nijera Kori, 2012).

#### ❖ **DRIK**

Drik, Bangladesh is a distinctive multimedia organisation that has made challenging social inequality and customer service its central driving force. Over the last two decades Drik has successfully partnered with national and international organisations to conduct several successful programs. Investigative reporting is an essential part of these programs. Credibility of information combined with powerful images presented in these projects have made it possible for Drik to bring out into the open opaque and delicate social issues for public debate and discussion. Thus, inherent in Drik's work is this ability to use the power of the visual medium to educate, inform and draw powerful emotional responses to influence public opinion (DRIK, 2012).

Theme: Climate Change Photo Contest 2008 – Organized by Drik & Ain O Shalish Kendra – Supported by FK Network (Norway) in Bangladesh – I submitted these five images but none of them has been selected even for exhibition (Flicker, 2012).

#### ❖ **Development of Biotechnology & Environmental Conservation Centre (DEBTEC)**

DEBTEC – Development of Biotechnology and Environmental Conservation Centre was founded in 1998 to work exclusively in the field of biotechnology and environment related research work. Today its work has expanded into homestead gardening, environmental conservation, climate change, tissue culture DNA finger printing and promotion of developing medicinal and aromatic plants (DEBTEC, 2012).

### **QUICK FACTS**

- DEBTEC is harnessing research on convention on biological diversity including climate change.
- The organization is a biotechnology and natural resource conservation based organization.
- DEBTEC is a registered non-government organization which consists of dedicated scientists committed to a mission of harnessing science and technology for poverty

alleviation and environmentally sustainable social and economic development in Bangladesh.

- DEBTEC was founded in 1998 with a 7 member executive committee, a 5 member advisory council and a 5 member research council.

The organization is registered with NGO Affairs Bureau of the Government of Bangladesh and Department of Social Welfare and is also a member of the International Union for Conservation of Nature (IUCN).

### **Vision**

Biological resource converted into economic wealth through sustainable utilization

### **Mission**

DEBTEC is harnessing research on CBD including climate change. DEBTEC is a biotechnology and natural resource conservation based organization. DEBTEC is committed to do research on biotechnology, tissue culture, medicinal & aromatic plants, and molecular genetics. DEBTEC is committed to develop awareness on biotechnology and natural resource conservation at grass roots up to the policy making level.

### **Goals**

- Focused on sustainable utilization of bio resources;
- How these resources can contribute to the economy;
- Management and value addition to biological resources;
- Promote awareness, communication and collaboration in the field of bio-technology;
- Skill development for those working in the field of biological resources;
- Documentation of traditional knowledge for future generations.

### **Objectives**

- To establish well equipped environment friendly biotechnology research centers.
- To protect biodiversity for ensuring sustainable development.
- To develop awareness on conservation and natural resource management.
- To mobilize communities for implementing research at grass root level up to the policy making level.
- To assist in commercialization of research findings.
- To provide support for ensuring innovative homegrown technology.
- To provide information knowledge and skills to women and unemployed youth on bio-resources management
- To provide income generation options to women and youth through bio-technological intervention.

### **Values**

DEBTEC has been honoring the following issues as its values to endorse the organization at its management and implementation level:

- Compassion
- Professionalism
- Partnership
- Accountability
- Ethics
- Time bound approach
- Pro people approach

## **Projects**

Understanding the Climate Change in Bangladesh and its Impact on Person with Disabilities (PWDs) (DEBTEC, 2012).

### **❖ Disaster Forum**

Disaster Forum (DF) is a Dhaka based National Disaster Preparedness Network of seventy humanitarian and development agencies, research institutions, government departments and independent activists who are working on various disaster and environmental issues with special focus on preparedness. Since 1994, Forum is working for ensuring the accountability of the humanitarian and development agencies and to promote the rights of all vulnerable people. Promoting alternative perspective on Disaster Mitigation against the prevalent dominant perspective is the prime objective of Disaster Forum (Disaster Forum, 2012).

### **❖ Alternative Movement for Resources and Freedom (AMRF)**

Alternative Movement for Resources and Freedom Society (AMRF Society) was established in 1999 by a group of various local and expatriate development professionals, activists, social scientists and technical experts with an aim to contribute to building a society based on human equality, where no discrimination originating from inherited/acquired traits would prevail. They believed there should be equal opportunities in personal, social, political and economic spheres where freedom of human advancement and enrichment can be earned easily. The organization is registered under Societies Act – XXI of 1860 of the People's Republic of Bangladesh and the registration no. is S-3106(71)/2003.

AMRF Society works on labour issues prevailing in Bangladesh and its focus is the implementation of labour law in the industrial sectors of the country. It performs as a watch dog in this area and investigates the violations of labour law made by the government with an aim to assist the government bodies to strengthen and justify the implementation of its rules and regulations. We also analyze the labour situations of the country and assist different bodies who

work in the same field by sharing knowledge and thoughts. We are affiliated with many national and international labour NGOs, labour unions, owner associations, universities and other organizations working with labour and human rights. We strongly believe that positive social change is only possible through a better coordination among fragmented efforts made by individual bodies/organizations.

Our mission is to achieve a fair balance of trade gains among the stakeholders of industrial production systems. We honour the investors (the owners) who partake in risks with their money in the production processes; we honour the management bodies who work hard to manage these investments in a fruitful means; we honour the middle parties/bodies who engage themselves as the helping hands to make the bridge between different segments of the total chain of production and distribution channels; and we humbly admire the workers whose input into the production systems is the key factor for any economy. The contributions of these entire stakeholders combine into a successful portfolio for economic growth of a country. For a healthy economy, it is essential, therefore, to have smooth, empathetic and optimistic relationships among all these stakeholders. The greed of any person within the system can make a great imbalance in the system. AMRF Society focuses their efforts to measure the fairness and finds out the imbalances if any. AMRF Society also searches out the ways to minimize these injustices with an aim to establish a fair trade justice.

AMRF Society is continually conducting research on these issues. We know that the process is not as easy as it seems to be but we believe that we can contribute any small amount, to the great movement of achieving humanities, especially the human rights of the poor workers.

AMRF Society is continuously searching options to improve the quality of life of the ethnic groups of the country through its continuous researches and actions. It is obvious that AMRF has many constraints in getting through all the ethnic issues, the organization is in a process of building a strong network of human-right activists and thus, contributing in raising urges for actions to improve the life of the ethnic people. In the past AMRF took many initiatives to build strong social units among the indigenous population in the CHT and north-western regions through its local institution building water project and now it is providing vital supports to those institution and motivating them to remain active. AMRF alone with its partners also have conducted many researches on the livelihood, societal, economic aspects of the indigenous communities.

AMRF Society is conducting researches on how these powerless communities can establish their rights on safe water. AMRF Society has found some innovative and strategic solutions from its research and is now implementing an action research based on its research outcomes. The project is funded by ICCO and Christian Aid and being implemented in 5 different geographical areas in Bangladesh by 5 partner NGOs. The project is coordinated by AMRF Society and one of its allies, BCAS (Bangladesh Centre for Advanced Studies).

AMRF Society is also concerned about the environmental issues. AMRF believes that environment affects the lives of poor people significantly. Environmental degradation makes the situation worse for the poor to earn their livelihoods, maintain their health, proper education and other aspects of their lives; and destroy the future opportunities as well. AMRF Society works on awareness building, issues regarding environment protection by mass participation, combining the voice of the people against pollutions, implementation of environmental rights and protection of the disadvantaged communities through fighting against the environmental degradation. To achieve this target, AMRF Society combines environmental issues in its every activity.

Climate change has drawn more attention of researchers, policy makers, socialists, politicians, government and mass population in recent years than ever before. Global warming due to increased level of carbon-dioxide and other green-house gases emission results the continual increase of sea-level due to the melting of ice-caps. This increase in sea-level will directly have an impact on the tidal regions like Bangladesh and the people of these areas will face new challenges in their lives. At the same time, the chronological change in seasons makes the human knowledge invalid which they had gathered from thousands of years of experience since the ancient history of human civilization. This situation will also affect the agriculture in the near future which will add another dimension of difficulties for human survival.

Global warming also increases the number of occurrences of natural disasters which also affects countries like Bangladesh. Before adapting the threats of desertification of North Bengal, we are just behind the line of entering into a new situation. Before we could recover from the damage the cyclone 'SIDR' had made, we experienced another devastating tidal upsurge 'AILA'. Scientists are now anticipating more of them to come in every year.

AMRF Society contributes some little effort to 'the green earth' concept through its activities keeping its focus on disadvantaged poor communities of the country. Climate change has devastating negative impacts on poor communities. Climate change creates immense pressure on their livelihood and in essence this results in migration. Changes in profession, losing hereditary professional competencies, changed lifestyle and cultural changes make their lives more and more difficult.

From the perspective of Bangladesh, in reality we can contribute very little to make the world a green globe because of the reality that major harmful events for this climate change are occurring in the developed world. For this reason, AMRF Society concentrates its efforts more into the social issues of managing of changes which result from climate change. One of its major focuses is on the migration of the poor to the cities creating social imbalances in different dimensions. The migrated people enter into the direct labour forces of big and medium cities and are being exploited by the industry holders which again results a poor standard of living.

AMRF Society now is concentrating on these issues and trying to build a new research unit with the aim to seek a way out for these communities and conclude probable solutions of their problems.

AMRF Society aims to contribute in building a just society based on human equality. Such a society would eliminate discrimination originating from inherited / acquired traits or lack of those. It will unfold opportunities in personal, social, political and economic spheres without exception and remove impediments to freedom of human advancement and enrichment. Society will be the space for interplay of people among themselves and with nature, accommodating freedom of everything without infringing that of any. Trends within and across societies will act, react and interact on the principles of protection of diversity and appreciation of differences denouncing hegemony. Essentially, political concerns must precede and guide decisions in other aspects of life for example, economic decisions (AMRF, 2012).

### **Our Partners and Network**

- War On Want
- Clean Clothes Campaign
- WWW (Working Women Worldwide)
- FWF (Fair Wear Foundation)
- Technical University of Delft
- Fem Net (Feminist's Network)

#### **❖ NCC,B (Network on Climate change BANGLADESH )**

The global warming resulting from excessive Greenhouse gas emissions is adversely changing the existing climate pattern of Bangladesh. The climate change has demonstrated effecting Bangladesh with the decreasing duration of winter with intense and lethal cold spells. During the summer, the temperature has risen and the intensity of heat waves is on the rise. The rainfall pattern of the country changed abruptly with higher degree of rainfall resulting in frequent longer lasting floods. On the other hand very little rainfall has been experienced during winter preceding, increasing risk of drought during months of March-April. With the rising sea level, vast low lying areas on the coast are likely to be inundated. Sea level rise will also bring additional challenge of higher quantity of saline water intrusion, increased frequency and intensity of cyclone storms, as well as increased storm surge height. Considering all these together, it can clearly be assumed that Bangladesh is going to become a land of natural hazard as an impact of climate change. Climate change already has affected the country, and will intensify in future in two ways. Firstly, global warming lead to change in precipitation and weather pattern leading agriculture and food security to massive threat. And secondly, increased number of climate induced disasters in the form of extreme hydro-meteorological events such as flood, drought, salinity ingress, river bank erosion and tidal surge leading to damage of

infrastructure, crop production, natural resources, livelihoods and consequently the national economy.

In this perspective, it becomes imperative to build up general awareness of the people on the vulnerabilities induced by climate change and initiative at field level to popularize strategies for adaptation. At the same time, it is also necessary to sensitize the concerned government department's to undertake mitigation initiatives on a national and international scale.

From 2005 to 2011, NCC,B has completed its three phases primarily based on Climate Adaptation in the field level, and based on both experiences of adaptation and advocacy, the network has designed the project, '*Advocacy to enhance justice for climate vulnerable people in Bangladesh*' that is presently ongoing.

It has been observed that in recent days, climate change has become a priority area for the Government and policy makers. In addition to the government agencies and NGOs, bi-lateral as well as multi-lateral development partners are giving special priority on the issue.

In recent years the Government has made remarkable progress in terms of policy, strategy and institutional arrangement. One of the most significant achievement of the present Government is to develop the Climate Change Strategy and Action Plan of Bangladesh (BCCSAP, 2009), as a part of the overall development strategy of the country. Now BCCSAP has become the principal policy paper of Bangladesh on climate change adaptation and mitigation. But the process of project selection and fund allocation generated a huge questions and accused for corruption. In this circumstance, advocacy to enhance good governance in climate change sector has become more important than ever. Realizing the situation NCC,B has designed it's new phase emphasizing on advocacy on climate change issue (NCC,B, 2012).

### **Ongoing project**

**Name of the project:** Advocacy to Enhance Justice for the Climate Vulnerable People in Bangladesh.

**Financial cooperation by:** Bread for the World (BftW), Germany.

**Overall Goal:** The interests, demands and needs of the most vulnerable people of Bangladesh are recognized and considered in national climate change policy which is pro-poor and vulnerability oriented.

### **Objectives of the project:**

- NCCB successfully implements its campaign to enhance justice for the climate vulnerable people in Bangladesh
- The affected and most vulnerable people in the project areas of the member organizations are mobilized and able to claim their rights



- Network members have enhanced evidence-based knowledge and practice on cc and adaptation
- The institutional set-up of the network is finalized and capacities are further enhanced

### **About the ongoing project**

Based on its previous experiences the network has taken initiative to review the Bangladesh Climate Change Strategy and Action Plan (BCCSAP), Financing on adaptation measures, National policy on disaster and Sixth Five Years Plan of Bangladesh under the ongoing project of the network named “*Advocacy to enhance justice for climate vulnerable people in Bangladesh*”. As a part of executing the objectives, NCC,B has taken initiatives to form a National Climate Advocacy forum with to boost up civil society voice in the national level. In this connection the NCC,B has already formed eleven District Climate Advocacy Forums(DCAF) with the help of respective partner organizations on their working districts(NCC,B, 2012).

### **❖ Christian Aid in Bangladesh**

Climate change and Bangladesh have been increasingly associated in recent years. In one of the world’s most vulnerable countries to climate change, we help to build community resilience to floods and cyclones.

**Climate change:** the country’s **sea levels** are rising much faster than the global average. Salty water is salinating fresh water near the coast, and **flooding** has become more frequent in the last 50 years.

**Women:** traditionally excluded from making decisions within the family and in a political sphere, **women’s empowerment** is key to development in Bangladesh. In recent years positive changes are taking place, for example, now in much of the country girls’ secondary school attendance exceeds that of boys.

**Our work:** Christian Aid started working in Bangladesh in 1972, and we are currently working through partners in 35 districts.

Our partners range from national level policy and advocacy organizations that focus on **climate change** to partners that work in the field dealing with the issue of **secure livelihoods** and **gender**.

Our main focus areas are climate change, preparing people for emergencies and helping people achieve sustainable livelihoods. Going forward we aim to work alongside local and national government on all of these issues.

**Christian Aid in Bangladesh has wide experience of projects funded by institutional and other key donors.**

We have a programmatic, **results-based** approach to participation, empowerment and policy advocacy at local, national and global level, working with our partners and through alliances, networks and consortiums (Christian Aid in Bangladesh, 2012).

❖ **ARCAB (Action Research for Community Adaptation in Bangladesh)**

ARCAB is a long-term programme of action research focused on Community Based Adaptation to Climate Change. As a new and rapidly expanding field, there is still uncertainty about what effective Community Based Adaptation (CBA) looks like and how it can best be supported. The purpose of ARCAB is to build a knowledge base around CBA action and knowledge transfer to enhance the capacity of NGOs to support climate resilient communities. This is being done through a research program that will span decades and cover a range of themes from economics to the role of children; ARCAB will use longitudinal data to build an evidence base for CBA that can inform policy, practice, and future research.

- The goal of ARCAB is the improved resilience of climate vulnerable communities.
- The purpose of ARCAB is to build a knowledge base around CBA action and knowledge transfer to enhance the capacity of NGOs to support climate resilient communities
- The mission of ARCAB is to provide evidences to inform effective strategies for community based adaptation action and learning in Bangladesh and globally.

ARCAB is a long-term programme of action research focused on Community Based Adaptation (CBA) to climate change in five major Livelihood Zones, which are part of the Ganges-Brahmaputra River flood plains, coastal and hill systems. These zones support livelihood of a very high proportion of the country's population and are characterized by varied types of climate hazards, including flood, tidal inundation, cyclones, drought etc. ARCAB conducts and researches Community Based Adaptation (CBA) in five major Ecosystem Zones, working through "Action Partners (APs)", "Research Partners (RPs)", "Knowledge Management Partners (KMPs)", and "Outreach Partners (OPs)" (ARCAB, 2013).

**Our Partner**

Action Research for Community Adaptation in Bangladesh (ARCAB) is a long-term programme of action research focused on Community Based Adaptation (CBA) to climate change in five major Livelihood Zones, which are part of the Ganges-Brahmaputra River flood plains, coastal and hill systems. These zones support livelihood of a very high proportion of the country's population and are characterized by varied types of climate hazards, including flood, tidal

inundation, cyclones, drought etc. ARCAB conducts and researches Community Based Adaptation (CBA) in five major Ecosystem Zones, working through:

1. Action Partners (APs)
2. Research Partners (RPs)
3. Knowledge Management Partners (KMPs)
4. Outreach Partners (OPs) (ARCAB, 2012).

❖ **Asia Energy Corporation (Bangladesh) Pty Ltd (a subsidiary of GCM Resources plc)**

GCM Resource plc (GCM) is a London-based resource exploration and development company. Its principal asset is its undeveloped coal deposit in the Phulbari region of Bangladesh, the development of which is awaiting approval from the Government of Bangladesh. In Bangladesh GCM works through its wholly owned subsidiary, Asia Energy Corporation (Bangladesh) Pty Ltd. It also has investments in other companies with mining interests. The company's shares are quoted on the Alternative Investment Market (AIM). See [www.gcmplc.com](http://www.gcmplc.com) for more details. The Phulbari Coal Project is a substantial, world class coal resource that will support a long life, low cost mining operation. It is the only such deposit in Bangladesh that has been subjected to a full Feasibility Study and Environmental and Social Impact Assessment prepared to international standards. GCM has also given the Bangladesh Government a proposal to build a large scale coal-fired power plant adjacent to the Phulbari coal mine.

In partnership with the Bangladesh Government, civil society and the community, GCM is committed to developing the Phulbari Coal Project to the highest social and environmental standards. By doing this, GCM seeks to maximise the benefits of the Project for both the Company's shareholders and the people of Bangladesh (BBG, 2012).

❖ **Islamic Relief, Bangladesh**

Islamic Relief, Bangladesh is an International Development Organization established in 1984 and registered with the UK government charity commission. It has a consultative status with UN Economic and Social Council. It is a members of Consortium of British Humanitarian Agencies (CBHA), Disaster Emergency Committee( DEC) , European Confederation of Development and Relief NGOs (CONCORD), British Overseas NGOs for Development and International Red Cross and Red Crescent movement. Islamic Relief, Bangladesh started its works in Bangladesh regardless of race, religion, ethnicity and gender and involved in nation-building since 1991. Islamic Relief seeks to promote sustainable economic and social empowerment by working with local communities in times of disasters as well as through development programs in the sectors of child rights, gender, water and sanitation, education, sustainable livelihoods and disaster risk reduction (IRW, 2012).

Islamic Relief, Bangladesh is an international Non- Government Organization. IRW started its operation in Bangladesh in April 1991 with assisting the cyclone-affected people in Chittagong and has been continuing to assist in national advancement. It received registration from the NGO Affairs Bureau in the same year and the registration no. is 553.

Islamic relief Bangladesh has a country office management team that is responsible for coordination, policy formulation and policy implementation in the organization. At present 297 staff work at Islamic relief across 30 districts. Out of them 65 are women and 232 are men. All development and emergency-response programs of IRW-B are covered through the following program units:

- Humanitarian Assistance and Early Recovery (HAER)
- Disaster Risk Reduction (DRR)
- Sustainable Livelihoods
- Orphan and Child Welfare

### **Vision**

Inspired by our Islamic faith and guided by our values we envisage a caring world where communities are empowered, social obligations are fulfilled and people respond as one to the suffering of others.

### **Mission**

Exemplifying our Islamic values, we will mobilize resources, build partnerships, and develop local capacity, as we work to:

- Enable communities to mitigate the effect of disasters, prepare for their occurrence and respond by providing relief, protection and recovery.
- Promote integrated development and environmental custodianship with a focus on sustainable livelihoods
- Support the marginalized and vulnerable to voice their needs and address root causes of poverty.

We allocate these resources regardless of race, political affiliation, gender or belief, and without expecting anything in return (IRW, 2012).

### **Climate Change and Disaster Resilience (CDR) Programme**

Bangladesh is one of the most disaster prone and climate vulnerable nations of the world, Islamic Relief in Bangladesh (IR,B) has adopted an integrated approach to address disaster and climate risks. IR,B envisages building self reliant and resilient Bangladesh *generation next* by delivering innovative and impactful solutions through partnership with government, local communities and private sector actors. IR,B recognizes that climate change need to be tackled to alleviate long-term suffering of the most vulnerable and poor people of Bangladesh.

Islamic Relief (IR) is inspired by the teachings of Islam in all of its work. Islam's climate change and disaster resilience worldview is a holistic one. It assumes a fundamental link and interdependency between all natural elements and bases its teachings on the premise that if humanity abuses or exhausts one element, the natural world as a whole will suffer direct consequences. Ultimately, none of the five major aims (maqasid) of the Shariah (protection of religion, life, mind, offspring and property) can be sustained if the world's environment – God's Creation - does not allow for survival.

Islamic Relief in Bangladesh has adopted an integrated approach to address disaster and climate risks in order to enhance aid effectiveness and reduce confusion for stakeholders. IR envisages building a self-reliant and resilient Bangladesh for the next generation by delivering innovative and impactful programmes in partnership with government, communities and private sector. Islamic Relief recognizes that climate change needs to be tackled to achieve long-term alleviation of suffering of the most vulnerable and poor people.

IR works with the most vulnerable and gives special emphasis to socially excluded, marginalized, women, elderly and children in disaster hotspots. We focus on building and scaling up local capacity and institutions. We take into account traditional wisdom and are striving to promote innovative and adaptable solutions in order to transform resilience. We translate the hard science of climate change into tangible and practical evidence through hands-on implementation to support adaptation of the way poor people live and work in the face of increased hydro-meteorological hazards.

We acknowledge that people have the right to be protected and governments, local to national, are expected to act as primary duty bearers in ensuring that. We work very closely with government, development partners and businesses. We build partnerships with national and local government and invest in their capacity development through sharing our experience and research findings. We invest in advocacy and leadership capacity of the most vulnerable people so that their priorities and concerns are included in the national and local planning.

We work with mandated emergency response agencies including the Fire Service & Civil Defense and Armed Forces Division of the government to strengthen coordinated response in emergency with community volunteers at the center of response and recovery strategy.

We learn by doing and maintain high standards in programme implementation

**Some of the impacts are of this programme are-**

- Enabled local communities and institutions to better prepare for adaptation and respond adequately to disasters.
- Worked with local authorities to mainstream DRR actions identified through local level risk assessments into local Annual Development Plans (ADPs) and budgets. Islamic Relief motivated local community and government institutions to leverage a total of BDT 1,92,28,825 from ADP (2011-12) and locally raised funds.

- As a member of National Alliance for Risk Reduction and Response Initiatives (NARRI) Consortium, Islamic Relief contributed to the formulation of recently enacted National Disaster Management Act.
- Islamic Relief directly contributed to the development of Flood Early Warning Guideline for the government which was incorporated in the National Disaster Management Policy.
- Islamic Relief's work on urban risk reduction interventions in Sylhet through mobilizing community and institutions has been recognized at the 1st Guangzhou International Award for Urban Innovation in China in 2012. Sylhet was the only city from South Asia that reached the final shortlist of 15 cities.
- Bangladesh was awarded the 2013 UN Sasakawa Award for Disaster Risk Reduction for the NARRI Consortium in which Islamic Relief is a leading partner.

### **Ongoing Projects**

- Building a Disaster Resilient Bangladesh (7<sup>th</sup> DIPECHO Action Plan)
- Enhancing Climate Change Adaptation & Disaster Resilience
- Program for Augmenting Disaster Risk Reduction and Climate Change Adaption Capacity of the Communities in the South-Western Bangladesh

Enhancing Resilience of Climate Affected Communities in the South-Western Bangladesh (ERCAC) (IRW, 2012).

### **❖ Bangladesh Poribesh Andolon (BAPA)**

Bangladesh Poribesh Andolon (BAPA) is a common forum of citizens and organizations concerned with the environment of Bangladesh. A community-based group, called POROSH, was set up as such a forum concentrating on Dhaka only in 1997. This has virtually been transformed into BAPA in 2000 with nation-wide coverage and expanded dimension.

BAPA, acting as a pressure group against any kind of environment degradation, is trying to create a broad-based citizen's movement for protection and betterment of environment in Bangladesh. It organizes seminars, meetings, conferences and workshops to draw attention to general and specific problems in environment and educate the public on such issues. It holds rallies and demonstrations to build up public awareness and secure wide participation of people on environmental issues. It undertakes publications for education or mobilization of public opinion.

BAPA is a volunteer organization, which runs without financial support from national or foreign governments. Subscription of the members and philanthropy of individual citizens and national organizations are the main sources of its income for meeting its routine expenditure.

## **Background**

Bangladesh Poribesh Andolon (BAPA) was launched in 2000 to create a nation wide, united, and strong civic movement to protect Bangladesh's environment. The environment of Bangladesh is deteriorating fast. Urban air quality is plummeting. Ground water is contaminated. Surface water bodies are getting polluted, encroached, and degraded. Solid, fluid, gaseous, and hazardous wastes are overflowing. Forests and open spaces are disappearing. Noise is increasing. Bio-diversity is vanishing. Health conditions are worsening due to pollution. Unless these processes of degradation are slowed down and reversed, the country's economic, social, cultural, and human progress will be gradually hampered, and Bangladesh will become unlivable in the long-term.

Unfortunately, the efforts by the government are not proving adequate to meet the threat. In fact, ill conceived and ill implemented government projects, corruption and poor governance are often aggravating the situation. On the other hand, isolated efforts by various non-governmental and civic organizations are also proving inadequate to meet the challenge.

In this backdrop, pro-environment forces of Bangladesh gathered at the International Conference on Bangladesh Environment (ICBEN) in January 2000 to discuss Bangladesh's environmental problems and chart out actions for the future. The conference adopted Dhaka Declaration on Bangladesh Environment 2000 and suggested formation of a unified platform for all sincere pro-environment forces of the country to join and work together. Following the decisions of ICBEN 2000, BAPA was formed (BAPA, 2012).

### **❖ CPRD (Center for Participatory Research and Development)**

CPRD is an independent, non-profit, and progressive policy, research, and implementation institute. CPRD envisions promoting people-centered sustainable development by innovation, application and advancement of appropriate scientific, technical and local knowledge through research, developing models, demonstration and implementation.

## **Genesis**

In January 2006 a group of young professionals met to discuss to find the strategies to support survival strategies of the marginalized people living at the forefront of the climate change risk and associated extreme weather events. The outcome of the meeting is the formation of a dedicated institution, CPRD, which would implement participatory action research, development policy research and advocacy on, interalia, climate change mitigation and adaptation strategies, development of alternative livelihoods and mainstreaming disaster risk reduction in the development policies.

## **Legal Status**

CPRD is registered as a research institution under the Societies Act XXI of 1860 with the Registrar of Joint Stock Companies. (Registration No. S 7023(211)/07 dated 05 September 2007)

### **Mission**

Facilitate people's initiatives and exploring paths of social and economic transformation towards a Just, Participatory and Sustainable society.

### **Goal**

CPRD envisions promoting people-centered sustainable development by innovating, applying and advancing appropriate scientific, technical and local knowledge through research, by developing models, demonstration, policy advocacy and project implementation.

### **Strategy**

To achieve the goal, CPRD equally gives importance to appropriate technology innovation and transfer, environmental justice for sustainable development, social justice for women and minority rights, public-private partnership and, north south dialogue for harmonizing growth and trade justice. In all aspect CPRD will develop effective communication tools for reducing rural-urban, north-south technology and knowledge gap, and will facilitate poor people's access to resources and contemporary knowledge and skills (CPRD, 2012).

### **Programme Focus**

The program focus of CPRD prioritized through a consultative process of discussion with the active participation of the executive committee members. Considering organizational goal and objectives, the EC members agreed on 5 thematic areas to work on priority basis, these are;

**Economic Development:** Research and policy analysis on micro- entrepreneurship development, financing to the rural as well as urban enterprises, development of social commerce, gender mainstreaming in the economic activities and entitlements

**Social Development:** Women and minority rights, social security, emphasizing equality and social justice and providing analysis in support of trade unions, social movements and public and private sector organizations.

**Natural Resources Conservation:** Conservation and management of aquatic and terrestrial eco-system, in-situ conservation of biological resources, management of eco-system services

**Sustainable Livelihoods:** Development of alternative livelihoods options for the resource scare and marginalized population, value and supply chain analysis of agricultural products



Disaster and Climate Change Resilience Development: Research and innovation for climate change adaptation and mitigation, community based adaptation, disaster risk reduction, policy advocacy and campaign for global climate governance (CPRD, 2012).

#### ❖ **CARITAS-BD**

Caritas was founded in 1967 as the eastern branch of Caritas Pakistan. Following the cyclone of November 1970 it was re-organised and became known as CORR (Christian Organisation for Relief and Rehabilitation) and took on the character of a national organisation on January 13, 1971. The name Caritas was re-introduced in 1976.

Caritas Bangladesh has its National Office in Dhaka. There are seven Regional (or Diocesan) Offices in Barisal, Chittagong, Dhaka, Dinajpur, Khulna, Mymensingh and Rajshahi and one Area Office in Sylhet. In all these places Caritas is operational in Integrated Development, Disaster Management and Human Resource Development, under a central management. Caritas restricts itself at present to 155 *upazilas* (sub-districts) for integrated human development work. During emergencies, such as natural disasters, Caritas is operational in any part of the country.

Caritas Bangladesh is a member of the Caritas Internationalis, a confederation of 165 Caritas Member Organizations over 200 countries and territories (CARITAS-BD, 2013).

#### ❖ **Nature Conservation Management (NACOM)**

Nature Conservation Management (NACOM) is the pioneer, non-government, pro-environment organization in Bangladesh working since 1987 with broader mandate for natural resources conservation, management and research, alternative energy and livelihood improvement, climate change and adaptation (NaCom, 2013).

#### **Donors for this Organization:**

- a) USAID/Winrock International
- b) Department of Environment, MOEF, Bangladesh/ UNDP
- c) IUCN Bangladesh
- d) Planning Commission/ DANIDA

#### **Activities on climate change**

- a. Mangrove forest restoration, alternative livelihood
- b. Redesigning of boats and households
- c. Introduction of salt tolerance crops.
- d. Awareness on adaptation, biodiversity conservation etc.

Source: Question Answer session.

#### **Mission**

Nature Conservation Management (NACOM) is the pioneer, non-government, pro-environment organization in Bangladesh, initially founded in 1987 as Nature Conservation Movement (NACOM) and renamed in 1998 with broader mandate of activities in the area of natural resources management and livelihood. NACOM's goal is protection of nature for better human life. Its mandates relate to biodiversity conservation, sustainable development, climate change, poverty alleviation and sustainable natural resource management through research, information exchange and undertaking conservation activities. NACOM undertake research activities for generating knowledge-base in understanding ecological processes, impacts of pollution and climate change on environment. Currently we are implementing a number of projects on biodiversity conservation, natural resource management including projects on indoor air pollution. The two major projects on IAP is Health Effects of Biomass Fuel Combustion on Women and Children and Options for Exposure Reduction supported by WHO-Bangladesh in collaboration with Columbia University, USA. The main objectives of the project is the reduction of biomass pollution exposure and improve the lung functions that would lower the morbidity and mortality from respiratory illnesses among the study participants. The other project is Steps Towards Indoor Air Pollution supported by Canadian Development Agency under the Gender Fund, Bangladesh. The main objective of the project is to create awareness on health issues by using traditional stoves and to introduce improved stoves for better livelihood and health.

### **Our Focus**

**Primary Initiatives, Target Populations, and Scope of Work:** Bangladesh, we mostly work with the community people for improving their livelihoods. Our targets is to improve and conservation of nature and natural resources for sustainable livelihoods.

**Fuels/Technologies:** Biogas, Biomass, Solar

**Sectors of Experience:** Agriculture, Carbon, Finance, Energy, Environment, Forestry, Health, Renewable

Energy, Rural, Development, Water

**Countries of Operation:** Bangladesh

### **Our Experience and Interest in the Four PCIA Central Focus Areas**

#### **Social/Cultural barriers to using traditional fuels and stoves:**

In rural Bangladesh, biomass fuel is the main source of household energy. More than 90% of women in rural areas are responsible for collecting, storing and cooking which ultimately exposes them to harmful pollutants. There is a cultural barrier to using improved stoves, normally rural women are habituated to the traditional stoves as they do not have better alternatives

### **Market development for improved cooking technologies:**

Currently, we are providing improved stoves to rural women in our target population. We are encouraging these women and providing necessary trainings for market development.

### **Technology standardization for cooking, heating and ventilation:**

Under the project scope we will standardize some of the stoves which are in use.

### **Indoor air pollution exposure and health monitoring:**

Respiratory illness in children is one of the biggest health problem in Bangladesh. Illness associated with biomass air pollution is a concern for the country. Unfortunately, there is no such monitoring activity to understand the health impact due to indoor air pollution.

### **Our Contribution to the Partnership**

Providing sharing of knowledge with others and exchange of idea, technology transfer on improved stoves, performance test and carbon trading. Exchange skills and collaborate with other members of the Partnership (NaCom, 2013).

#### **❖ Concern-BD**

World Concern is an International non-Government organization based at Seattle, Washington. At present World Concern has involvement in 30 countries of the world to reduce socio-economic poverty of the poor and thus establish their dignity. World Concern Bangladesh has been operating its activities as an implementing organization under the Asia area office based at Bangkok, Thailand since 1991. But in response to the post war needs of Bangladesh, It took part in relief and rehabilitation activities of this country through providing funds and personnel to a number of NGOs.

World Concern Bangladesh has been working for 21 years in the field of Education, Health, Economic, Relief & Rehabilitation and Social development.

### **Target people:**

- Women, children and disable people
- Vulnerable to natural disaster, Refugees/displaced people
- Poor, landless, day laborers and marginal farmers (Concern-BD, 2013).

#### **❖ OSHE**

Bangladesh Occupational Safety, Health and Environment Foundation (OSHE) established in December 2003 by workers initiative as specialized development organization to work on issue effect employment, income, economy, environment and livelihood of the working people.

OSHE is an umbrella for different national and industrial trade unions working together on workplace problems and development issues based on common understanding, beyond any individual or specific group interest.

The foundation is serving as ‘think-tank’ at national level on labour, OSH, Sustainable development and other cross cutting issues OSHE plays the role of catalyst to promote sound industrial relations and workers rights in formal and informal sectors of economy.

Bangladesh Occupational Safety, Health and Environment Foundation perform as a ‘special bridge’ to foster relations and cooperation between workers, Government, employers on core labour standards, workplace safety, workers health, environmental protection and social safety-net issue.

OSHE is the national collaborating center of International Safety and Health Information Center of the International Labour Organization (CIS-ILO).

The foundation is actively involved in discussion sessions of UN Commission for Sustainable Development and the UNFCCC COP/MOP events, as part of labour group.

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### **Our Mission**

“Our mission is to promote human rights at workplaces with special focus to workplace safety, workers health and environment.

Extend our effort towards poverty redaction, social advancement and healthy future of workers by contribute to strengthen capacity and united position of labour movement, as an important contributor of the society, the world of work and sustainable development” (OSHE, 2012) .

## **Labour and environment:**

:: Workers education course on Environment and Climate Change

:: Special Education course on Sustainable Development (OSHE, 2012).

### **❖ SEHD**

The Society for Environment and Human Development works for human rights and environmental justice in Bangladesh through research, capacity building and advocacy. Working closely with communities where the environment and human rights have eroded, SEHD gives the affected communities a voice through its publications, investigative reporting, training, and grassroots empowerment programs.

The Society for Environment and Human Development (SEHD) is a non-profit Bangladeshi organization working for human rights and environmental justice through research, training, dialogue and advocacy. Operating since 1993, SEHD works closely with communities where environmental and human rights have been eroded.

SEHD is vocal about the danger of poor environmental conditions and management, and the impact these have on the people living in such environments. It is also an advocate for the rights of marginalised communities. SEHD seeks to draw attention to these problems by giving affected communities a voice through its publications, investigative reporting, training, and grassroots empowerment programs.

The two broad areas of SEHD's work are human rights and environment, specific areas include: tea workers, Adivasis (indigenous people), forests, journalism, sex workers, and coastal environment in Bangladesh. SEHD takes pride in its publications on these areas and more, which include books, documentaries, photography exhibitions and investigative reports. It also hosts a special documentation library at its office in Dhaka.

Through its activities, SEHD has helped to provide skills and training to journalists, marginalized and indigenous communities, youths, students and academics. All of SEHD's activities are underpinned by its commitment to democratic values and the inherent importance of empowering people by giving them a voice (SEHD, 2013).

## **Our Activities**



The main areas of SEHD's work are: research and investigative reporting, journalist training, seminars and other public events, advocacy, promotion of organic farming and promotion of Adivasi culture.

### **Research and Investigative Reporting**

Research and investigative reporting are central elements of SEHD's work. It takes an action-oriented approach involving the media, professionals from a range of backgrounds, and activists. SEHD's investigations aim to explain complex human rights issues and their relationship with environmental problems. SEHD's work has highlighted the problems faced by indigenous people in Bangladesh, sex workers and tea plantation workers. SEHD's research has also addressed the environmental problems associated with commercial and industrial plantations and forestry, energy issues, coastal erosion and climate change. The output of SEHD's research and investigations —books, reports and documentary films— has been essential information and knowledge tools for journalists, academics, community leaders, and activists.

### **Journalist Training**

SEHD provides training to journalists from newspapers, magazines, radio and television as well as individuals representing different ethnic communities, civil society organizations, and activists. Through training and public events, SEHD shares its skills, knowledge and ideas thus inspiring advocacy and awareness raising about important issues within the broader community.

### **Seminars, Cultural Programs, and Other Public events**

In addition to its training programs, SEHD regularly organizes seminars, roundtable conferences, film festivals, Adivasi cultural festivals, photography exhibitions, study tours, and other public events. Issues and concerns of community and national interest that have been voiced through SEHD events include the exploitation of forests and forest people, the problems associated with commercial plantations, the devastating effects of aid and loans on Bangladesh's environment, Adivasi issues in Bangladesh, and problems facing other excluded groups. In addition to seminars, SEHD organizes cultural events, programs for school children and university students, screenings of its documentary films and book launches.

### **Advocacy**

SEHD is involved in direct and indirect lobbying and advocacy at different levels. It targets international financial institutions (IFIs) such as the Asian Development Bank and World Bank as well as government institutions that formulate policies and implementation mechanisms. SEHD also targets the general public of Bangladesh and those communities that are the victims of wrong policies. In the past, SEHD has conducted effective advocacy work to raise awareness and understanding of the problems associated with the plantation economy and its effects on local communities and ecologies, indigenous peoples' access to local resources, shrimp aquaculture, ecological farming, threat of coal mining, the rights of tea plantation workers, sex workers and climate change issues.

### **Promotion of Organic Farming**

In 2009, SEHD set up an organic farm in Rajghati, a small indigenous Garo village in the Modhupur sal forest in Tangail District (in the North-central region of Bangladesh). Rajghati has 28 families, all Garos, who in the past were completely dependent on the surrounding forest, but now there is no forest remaining. SEHD has been working closely with villagers to introduce and encourage organic farming techniques. A group of villagers, mainly women, have been given training in organic farming skills such as making compost and setting up a bio-gas plant. The practice of organic farming will be gradually expanded into other forest villages once a successful model is achieved.

SEHD has also been establishing knowledge and learning center among the local communities in the Modhupur sal forest area that teaches about organic farming practices, natural history, indigenous culture, ecology and innovative ideas.

### **Promotion of Adivasi Culture**

The Adivasis, or ethnic communities of Bangladesh, demonstrate unique cultures, traditions and knowledge. Adivasi people and their cultures are typically neglected and marginalized. In many instances, the people have lost their identities and languages, which has severe consequences for their social, political, economic and cultural life. SEHD, for many years, has organized cultural exchange programs and festivals for the Adivasi communities across Bangladesh, providing them with the opportunity to interact with the rest of the community. The media response to the cultural festivals has been enormous and this has contributed to the increased visibility of the Adivasis in Bangladesh. SEHD has also published books and hosted seminars to advocate for the rights of Adivasi people. Through different means SEHD continues to promote cultures of the indigenous and marginalized communities (SEHD, 2013).

### **❖ Nagorik Uddyog**

The name “Nagorik Uddyog” (“The Citizen’s Initiative”) epitomizes the organization’s fundamental goal as well as the strategies and activities it utilizes to achieve this goal. Specifically, since its establishment 1995, Nagorik Uddyog (NU) has worked to strengthen local government in Bangladesh via the dual imperatives of, on the one hand, raising awareness among the general masses of people’s basic human rights and, on the other, building people’s capacity to pursue and realize these rights.

NU recognizes that democratic elections are by themselves insufficient in fulfilling democracy; that the poor, marginalized and disadvantaged must be given the power to participate in and contribute to all those decision-making processes that affect their lives. Accordingly, NU strives to provide an enabling condition for the people to set up institutions and mobilize themselves.

NU holds special interest in democratizing the historically gender-imbalanced “Shalish”, Bangladesh’s traditional rural dispute-resolution system. A fair and equitable Shalish especially entails unprecedented access to justice for rural women – the ‘poorest of the poor’ in this country – and in turn a new and exciting horizon in Bangladesh’s development journey.

NU envisions a Bangladesh without poverty where socially and environmentally conscious citizens have the ability to achieve their full potential as human beings irrespective of gender or social status.

- Establish accessible justice through mediation and legal aid support;
- Promote popular participation to ensure a fair, open, participatory and accountable electoral system;
- Raise human and women’s rights consciousness at the grassroots level
- Create an environment conducive to the exercising of democratic rights;
- Support the struggle of women at the grassroots level, ensuring their effective and broad participation in the electoral process;
- Conduct training programmes on human rights for community leaders, activists, and NGO workers;
- Establish and consolidate a network of national and international organizations in the field of human rights; and
- Conduct research on various aspects of Bangladeshi society and the global order relevant to local human rights situations (Nagorik Uddyog, 2013).

#### ❖ **BEN (Bangladesh Environment Network)**

Since its inception BEN has collaborated with pro environment agencies in Bangladesh to nurture a broad social movement, such as represented by the Bangladesh Poribesh Andolon (Bangladesh Environment Movement, BAPA) Recent achievements in Bangladesh have been encouraging, but many problems yet need to be addressed adequately. You can get updates



on environmental issues via our discussion site or contact us for more information on how you can participate in our work.

BEN has setup this web-site as repository of information about environmental problems of Bangladesh and about the activities of BEN.

We hope that you will join this effort to protect Bangladesh's environment

## **Background**

Bangladesh Environment Network (BEN) has been set up to facilitate communication about Bangladesh's environmental problems. It is open to all Bangladeshis who are either residing in Bangladesh or living abroad. BEN is also open to non-Bangladeshis who are interested in Bangladesh's environmental problems.

Over the last few years, Bangladesh has undergone serious environmental degradation. The lead level in air of Bangladesh's cities is several hundred times higher than the UN recommended safe level. The level of arsenic in 43 out of Bangladesh's 64 districts has been found to be more than 500 percent of the WHO recommended safe mark. The population density has reached a dangerously high level. The forests are disappearing. Rivers and other water bodies are being filled up. Unknown number of animal and plant species has become extinct. Chemical runoff from farm fields into the neighboring water bodies is damaging the country's fish stock. Disposal of solid waste has become a major problem in the urban areas. Rising use of plastic and other toxic and non-biodegradable materials is making even household waste a major threat to health and environment. As Bangladesh tries to industrialize, increasing amount of toxic and non-toxic industrial waste is being dumped into neighboring lands water bodies.

Overall, it seems that the country is headed toward an environmental disaster. Bangladesh's arsenic situation has already become a focus of international alarm. In addition to being the locale of natural disasters, Bangladesh has now also emerged as the country of man-made ecological disasters. With global warming and the possibility of rising sea level, the very long term physical existence of the country, being just a few feet above the sea-level for its most parts, has become a question.

It is clear that the government response to the environmental situation has been inadequate and often inept. Bangladesh government does not have an overall coherent plan of its own to fight environmental degradation. It is simply relying on initiative, finance, and prodding of donor agencies. The result has been an array of disconnected and often contradictory projects, which are generally failing to be effective.

## **Issues:**

Ben Panel of Experts

Arsenic in Drinking Water

Air Pollution  
Climate Change

### **Energy Policy**

- BEN-BAPA Joint Statement on Coal Policy (February 21, 2014)
- Energy Strategy for Bangladesh: A Brief Survey with Recommendations (September 1, 2006. Correction: July 28, 2007)

### **Flood Management**

Forests and Indigenous People (2004)  
River Linking, Farakka, Other Dams (2004) (BEN, 2013).

## **❖ Action Aid International in Bangladesh (AAI)**

### **Who are AAI**

We're an international organisation, working with over 15 million people in 45 countries for a world free from poverty and injustice.

Our head office is in Johannesburg. We're the only international development organisation with our head office based in Africa. We also have offices right across Asia, the Americas and Europe. We believe the people whose lives our work affects should decide how we're run (AAI, 2012).

### **What do AAI**

We focus on the people that others forget. People in poverty. People who face discrimination. People whose voices are ignored.

We help people fight for the rights that they are denied. Simple things, like the right to eat. The right to stay on their land. To an education. To have a say in the decisions that shape their lives.

We're not about giving handouts or telling people what to do, because in the long run we know that doesn't work. Instead, we use our resources, influence and experience to help people find their own solutions.

We listen to what people really want and need. We help communities take action together to hold their governments to account, and we give local organisations our support where they need it. Together, we're making a lasting difference.

### **Climate Change**

The rich countries cause climate change, but it's the poorer countries that are suffering the consequences. We're supporting communities who are trying to cope with the disastrous effects of climate change. And we're challenging world leaders to do something about it.

Action Aid is working with communities, and challenging world leaders, to protect poor people from the disastrous effects of climate change caused by human action.

If not urgently addressed, climate change is likely to place millions of more people at risk of increased hunger, disease and disasters.

A growing body of evidence, including the recent reports of the Intergovernmental Panel on Climate Change (IPCC), paints a picture of falling crop yields, problems with access to water, the degradation of many eco-systems, and an increase in diseases such as malaria, spread by insects.

As well as responding to climate-related disasters, Action Aid is working with communities to help them deal with a changed climate. We are also campaigning for change at the global level, because international action is needed to make a difference.

### **Climate change debts**

Action Aid is calling on rich governments to repay their climate debts. Rich countries need to drastically reduce their emissions so that developing countries have scope to grow their economies without destroying the planet.

The rich world needs to provide finance and technology to enable developing countries to reduce emissions, adapt effectively to climate change, compensate communities for loss and damages and chart low-emission pathways out of poverty.

### **Food rights and climate change**

We work with farmers to help them understand and adapt to changes in climate. Our Hunger FREE campaign focuses on the global food crisis pushing more people into extreme poverty. We also work with a few countries to analyze the impact of biofuels on food security and advocating for appropriate policy measures.

### **Preparing for the worst**

Action Aid works with partners and poor communities in country programmes including Ghana, Bangladesh, Sierra Leone, Malawi, India, Vietnam, Brazil and Kenya, to understand and deal with the impact of climate change. Our projects help communities work out ways to adapt, take on sustainable forms of farming, and prepare for disasters (AAI, 2012).

## ❖ **European Commission**

EC-Bangladesh institutional relations date back to 1973 and have developed over the years – as have Bangladesh and the European Community.

Since Bangladesh achieved independence in 1971, its population has grown from about 70 million people to 150 million or more in 2012. Over the same time period, the population of the European Community has expanded as new countries have joined. From six EC Member States in 1971 with a combined population of some 210 million, the European Union (EU) as it is now called has 27 Member States with some 500 million people.

The European Community (EC) established diplomatic relations with Bangladesh in 1973. Some nine years later the European Commission established an office in Dhaka, which was upgraded to a full-fledged Delegation in 1989. Under the EC-Bangladesh Co-operation Agreement of 2001, co-operation now covers trade and economic development, human rights, good governance and the environment.

Today more than half of Bangladesh's total exports go to the EU (54% in 2011). Bangladesh benefits from the most preferential trade arrangement granted unilaterally by the EU to LDCs, known as the "Everything but Arms" (EBA) scheme. EBA maintains the Generalised System of Preferences (GSP) for an unlimited period of time, so that it is not subject to periodic renewal as is the case for some other countries. Bangladesh now enjoys a significant trade surplus with the EU, with exports of €8.5 billion in 2011 compared with imports from the EU of €1.7 billion.

The European Union is among the three biggest donors of grant finance to Bangladesh, estimated at €500 million in 2011. The EC is (after the UK) the second largest EU donor to Bangladesh, with €403 million allocated under the Country Strategy Paper (CSP) for 2007-13. The CSP sets out the following priorities for assistance: health, education, good governance and human rights, economic and trade development, disaster management and food security. The EU is broadly supportive of the Government's reformist agenda, and emphasises the need for it to deliver on its promises and to ensure compliance with Bangladesh's human rights obligations. Political issues raised by the EU include: extrajudicial killings and torture in custody; women's rights; children's rights (including in particular child labour, especially in dangerous environments such as ship-breaking yards); minority rights, in particular those of the hill tribes in the Chittagong Hill Tracts; rights of refugees, especially Rohingyas; and reinforcement of the independent judiciary and of bodies which assure democratic checks and balances (AAI, 2012).

## **Overview**

The European Union is among the three biggest donors of grants to Bangladesh. It ranks fifth for overall development assistance.

The EC-Bangladesh Country Strategy for 2007-13 is funded with an indicative total amount of €410 million under the EC's Development Cooperation Instrument country allocation. The present strategy focuses mainly on three areas where the EC's comparative advantages are best able to contribute to delivering Millennium Development Goal (MDG) targets.

1. Human and social development especially in education and health to further help achieving the sectors' MDGs.

2. Good governance and human rights strengthening governance institutions and Bangladesh's democracy, improving the delivery of public services, strengthening public financial management, and promoting the protection of human rights, including minority rights. Substantial support to the Chittagong Hill Tracts development process and to Rohingya refugees fall also under this area.

3. Economic and trade development – With the EU being Bangladesh's no. 1 trade partner, the EU has a comparative advantage in enhancing competitiveness and investment climate in Bangladesh by supporting measures to improve trade and private sector development into an overall pro-poor growth approach. Also:

- Environment, disaster risk reduction and climate change receive in total 12% of the country allocation. Mitigating the effects of climate change is a major 'horizontal' issue addressed in an integrated way in many activities.
- The EC's food security programme is providing social protection, employment generation schemes, reconstitution of assets and training activities to hundreds of thousands of ultra-poor people all over Bangladesh. The EC has for a very long time been one of the the country's main partners in the area of food security, an activity often as well integrated into other programmes.
- The issue of gender equality is integrated wherever possible into activities under all of the above areas. Thus, food and livelihood security activities usually target ultra-poor women with children, whereas education activities pay special attention to gender equality in primary education.
- In order to remain responsive to the country's needs in view of existing and sometimes new priorities and challenges, the strategy and its implementation are being monitored for performance and relevance.
- In addition to development assistance covered by the Country Strategy, the EU provides humanitarian aid in response to emergencies (AAI, 2012).

## **Projects**

### **The environment and the sustainable management of natural resources**

- Bangladesh Climate Change Resilience Fund (BCCRF)
- Bangladesh Climate Change Resilience Fund (BCCRF)
- Comprehensive Disaster Management Programme (CDMP) 2010-2014
- Strengthening Resilience and reducing vulnerabilities of disaster vulnerable coastal communities in Bangladesh

- Strengthening the role of Non State Actors on Climate Change policy formulation in South Asia and enhancing their capacities to influence global climate change negotiations
- Sundarbans Development & Alternative Resources Integration (SUNDARI) (AAI, 2012)

#### ❖ CARE- BD

Founded in 1945 CARE is working across 70 countries fighting global poverty. By addressing the underlying causes of poverty CARE promotes sustainable development models to empower and benefit the poorest and marginalized. CARE has been working in Bangladesh for 60 years.

#### **Vision**

We seek a world of hope, tolerance and social justice, where poverty has been overcome and people live in dignity and security.

CARE International will be a global force and partner of choice within a worldwide movement dedicated to ending poverty. We will be known everywhere for our unshakable commitment to the dignity of people.

#### **Mission**

CARE Bangladesh amplifies the voices of the poor and the marginalized in ways that influence public opinion, development practice, and policy at all levels. This happens as knowledge drawn from our grass roots and global experience is channeled through purposeful relationships with civil society, government, and the private sector. (<http://www.carebangladesh.org/about.php>, Accessed: 22.4.13).

**Table: 2.4.6: Donor of CARE BD**

<b>Donor name</b>	<b>Name of the Project</b>
CARE USA	Akhoni Shomay (Window of Opportunity)
USAID	Agriculture Extension Capacity Building Activity Project
USAID	Bangladesh National Health Service Delivery Project (BNHSDP)
GSK Bangladesh	CARE-GSK CHW Initiative
The Global Fund	Expanding Provision of Essential Harm Reduction Services for Injecting Drug Users (IDUs)

Big Lottery Fund, UK	Enhancing Mobile Populations' Access to HIV & AIDS Services, Information and Support (EMPHASIS)
European Union	Empowerment of Local Actors and Non-State Actors in Responding to Economic Development Opportunities and Climate Change and Disaster Vulnerabilities project (PRODUCE)
European Union and CARE Norway	Food Security for Ultra-Poor in the Haor Region (FSUP-H Project)
DFID	Food Security and Livelihood Recovery for flood affected people in South- East of Bangladesh (LIFE)
Walmart Foundation	Global Women's Economic Empowerment Initiative (GWEEI)
DANONE Japan	Health, Nutrition & Food Security for Marginalized Children and their Families
Humanitarian Innovation Fund (HIF)	HIF Early Warning System
GUCCI Foundation	Improving Women's Health and Education through Effective Learning (IWHEEL)
Societe Generale	LiLAC: Light of Life, A Change
UNICEF	Maternal and Young Child Nutrition Security Initiative (MYCNSI)
PCTFI	Patsy Collins Trust Fund Initiative (PCTFI)
Bill and Melinda Gates Foundation	Pathways/SAMMOW
European Commission	Promoting Sustainable Consumption and Production of Jute Diversified Products (SWITCH Asia)
Gap Inc.	Personal Advancement and Career Enhancement (P.A.C.E)

Societe Generale	Providing Working Children with Functional Education and Marketable Skills (WCP)
ECHO	Recovery from Floods in the Southeastern part of Bangladesh
JICA	Safe Motherhood Promotional Project (SMPP II)
European Commission	Sustainable Access to Land Equality (SALE)
Bill and Melinda Gates Foundation	Strengthening the Dairy Value Chain, Phase II: Building a Hub Model for Pro-Poor Inclusive Dairy Development in Bangladesh
USAID and GoB	Strengthening Household Ability to Respond to Development Opportunities II (SHOUHARDO II)
SHIREE/DFID	Social Economic Transformation of the Ultra Poor II (SETU II)
EC	Solidarity and Empowerment through Education, Motivation and Awareness (SEEMA)
UNDP	Stimulating Change through Access and Livelihoods Enhancement of Urban Poor (SCALE-UP)
Dutch Government	Sustainable Agriculture, Food Security and Linkages (SaFaL)
USAID	Stimulating Agricultural Management & Marketing Opportunities for Women (SAMMOW)
Walmart Foundation	Women's Health & Education through Effective Learning Project (WHEEL)
KiK Textilien & Non-Food GmbH	Sustainable Healthcare by Enabling Improved Knowledge and Access (SHEBIKA)
Axa and Mac Arthur Foundation	'Where The Rain Falls' Research project (CARE BD, 2013).

### ❖ **Practical Action**

Practical Action's work in Bangladesh has evolved over time to meet the challenges of poverty, inequality and vulnerability. Deeply committed to helping the poor in Bangladesh, our work on



appropriate technology as a means to improve poor peoples livelihoods has been flexible and responsive to local conditions and needs.

Practical Action, through its programmes in Bangladesh, works primarily by:

- developing, upgrading, demonstrating and putting into practice appropriate technology within communities using participatory approaches.
  - giving skills training and extending capacity building support to NGO/GO staff
  - sharing knowledge and disseminating information and research findings among key stakeholders
  - enabling producers and entrepreneurs information and skills for making access to market opportunities and linkages
  - promoting advocacy and influencing for policy change
- 
- The country programme is organized into three thematic aims, namely:
  - Reducing vulnerability and natural resource management
  - Markets and livelihoods
  - Infrastructure services

### **Resilience to climate change in Bangladesh**

#### **Strengthening resilience of climate change-affected communities in south-western coastal area of Bangladesh**

Duration: July 2011 – June 2013

**Supported by:** United Nations Development Programme (UNDP) and Global Environment Fund (GEF)

The pilot project is a part of a global Community-Based Adaptation (CBA) Project of the UNDP/GEF. The Practical Action Bangladesh-implemented component of the CBA Project is co-funded by the UNDP/GEF and Practical Action.

The goal of this initiative is to strengthen the resilience of coastal communities of Bangladesh under climate change regime through ecosystem and livelihoods protection. More specifically the project will improve the adaptive capacity of four villages (400 households directly) of Atulia union of Satkhira district by introducing appropriate knowledge and technologies to cope with increased salinity conditions over the project period. In doing so, the proposed initiative will demonstrate relevant adaptive measures, approaches, and interventions that will build resilience of the salinity-affected vulnerable communities in terms of biodiversity and ecosystem management thereby reducing their climatic risks and securing their employment, food and income.

## Outcomes and Outputs

### Outcomes (long-term benefits):

1. Improved capacity and representation of local people and institutions to influence climate change adaptation and biodiversity protection plans.
2. Sustainable aquaculture practiced in salinity-affected fish and shrimp farms mitigating at least 30% loss.
3. Negative pressure on natural aquatic animals (at least 5 species) reduced to a measurable extent.
4. Local ecosystem and peoples' resilience improved as a whole through plantation.
5. Project lessons captured and mainstreamed with NAPA 2005, BCCSAP 2009 and Biodiversity Programme of Action 2020 for up scaling.

### Outputs (short-term benefits):

1. Understanding and awareness of the communities, 10 local NGOs, and local government institutions of Atulia union on the impacts of climate change, climate variability and biodiversity conservation enhanced.
2. Thirty skilled volunteers developed as ambassadors to climate change adaptation and biodiversity monitoring.
3. Adaptive model of biodiversity and environment sensitive shrimp farming demonstrated in salinity-affected increasing 40% household income.
4. Adaptation of selected aquatic animals and recent changes in fish-farming due to salinity intrusion in Atulia union recorded
5. Participatory aquatic biodiversity monitoring system practiced by community people, Union Parishad, local NGOs and at least 3 government line departments.
6. Off-farm activities practiced by 10% of 400 households (mostly women) to divert pressure from natural resources.
7. Two community nurseries of suitable plant species (wind-resistant and salinity) established with women-headed households.
8. Rehabilitation of mangrove plant species at 2,500 households and institution premises.
9. Project learning documented & widely disseminated in coastal regions.

This project is part of Practical Action Bangladesh's Reducing Vulnerability programme (Practical Action, 2012).

### ❖ OXFAM-GB

Oxfam's involvement in Bangladesh began in 1970 assisting the then cyclone victims and supporting the people of Bangladesh during the Liberation War in 1971. For our work in 1971 Oxfam was one of only three organizations honored as a Friend of the Bangladesh Liberation War in 2012.

We work with a wide range of partners including civil society organizations, NGOs, media organizations, foreign and local universities, private sector companies and different levels of government. We see a particular role for Oxfam as a network facilitator between the wide range of power holders and poor people in Bangladesh.

### **Climate Change campaign**

#### **5 natural disasters that beg for climate action**

Around the world, devastation caused by climate-related events is growing. Oxfam works on improving community resilience while calling for nations to cut emissions, commit to the Climate Fund and help the most vulnerable communities adapt to climate change.

#### **2011 UN Climate Change Conference concludes, but the battle against climate change continues**

The UN Climate Change Conference in South Africa, COP17, has come to a close but the battle against climate change continues. In this film we look at the outcomes from Durban and the broader issues around getting a global climate deal to keep warming below two degrees.

#### **Mamtaz' story: The fight for climate justice in the Bay of Bengal**

Mamtaz Begum (35) lives in the village of South Tetulbaria near to the Bay of Bengal. This village relies on fishing but the changing climate is threatening this way of life, and without fishing, there is little else for them to eat. She explains her story.

### **About the Climate Change campaign**

Climate change is pushing poor people further into poverty. Urgent, concrete action is needed to help avoid catastrophe. Find out more about Oxfam's climate change campaign and see what you can do to help.

#### **Thailand: finding innovative solutions to the uncertain impact of climate change**

Oxfam's climate change adaptation work in Thailand is just one example of how with communities are fighting back. But to make a global difference, those with a bit of international clout must play their part too (OXFAM-GB, 2012).

### **About the Climate Change campaign**

The environmental effects of climate change are well-known. It is threatening wildlife, causing ice caps to melt and increasing the number of weather-related natural disasters.

What is less publicized though is how climate change is driving many of the world's poorest people dangerously close to the edge of survival.

## What are the issues?

The impacts of climate change are complex. Sometimes gradual, sometimes sudden, but nearly always hitting the poor first and hitting them hardest.

- It is causing the Himalayan glaciers to melt and if these disappear, it will threaten the viability of farming across huge swathes of **South and East Asia**.
- In the **Pacific**, whole islands are having to evacuate, as sea levels rise contaminating the soil with salt.
- People who have farmed cattle in **Africa** for generations are abandoning their traditional ways of life, as changing weather patterns make cattle rearing impossible.

The world's scientists have already agreed on the causes, such as burning too much fossil fuel. And we are already seeing some of the impacts. But world leaders have not yet shown the courage and leadership we need to move towards a just solution (OXFAM- GB, 2012).

### ❖ **Swiss Agency for Development and Cooperation (SDC)**

#### **The Swiss Cooperation Office in Bangladesh**

Switzerland is one of the long-standing development partners of Bangladesh. The Swiss Agency for Development and Cooperation (SDC), a part of the Federal Department of Foreign Affairs of Switzerland, has been working in Bangladesh since its independence. SDC considers Bangladesh as one of its priority countries to concentrate its long-term development cooperation efforts.

SDC has a substantial programme in Bangladesh with an aim to achieve an effective and sustainable poverty reduction in this country. During the last few years' work, SDC felt that Bangladesh has made huge progress in the previous few decades, notably in population control, food security, child mortality, malnutrition and access to education. However, poverty reduction remains a major challenge.

The **Swiss Cooperation Strategy Bangladesh 2013-2017** will contribute to systemic change through facilitation, capacity building, advocacy and policy dialogue in the fields of Market Development, Skills Development and Local Governance. Outcomes in the three portfolios will focus on (1) citizens' use of improved services, (2) the provision of improved and inclusive services by public and private sector players, and (3) the improvement of the enabling environment.

The Cooperation Strategy mainly focuses on the three thematic areas:

- Market Development
- Skills Development
- Local Governance

The priority areas and the lines of action are aligned with the Bangladesh Government's 6th Five-Year Plan (2011-2015) and the Joint Cooperation Strategy adopted between the Government and

the Development Partners in 2011. Owing to the vulnerability of Bangladesh to natural disasters and with a view to capitalising on investments made under the Cooperation Strategy 2008-2012, Climate Change Adaptation will be addressed as a priority besides the core domains of intervention. Disaster Risk Reduction will be mainstreamed wherever relevant and feasible, in particular in the Market Development and Local Governance portfolios. SDC will continue to support relevant interventions in the fields of Human Rights promotion. The State Secretariat for Economic Affairs intends to support a limited number of in-country initiatives, especially in regard to promoting sustainable trade and investment climate issues. Gender equality and good governance will be addressed as mandatory crosscutting themes.

The Cooperation Strategy 2013-2017 will be mainly implemented by SDC's Regional Cooperation. The budget allocation to implement the proposed programme will grow from currently about 30 to an estimated CHF 35-40 million per annum by 2017.

In general, SDC is guided by the terms of the Paris Declaration to secure ownership for the joint endeavors among the national partners and to achieve a well coordinated, efficient cooperation with other donor agencies. Cooperation with other bi- and multilateral (likeminded) donors is an important way for becoming involved in the policy dialogue and for scaling up successful approaches. (<http://www.swiss-cooperation.admin.ch/bangladesh/en/Home>, Accessed: 27.4.13)

## **About Swiss International Cooperation**

### **Reducing Poverty and Promoting Peace**

Switzerland invests about CHF 2.8 billion a year to combat poverty and promote economic development in countries of the developing world as well as in Eastern Europe and the Commonwealth of Independent States (CIS). Two federal offices coordinate international development cooperation on behalf of the Swiss Confederation: the Swiss Agency for Development and Cooperation (SDC), and the State Secretariat for Economic Affairs (SECO).

All official development cooperation activities aim to improve living conditions for the world's most disadvantaged people. Development cooperation focuses primarily on conflict prevention and transformation, social development, good governance, promoting economic structures and safeguarding natural resources. Swiss development cooperation also strives to strengthen the ability of its partner countries to take their own initiatives.

SDC and SECO support Eastern Europe and the CIS in their transition to a market economy through know-how transfer and financial assistance. Since 2008, the two institutions also implement the Swiss Enlargement Contribution aiming to reduce the social and economic disparities in new member states of the European Union (EU), most of them located in Central Europe and the Baltic region. In 2010, the Swiss Enlargement Contribution was extended to Rumania and Bulgaria.

The Humanitarian Aid of the Swiss Confederation and the Swiss Humanitarian Aid Unit (SHA) respond to emergencies such as natural catastrophes, crises and armed conflicts.

While emergency aid is focused on areas with the greatest need, SDC's bilateral development cooperation takes a different approach: It concentrates on 12 priority countries and regions and on 6 special programmes. SDC's development cooperation always strives for sustainable impact. In Eastern Europe, the SDC's work focuses on 9 transition countries. The SDC works multilaterally with specialised UN agencies, the World Bank and regional development banks.

SECO is responsible for planning and implementing economic and trade policy measures with developing and transition countries and the new Member States of the EU. The primary aims of SECO are to integrate partner countries into the world economy and promote their sustainable economy growth, making an efficient and effective contribution to reducing poverty. SECO's priorities lie in strengthening the partner countries' competitiveness and diversifying their trade, mobilizing domestic and foreign investments, improving the basic infrastructure and promoting stable economic framework conditions. Special attention is paid to economic governance, the climate, energy and the environment. The mobilization of private capital and know-how in the partner countries and in Switzerland forms an important principle of SECO's development cooperation.

The on-site activities of Swiss development cooperation are managed through about 50 Cooperation Offices. Currently, the SDC has approximately 1000 projects worldwide. Roughly 550 Swiss work at headquarters and abroad for the SDC along with 900 people employed locally in partner countries. The SHA has over 600 mission-ready members, of which around 100 specialists are on standby at any given moment. Around 70 people work at SECO's Economic Cooperation and Development Division.

More about the activities of SDC and SECO and the cooperation priorities in Eastern Europe:

- About SDC
- About SECO
- About cooperation priorities in Eastern Europe (SDC, 2013).

### **Approaches, Modalities and Partnerships**

Based on the assumption of an overall stable political and economic context and considering Switzerland's modest general leverage in Bangladesh, Swiss development assistance will contribute to systemic change and reform processes through facilitation, capacity building and advocacy in multi-stakeholder processes at field and policy level.

Direct synergies between the Swiss-funded interventions in the three domains of intervention will be exploited when interventions are conducted in the same geographic area, whereby projects in the fields of Market Development and Local Governance are particularly well positioned for such interaction. Mutual enforcement as well as close exchange and learning among interventions within and across the domains will be fostered systematically, in particular through intra-portfolio cooperation and coordination around mainstreaming and results management processes. Synergies and mutual reinforcement between Swiss-funded interventions and projects/programmes implemented by other donors within the core domains will be achieved through pro-active coordination and cooperation among development partners.

SDC will apply a balanced mix of implementation modalities ranging from mandated projects, contributions to local NGOs, co-financing arrangements with IFIs and UN organisations as well as co-financing partnerships with like-minded bilateral donors. Adjustment of this mix – i.e. an increase in mandates at the expense of co-financing initiatives with involvement of the government – will be the main mitigation measure to respond in the event of a deteriorating development context.

To ensure alignment of the Swiss development assistance with Bangladesh's national priorities, the Embassy of Switzerland and SDC will continue to play an active role in the *Local Consultancy Group* and its relevant working groups and to actively engage with key government stakeholders in the spirit of the Busan Partnership. Coordination with the country's leading development partners, in particular within the constituency of European donors and with UN organizations and IFIs, will continue to be very close (SDC, 2013).

#### ❖ SDC Network

##### **Climate Change and Environment**

The CC&E Network of the Swiss Agency for Development and Cooperation (SDC) promotes the integration of climate change mitigation and adaptation approaches into the programmes and activities of SDC and its partners.

The Network is hosted by SDC's Global Programme Climate Change (GPCC). Members of the CC&E Network are interested SDC staff and development practitioners with connections to the activities of SDC.

##### **The main objectives of the CC&E network are to support and promote:**

- the integration of climate change into Swiss development cooperation
- climate change-related result and impact monitoring
- training and learning
- information and knowledge sharing

The network lives and thrives through its members who take on different roles and activities, e.g. share their experiences and information, support each other, raise awareness of decision makers and citizens on climate change issues, promote the network and strive towards improving the quality of their work.

In order to avoid redundancies and promote cross-fertilization of ideas, the CC&E network collaborates with the other SDC thematic networks (ADB, 2012).

#### ❖ Asian Development Bank

Delay in implementation of development projects continues to constrain Bangladesh's development.

ADB's country partnership strategy (CPS) for 2011-2015 emphasizes the need to design projects that are better prepared for implementation. This means projects that are simpler, taking into consideration capacity constraints, and including covenants that are realistic, focused, and properly sequenced (ADB, 2012).

### **Climate change**

Meeting global demand for energy and natural resources is destabilizing our climate, and threatening the development and security of Asia and the Pacific. The poor are particularly vulnerable to these changes and are already suffering from rising sea levels and increasingly devastating storms, droughts, and floods. Combined with other strains on the environment, these forces could reverse hard-won development gains.

Working with our partners, ADB is responding to the growing need for innovative policies, institutions, and investments to lead the region to a low-carbon and climate-resilient future.

With more than half the world's population and two-thirds of its poor, the Asia and Pacific region has seen remarkable economic expansion over the past decades. But progress has come at a high cost to the environment and, as a consequence, to human development.

Having become a main driver of the climate change crisis, the region jeopardizes its own development. If future production and consumption patterns remain carbon intensive, Asia's developing countries will account for more than 40 percent of global greenhouse gas emissions in the next decade.

### **Consequences of climate change for Asia and the Pacific**

- Decreasing freshwater availability, particularly in large river basins, threatening water, energy, and food security.
- Declining crop yields in Central, West and South Asia, falling by up to 30%.
- Rising sea levels, threatening low-lying coastal areas and island nations.
- Increasing risk of flooding in coastal areas, especially in the densely populated coastlines of South, East, and Southeast Asia.
- Melting glaciers, leading to increased flooding, decreased summer river flows, landslides and erosion.
- Growing pressures for large-scale migration.
- Jeopardizing sources of livelihoods, particularly for the poor in highly vulnerable areas.
- Increasing health risks from heat waves, vector-borne diseases, and water shortages and contamination.
- Deepening economic damage from the combined and cumulative effects of these impacts.



## **Moving to a low-carbon and climate-resilient future**

Urgent action is needed to integrate both mitigation of greenhouse gas emissions and climate change adaptation measures into development planning and investments. Mitigation costs in developing countries are predicted to grow to over \$100 billion per year by 2030, while adaptation cost estimates for Asia and the Pacific are in the order of \$40 billion per year between now and 2050.

For the massive financing required to combat climate change, the key will be using limited public sector funds to leverage significant amounts of private capital, and to get the right technologies into the hands of as many partners as possible, as quickly as possible.

ADB plays an important role in leading the region to a green growth path through financing and innovative technologies. From 2009 to 2010, ADB invested more than \$8 billion in 227 loans, grants, and technical assistance for which climate change mitigation and/or adaptation comprised a substantial component of the entire project.

In line with its Strategy 2020, ADB is integrating climate change into its planning and investment to ensure continued economic growth and a sustainable future for all in Asia and the Pacific.

### **ADB's climate change strategic priorities**

- Expanding the use of clean energy
- Encouraging sustainable transport and urban development
- Managing land use and forests for carbon sequestration
- Promoting climate-resilient development
- Strengthening policies, governance and capacities ( ADB, 2012).

#### **❖ Chevron**

Chevron shares the concerns of governments and the public about climate change and recognizes that the use of fossil fuels to meet the world's energy needs is a contributor to an increase in greenhouse gases (GHGs) in the Earth's atmosphere.

The Intergovernmental Panel on Climate Change concluded in its Fourth Assessment Report, released in 2007, that "warming of the climate system is unequivocal," and that it is "very likely" that a significant level of warming is due to human activity.

GHGs come from a variety of sources—power generation, transportation, agriculture and land use, manufacturing, and other activities. Fossil fuels—coal, oil and natural gas—release carbon dioxide during production and consumption. Fossil fuels are also the primary source of energy for the global economy, which is in the midst of a long-term expansion that is contributing to a rising quality of life in many parts of the world, particularly in developing countries. Based on current projections of population and economic growth, the world's demand for energy will increase substantially over the next 25 years. The majority of that energy will be provided by fossil fuels, even as lower-carbon alternatives continue to emerge.

As we work to reduce GHGs, our collective challenge is to create solutions that protect the environment without undermining the growth of the global economy. We offer the following seven principles as guideposts for the development of policies (Chevron, 2012).

### ❖ EPA (United States Environmental protection Agency)

#### Climate change is happening



**Our Earth is warming.** Earth's average temperature has risen by 1.4°F over the past century, and is projected to rise another 2 to 11.5°F over the next hundred years. Small changes in the average temperature of the planet can translate to large and potentially dangerous shifts in climate and weather.

**The evidence is clear.** Rising global temperatures have been accompanied by changes in weather and climate. Many places have seen changes in rainfall, resulting in more floods, droughts, or intense rain, as well as more frequent and severe heat waves. The planet's oceans and glaciers have also experienced some big changes - oceans are warming and becoming more acidic, ice caps are melting, and sea levels are rising. As these and other changes become more pronounced in the coming decades, they will likely present challenges to our society and our environment.

## Humans are largely responsible for recent climate change



Over the past century, human activities have released large amounts of carbon dioxide and other greenhouse gases into the atmosphere. The majority of greenhouse gases come from burning fossil fuels to produce energy, although deforestation, industrial processes, and some agricultural practices also emit gases into the atmosphere.

Greenhouse gases act like a blanket around Earth, trapping energy in the atmosphere and causing it to warm. This phenomenon is called the greenhouse effect and is natural and necessary to support life on Earth. However, the buildup of greenhouse gases can change Earth's climate and result in dangerous effects to human health and welfare and to ecosystems.

The choices we make today will affect the amount of greenhouse gases we put in the atmosphere in the near future and for years to come.

### Climate change affects everyone

**Our lives are connected to the climate.** Human societies have adapted to the relatively stable climate we have enjoyed since the last ice age which ended several thousand years ago. A warming climate will bring changes that can affect our water supplies, agriculture, power and transportation systems, the natural environment, and even our own health and safety.

**Some changes to the climate are unavoidable.** Carbon dioxide can stay in the atmosphere for nearly a century, so Earth will continue to warm in the coming decades. The warmer it gets, the greater the risk for more severe changes to the climate and Earth's system. Although it's difficult to predict the exact impacts of climate change, what's clear is that the climate we are accustomed to is no longer a reliable guide for what to expect in the future.

**We can reduce the risks we will face from climate change.** By making choices that reduce greenhouse gas pollution, and preparing for the changes that are already underway, we can reduce risks from climate change. Our decisions today will shape the world our children and grandchildren will live in.

## We can make a difference



**You can take action.** You can take steps at home, on the road, and in your office to reduce greenhouse gas emissions and the risks associated with climate change. Many of these steps can save you money; some, such as walking or biking to work can even improve your health! You can also get involved on a local or state level to support energy efficiency, clean energy programs, or other climate programs.

Calculate your carbon footprint and find ways to reduce your emissions through simple everyday actions.

### Personal Greenhouse Gas Emissions Calculator

**EPA and other federal agencies are taking action.** EPA is working to protect the health and welfare of Americans through common sense measures to reduce greenhouse gas pollution and to help communities prepare for climate change.

### What are climate change and global warming?

**Global warming** refers to the recent and ongoing rise in global average temperature near Earth's surface. It is caused mostly by increasing concentrations of greenhouse gases in the atmosphere. Global warming is causing climate patterns to change. However, global warming itself represents only one aspect of climate change.

**Climate change** refers to any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer (EPA, 2012).

### ❖ International Institute for Environment and Development (iied)

#### Who we are

IIED is one of the world's most influential international development and environment policy research organizations. Founded in 1971 by economist Barbara Ward, who forged the concept and cause of sustainable development, we work with partners on five continents. We build

bridges between policy and practice, rich and poor communities, the government and private sector, and across diverse interest groups. We contribute to many international policy processes and frameworks, including the Intergovernmental Panel on Climate Change, the Millennium Ecosystem Assessment and the UN conventions on climate change and biological diversity.

### **What we do**

IIED carries out research, advice and advocacy work. We carry out action research — generating robust evidence and know-how that is informed by a practical perspective acquired through hands-on research with grassroots partners — and we publish in journals and maintain high research standards. We advise government, business and development agencies, and we argue for changes in public policy. We focus on bottom-up solutions, stay open to flexible, adaptable solutions and are marked by a tradition of challenging conventional wisdom through original thinking.

### **Research groups**

IIED has four research groups, which coordinate our work on each of four interlinked issues. The pages below describe each group's strategic objectives, projects and findings



### **Climate change**

Working in collaboration with partner organisations and individuals in developing countries our climate change group has been leading the field on adaptation to climate change issues.



### **Human settlements**

Human settlements group works to reduce poverty and improve health and housing conditions in the urban centres of Latin America, Asia and Africa. It seeks to combine this with promoting good governance and more ecologically sustainable patterns of urban development.



### **Natural resources**

The aim of the natural resources group is to build partnerships, capacity and wise decision-making for fair and sustainable use of natural resources. Our priority in pursuing this purpose is on local control and management of natural resources and other ecosystems.



### **Sustainable markets**

The sustainable markets group drives our efforts to ensure that markets contribute to positive social, environmental, and economic outcomes.

### **Who we work with**

Partnerships are key to the way we work at IIED. By forging alliances with individuals and organisations ranging from urban slumdweller to global institutions, we help strengthen marginalised people's voices in decision making and ensure that national and international policy better reflects the agendas of poorer communities and countries. Some of our partners are people working in other nongovernment organisations, governments, academia, indigenous people's groups, global institutes and multilateral agencies such as the UN. Others are alliances that we either steer or work very closely with, often at the grassroots level in developing countries. We also play an active role in international networks, such as the International Union for Conservation of Nature (IUCN) (IIED, 2013).

## ❖ **The Asia Foundation**

The Asia Foundation is a nonprofit international development organization committed to improving lives across a dynamic and developing Asia. Informed by six decades of experience and deep local expertise, our programs address critical issues affecting Asia in the 21st century—governance and law, economic development, women's empowerment, environment, and regional cooperation. In addition, our Books for Asia and professional exchange programs are among the ways we encourage Asia's continued development as a peaceful, just, and thriving region of the world.

Headquartered in San Francisco, The Asia Foundation works through a network of offices in 18 Asian countries and in Washington, DC. Working with public and private partners, the Foundation receives funding from a diverse group of bilateral and multilateral development agencies, foundations, corporations, and individuals. In 2013, we provided nearly \$114 million in direct program support and distributed textbooks and other educational materials valued at over \$10 million.

### **Approach**

Internationally recognized for our commitment to Asia's development, the Foundation brings together local individuals, communities, and governments who are shaping Asia's future (The Asia Foundation, 2013).

### **Environment**

The Asia Foundation's Environment programs support Asian initiatives to ensure the sustainability of the environment and natural resources critical to Asia's development and future well-being. The Asia Foundation works with a broad range of local stakeholders including civil society, government, and the private sector. We initiate high-impact programs to strengthen the institutions and processes through which environmental resources are managed, and to improve environmental policy

### **Environment Programs**

Now more than ever, Asia's urban and rural communities, governments, businesses, and broader civil society are voicing their concerns regarding the effects of degraded ecological systems and the negative impacts of climate change. In response, the Foundation is building on its experience of over two-decades of in-country environmental initiatives, and expanding the scope and scale of its environmental programming. It recognizes that improved governance of Asia's natural resources and response to climate change is one of the key elements in achieving successful, sustainable development.

The Foundation's Environment programs address and prioritize critical issues that benefit from a coordinated understanding of the broad political, social, and economic dynamics of environmental governance reform. This is coupled with a grounded understanding of the unique local context of the countries where we work. Environment program priorities include:

- Natural Resource Management and Use
- Water Resource Management and Transboundary Water-Sharing
- Climate Change Adaptation and Resilience
- Disaster Preparedness and Risk Reduction
- Urban Environmental Issues
- Women and the Environment

Areas where the Foundation is having an impact in Asia include: programs on responsible mining and natural resource management in Mongolia; increasing public participation and transparency in environmental decision-making in China; and preparing for natural disasters and climate change in the Pacific Islands, among others. For further information on the Foundation's Environment programs (The Asia Foundation, 2013).

#### ❖ **Climate Radio Secretariat**

Many countries are facing critical situation and losing normal status in agriculture, health and livelihood for climate change. However unexpected poverty and migration has been creating there. In this global reality, Bangladesh has been identified as one of the most burn-arable country for climate change. There is happening new type of environmental hazard, disaster however abrupt changes in land, particularly in Southern districts and islands of Bangladesh. The life and struggle is becoming for sharp! This is the time to stop changes in climate for saving life and livelihood, particularly for Bangladesh like most effected countries. As already there is happen huge damages, need to pay compensation, however essential to establish 'Climate Justice'. Although there is ongoing many debates, practices and demand, but having very less participation and voice of victims in the process, media, policy making process. In order to strengthening the voice of voiceless rural climate victims 'Climate Radio' pod casting initiative has been launched.

‘No More Change in Climate’ with this slogan ‘Climate Radio’ has started its mission on May 2009. This is an on-demand online radio from Bangladesh. Initially it started mission with publishing the voice of Alia victims. The nonprofit project 'Climate Radio' has been published and edited by Shahjahan Siraj with technical and administrative supports of Machizo Multimedia Communication.

The objective of 'Climate Radio' is to present the voice of Bangladeshi climate victims in global stage through the 'Internet'. We believe, although it is a small initiative but having open local content. It has limitless power to reach in global policy making levels, however to encourage unlimited number of internet users that may influence to establish climate justice worldwide.



We will be happy, if someone by listening the stories of Bangladeshi climate victims become sensitive and aware about climate change.

Climate Radio has vision to publish more and extensively voice of victims by visiting all southern effected climate change hot-spots and Bangladeshi islands which are mostly burn-arable area. Along with the climate voice, we would like to produce a series of documentary like ‘VICTIMS’, CLIMATE ORPHAN. In this 1st phase Climate Radio has published a number of interviews, government's statements, adaptation success story, vision of civil society, voice of activist, national leader and policy makers.

All the content of 'Climate Radio' is free and open content under Creative Commons. Anybody can use clips and production without reedit or change for public benefit and purposes. There is no need permission as well.

It is a ‘zero-funded’ not for profit project. We have big vision to launch full phase online radio and audio sharing site on climate change as well. But it is hard to expand without external support. We are looking partnership and collaboration to expand the Climate Radio in second phase (Climate Radio Secretariat, 2013).

#### ❖ **Ethnic Community Development Organization (ECDO)**

ECDO is a voluntary development organization working for and with the indigenous people of Sylhet Division of North Eastern part of Bangladesh.

ECDO was founded by some members of the indigenous community in December 2002, and all of ECDO’s staff are indigenous people. At present ECDO is working with the beneficiary of ethnic groups in three upazillas of Sylhet district; Jaintapur, Goainghat and Sylhet. ECDO’s target is to be working with all of the indigenous people of Sylhet division.

ECDO envisages a society where empowered, educated, aware and culturally diverse indigenous groups are able to ensure their own human development free from discrimination, poverty and exploitation. ECDO’s mission is to assist indigenous communities in working for a positive and sustainable change for those deprived of rights and opportunities by implementing both service delivery and rights based approaches. ECDO implements its activities in a fully participatory and bottom-up approach with an emphasis on empowerment from within indigenous communities. We are funded by several international organizations, including Oxfam GB, Manusher Jonno Foundation-MJF and Concern Universal Bangladesh.

Please follow the links on the left to learn more about ECDO's work and impact. ECDO also works with academics to produce high-quality research on indigenous communities, so if you would like to learn more about the lives and cultures of the indigenous people of North Eastern Bangladesh, please browse our resources section, and get in contact with ECDO. We also have posted some pictures of our work in that section (ECDO, 2013).

### **What to Do**

ECDO is working for the welfare of different ethnic communities in Sylhet region. Their intervention communities are Manipuri, Khasi, Patro, Tea-worker and other small minority communities who are living under poverty line.



Ethnic Community Development Organization was formed on December 25th 2002. It is a rights based organization working with Ethnic communities. As ECDO's staff are all indigenous people themselves, ECDO as an organization benefits from having a unique link and bond of trust with it's target beneficiaries. ECDO undertook, and maintains an extensive consultative process with the indigenous communities, to discover and discuss what they feel they need assistance with towards their development.

Based on this, ECDO addresses its beneficiaries problems through helping the community to provide sustainable access to basic services such as health, education, water and sanitation, HIV/AIDS awareness and human rights. It operates in 18 villages/punjees in Jaintapur, Goainghat and Sylhet Upazilla's in the North East of Bangladesh.

ECDO has six full time staff, a full time Aus Training International Volunteer and two part time staff working out of the Sylhet office. Of these staff, three are female and three are male. ECDO has a total of 18 community volunteers, of these, 5 are women and 13 are men.

Today ECDO runs three main programs, which can be summarized as:

- Promoting **education** for all in indigenous communities through Education Support Centres, a Global Art Exchange with a primary school in the UK, and Education Materials Distribution.
- Ensuring access to **health** facilities through medical camps and raising awareness about HIV/AIDS. In addition ECDO raises awareness on reproductive health issues for mothers and their new-born children
- **Water and sanitation programs** which includes awareness raising workshops about sanitation and the delivery of five Rain Water Harvesting Plants to provide an arsenic and other bacteria-free source of water for the indigenous people.

ECDO also operates a Research and Publications wing and publishes annual Journals, Newsletters and IEC/BCC Materials (ECDO, 2013).

### **Project Partners**

As well as ECDO's excellent links with the indigenous communities of Sylhet, ECDO benefits greatly from the cooperation and assistance of other organizations.

ECDO is a partner with the following organizations, who provide funding and share their expertise and experience to enable ECDO to deliver their projects successfully:

- Oxfam GB Bangladesh
- Manusher Jonno Foundation
- Concern Universal Bangladesh

### **ECDO is also a member and supporter of the following organizations:**

- Member of Committee of Concerned Citizens, Transparency International Sylhet, Bangladesh
- Member of District HIV/AIDS Coordination Committee, Sylhet, Bangladesh.
- Member of Indigenous Children's Education Forum (ICEF, Secretariat CARE office Dhaka, Bangladesh)
- Steering committee member of National Coalition for Indigenous People's Bangladesh (NCIPB), Dhaka, Bangladesh (ECDO, 2013).

### **Archive for Climate Change**

Tackling the issue of climate change through education

February 27, 2014 at 4:01 pm · Filed under Climate Change, Human Rights, Indigenous People



Climate change is a particularly important issue for Bangladesh, which is often recognized as one of the most vulnerable countries in the world to the impacts of climate change. Acknowledging this importance, many internationally and nationally focused Non-Government Organizations (NGOs) working in Bangladesh, have already incorporated climate resilient activities into their project activities at a field level. In response to these initiatives, locally based NGOs are seeking to follow this lead, in recognizing the importance of tackling climate change impacts as part of the process of improving the quality of life of the rural poor and marginalized. One of the first steps in integrating climate resilient activities into development activities at a regional level is to understand the issue of climate change and what it means for Bangladesh. Climate change is still a relatively new concept to locally based NGOs whose main focus to date has been on poverty alleviation, livelihood security, gender equality and human rights issues. As such, a knowledge gap on the issue of climate change presently exists at the grassroots level within the NGO sector. On Wednesday 29th January, Ethnic Community Development Organisation (ECDO), Jaintia Shinnomul Songthsa (JASHIS) and the Climate Council Australia, jointly hosted a Climate Change Workshop at MC College Sylhet, which sought to go some way toward bridging this knowledge gap here in Sylhet. The event brought together international and national climate change specialists to share information, with approximately more than participants including local development professionals, regional government officials, academics and students participating.



The event was chaired by the Executive Director of JASHIS, Mr. ATM Badrul Islam. The Chief Guest was Professor Will Steffen, a Climate Change Scientist and Researcher from the Australian National University (ANU) and Councilor of the Climate Council Australia. Special guest was Mr. Sarder Shafiqul Alam, a Fellow at Bangladesh Centre for Advanced Studies (BCAS), and Climate Change Adaptation Expert and National Capacity Building Co-coordinator of the ARACB Programme. The workshop was launched by Vice Principal of MC College, Mr. Hayatul Islam Akonjee, who gave a welcome speech on behalf of his college as venue host and the organizers. As a thank you gesture for providing the venue for the event, the Vice-Principal was presented with a choto gach or small tree by members of the organizing team, Ms. Sonja Steffen, Marketing & Networking Officer at ECDO and Ms. Melissa Pepper, Climate Change Education Officer at JASHIS, to be planted on campus to commemorate the event and in a symbolic gesture to become more climate resilient. The Executive Director of ECDO, Mr. Lakshmikanta Singh, then gave an introductory speech giving an overview of the program, its significance to the work of the hosting organizations, and its greater value to the broader development sector. Mr. Lakshimikanta Singh also introduced each of the key speakers in attendance, and welcomed the first speaker Professor Will Steffen to the stage to present his talk.



In his talk, Professor Steffen gave an overview of the science of climate change, touching on its impacts for Bangladesh. Professor Steffen's talk raised some interesting discussion points, engaging the audience, who enthusiastically asked questions during a Q&A session with Professor Steffen, which immediately followed his presentation. At the conclusion of Professor Steffen's presentation and Q&A session, special guest Mr. Sarder Shafiqul Alam took to the stage to talk about adaptation to climate change from a Bangladesh perspective, with a particular focus of community-based adaptation. Mr. Alam then fielded questions from the audience, who again participated enthusiastically to the discussion.

The formal component of the program was brought to a close by Chairperson and Executive Director of JASHIS, Mr. ATM Badrul Islam, who gave closing remarks and formally thanked all those in attendance. A late lunch was then enjoyed by all in attendance as participants mingled with the guest speakers (ECDO, 2013).

#### **❖ The Bangladesh Agricultural Research Council (BARC)**

##### **Ministry of Agriculture, Government of the People's Republic of Bangladesh**

The Bangladesh Agricultural Research Council (BARC) is an autonomous organization under the Ministry of Agriculture, Government of the People's Republic of Bangladesh. Bangladesh Agricultural Research Council (BARC) has been established in 1973 with the aim of coordinating systematic agricultural research in the country. It is the apex body of National Agricultural Research System (NARS).

##### **Vision**

The vision of the BARC is to develop an efficient, effective and sustainable system of agricultural research promoting to increase standard of living, which would be adequate for well being of the people of Bangladesh.

##### **Mission**

The mission of the BARC is to strengthen and mobilize research capabilities of the institutes of the NARS, universities, private sectors and other stakeholders in partnership in the generation of appropriate technologies and information for the development of agriculture sector.

##### **Background**

The economy of Bangladesh is predominantly agricultural. About 80 percent of the total population live in rural areas and are directly or indirectly engaged in a wide range of

agricultural activities. The agricultural sector contributes around 29 percent of the country's Gross Domestic Product and generates employment for 63 percent of the total labour force.

With the rapid increase in population and high pressure on land it was not possible to achieve increased productivity of agriculture through traditional farming systems. To achieve farmer's prosperity, alleviate poverty, ensure self reliance in rural communities on sustainable basis, and meet the challenges of the future, a mechanism was needed to systematically coordinate and organize facilities and resources in agricultural research. Bangladesh Agricultural Research Council (BARC) was established in 1973 by the Presidential Order No. 32 to provide systematic approach to plan, evaluate, coordinate and conduct national agricultural research program in order to accelerate food production including fish and livestock and labour productivity.

The continuing reorganization of research institutions led to further restructuring of the agricultural research system in 1976. The parliamentary act in 1996 empower BARC with a wider responsibility of planning, priority setting, coordination, monitoring, reviewing and evaluation of research programs and human resource development of the National Agricultural Research System (NARS) institutes. This wider responsibility was deemed necessary to improve the effectiveness of resources allocated to the agricultural research community.

In order to strengthen BARC's role for effective co-ordination of NARS, BARC Act, 2012 was approved by the parliament in March 2012. The BARC Act, 2012 empowers BARC to allocate research resource in order to co-ordinate agricultural research program (BARC, 2012).

#### ❖ **BARI**

BARI (Bangladesh Agricultural Research Institute) is the largest multi- crop search institute conducting research on a wide variety of crops, such as cereals, tubers, pulses, oilseeds, vegetables, fruits, spices, flowers, etc. Besides variety development, this institute carries out research on such areas as soil and crop management, disease and insect management, water management and irrigation, development of farm machinery, improvement of cropping and farming system management, post-harvest handling and processing, and socio-economic studies related to production, processing, marketing and consumption. The institute functions with the director general as the chief executive along with three directors of three of its major wings, such as Research Wing, Support Service Wing, and Training and Communication Wing. The Research Wing executes and monitors all the research programmes and other research activities through 7 special crop research centres, 17 research divisions, 6 regional research stations and 28 sub-stations. Support Service Wing provides all the logistic supports in research and personnel

management. This wing is also responsible for infrastructural development and general procurement of the institute. The Training and Communication Wing is responsible for human resource development through conducting trainings and arranging scholarships for higher studies. Dissemination of information through print and electronic media, organizing seminars and symposia are also the important areas of activities of this wing.

### **Historical Background**

BARI has a long historical background of its own. The emergence of the Institute in its present form has occurred through a number of changes starting from simply a sub-ordinate status under the Department of Land Records in the then Bengal. On the recommendation of the Famine Commission in 1880, the Bengal Department of Agriculture was established as a sub-ordinate part of the Department of Land Records in the then Bengal. In 1906, Lord Curzon, the then Vice Roy of India had granted separate status to the Bengal Department of Agriculture and in the same year, a nuclear agricultural research laboratory under this department was established at Tejgaon, Dhaka. In 1908, an experimental station what has become known as Dhaka Farm was established on an area of 161.20 hectares of land. This Dhaka Farm was the predecessor of BARI and some other research institutes. Establishment of Dhaka Farm offered a good scope for conducting research in the field. In 1947, Bengal Department of Agriculture was renamed as East Pakistan Department of Agriculture. The two constituent divisions of the department were Research and Extension. In 1962, there was a severe blow to agriculture research when the land of Dhaka Farm was acquired for establishing Second Capital (today called Sher-e-Bangla Nagar). In 1968, two separate directorates were established - one was Directorate of Agriculture (Extension and Management) and the other was Directorate of Agriculture (Research and Education). The Directorate of Agriculture (Research and Education) was mostly concerned with research. This Directorate as well was responsible for the management of Bangladesh Agricultural Institute (BAI) at Sher-e-Bangla Nagar, Dhaka. Later in eighties and nineties, two other agricultural colleges, one in Patuakhali and the other in Dinajpur, were established. These two agricultural colleges were also administered by BARI until these became universities. In 1971, the former provincial organization took on national responsibilities. Like many other sectors, agriculture as well inherited poor manpower and insufficient administrative set ups. Therefore, it was rightly thought to have established a coordinated and comprehensive research and some major decisions were taken up in 1973. Another important development in the year was the Presidential Order No. XXXII that helps strengthen and reconstitute agricultural research organizations and system in the country. Upon subsequent developments of research institutions



led to further restructuring. In 1976, through the Presidential Order No. LXII, the Bangladesh Agricultural Research Institute (BARI) was emerged as an autonomous and effective research organization following the dissolution of the Directorate of Agriculture (Research and Education) with sufficient operational flexibility, structural modification, and improvement of regional and sub-stations (BRRI, 2012).

**Table: 2.4.7: Climate Change Feedback Information**

Query Subject	Climate change
Message	Climate change is a major problem for maintaining stability of potential yield of pulses. What kind of research activities are going to cope with this situation.
<b>Feedback Information</b>	
Feedback Message	Global climate is gradually changing, particularly the trend of increasing ambient temperature which has been contributing to outbreak of diseases. Some minor diseases and insects are becoming major causing epidemic situation. Changing of relative humidity and temperature also may increase and decrease the severity of different diseases of pulse crops. Research program has taken to develop short duration, heat and drought tolerant, photo and thermo insensitive varieties having potential for withstanding the long range of climatic variations and weather factors. Â Pulse Research Centre BARI

❖ **BRRI**

Bangladesh is a large deltaic plain formed under the influence of three mighty rivers –Ganges, Brahmaputra and Meghna with its flat topography, abundant water and sub tropical climate, constitutes an excellent habitat for the rice plant. Rice, as such, evolved as the staple food of the people of the country, and historically has been associated with their culture, rites, and rituals.



With time, as the population increased at a rapid pace, the gap between rice production and food requirement for the millions widened. To feed the increasing population through radical change

in rice production, replacement of the low-yielding traditional varieties and age old production practices of rice by high-yielding varieties and improved production technologies became essential.

Rice research in this part of the sub-continent started in 1910 that got momentum in mid 60s.

Realizing the importance of rice in food security and political stability of the country, an autonomous organization in the name of East Pakistan Rice research Institute ( EPRRI) was established on 1 October 1970 on 76.82 hectare of land at Gazipur,36 km north of the capital city Dhaka,



which was renamed as the Bangladesh Rice Research Institute (BRRI) after the independence in 1971 (BRRI, 2012).

#### ❖ **BIDS (Bangladesh Institute of Development Studies)**

The Bangladesh Unnayan Gobeshona Protishthan or BIDS is an autonomous public multi-disciplinary organization which conducts policy oriented research on development issues facing Bangladesh and other developing countries. The mission is to facilitate learning in development solutions by conducting credible research, fostering policy dialogue, disseminating policy options, and developing coalitions to promote informed policy making. The Institute also conducts training on research methodologies and carries out evaluation of development interventions. In that pursuit, BIDS is involved in collection and generation of socio-economic data for carrying out analytical and policy loaded research on current economic and social issues and dissemination of research findings and knowledge on developmental concerns to support policy formulation. BIDS researchers also contribute directly to formulation of government policies through their interactions and participation in the policy making process

#### **Goals & Objectives**

The strategic objectives of BIDS are crystallized around the theme of generating credible policy oriented research on development issues facing Bangladesh and other developing countries along with strengthening research-policy links to promote informed policy making in Bangladesh. In

the pursuit of its strategic objectives, BIDS activities are multi-dimensional and inherently straddle several objectives:

- Promote excellence in policy research and extend the knowledge frontiers to facilitate learning in development solutions especially in priority areas of development related to social well being of the poor and disadvantaged groups in society;
- Collect and generate socioeconomic data to facilitate the conduct of analytical research on current economic and social issues and facilitate development planning and policy formulation by the government;
- Disseminate knowledge and research based policy options to the policy makers and assist them in designing credible development strategies for achieving economic and social goals;
- Expand outreach of research to civil society and other stakeholders to help shape policy debates on key development issues, develop broader understanding and consensus, and promote knowledge based policy agenda;
- Conduct training and capacity building programs and promote the application of cutting edge research techniques and appropriate methodologies in economics and allied social sciences to develop human and institutional capacities within the government and in other institutions;
- Promote research communication and networking to share research findings on the BIDS knowledge base and stimulate interaction within the research community, policy makers, civil society, and other stakeholders through organizing workshops, seminars, conferences, and using different modes of print and electronic media.

### **A Brief History**

The Bangladesh Institute of Development Studies (BIDS) had its origin in Pakistan, named as the Pakistan Institute of Development Economics (PIDE) and established in June 1957. From the very beginning, PIDE was served by a significant number of Bengali scholars and a distinguished body of foreign scholars. Through its performance, PIDE attracted bright young economists and social scientists who began their career at the Institute. The PIDE was moved to Dhaka in January 1971.

After the emergence of independent Bangladesh in 1971, the Institute was called the Bangladesh Institute of Development Economics (BIDE). Later on, a Parliamentary Charter was awarded in 1974 and the Institute was renamed as the Bangladesh Institute of Development Studies (BIDS) to reflect its multidisciplinary focus of development research. It was incorporated as an autonomous body, governed by a high powered Board of Trustees under the Chairmanship of the Minister of Planning, Government of the People's Republic of Bangladesh. Since 1974, through a process of national level institutional restructuring, two other institutions—the Population Study Centre and the National Foundation for Research on Human Resources Development—were merged with BIDS in 1982 and 1983 respectively.

With its multidisciplinary focus on development, evolving development paradigm, and changing economic and social realities of the country, the research focus of BIDS covers a wide range of issues including macroeconomic fundamentals, agriculture and rural development, poverty and inequality, trade, food security, microcredit, industry and small and medium enterprises, labor market, health, nutrition, education, rural nonfarm activities, environment and climate change, water resources management, energy, gender and empowerment, migration, urbanization and other areas of dynamics of development in Bangladesh and developing countries in general. Emerging priority issues include macroeconomic management, environment and climate change impacts, infrastructure including energy and power, and impact of globalization.

Initially, funding for BIDS was made through regular government budgetary support. In 1983, the Government created an endowment fund to ensure a source of recurring revenue for running the Institute, thereby reducing its dependence on regular budgetary support, and enabling BIDS to enjoy more functional autonomy. In 2009, the Government provided a Research Endowment Fund of Tk. 200 million to support core institutional research of BIDS. Some donor agencies and foundations also provide resources for its activities (BIDS, 2012).

#### ❖ **Centre for Policy Dialogue (CPD)**

##### **Profile**

The CPD established in 1993 by Professor Rehman Sobhan with support from leading civil society institutions in Bangladesh, is mandated by its Deed of Trust to service the growing demand that originates from the emerging civil society of Bangladesh for a more participatory and accountable development process. CPD seeks to address this felt need by way of organising multistakeholder consultations, by conducting research on issues of critical national and regional interests, through dissemination of knowledge and information on key developmental issues, and by influencing the policy making process in the country.

In the process, CPD strives to bridge the gap between empirical research and policy advocacy through a sustained effort in public policy analysis. CPD endeavours to create a national environment conducive to open public discussion on important policy issues with a view to ensuring domestic ownership over the policy agenda and also building a broad-based support for such policies.

Over the past fifteen years, CPD has emerged as Bangladesh's premier think-tank and has established its credibility as one of the very few places in Bangladesh where the government and opposition political parties agree to sit around the dialogue table and conduct an informed discussion with the civil society.

CPD's civil activism in policy-related areas is operationalised through various means which are implemented through concrete initiatives. These include:

- Knowledge generation through research and analysis, creation and management of data and information base.

- Policy awareness raising through dialogues, networking, information dissemination and mobilising support of the civil society.
- Policy influencing, at both national, regional and international levels, by involving policymakers in the dialogue process and by contributing to preparation of global policy documents and national policy briefs.
- Capacity building, by way of organising policy appreciation workshops for policy-makers and other important stakeholder groups.

## **The Background**

The revealed wisdom stemming from recent development experiences of many countries amply demonstrate that unless policy changes originate from domestic discourse and are designed with stakeholder participation, it is hardly possible to establish domestic ownership over the development agenda and ensure successful implementation of the developmental policies. Besides, the absence of informed policy discussion on important public issues severely jeopardize the credibility of public policies, limit their acceptability and undermine their efficacy. In order for policies to be democratically sustainable, it is important to recognise the need for making the process of policy formulation more inclusive. To ensure accountability and participation, it is essential to initiate a process of public consultation based on a more objective assessment of policy designs, their implementation and outcome, which is independent of the donors as well as the Government of Bangladesh (GOB). Such an exercise provides a basis for encouraging civil society as stakeholder to identify policy alternatives and to build up support for particular policy options. Such a process will serve to establish a degree of ownership over the policy agenda by involving representatives of the stakeholders along with policymakers in the design of public policy. Policies which originate from such a consultative process are likely to be more acceptable to the people of Bangladesh and are, thereby, likely to be more implementable. The Centre for Policy Dialogue (CPD) holds that an agenda of focused policy dialogues, organised in a non-confrontational environment is likely to bring to the surface a more consensual perspective to policy-making and would contribute towards good governance in the country.

## **Objectives**

- It is of paramount importance to the sustainability of any programme of policy reforms in Bangladesh and indeed integral to the process of good governance to develop institutional mechanisms for educating the public on the significance of specific policy issues through a process of informed public debate. The principal objectives guiding the work of the Centre for Policy Dialogue is to contribute towards people's awareness about policy issues affecting their lives and the future of their country, and to create a national climate for public discussion of important policy issues with a view to building up broad-based support for such policies. In order to achieve its objective, CPD has set itself the task to attain the following goals:
- To create a platform for public discussion of important national policy issues with a view to building up a broad-based support for such policies.

- To organise regular policy dialogues with participation from major stakeholders including policy makers, academics, experts, civil society, representative from business community, NGOs and other civil society groups and stimulate a culture of dialogue and discussion on various important development issues.
- To conduct in-depth research on critical development issues which could service the needs of an informed public debate.
- To raise policy awareness of young people in Bangladesh by conducting internship programme by creating opportunities to share their views, and by organising policy appreciation courses for them.
- To provide policy inputs to the principal decision-makers on the basis of research and dialogue outputs.
- To enhance and stimulate endogenous capacity to design and implement domestic policy agendas with a view to generate a sense of ownership by encouraging research activities through grants and fellowships.
- To disseminate the revealed wisdom stemming from the dialogue discussion to a broad spectrum of civil society through active dissemination and networking activities.
- To undertake in depth case studies, including ‘investigative journalism’, in order to generate first hand information on state of governance in particular sectors of the economy and bring the results of such investigation to public notice and subject these to public scrutiny and accountability.
- To generate information on public perception on issues of national, economic and social interest and on state of governance by conducting periodical public perception polls.

In the process of addressing the above objectives CPD has emerged as Bangladesh’s premier think-tank and is generally looked upon by civil society to provide a space where issues of national concern can be exposed to interactive discussion within an enlightened environment. CPD has established its credibility as one of the very few places in Bangladesh where the government and opposition political parties are agreeable to sit around a dialogue table and also to interact with civil society. Dialogue reports published by the CPD on a regular basis capture the outcome of such dialogues and have in the past served a useful purpose in bringing into sharp focus the critical and relevant issues of the day.

### **Focus**

CPD focuses on frontier issues which are critical to the development process of Bangladesh in the present context, and which are expected to shape and influence the country’s development prospect in the mid-term.

CPD’s current programme portfolio includes research activities, holding of dialogues, publication and dissemination as well as networking related initiatives.

### **Facilities**

- A five storey building with full time gas, water and electricity supply
- A high capacity electric generator
- An elevator
- 24 hour dedicated higher bandwidth with e-mail server

- 50 IBM compatible PCs (one person one computer facility), 15 Printers (among which 3 printers with scanning and photocopying facilities), 2 scanners and 5 Laptop computers
- A fully furnished and well equipped dialogue room with PA system and complete multimedia set-up
- Air condition facility in every floor
- A canteen on the roof top (CPD, 2012).

## **Research Area**

### **Climate Change and Environment**

In view of the worldwide concern over climate change, CPD is giving increasingly more emphasis on environmental issues in its research work. It is in this context that CPD is engaged in conducting a number of studies for last several years analyzing the impact of climate change on various sectors of Bangladesh. One of the major initiatives taken in this regard was research undertaken in related areas as part of a three-year long research project on climate change in partnership with the *International Crops Research Institute for the Semi-Arid Tropics* (ICRISAT) with support from the Asian Development Bank (ADB). CPD has also carried out a study on climate change and rice production in Bangladesh in 2008. The study presented a synthesis of projection on impact of climate change on agricultural production in Bangladesh and underscored the importance of strengthening research on drought, flood and saline-tolerant rice varieties to facilitate crop adaptation in future. In 2010, CPD completed two studies under the project focusing on the adaptation strategies in Bangladesh agriculture to combat negative consequences of climate change. These studies analysed changes in climate conditions in Bangladesh over the last four decades with special focus on flood-prone and drought-prone ecological conditions. Documenting the changes and patterns of the rural economic life and livelihood activities in four districts during 1990-91 to 2004-05, the studies analysed the changes in cropping pattern, livelihoods and poverty situation in these areas (CPD, 2012).

### **❖ Disaster Research Training & Management Centre (DRTMC)**

#### **University of Dhaka**

Disaster Research Training and Management Centre (DRTMC) was set up in May 1989. The Centre provides an interdisciplinary forum for (i) conducting scientific research and professional training in the field of disaster management, (ii) disseminating knowledge through published materials and seminars, (iii) assisting the government to develop disaster-related curriculum and manpower and (iv) extending professional service to policy makers, particularly to those who are dealing with disaster management in Bangladesh. A Management Council comprising 25 members from within and outside the university bears the overall responsibility for the management of the Centre.

One of the major functions of the centre is to maintain a current inventory of disaster situations, the needs created in such areas, the nature, magnitude and effectiveness of assistance delivery and the longer term rehabilitation and reconstruction requirements of affected areas.

The centre designed and implemented a series of short extension courses and training, seminars dealing with various aspects of disaster forecasting and early warning systems, disaster mitigation and management and long term reconstruction and rehabilitation strategies. Such courses help government personnel response and non-governmental agencies involved in disaster assistance. The center also helps in developing appropriate communication strategies for village level self-help hazard mitigation activities, and also developing close interaction with non-governmental agencies active in disaster, prone areas.

Besides providing grants for research scholars, the Centre provides financial support to the students of Dhaka University for doing research mostly on disaster related topics (BDRC, 2012).

#### ❖ **Bangladesh Development Research Center (BDRC)**

BDRC is an independent, non-partisan, non-profit research organization, run by volunteers.

**The BDRC is a non-profit research organization**, incorporated with the specific purpose to undertake and disseminate research on development issues relevant for Bangladesh in order to foster the peaceful development of nations.

**The BDRC has been founded in January 2007**, by Dr. Bernhard G. Gunter, after more than 15 years of research and/or development work at various universities and international organizations (including the African Development Bank, the International Labor Organization, the United Nations Conference on Trade and Development (UNCTAD), the United Nations Development Program (UNDP), and the World Bank). In order for the BDRC to concentrate on research, the BDRC does not have members; instead, it is governed by a Board of Directors.

**The BDRC supports the Paris Declaration on Aid Effectiveness.** The BDRC believes strongly that the Bangladeshi people are able to lead their country's development policies and strategies. The BDRC supports capacity building as well as indigenous knowledge.

**The BDRC is an independent research organization.** The BDRC does not get involved in politics, neither in Bangladesh, nor in any other country. Therefore, the BDRC does not accept any funds from a) the Government of Bangladesh and b) from any political party in Bangladesh or any other country (BDRC, 2012).

#### **Current BDRC Projects**

Bangladesh Development Bibliography provides the World's Largest Bibliography on Bangladesh Development Studies and Reports published in this Millennium. We also provide



suggestions for how to find Bangladesh related development literature published before 2000 (including some links and lists). Furthermore, recognizing some international days/events, the BDRC provides lists of recent publications related to international days/events and Bangladesh. Finally, the BDRC provides (jointly with the Climate Change Cell of the Government of the People's Republic of Bangladesh) a regularly updated annotated bibliography on climate change and Bangladesh.

### **Current BDRC Research**

Climate Change: Includes four areas/topics:

- research on climate change adaptation policies of Bangladesh,
- research on climate change vulnerability in Bangladesh,
- research on the impact of development on CO<sub>2</sub> emissions, and
- a regularly updated annotated bibliography on climate change and Bangladesh (jointly with the Climate Change Cell of the Government of the People's Republic of Bangladesh ( BDRC, 2012).

### **❖ Bangladesh Centre for Advanced Studies (BCAS)**

BCAS is an independent, non-profit, non-government, policy, research, and implementation institute working on Sustainable Development (SD) at local, national, regional and global levels. It was established in 1986 and over 25 years and has grown to become a leading research institute in the non-government sector in Bangladesh and South Asia.

BCAS encourages multidisciplinary and interdisciplinary in its approaches of running programs and projects by working under four broad themes, **Environment-development integration, Good governance and people's participation, Poverty alleviation and sustainable livelihoods, Economic growth and public-private partnership**. BCAS has over hundred full-time and some part-time staff working in different capacities, with a large group of senior professionals and scientists, and many mid-level professionals and researchers.

### **What is BCAS**

Established in 1986, the Bangladesh Centre for Advanced Studies (BCAS) is a leading research and policy institute in the non-government sector of Bangladesh. It is independent, non-profit and specializes in policy analysis, action research and project implementation for sustainable development at local, national, regional and global levels. BCAS addresses sustainable development through the following interdisciplinary themes. They are:

- Environment and climate change
- Good governance through people's participation
- Poverty alleviation and sustainable livelihoods
- Economic growth

- Public-private partnership
- Sustainable markets

The overall aim of BCAS is to provide guidance and practical solutions to promote sustainable development, eradicate poverty, improve access of the poor to resources and ensure social justice.

BCAS tests dynamic ideas, develops models and gives practical solutions to problems in all areas that fall under the broad themes. These ideas have been replicated by NGOs, government departments, private sectors and UN agencies.

### **Vision and Mission**

- To undertake action research on policy issues and implementation at local, national, regional and international levels for advancing and supporting sustainable development
- To develop ideas and models for efficient resource management, conservation of the environment with an aim to promote sustainable development
- To ensure people's and community participation in planning, implementation and management of resources
- To undertake collaborative research with scientists in both national and international organizations to share knowledge and experience
- To motivate and facilitate the private sector to adopt cleaner production methods, pollution abatement techniques and ensure clean environment and sustainable trade.
- To enhance the capacity of civil society, private and public sectors in the areas of environment and natural resource management and promote pathways to green economy for ensuring sustainable development.
- To closely work with various agencies and departments of the Government in different countries as well as development partners, international institutions and Multilateral Environmental Agreements (MEAs).

### **Key approaches**

Integration of knowledge and information at community, national, regional and global levels into policy and programme to make knowledge useful and effective through documentation, communication and outreach.

- Carry out research to establish linkages between science, policy and people to promote sustainable development
- Integration of indigenous knowledge and experience of communities with scientific knowledge to increase awareness and efficiency.
- Development through participatory approach, by involving communities, in identifying problems and root causes and suggesting solutions.

- To bring out publications including books, newsletters and monographs and to disseminate the results and findings of various research and initiatives
- To enhance public awareness and influence policy decisions through policy dialogue, advocacy, networking, training, workshop, seminar and symposium
- To undertake interdisciplinary and multidisciplinary research activities using multidisciplinary methodologies

### **Development Partners**

1. Asian Development Bank (ADB)
2. CARE – International
3. Centre for Environmental Education (CEE), India
4. Centre for the Economics and Management of Aquatic Resources (CEMARE)
5. University of Portsmouth, UK
6. Centre for the Law and Economics of the Sea (CEDEM), France
7. Centre for Transatlantic Relations, New York
8. Centre for Water Policy and Development, School of Geography, University of Leeds, UK
9. Coastal Resources Institute (CORIN), Thailand
10. Department for International Development (DFID) UK
11. Development Alternatives (DA), India
12. Directorate General for International Cooperation (DGIS)
13. Environmental Law Foundation, Sri Lanka
14. Fletcher School of Law and Diplomacy, Tufts University, Boston, USA
15. Interchurch Organization for Development and Cooperation (ICCO), The Netherlands
16. International Centre for Integrated Mountain Development (ICIMOD), Nepal
17. International Institute for Environment and Development (IIED), UK
18. International Institute for Sustainable Development (IISD), Canada
19. IUCN International
20. Organization of Economic Cooperation and Development (OECD)
21. PELANGI, Indonesia
22. Profit, Peoples' Planet (3Ps), Germany
23. Research Institute for Aquaculture (RIA), Vietnam
24. RIVM, The Netherlands
25. Stockholm Environment Institute (SEI–Boston, York), USA
26. Sustainable Development Policy Institute (SDPI), Pakistan
27. Swiss Agency for Development and Cooperation (SDC)
28. The Jane Goodall Institute, London, UK
29. United Nations Conference on Trade and Development
30. United Nations Development Programme (UNDP)

31. United Nations Environment Programme (UNEP)
32. United Nations Food and Agricultural Organization (FAO)
33. USAID
34. Winrock International
35. USA. World Bank
36. WWF International

### **Climate change adaptation and mitigation**

Climate change adaptation and mitigation is a core area of activity at BCAS because Bangladesh is recognized as a country most vulnerable to climate change. Natural hazards such as floods, increased rainfall, rising sea levels, and tropical cyclones are expected to increase which may seriously affect agriculture, water & food security, human health and shelter. This programme is therefore a significant part of the “Integration of Environment and Development” theme which BCAS is based around. BCAS has achieved specialization in this area throughout the years by conducting research with sophisticated in-house technology, building awareness, designing advocacy campaigns, publications and collaborating with development partners at national and international levels.

### **Objective**

- To develop models and ideas in climate change adaptation and mitigation as a part of sustainable development
- To ensure community resilience through comprehensive, planning implementation and management of resources.

### **Approach**

BCAS addresses this area with the following activities:

- Conducting research by assessing impacts, vulnerabilities, adaptation and mitigation potential
- Compiling inventory on Greenhouse gases
- Promoting clean development mechanisms
- Raising awareness and building capacity
- Formulating policy for institutional development
- Contributing to global assessment and negotiations
- Designing advocacy campaigns at local, regional and global levels

### **Outcomes**

- Experts at BCAS are the main contributing authors of the IPCC reports on climate change.

- BCAS has published a number of books, working papers and scientific articles on climate change impacts on development, poverty, disaster risk reduction and helps to build capacity of various actors like government departments, NGOs, community and development partners in Bangladesh.
- BCAS is the secretariat for the Climate Action Network South Asia (CANSA) which consists of fourteen non-governmental organizations in South Asia working on Climate Change issues and publishes the journal “Clime Asia”.
- BCAS worked with the Government of Bangladesh to formulate the National Adaptation Programme of Action (NAPA) and National Environment Management Action Plan (NEMAP).
- BCAS has organized a number of seminar and dialogues on climate change, causes, impacts, mitigation and north-south cooperation. It has helped to put forward southern perspectives in global discourses on climate change.
- Two Community Based Adaptation (CBA) workshops were organized in Dhaka in 2005 and 2007, where experts and practitioners from across the world shared their ideas and experiences.
- BCAS has organized orientation workshops aimed to increase understanding and awareness about climate change impacts on development, poverty alleviation, food and water security. BCAS has also organized workshops on Disaster Risk Reduction (DRR) so that the partner organizations can internalize climate change issues in their institutional strategies and development programmes.
- BCAS has provided orientation to partner organizations on climate change, development, poverty alleviation, livelihood and DRR.

### **Projects (hyperlink with project page)**

- Country vulnerability and sectoral studies
- Climate change mitigation studies and action
- Climate change adaptation: BCAS implemented RVCC (Reducing Vulnerability of climate change) in floodplain ecosystem in collaboration with Care Bangladesh and currently is implementing two community based climate change adaptation project in drought prone and coastal zone.
- Linking climate change issues with DRR and conducting a number of Community Risk Assessment (CRA) in the context of climate threats in vulnerable areas of Bangladesh with the Disaster Management Bureau under the Comprehensive Disaster Management Programme (CDMP).
- Formulation of Risk Reduction Action Plan (RRAP) for addressing climate problem at the community level.
- Nationwide study for CDMP on Knowledge, Attitude and Practice (KAP) in relation to climate risk and vulnerability.
- Addressing climate related disaster impacts at community level (multi-country project)
- Asia’s Least-Cost Greenhouse Gas Abatement Strategy
- Bangladesh Climate Change Country Study
- North South Dialogue on Climate Change
- Climate And Development

- Sustainable Development and Climate Change
- Mainstreaming Adaptation to Climate Change in Least Developed Countries (LDCs)
- Formulation of the Bangladesh Programme of Action for Adaptation to Climate Change (NAPA)
- Linking Climate Adaptation
- Bangladesh Country Experiences and Highlights for NCCSAP
- Improving Capacity of Vulnerable Household, A BCAS-CARE-RVCC Partnership Project
- South South North Project (SSN)-CDM Capacity Building Activities
- Capacity Building of LDCs of Adaptation of Climate Change (CLACC)
- South South North Project (SSN) : Poverty And Climate
- NIES-PELANGI-BCAS Climate Change Project
- SSN-2, Adaptation to Climate Change
- Development & Climate Change-Phase-II
- Building Adaptation Strategy to Climate Change for Selected Drought and Flood Prone Areas of Bangladesh.

### **Publications**

- National Environment Management Action Plan (NEMAP) (4 volumes)
- Vulnerability and Adaptation to Climate Change for Bangladesh
- Vulnerability of Bangladesh to Climate Change and Sea Level Rise (4 Volumes)
- Climate Change (South South North)
- Climate Action Network South Asia: First Regional Meeting and Research Agenda

**Key Personnel:** Dr. Atiq Rahman, Dr. Moinul Islam Sharif, Sarder Shafuqul Alam Dr. DL Mallick, Golam Rabbani (hyperlinked) (BCAS, 2012).

### **2.5: Climate Change and Observations/ Challenges of Climate Change**

David Parker, Climate Monitoring Expert said, We need long-term worldwide observations of the atmosphere, oceans and land surface to understand the world's climate and how it has changed.

There are many challenges which have to be tackled when we are observing the climate, including:

- Incomplete geographical coverage of measurements.
- Gaps in historical climate records.
- The need to use some indirect measurements of climate change.
- Biases and errors in data.

- Varying standards for taking observations.
- Collecting information to assist interpretation of climate records.
- Calculating changes in climate.
- Estimating uncertainties in climate observations.

### **Geographical coverage and gaps in the historical record**

A major obstacle in assessing past climate change has been the fact that a lot of observations aren't complete. Before the 1950s, climate observations were mainly limited to weather stations and ships, and only included measurements made at or near the land or ocean surface. In the 19th century, many parts of the world were not monitored at all. There are few complete daily instrumental records stretching as far back as the eighteenth century, though one of these - Central England Temperature (CET) - has monthly data back to 1659.

In recent years things have improved:

- Since the 1950s weather balloon soundings have been widespread over land.
- There has been nearly worldwide coverage from satellites since the 1970s - greatly improving our ability to monitor climate.
- Since 2000, there has been a massive increase in sub-surface ocean monitoring through the Argo project.

Scientists have also greatly improved the availability of instrumental data for the last two centuries. Millions of observations made from ships in the late 19th and early 20th centuries, which until recently were only available from paper logbooks, are being put in computer databases. Some of these have been included in the latest assessments of climate, like the Intergovernmental Panel on Climate Change (IPCC) 2007 report. However, many more logbooks have yet to be included.

### **Using indirect, or proxy measurements of changes in climate**

As there are no records of climate from direct measurements before the 1600s, scientists have used other types of information to investigate further back.

- Tree-rings and ice-cores can be used to infer changes in temperature and precipitation.
- Depth profiles of temperature in oil-drilling boreholes can be used to estimate the changes in air temperature over recent centuries.

- Corals can be used to estimate oceanic temperature and sea-level changes.

None of these indirect, or 'proxy' methods are as precise as direct instrumental measurements. Also, there are very few proxy datasets, so it is very difficult to obtain reliable estimates of past global temperatures. However, long-term temperature trends derived from borehole and other independent proxy data are in reasonable agreement, confirming the climate in the past two thousand years was not as warm as it has been in recent decades.

### **Biases and errors in data**

Reliable analysis of climatic change is made difficult by historically-varying biases in the data. Basic quality checks and correction of obvious errors in current observations are relatively simple using modern computers. However, it is much more difficult to account for the systematic differences between modern and historical observations.

### **Example of differences between modern and historical observations**

- Sea surface temperatures in the early 20th century were mainly measured using canvas buckets. When the buckets were drawn out of the water and the wind blew on them, the water cooled, leading to biased temperature recordings, so it is necessary to correct the data.
- More recent sea surface temperature measurements are less biased because they have been made using thermometers attached to ships well below the water-line, or using purpose-built buoys.
- Since the early 1980s sea surface temperatures have also been measured from satellites, which detect the infra-red or microwave radiation coming up from the oceans. Satellite measurements also need careful treatment because dust and moisture in the atmosphere can cause systematic differences with measurements made from ships and buoys.
- Satellites also only measure the temperature of the surface skin of the ocean, whereas ships and buoys measure the temperature lower down. All of this is taken into account when studying the data. Corrections and adjustments are made where necessary to ensure biases are ironed out to create a reliable data set.

### **A note about satellite data**

Satellites do not measure temperature and other climate indicators directly. They measure visible, infrared and microwave radiation of different colours and these are used to calculate temperature, humidity, rainfall, soil moisture, and vegetation characteristics, either via statistical algorithms or via physical equations expressing how radiation is transferred through the air up to the satellite. The same equations can be applied in weather-forecasting and climate-prediction



models of the atmosphere allowing us to compare the radiation measured by the satellite instrument with that simulated by the model. This can help us to uncover and correct any biases or errors in the measurements and the models.

### **Varying standards for taking observations**

Errors can arise in combining climate data from different sources unless careful account is taken of how the original measurements were taken and how these methods may have varied. International standards for observing practices have been developed and documented over the past 150 years, and are now co-ordinated and reviewed through the World Meteorological Organization. For climate, the Global Climate Observing System climate monitoring principles have been agreed and adopted by the Conference of Parties to the UN Framework Convention on Climate Change.

These standards, for both satellite and ground-based data, include the requirement to overlap records when observing systems are changed so scientists can reliably estimate and remove any relative biases. This requirement can be expensive to implement for satellites because it means launching a new one before the old one has expired rather than when the old one fails. However, it makes the investment in satellites much better value for money. Information about how observations are made and processed (known as 'metadata') should also be kept in full, and treated with as much care as the data themselves. If a scientist knows how an observation was made, it is much easier to make a fair comparison with other observations.

### **Collecting information to assist interpretation of climate records**

An accurate record of a land-based observing station's environment, and how it may have changed, is an important part of collecting observations. This information can be vital in assessing, for example, whether a temperature record has been affected by urban development (known as the 'urban heat island' effect), or whether rainfall patterns have been affected by the growth of trees or the construction of new buildings. The station records used to develop the global temperature trends presented in the IPCC's Fourth Assessment Report (IPCC 4AR) have been screened for biases and adjusted or rejected if necessary. The IPCC's report shows that while urban warming is a significant local phenomenon, it has contributed very little to the global warming trend.

### **Calculating changes (anomalies) in climate**

Climate observations are often expressed as differences (known as anomalies) relative to a particular period. In the IPCC's reports, anomalies have been expressed relative to the years from 1961 to 1990, the reference period approved by the World Meteorological Organization. When

working out global or national average temperatures, anomalies are used instead of taking the average of absolute (or observed) temperatures. This is because anomalies vary less from one place to another and can, therefore, be averaged more reliably when there are gaps between observing stations.

If we averaged actual temperatures worldwide and the observation from a normally warm (e.g. tropical) station was missing, then the average would be biased cold by the absence of its data. When we average anomalies, any bias is much smaller because anomalies do not vary as much as actual temperatures, and, by definition, are not systematically higher or lower in one place than in another.

### **Estimating uncertainties in climate observations**

Scientists and mathematicians have recently developed methods to estimate the uncertainties in weather data and global averages. The uncertainties are estimated from the random and systematic errors, as well as the geographical gaps in the observations. The random and systematic errors in turn are estimated from the statistical properties of large numbers of observations.

The estimates of observed global and regional warming in the IPCC 4AR include uncertainty estimates which show the observed warming far outstrips the uncertainties (Parker, 2012).

## **2.6: Addressing Climate Change Challenges**

In focus group discussions and interviews, community members and local government officials described the threats they are facing from climate change and the efforts they are undertaking to address these challenges. In the coastal Patuakhali District, UP representatives from one union discussed the climate change impacts their constituents are facing, including flooding, saltwater intrusion, river erosion, and the threat of cyclones, including the recent storms Sidr and Aila. Community members who had been working with several GGDs in one union explained the participatory process through which they have assessed their vulnerabilities and identified adaptation needs through the creation of a CAP. Top priorities included improving rice and vegetable cultivation under saline conditions, securing food and essential documents during cyclones, preventing river erosion, raising the heights of house plinths, road construction, and reducing saline intrusion into freshwater bodies. Adaptation solutions have included increasing the height of the dikes of ponds to keep out floodwater and switching to BR 47, a saline-tolerant variety of rice.

In Naogaon District, where drought is a major climate-related problem, GGD members from two different unions explained that they had also created CAPs and that a priority for the area is increasing access to drinking water. Other key needs identified included increasing the number of sanitary latrines, improving access to water for other purposes such as bathing and irrigation, and support for agriculture and livestock rearing. Community members in one union also noted that the increasing trend of large landowners growing mangoes as a cash crop was reducing the fertility of the land. Among the solutions outlined to address water problems were building new tube wells, repairing broken wells, and raising awareness about the drinking water crisis throughout the community. An upazila representative highlighted the re-excavation of ponds and canals, along with the digging of a new canal to connect two nearby rivers, as important adaptation activities.

Some GGD members noted that they had benefitted substantially from the support provided by AAB and, in the case of Naogaon, its local NGO partner. In one union in Naogaon, the GGD representatives reported receiving benefits such as tube wells, sanitary toilets, improved water sanitation, provision of livestock, assistance with access to markets for their goods, and support for re-excavation of water bodies, which has significantly increased the quantity and diversity of their crop harvests. GGD members in Patuakhali highlighted a recent project to build embankments to keep saline water out of irrigation sources. The GGD raised the issue with the UP, which then provided support for the project. Both the GGD members and a UP representative agreed that the effort had substantial benefits in terms of increasing crop production in the area. UP representatives did note, however, that additional work is needed to devise a more sustainable, long-term solution.

Interviews with members of a displaced community in Patuakhali revealed a different picture. The communities had moved following a cyclone and AAB constructed new housing for them, which had been raised on pillars to withstand future floods and storm surges. Beyond this, however, climate change was not one of the primary challenges they reported facing. Their biggest problem is a lack of income, along with basic development gaps such as a lack of electricity, quality education, and road infrastructure. They had heard about problems with salinity in the area negatively affecting agriculture, but since most of them were landless day laborers, they did not have first-hand experience with these problems. In times of severe need, one of their coping strategies is to approach the wealthier households in the area to ask for support, although nowadays they also try going to the UP for assistance.

While some of the adaptation needs and activities identified require large-scale efforts such as raising the height of a long stretch of embankments, many of the possible solutions discussed by communities were relatively small in scale. This finding indicates that at least some beneficial adaptation activities could be undertaken at the local level and likely managed by communities or local government institutions. More analysis is needed, however, to determine to what extent

these projects represent true adaptation and will build long-term, sustainable resilience in the face of future climate impacts (Christensen, 2012).

## **2.7: Climate Change and Disaster Challenges in Bangladesh**

Climate change has emerged as the greatest threat to humankind. The long term effects of climate change are likely to hinder the progress towards sustainable development and undermine the development gains. Climate change will have negative impact on all aspect of human development including livelihoods, food security, safe water and sanitation, health care, shelter etc. Poor communities of developing countries will be pushed further into extreme vulnerable condition and suffer the most in the face of increased intensity and frequency of disasters. Bangladesh is one of the most vulnerable countries who are facing immense challenge due to climate change. Geophysical position coupled with highly dense population, limited resources and dependence to nature make Bangladesh a hazard prone country with many subsequent catastrophic events like flood, cyclone and salinity intrusion. The poor are the most affected by the climate extremes and have very little capacity to cope with the risks. Bangladesh is already experiencing the impacts of climate change through irregular rainfall pattern, floods, flash flood, cyclone, saline intrusion, drought, sea level rise, tidal surge and water logging. Poor communities in the coastal areas of Bangladesh are the most vulnerable to the impacts of climate change and extreme climatic events with environmental degradation. The north western part of Bangladesh is experiencing successive drought and acute water shortage, pushing agriculture dependent communities further into poverty. In the central zone and north east, increased and prolonged flood, flash flood and river erosion are causing unprecedented loss of livelihood and assets.

Two devastating cyclones, Cyclone Sidr in November 2007 and Cyclone Aila in May 2009 that hit the coast of Bangladesh gave a glimpse of the challenges wait for the country in the near future. While the loss of lives during these cyclones was reduced, the destruction to infrastructures, eco system and livelihood would take many years to recover, making the long term impact of climate change visible with declining living condition of the coastal communities.

Hundreds of thousands of the coastal impoverished communities have already been displaced and pushed into extreme poverty without any livelihood opportunity and shelter. Millions more will follow if the sea level rise and saline water intrusion continues to move upward in the inland. A 45cm rise of the sea level will not only affect the vast coastal ecosystems and hamper agriculture and food production, has the potential to dislocate about 35 million people from 20 coastal districts. The climate induced displacement will create new housing, livelihood and settlement challenges as well as enhance competition and conflict over scarce resources including land, water, fisheries and forests. Rural to urban as well as cross boarder migration will accelerated with the continued increase climate induces displacement forcing people live in inhuman and undignified living condition in the slums without adequate income, food, water, shelters and basic amenities.

### **Bangladesh - innocent victims of global warming**

Bangladesh has one of the lowest per capita emissions in the world. Yet a majority of its people, the economy and ecological space has already suffering due to global warming for which

developed countries are primarily responsible. For Bangladesh global warming induced climate change will –

**Threaten Development-** Climate change and global warming triggers a host of effects with far reaching consequences for the already vulnerable nation and its people.

**Challenge poverty reduction** - Past achievements, current efforts to break out of the poverty trap and pursue sustainable development aspirations are already confronted with climatic challenges.

**Question human security** - Permanent displacement from homes, settlements leading to out-migration has already led to a surge in squatters and slum dwellers who are physically, financially, psychologically and socially insecure. The rate of out-migration due to flood, river erosion, coastal erosion, permanent inundation already is alarming and holds the potential for development instability.

Disaster risk reduction and climate change adaptation is now an integral part of national development strategy.

New legal and institutional frameworks for disaster risk reduction and climate change adaptation have been established.

Disaster and climate change sensitive sectoral development strategies, norms and standards (e.g. urban development, water management, natural resource management, and infrastructure) are also adopted.

Social safety net programs have been strengthened for building resilience to cope with disasters and anticipated climate impacts in Bangladesh.

Cooperation and collaboration in disaster risk reduction and climate change adaptation have been strengthen among government and non-government actors in the areas of land use planning, city emergency management, early warning dissemination, community-based disaster preparedness, etc.

Post-disaster needs assessments are undertaken in the aftermath of a disaster to accelerate resilient recovery.

### **Confronting the Challenges of Climate Change**

Disaster Risk Reduction (DRR) is the development and application of policies and practices that minimizes risks to vulnerabilities and disasters. While Climate Change Adaptation (CCA) is an adjustment in natural and human systems, which occurs in response to actual or expected climate changes or their effects. Governments worldwide have recognized that disaster risk reduction is a fundamental building block of any climate change adaptation action plan or strategy. The world agrees that more Integration and convergence of disaster risk reduction and climate change adaptation into development plans and poverty reduction programmes.

Global warming induced climate variability and change is already evident in Bangladesh and many poor and vulnerable communities are at risk from adverse impacts. As a country striving to achieve the Millennium Development Goals ((MDG), Bangladesh continued its efforts to fulfill its commitment to Hyogo Framework for Action (HFA) for sustainable development. Bangladesh also has demonstrated its ability to withstand disaster and climate risk by combining indigenous knowledge and practices with the spirit of endurance and perseverance of the affected population (CDMP II, 2009).

## **2.8: Key Strategies and Activities for Disaster Management of the Government**

Disaster Management in Bangladesh had gone through a process of significant reforms. Since independence the focus was limited in relief and rehabilitation activities. Following the devastating floods of 1988 and the cyclone of 1991, which has created a massive destruction in the economy; the focus has been shifted towards adaptation of a holistic approach that embraces processes of hazard identification and mitigation, community preparedness and integrated response efforts. As a result, a short-term project titled Assistance to Ministry of Relief in Coordination of Cyclone Rehabilitation: BGD/91/021 was taken up after the killer cyclone of 29 April 1991. While implementing the project, the Project Steering Committee (PSC) chaired by the Member (Programming and SEI), Planning Commission at one of its meetings on 28 January, 1993 endorsed the concept of the specialist disaster management unit as one of the outcomes of the project. In conformity with this endorsement, the Government of Bangladesh (GoB) established the Disaster Management Bureau (DMB) in April, 1993 as the successor of the Disaster Coordination and Monitoring Unit and renaming of the Ministry of Relief and Rehabilitation as the Ministry of Disaster Management & Relief (MDMR) in 1993. The Government has established Disaster Management Council and Committees from National down to field level in 1993. As part of the paradigm shift earlier, DMB was assigned to perform specialist support functions working in close collaboration with District and Upazila level authorities and the concerned line ministries under the overall authority of high-level Inter-Ministerial Disaster Management Co-ordination Committee (IMDMCC). The DMB also has the responsibility to create public awareness on the severity and risks associated with natural and human-induced hazards and to formulate programs and projects that will better prepare at-risk communities and public officials to mitigate their consequences. As a technical arm to the Ministry of Food and Disaster management, DMB overview and coordinate all activities related to disaster management from national to the grass-root level. It is also entrusted to maintain an effective liaison with government agencies, donors and NGOs to ensure maximum cooperation and coordination in all aspects of disaster management.

The main mission of the Government is to bring a paradigm shift in disaster management approach from conventional response and relief to a more comprehensive risk reduction culture

and to promote food security as an important factor in ensuring the resilience of the communities to hazards. Again renaming the name of the Ministry of Relief and Rehabilitation as the Ministry of Food & Disaster Management in May 2004.

Now Ministry of Food and Disaster Management is working hard to ensure socioeconomic development of the country through food security, relief and disaster management programmes. The Ministry has taken a number of programmes for, (a) overall food management of the country and establishment of dependable national food security, (b) implementation of national food policy and strategy with overseeing and monitoring of overall food supply situation of the country, (c) monitoring and coordination of all matters relating to procurement, storage and distribution of food grains and ensuring fair price, (d) formulation and implementation of policies and planning relating to disaster management, relief and rehabilitation, (e) poverty reduction through formulation, implementation and evaluation of programmes like Food for Work, Test Relief, KABITA etc., (f) planning, coordination, monitoring and evaluation of matters relating to relief activities and disaster management, (g) co-ordination among the different organizations for pre-disaster, during-disaster and post-disaster activities including preparation of disaster management guidelines, (h) provision of assistance to disaster related ministries and organizations in preparing the action plan on matters related to disaster management, (i) formulation of policy and its' implementation on matters relating to the preparation, monitoring and evaluation of food assisted projects and programmes, (j) coordinating matters relating to the distribution of external food aid and other relief assistance, and (k) other concerned matters relating to food, relief and disaster management.

The GOB has, therefore, total commitment towards the reduction of human, economic and environmental costs of disasters by enhancing overall disaster management capacity. Further, efforts have been continuing for optimum coordination and best utilization of resources along with ensuring community involvement so that they are aware of what they can do for protecting their lives and properties against disasters. The planning and disaster management activities, however, conducted by the GOB agencies involve preparedness, response, recovery and mitigation as keynotes for building up self-reliance of the community people.

The GOB objectives for proper handling of disasters, is to coordinate the efforts taken at different stages in disaster management cycle like disaster management practice, disaster mitigation, emergency preparedness, emergency response, disaster management mechanism, early recovery and immediate rehabilitation, space technology and disaster management, space technology in disaster prediction, warning and mitigation, flood monitoring mapping and use of internet facilities for disaster monitoring, predictions and information dissemination, etc.

As a continuation of the paradigm shift process, the Comprehensive Disaster Management Programme (CDMP) has been designed as a long-term programme of the Ministry of Food and Disaster Management with multi-agency involvement was launched in November, 2003 to

optimize 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.

MoFDM, in close association of the Bangladesh Red Crescent Society (BDRCS), is implementing Cyclone Preparedness programmes (CPP) in the 12 coastal districts of the country to minimize loss of lives and properties in cyclone disaster by strengthening the disaster management capacity of coastal people of Bangladesh. The main activities of Cyclone Preparedness Programme (CPP) are to (a) disseminate cyclone-warning signal to local residents; (b) assist people in taking shelter (c) rescue victim affected by a cyclone, and (d) provide first aid to people injured by cyclone. Cyclone Preparedness Programme (CPP) is now acclaimed worldwide for its dedicated volunteers and effectiveness in emergency response during disaster especially in cyclone. It may be mentioned that the International League of Red Cross introduced the Cyclone Preparedness Programme (CPP) in the country in mid-sixties. After independence, they handed over its main responsibilities to the Government. However, Bangladesh Red Crescent Society (BDRCS) is providing substantial supports to the programme. In its long journey, the CPP and its more than 42,000 volunteers have achieved tremendous success in cyclone preparedness and mitigation programmes by saving lives and properties of coastal people, which set a unique example in the world.

It is a matter of great pride that before adaptation of MDGs, Hyogo Frame Work of Action, United Nations Framework Convention on Climate Change (UNFCCC), SAARC Framework for Action (SFA) and Agenda 21, Bangladesh Government introduced specific programmes to institutionalize disaster management system by involving all concerned from national level to grass-root level. The emergency response programme, rehabilitation activities and cyclone preparedness programme of Bangladesh Government widely recognised by the world communities. Now, Bangladesh is the signatory of the MDGs, Hyogo Frame Work of Action, United Nations Framework Convention on Climate Change (UNFCCC), SAARC Framework for Action (SFA) and Agenda 21, and committed to implement the recommendations for comprehensive disaster management in light of the guidelines prescribed in the international and regional forums.

**Necessity of the Plan:**

Now, the government acknowledges the need for pre-disaster mitigation and preparedness of the people. Thus priority has been accorded to focus on community level preparedness, response, recovery and rehabilitation. Programme to educate people living in disaster prone areas improving their capability to cope with natural disaster is highlighted in the Disaster Management strategies:



First: Disaster management would involve the management of both risks and consequences of disasters that would include prevention emergency response and postdisaster recovery.

Second: Community involvement for preparedness programmes for protecting lives and properties would be a major focus. Involvement of local government bodies would be an essential part of the strategy. Self-reliance should be the key for preparedness, response and recovery.

Third: Non-structural mitigation measures such as community disaster preparedness training advocacy and public awareness must be given a high priority; this would require an integration of structural mitigation with non-structural measures.

### **Scope of the Plan:**

The Plan has envisaged to cover up the following crucial aspects for Disaster Management:

- (a) Analyse the natural and man-made disaster threats to their people and society, economy and infrastructure, with a view to identifying where and when these threats are likely to occur and in what frequency.
- (b) Identify by further detailed analysis who and what are vulnerable to the occurrence of these threats and how these are likely to be affected by them.
- (c) Investigate what measures are possible to prevent occurrence of the disaster events, (unlikely to be possible in the case of the natural phenomenon but possible in the case of man-made disasters and environmental degradation), what can be done to mitigate the affects of disaster events and what disaster preparedness measures can be put in place in anticipation of these.
- (d) Determine where responsibilities for prevention, mitigation and preparedness planning and action should lie in Government, in the non-government organizations (NGOs) and in the private sector.
- (e) Make provision in the national budget for funding of activities related to Disaster Reduction and a contingency fund to meet the immediate needs of disaster relief, at all administrative levels of the Administration.
- (f) Ensure that the costs of disaster relief and post-disaster recovery are managed and co-ordinated by a high level committee to avoid duplication or waste across the spectrum of donor agencies, including government, national and international NGOs and the private sector.
- (g) Ensure an effective system within Government to link and co-ordinate the processes of planning and the management of sustainable development, environmental management and disaster reduction (MoFDM, 2008).

### 3.1: Geographical Bangladesh

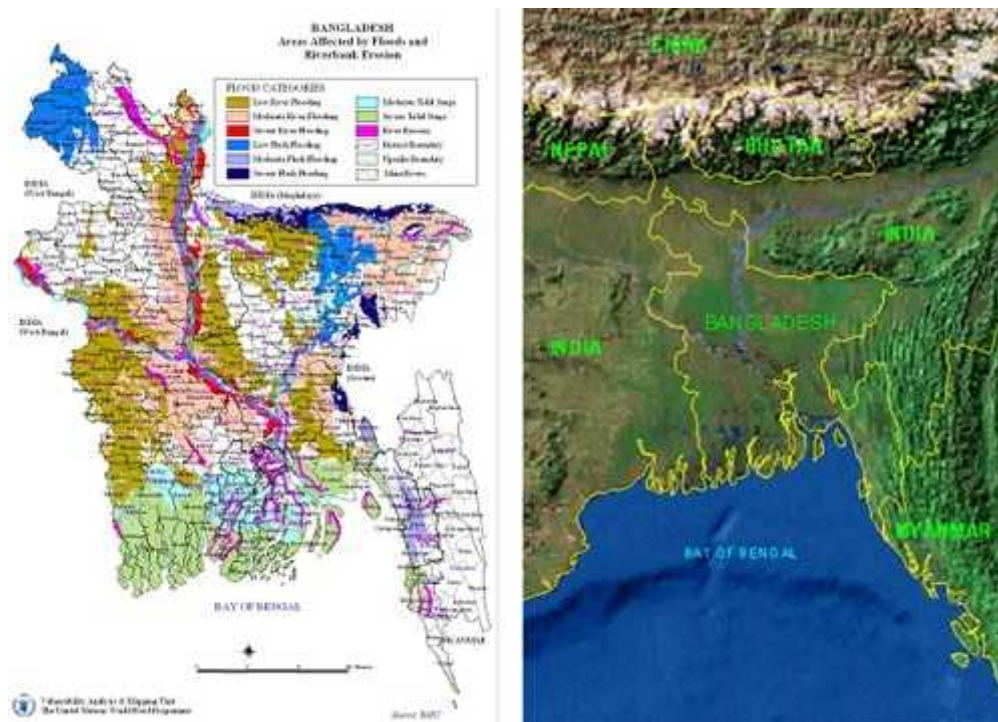
The People's Republic of Bangladesh is situated in the southern part of Asia, bordered on the west, north, and east by India, on the southeast by Myanmar, and on the south by the Bay of Bengal. With a total area of 147,570 square kilometer, most of Bangladesh lies within the broad delta formed by the Ganges and Brahmaputra rivers. The country is an exceedingly flat, low-lying, alluvial plain traversed by more than 230 rivers and rivulets (with a total length of 24,140 km) and has a coastline of about 580 km along the Bay of Bengal.

**Figure 3.1.1: Geographical Location of Bangladesh**



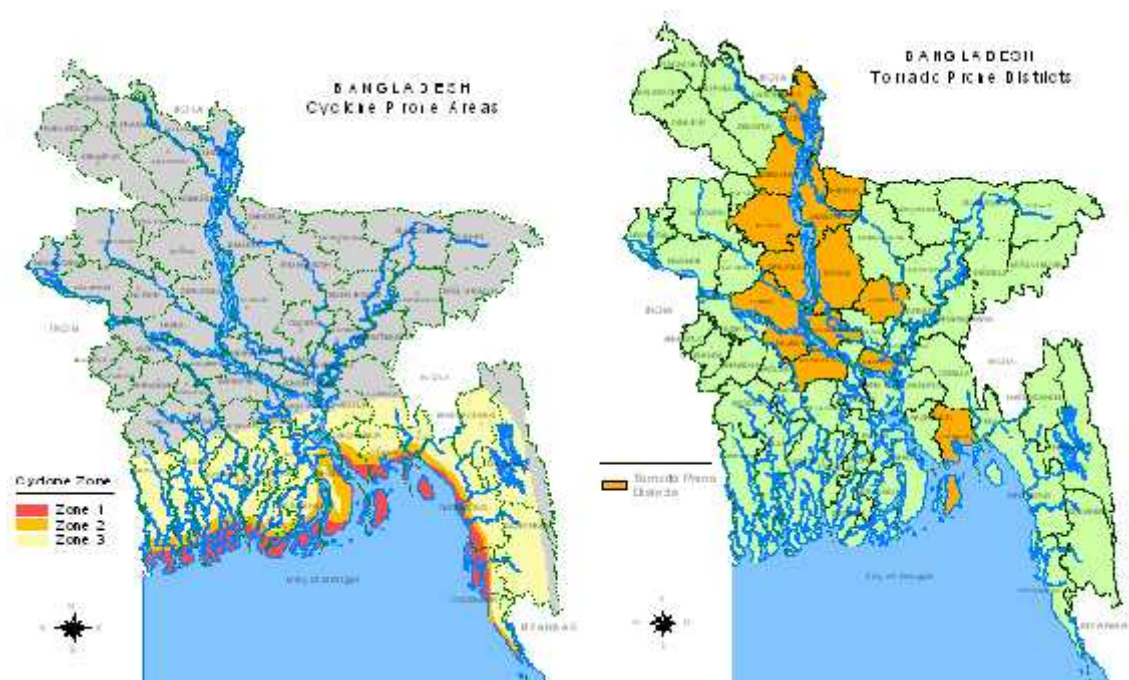
The geographical location and topographical features of Bangladesh have exposed the country to almost all kinds of natural and human induced disasters. The monsoon weather brings in tornados and cyclones affecting the entire country with high tidal upsurges at the coastal belts during March-June, and due to heavy rainfall in the country as well as in the northern Indian states of Assam and Maghalaya, floods occur almost every year affecting almost two thirds of the country during the months of July to October, resulting in heavy damage to properties, crops and lives. Although significant earthquake- tremors or Tsunamis did not take place in Bangladesh since over 100 years, a considerable part of the country falls under 'Earthquake zone' and mild tremors continues to occur in the southern parts of the country without any significant casualties or life loss, so far, but the country remains at threat of moderate to major earthquakes along with disasters like Tsunami.

**Figure 3.1.2: Maps of Flood and Earthquake/Tsunami prone areas in Bangladesh**



**Major Hazards of Bangladesh:**  
**Natural:** Flood including Flash Flood, Cyclone & Tidal surge, Tornado, River erosion, Land slide, Mild Earthquake, Draught etc.  
**Human induced/Biological/Technological:** Road & River Traffic accident, Epidemics, Fire, Buildings Collapse, Gas Field explosion, Political Conflicts etc.

A range of factors such as over population, social inequality, escalated environmental degradation and rapid urbanization is considerably increasing the impact of disasters on human health and survival in the country demanding a more complex nature of emergency response in recent times. Moreover, the economic burden of poverty and demographic pressures are making a vast majority of people more vulnerable by forcing them to migrate to high risk areas such as flood plains and far flung islands which are normally not suitable for human settlement. The arsenic contamination of drinking water is now gradually evolving as a new public health emergency of a scale never witnessed before. At the same time, the country is at risk of being inundated, at-least ten percent of its land mass with in the first half of this century due to rising sea levels as a result of climate change.

**Figure 3.1.3: Maps of Cyclone and Tornado prone areas in Bangladesh**

**Population:** The population of Bangladesh is approximately 123.15 million of which approximately 23 percent of the population live in the urban areas while the rest (77%) live in the rural areas. The population growth rate is 1.47 percent per annum. The current density of population is approximately 834 persons per square kilometer which is one of the highest in the world. The average household size (persons) is 4.8 and most of the people are relatively young, some 45 percent being under the age of 15 and only about 3 percent being 65 or older. Life expectancy at birth is about 62 years for both males and females. (Source: Population Census of Bangladesh, Bangladesh Bureau of Statistics, August 2001).

**Climate Change Vulnerability in Bangladesh:** With 140 million people, Bangladesh is one of the world's densest nations and also one of the most vulnerable to the impacts of climate change. People in Bangladesh live precariously close to the risks of cyclones, floods and droughts and more than 100 million people live in rural areas.

Two-thirds of the country is less than 5 meters above sea level and in an average year, a quarter of the country is inundated. Bangladesh has experienced severe floods every 4 to 5 years that may cover more than 60 percent of the country, resulting in significant losses.

Bangladesh has achieved recent gains in the areas of economic growth and population control that could be reversed by climate change. The fourth report by the Intergovernmental Panel on Climate Change (IPCC) stated that Bangladesh would experience heavier monsoons and that the melting of Himalayan glaciers will cause higher river flows and severe floods. Rainfall will become heavier and more erratic. While droughts will increase in frequency (The World Bank, 2012).

## **Economy:**

GDP (2008 est.): \$84.2 billion (official); \$226.4 billion (PPP).

Annual GDP growth rate (FY 2008): 6.2%; (FY 2008 World Bank est.): below 6%.

Per capita GDP (2008 est.): \$554 (official); \$1,500 (PPP).

Inflation (December 2008): 6.03% (point-to-point basis) and 8.9% (monthly average basis).

Exchange rate: U.S. \$1=69.03 BDT (Dec. 2009); U.S. \$1=68.55 BDT (2008); U.S. \$1=69.89 BDT (2007).

Annual budget (2008 est.): \$12.54 billion.

Fiscal year: July 1 to June 30.

Natural resources: Natural gas, fertile soil, water.

Agriculture (19.1% of GDP): *Products*--rice, jute, tea, sugar, wheat.

Industry (manufacturing; 28.6% of GDP): *Types*--garments and knitwear, jute goods, frozen fish and seafood, textiles, fertilizer, sugar, tea, leather, ship-breaking for scrap, pharmaceuticals, ceramic tableware, newsprint.

Trade: *Total imports* (FY 2008)--\$21.6 billion: capital goods, food grains, petroleum, textiles, chemicals, vegetable oils. Growth rate over previous fiscal year: 25.95%.

*Total exports* (FY 2008)--\$14.11 billion: garments and knitwear, frozen fish, jute and jute goods, leather and leather products, tea, urea fertilizer, ceramic tableware.

Growth rate over previous fiscal year: 16.04%. *Exports to U.S.* (Jan.-Dec. 2008)--\$3.74 billion. *Imports from U.S.* (Jan.-Dec. 2008)--\$468.1 million (U.S. Department of State, 2012).

## **Economic Impacts of Climate Change in Bangladesh:**

The poor and vulnerable in Bangladesh are constantly adjusting to climate change by raising their houses above the flood level or changing crop types. The Government of Bangladesh has invested more than \$10 billion during the past 35 years to make Bangladesh less vulnerable to natural disasters.

Despite these efforts, the direct annual cost of natural disasters over the last 10 years is estimated to be between 0.5% and 1% of Bangladesh's GDP (UNDP). The economic impacts of future climate change are expected to be larger and could even reverse the recent gains in the areas of economic growth and population control (The World Bank, 2012).

### **3.2: Climate Change: Global Context**

Global warming is accelerating rapidly. Already, many countries, ecosystems and people are suffering from its impacts. Global warming has affected our weather patterns and disrupted our variability and trends in climate. This is resulting an increase in climate related extreme events like heavy rainfall, flood, cyclone, storm surge, etc. these claim thousands of lives, destroy billions of dollar worth of properties, and disrupt livelihoods of hundreds of people (Climate Change Cell, 2007).

The First Assessment report of the intergovernmental panel on climate change (IPCC, 1988) (IPCC AR1) (IPCC, 1992) in 1990 noted that the greatest single impact of climate change might be on human livelihood as they will have to migrate from the

place to reduction of coastal area for the raise of sea level. The report estimated that by 2050, 150 million people could be displaced by climate change related phenomenon like desertification, increasing water scarcity, floods and storm etc. ([www.ipcc.ch/ipcc/reports/assessment-reports.htm](http://www.ipcc.ch/ipcc/reports/assessment-reports.htm). Accessed: 12/4/12) Many people of the largest deltas worldwide are already subject to flooding from both storm surges and seasonal river floods, and therefore it is necessary to develop further methods to assess individual delta vulnerability.

The Stern Review and IPCC 4<sup>th</sup> Assessment Report both state that climate change will have adverse impact on people's health, safety and livelihoods, with the "poorest people in the poorest countries expected to suffer first and foremost". Predicted climate change will create barriers to future poverty reduction and reverse many of the important socioeconomic gains made by developing countries.

In 1991, the intergovernmental Panel on climate change IPCC (IPCC, 1992) raised the alarm globally by presenting scientific findings on evidence of global warming, emission increase and climate change impacts. This resulted in a worldwide recognition that some serious actions are necessary to save our planet. In 1992 the UN climate convention led to the establishment of an inter-governmental process to identify and implement necessary response measures to curb global warming and address its negative impacts. The Convention led to the development of the Kyoto Protocol in 1997 which provides the mechanisms, targets and timetable for greenhouse gas emission reductions. To help vulnerable countries and people adapt to climate change and increase resilience, additional support was also agreed. Since then, ten years have passed. From an environment challenge, climate change emerged established as a challenge to development, poverty reduction efforts, livelihood options, biodiversity, and human security. However, in terms of progress made in reducing greenhouse gas emissions, the report card is disappointing. Convention commitments to address current impacts and future risks from global warming through support for reducing vulnerability and adaptation measures is yet to materialize in a manner that will match current and future priorities. Funding through the creation of the Special Climate Change Fund (SCCF) and the Least Development Countries Fund (LDCF) under the Convention has been fractions of the amount required as priority by the poorest and vulnerable countries. The Adaptation Fund under the Kyoto Protocol is yet to demonstrate its potential to mobilize financial resources to match priority investments to reduce vulnerability, adapt and increase resilience. For almost a decade or so, the negotiation process has been pursuing to include all major countries that may have a role with regard to collective global effect.

Over the last century the level of carbon dioxide by oxide has increased by 25 percent, the level of nitrous oxide by 19 percent and the level of methane by 100 percent.

These are the three major global warming gases. Over the past 100 years (1906-2005), the earth's average surface temperature has risen by around  $0.74^{\circ}\text{C}$ , with the warming greater over the last 50 years in nearly twice the rate for the last 100 years. The last 1990s and the early 21<sup>st</sup> century have featured the warmest years since modern records began. A further warming of about  $0.2^{\circ}\text{C}$  is projected for each of the next two decades. (World Bank, 2006).

Scientists say the world needs to cut emission of global warming gasses by 50 to 70 percent just to stabilize the level of gases already in the atmosphere. However, emission of these gases are projected to continue rising in the coming decades. Scientists (IPCC, 2007) have projected that stabilizing atmospheric concentration of gases responsible for accelerated global warming must happen as possible to prevent the temperature to rise at a level that triggers dangerous climate. A 2 degree Centigrade rise in the global mean temperature by the end of this century has been considered a possibility by many researchers and future scenarios of impact according to different increases in global mean temperature are now being produced illustrating effects and consequence in different parts of the world. However, 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. 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-climate activities and their outcomes.

### 3.3: Regional Context

According to IPCC Fourth Assessment Report (AR4) and scientists of the world, different country/sub regions of Asia will show changes in climate parameters including variation in temperature and precipitation. With higher temperatures, the water-holding capacity of the atmosphere evaporation into the atmosphere increase, and this favors increased climate variability, with more intense precipitation and droughts (Trenberth et al., 2003).

Inter seasonal, inter annual and spatial variability in rain fall trend has been observed during the past few decades all across Asia. Decreasing trends in annual mean rainfall are observed in many parts of Asia including coastal belts and arid plains of Pakistan, parts of North-East India. But in Bangladesh annual mean rainfall exhibits increasing trends. The following table shows the recent trends, particularly on the increasing tendency in the intensity and frequency of extreme weather events in some South Asian countries.

A number of ill effects-change in extreme events and severe climate anomalies have also been observed in both south and southeast Asia countries. The following table shows some of the observed past and present climate trends:

**Table 3.3: Summary of key observed past and present climate trends and variability (IPCC, 2007)**

Region	Country	Change in temperature	Change in precipitation
East Asia	China	Warming during last 50 years	Annual rain declined in past decade in North-East and North China, increased in Western China
	Japan	About 1° C rise in 20 <sup>th</sup> Century and 2° to 3°C in large cities	Fluctuations increased
	Korea	0.23° C rise in annual mean temperature per decade	More frequent heavy rain in recent years
South Asia	India	0.68° C increase per century, increasing trends in annual mean temperature	Increase extreme rain in north-west in recent decades, lower number of rainy days

			along east coast
	Nepal	0.09° C rise in per year in Himalaya, and 0.04° C in Teraj region, more in winter	No distinct long term trends in precipitation records for 1948 to 1994
	Pakistan	0.6° C to 1°C rise in mean temperature in coastal areas since early 1900s	10 to 14% decrease in coastal belt and hyper arid plans, increase in summer and winter precipitation over the last 40 years in Northern Pakistan
	Bangladesh	Increasing trend of about 1° C in May and 0.5 in November during the 14 year period from 1985 to 1998	Decadal rain anomalies above long term average since 1960s
	Sri Lanka	0.06° C increase per year between 1961 and 1990 over entire country, 2° C increase per year in central highlands	Increasing trend in February and decreasing trend in June

### 3.4: National Context

For Bangladesh, to date, climate models have generally been consistent in simulating warming throughout country in all seasons, moderate increases in monsoon rainfall and moderate decreases in dry season rainfall. Most of the climate models estimate that precipitation will increase during the summer monsoon because they estimate that air over land that happens any way in the summer and will enhance the monsoon. It is notable that the estimated increase in summer precipitation appears to be significant. This does not mean that increased monsoon is certain, but increases confidence that is likely to happen.

Changes in area averaged temperature and precipitation over Bangladesh were assessed based upon over a dozen recent GCMs using a new version of MAGICC/SCENGEN. MAGICC/SCENGEN is briefly described in Box 1.

#### Box 1. A brief description of MAGICC/SCENGEN

MAGICC/SCENGEN is a coupled gas-cycle/climate model (MAGICC) that drives a spatial climate-change scenario generator (SCENGEN). MAGICC is a Simple Climate Model that computes the mean global surface air temperature and sea-level rise for particular emissions scenarios for greenhouse gases and sulphur dioxide (Raoer et al., 1996). MAGICC has been the primary model used by IPCC to produce projections of future global-mean temperature and sea level rise (see Houghton et al., 2001). SCENGEN is a database that contains the results of a large number of GCM experiments. SCENGEN constructs a range of geographically-explicit climate change scenarios for the world by exploiting the results from MAGICC and a set of GCM experiments, and combining these with observed global and regional climate data sets. SCENGEN uses the scaling method of Santer et al. (1990) to produce spatial pattern of change from an extensive data base of atmosphere ocean GCM – AOGCM (atmosphere ocean general circulation models) data. Spatial patterns are “normalized” and expressed as changes per 1°C change in global-mean temperature. The greenhouse-gas and aerosol components are appropriately weighted, added, and scaled up to the actual global-mean temperature. The user can select from a number of different AOGCMs for the greenhouse-gas component. For the aerosol component there is currently only a single set of model results. This approach assumes that regional patterns of climate change will be consistent at varying levels of atmospheric greenhouse gas concentrations. The MAGICC component employs IPCC Third Assessment Report (TAR) science (Houghton et al., 2001). The SCENGEN component allows users to investigate only changes in the mean climate state in response to external forcing. It relies mainly on climate models run in the latter half of the 1990s. Source: National Communications Support Program Workbook.



[The IPCC SRES B2 scenario assumes a world of moderate population growth and intermediate level of economic development and technological change. SCENGEN estimates a global mean temperature increase of 0.8 °C by 2030, 1.2 °C by 2050, and 2 °C by 2100 for the B2 scenario.]

The spread in temperature and precipitation projections of these 11 CMs for various years in the future provides an estimate of the degree of agreement across various models for particular projections. More consistent projections across various models will tend to have lower scores for the standard deviation, relative to the value of the mean. The results of the MAGICC/SCENGEN analysis for Bangladesh are shown in Table 2.4.1.

**Table 3.4.1: GCM projection for changes in temperature and precipitation**

Year	Temperature change (°C) mean (standard deviation)			Precipitation change (%) mean (standard deviation)		
	Annual	DJF	JJA	Annual	DJF	JJA
<i>Baseline Average 2030</i>	1.0 (0.11)	1.1 (0.18)	0.8 (0.16)	+3.8 (2.30)	-1.2 (12.56)	+4.7 (3.17)
2050	1.4 (0.16)	1.6 (0.26)	1.1 (0.23)	+5.6 (3.33)	-1.7 (18.15)	+6.8 (4.58)
2100	2.4 (0.28)	2.7 (0.46)	1.9 (0.40)	+9.7 (5.80)	-3.0 (31.60)	+11.8 (7.97)

Note: DJF represents the months of December, January and February, usually the winter month  
JJA represents the months of June, July and August, the monsoon months

Source: Agrawala et.al., 2003.

By the 2020s warming is 0.9 and 1.0° C (A2 and B1) and 2050 2.0° C (A2), 1.6°C (B1). The climate change model averages suggest even smaller change in annual rainfall by the 2020s (0% and -1% with A2 and B1, respectively). The seasonal changes are also modest: slightly wetter winters (+3% A2, 0% B1) and monsoon summers (+1 A2, +4% B1). By the 2050s average changes are slightly larger, with winter drying (-3% A2, -4% B1) and summer wetting (+2% A2, +7% B1).

**Table 3.4.2: New results of changes in temperature for Bangladesh, in 2020s and 2050s**

Absolute temperature Change (C°)		2020s			2050s		
		Annual	DJF	JJA	Annual	DJF	JJA
A1	Cool	0.6	0	0.2	1.3	1.5	1
	Average	0.9	1	0.9	2	2.4	1.8
	Warm	1.4	1.8	1.3	2.6	3.7	2.3
B1	Cool	0.5	1.7	0.1	1	1.1	0.9
	Average	1	1.2	0.9	1.6	1.9	1.4
	cool	1.3	2.2	1.6	2.1	2.9	1.9

According to IPCC AR4, Bangladesh will be particularly affected by climate change through (IPCC 2007):

- Serious and recurrent floods due to glacier melt and increased rainfall intensity.
- Increased intensity and frequency of drought will affect agriculture the most.
- Frequency of monsoon depressions and cyclones formation in Bay of Bengal has decreased but intensity is increasing causing severe damages to life and property.
- Degradation of wetlands, biodiversity and ecosystems
- Diarrhoeal diseases and outbreaks of other infections diseases (e.g., cholera, hepatitis, malaria, dengue fever) to be influenced by climate –related factors such as severe floods.
- An increase of 10 to 20% in tropical intensities for a rise in sea surface temperature of 2 to 4°C.

As stated earlier, Bangladesh is highly vulnerable to climate change impacts due to its low-lying, deltaic characteristics and dense population. The national economy strongly depends on agriculture and natural resources that are sensitive to climate change and sea level rise. The impacts from climate change will bring about changes in the hydrological system and regional water flow patterns that will result in increased water during monsoon and water scarcity during the dry season.

Already Bangladesh is under considerable onslaught of climate change and its associated impacts these impacts. These are manifested in frequent increases of changing weather patterns, drought, floods, sea level rise (SLR) that increases salinity intrusion, natural disaster and various other impacts to health, economy and society. These climate change problems have direct impacts in areas of fresh water availability, surface drainage congestion, food security, economic growth, energy security, poverty reduction and overall development.

It is important to remember that climate change threat for Bangladesh is intimately interlinked to development issues. The IPCC AR4 has already indentified that development could facilitate adaptation to climate change through increase in adaptive capacity. But this development itself is difficult to achieve since climate change hampers development processes as well. Given the importance of the costal and fresh water resources in Bangladesh, climate change poses a major threat to should be seen as a requirement for sustainable development.

In order to address climate change and its impacts, the government of Bangladesh has formulated the National Adaptation Programme of Action (NAPA) under the guidance of the UNFCCC. The NAPA indentifies the immediate and urgent needs of the country in regard to adaptation activities and has listed priority activities. So far the NAPA has also designed future adaptation strategies for the country.

The national Adaptation Programme of Action (NAPA) was prepared by the Ministry of Environment and Forest (MOEF), Government of the people's Republic of Bangladesh as a response of the decision of seventh Session of the Conference of the

Parties (COP7) of the United Nation Framework Convention on Climate Change (UNFCCC). The preparation process following the generic guiding principles outlined in the annotated guideline prepared by LDC Expert Group (LEG). The basic approach to NAPA preparation was along with the sustainable development goals and objectives of the country where the necessity of addressing environmental issue and Natural resource management with the participation was of stakeholders in bargaining over resource use, allocation and distribution was recognized. Therefore, involvement of different stakeholders was an integral part of the preparation process for assessing impacts, vulnerabilities, adaptation measures keeping urgency and immediacy principle of the NAPA. Policy makers of Government, local representatives of the Government (Union Parishad Chairman and Members), scientific community members of the various researcher institutions, researchers, academicians, teachers (ranging from primary to tertiary levels), lawyers, doctors ethnic groups, media, NGO and CBO representatives and indigenous women contributed to the development of NAPA for Bangladesh.

The NAPA has suggested the following adaptation measures for Bangladesh to address adverse effects of climate change including variability and extreme events based on existing coping mechanisms and practices. The suggested future adaptation strategies are (MOEF 2005):

1. Reduction of climate change hazards through costal afforestation with community participation.
2. Providing drinking water to costal combat enhanced salinity due to sea level rise.
3. Capacity building for integrating climate change in planning, designing of infrastructure, conflict management and land water zoning for water management institutions.
4. Climate change and adaptation information dissemination to vulnerable community for emergency preparedness measures and awareness raising on enhance climatic disasters.
5. Construction of flood shelter, and information and assistance centre to cope with enhanced recurrent floods in major floodplains.
6. Mainstreaming adaptation to climate change into policies and programmes in different sectors (focusing on disaster management, water, agriculture, health and industry).
7. Inclusion of climate change issues in curriculum at secondary and tertiary educational institution.
8. Enhancing resilience of urban infrastructure and industries to impacts of climate change.

9. Development of eco-specific adaptive knowledge (including indigenous knowledge) on adaptation to climate variability to enhance adaptive capacity for future climate change.
10. Promotion of research on draught, flood and saline tolerant varieties of crops to facilitate adaptation in future.
11. Promoting adaptation to coastal crop agriculture to combat increased salinity.
12. Adaptation to agriculture system in areas prone to enhanced flash flooding in North East and Central Region.
13. Adaptation to fisheries in areas prone to enhanced flooding in North East and Central Region through adaptive and diversified fish culture practices.
14. Promoting adaptation to coastal fisheries through culture of salt tolerant fish special in coastal areas of Bangladesh.
15. Exploring options for insurance and other emergency preparedness measures to cope with enhanced climatic disasters.

Climate change and its associated events will affect the natural resources and common property resources such as fisheries, mangroves and forests, which provide livelihood supports for the common people and the poor. This will contribute to increase in poverty. Climate change will affect sectoral as well as regional developments and current disaster preparedness strategies. Climate change is also likely to stand in the way of stand in the way of achieving the millennium Development Goals (MDGs) of the country particularly the goal of eradicating poverty and hunger.

### **3.5: Sub- National and Local Context**

The major problem due to change in Bangladesh are location specific. Climate change has different parts of the country. Some parts of Bangladesh are affected by floods while others are drought prone and are affected by sea level rise. For instance in the case of floods, the most vulnerable areas are central Bangladesh and flashfloods in the hilly areas namely in the northeast part of Bangladesh.

Some of the climate change issues at the sub national level and local context are:

#### **1. Increasing floods in flood prone are:**

The enhanced snow melt from the Himalayan permafrost, due to increase in temperature will force more water to flow through the Ganges, meghna, Brmaputrutra river systems and their river networks. This will create additional flooding extending over the central flood plain of Bangladesh. Combined with this in increased intensity of rainfall during the monsoon season. This not only adds to the existing flood and water-longing problems but also causes flashfloods in the hilly areas of the country.

## **2. Increase in drought:**

The northwestern drought prone areas of Bangladesh are projected to be greatly affected by decreasing rainfall. There has been major investment over the last two decades in the Barind area and succeeded in raising agricultural productivity. But most of these effects will be challenged by predicted increasing drought in the northwest Bangladesh.

## **3. Sea level rise and salinity intrusion:**

Sea level rise is a problem faced by the entire coastal region in southern Bangladesh. It is projected that the possible sea level rise will affect the country by inundating coastal areas of Bangladesh. These will dislocate millions of people from their homes, occupations and livelihoods. Salinity has already increased in the Coastal zones. Intrusion of salinity is contributed by less flow of fresh water from the Ganges and ingress of salt water from Bay of Bengal. It is predicted that for 45cm of sea level rise about 10 percent of the country will be increased. Further for a 1m sea level rise 21% of the country will go under salt water (IPCC, 2007).

## **4. Increase in Cyclones and storm surges:**

One of the predictions of the IPCC AR4 is the intensification of the extreme weather events such as cyclones and associated storm surges. Bangladesh coast is vulnerable to recurrent cyclones. The enhancement in intensities of wind velocity is expected to incur greater losses to vulnerable communities and ecosystems. Further increase in sea level rise will bring the water line further inwards. Consequently the effect of storm surge will penetrate deeper into the landmass. As population increases both numbers of affected people and investment in infrastructure will incur greater losses.

## **5. Impact on mangrove ecosystem of the Sunderbans:**

Sunderbans in the coastal Southern Bangladesh will be exposed to several of the adverse associated risks of climate change, particularly sea level rise, saline intrusion and intensive extreme weather events. The rate at which climate change related sea level rise and saline intrusion is likely to take place is going to be much faster than the rate at which the mangrove ecosystem will be readjust. This will result in reduction in species and biodiversity as well as decrease in the areas of the area of the mangrove forest with all its concomitant consequences.

All these above factors result in loss of agricultural production, health, loss of livelihoods and increase in poverty. Climate change is also responsible for the increase in rural-urban migration.

#### **4. NGO approaches to climate change: a priority?**

The research investigator interviewed 15 Go and NGOs for this piece of research work. Although most of them have some sort of climate change response, only three or four have explicit climate change projects. One response was “We don't really work on climate change... it is a cross-cutting issue”- Interview with Ms Momtaz Khatun, Executive Director, Asroy Foundation on 12.11.09. Indeed, climate change may not be a priority issue for these organizations' mandates. The most common NGO response was that they add climate change issue to their existing rural livelihoods or disaster management work. One (Nabolok) was preparing to attend the Conference of Parties 15 (COP15) summit of the IPCC in Copenhagen in December 2009 as an observer, to bring Bangladeshi concerns to an international forum. Some others were providing ‘awareness dialogue’ meetings for local government officials (JJS, CSS). Community-level awareness raising on climate change was another popular response, but the two community theatre ‘infotainment’ pieces that the research team were shown dealt only incidentally with climate change.

When asked what kinds of resources the NGOs needed to work on climate change, typical responses were:

- Funding
- Technical support (knowledge about climate change and its effects)
- Analytical support (information on what to do about climate change, and how).

This section describes where the climate change impetus for local NGOs came from; what kinds of livelihoods and disaster management initiatives the respondents work with now; and some advocacy initiatives on climate change. Although climate change may not be a central feature of local NGOs' activities now, this shows which types of outreach and information channels do get the message across. It also shows what kinds of useful activities NGOs are already undertaking – these help alleviate climate change effects even if they are not explicitly labelled 'climate change'.

#### **How do NGOs start work on climate change?**

Climate change gives us an opportunity to see how Bangladeshi NGOs adopt new development trends. We were interested in finding out about the climate change resources available to local NGOs: information, training, contact persons, research findings, forums, policy. The table below lists the responses, with a 'star' system indicating how common the response was: five for common, one for unique.

A typical learning trajectory would be one where NGO employees hear about climate change in the media. They may find opportunities to learn more in training sessions or seminars. They may decide to incorporate climate change in their work with or without outside funding or support. Only a few have made it a central activity for their organization.

Type of outreach	Source	Frequency	Specifically/ alignment	lift
	Own experience	*****	Living through changing weather, cyclones, declining agricultural yields, inundations and water scarcity	
Information	Newspapers	*****	Climate change is now a daily feature in the Bangladeshi press	
	TV	*****	E.g. a BBC feature in 1999 stating that 'Bangladesh will be under water'.	
	NGOs	**	Pradipan leaflets and newsletter – internal learning from colleagues	
	Partner INGO	**	Partner or funder INGOs suggested	
			preparing a climate change project	
	Local government	***	Monthly NGO coordination meetings at District or Upazila level	
	Internet	*	Only three NGOs had used the internet for accessing climate change information.	
Training	BDPC/Care– climate change and rescue training	*	Staff who did this training left the organization.	
	Pradipan/Care training	*	Mentioned once (not by Pradipan)	
Research			No respondent mentioned reading research reports on climate change	
Policy			Only two respondents mentioned studying policy documents – one academic and one advocacy organisation	
Word of mouth			Although it seems like a probable information source, no respondent mentioned learning about climate change	

			from a colleague or friend. This may be more to do with saving face than with facts.
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This overview shows us that most of NGOs' climate change knowledge comes from the media. It is also crucial to note that most of these NGOs are not in the habit of using the internet for information searches or communication. Official documents are similarly inaccessible.

The Climate Change Cell publishes useful information booklets in Bangla, but these printed materials don't reach far.

Since media coverage is unlikely to include in-depth or practical information, it follows that there is demand for clear, NGO-specific, interactive climate change information.

Workshops, information visits and training courses are sure to attract interest and attendance. The challenge is to follow good active learning principles when designing sessions; to make the content useful to NGOs who need to design programmes and attract funding; and to manage to convey the subtleties of climate change. For example:

- that there are still many questions about the impact of climate change;
- how many of current problems are due to climate change – and which ones are not;
- the importance of taking a long-term view when considering climate change interventions.

The community-based adaptation (CBA) approach is especially salient for Bangladeshi NGOs and can be recommended. CBA relies on an organisation's connections with communities to incorporate climate change into long-term community-based, community-owned support. The new International Centre on Climate Change and Development in Dhaka runs climate change training for NGO staff, but there is scope for more high-quality training (INTRAC, 2010).

#### **4.1: The Community-Based Adaptation (CBA) of UNDP**

The CBA programme seeks to encourage systemic change in national adaptation-related policy through evidence based results from a portfolio of community-driven climate change risk management projects. The programme promotes global learning related to community adaptation by sharing lessons from a range of initiatives focusing on natural resource management.

The programme is a collaboration led by the United Nations Development Programme (UNDP), with financing from the Global Environment Facility (GEF). The GEF Small Grants Programme (SGP) is the delivery mechanism. The UN Volunteers has partnered with UNDP and GEF-SGP to enhance community mobilization, recognize volunteers' contribution, and



ensure inclusive participation around the project, as well as to facilitate capacity building of partner NGOs and CBOs. In addition, funding is provided by the Government of Japan, the Government of Switzerland, and AusAID.

### **The Community-Based Adaptation Programme**

- USD \$4.5 million, plus co-financing
- Up to \$50k per project (+co-financing)
- A five-year programme, 2008 to 2012
- 8-12 projects per country
- Approximately 120 projects globally
- Ten pilot countries: Bangladesh, Bolivia, Guatemala, Jamaica, Kazakhstan, Morocco, Namibia, Niger, Samoa, Vietnam

Key partners: UNDP, The Global Environment Facility (GEF), GEF Small Grants Programme (SGP), The United Nations Volunteers, the Government of Japan, the Government of Switzerland, and AusAID

### **CBA Project Timeframe**

- 2009 31 projects under implementation
- 2010 50-60 projects under implementation
- 2012 80-120 projects under implementation

The CBA programme addresses this gap by supporting community-driven projects that will pilot a range of climate risk management practices at the local level. The initiative seeks to support 8-12 projects in each of ten pilot countries, and a total of 80-120 projects globally by 2012.

Taking a natural resource management approach, the CBA programme focuses on adaptation approaches that also generate global environmental benefits in areas such as biodiversity conservation and sustainable land management. Projects will contribute towards country-driven priorities on natural resource management and climate change adaptation. The projects will in turn leverage systemic policy changes at a national level that are necessary to reduce vulnerability to climate change impacts.

The UNDP approach to adaptation is ultimately about doing development differently — integrating climate change risk management into MDG-focused initiatives. CBA projects add an adaptation layer to sound community-based development initiatives – ensuring that development gains are not threatened by climate change impacts. UNDP's CBA programme officially began implementation in February 2008. Country programme strategies have been developed in the ten pilot countries, and community outreach and project development-related activities are underway (UNDP, 2012).

### **4.2: Community-Based Adaptation (CBA) - Action Aid Bangladesh (AAB)**

The goal of ensuring that even the most marginalized people have a voice in decisions around adaptation finance creates a rationale for a bottom-up approach. In recent years, support has

been growing for the idea of community-based adaptation (CBA) as an important method of addressing climate change challenges at the local level. Reid et al. (2009) define CBA as “a community-led process, based on communities’ priorities, needs, knowledge, and capacities, which should empower people to plan for and cope with the impacts of climate change.” (Mitchell, 2008).

### **Community-based Adaptation**

CBA focuses on communities that are most vulnerable to climate change and aims to understand how climate change will affect a community’s capacities and assets (Mitchell, 2010). The process is bottom-up and community-driven, placing a strong emphasis on incorporating indigenous knowledge, social capital, and local context in adaptation planning (Harris, 2011). Reid et al. explain that “it is now increasingly recognized that, for poor communities, adaptation approaches that are rooted in local knowledge and coping strategies, and in which communities are empowered to make their own decisions, are likely to be far more successful than top-down initiatives.” (World Bank, 2010) When employing participatory approaches, communities can develop “social capital” that promotes the positive engagement necessary to reach collective goals, including addressing the challenges of climate change (Parry, et al, 2009).

Furthermore, stakeholder participation is essential for long-term sustainability and effectiveness of adaptation projects, because without inclusion of local community stakeholders, projects and initiatives will not be maintained (Grasso, 2010).

### **Action Aid Bangladesh (AAB) Experiences with Climate Change Adaptation and Local Governance**

Over the past several years, AAB has been pursuing projects at several sites across Bangladesh with the goal of piloting a model for participatory, community-based planning for climate change adaptation. In 2008, AAB started a new project called, “Assistance to Local Communities on Climate Change Adaptation and Disaster Risk Reduction in Bangladesh.” At the core of the project are what AAB calls “GonoGobeshona Dols” (GGDs), which translates in English as “People’s Research Teams.” Each team comprises members drawn from among the poorest and most vulnerable in each community. The project began at sites in three districts of the country: Sirajganj, Patuakhali, and Naogaon.

AAB follows a “Human Rights Based Approach” (HRBA), which emphasizes values such as mutual respect, equity, and justice, and is built on the notions of empowerment, campaigning, and solidarity. AAB “believes that the indignity of poverty is a violation of human rights, arising from unequal power relations from the household to the global level.” From the perspective of AAB, reducing poverty requires helping people and communities to understand their human rights and come together to collectively demand and fight for them. HRBA also focuses on understanding the issues facing a community through participatory activities, enabling people to voice opinions in a truly democratic process, and respecting the knowledge and perspectives that people bring to the table. Given the uncertain future under a changing climate, traditional knowledge and past experiences alone will not be enough to ensure successful adaptation.

AAB's projects aim to fill this gap by helping communities to better understand the hazards and vulnerabilities they face and by facilitating a CBA process to identify strategies to overcome these challenges and build resilience. AAB works to empower poor and marginalized communities to take adaptation into their own hands and address the root causes of their poverty and vulnerability. With the support of AAB, in most cases provided through local NGO partners, GGDs undertake a series of activities to understand how climate change affects them and ultimately produce a Community Adaptation Plan (CAP). The initial process may take about a year, but after completion of the CAP, the GGDs continue to meet to revise, improve, and implement it. These activities draw heavily from the principles and approaches of Participatory Vulnerability Analysis (PVA) and the "Reflect" model. (ActionAid International, PVA).

AAB has recently expanded the scope of its work on adaptation to encompass a focus on local governance, based on lessons learned from previous experience and the notion that "local government institutions are central in facilitating adaptation locally." (Raihan, *et al* 2010). As part of a separate project, AAB had also previously undertaken efforts to increase local government capacity and accountability to citizens by facilitating participatory planning and budgeting at the UP level, which according to AAB has significantly improved both governance and service delivery. (Ashraf, Action Aid Bangladesh: PP&B) An AAB staff member involved in this work explained that AAB learned a lot through the successes and failures of the project. The outcomes were used to approach the government to advocate for greater decentralization. However, the experiences also revealed that UPs had virtually no decision-making power, institutions were often not prepared for the new processes, and participation by communities in meetings was often driven by AAB and not something people took the initiative to do on their own. In addition, priorities identified were sometimes skewed away from core development needs such as education and health and instead toward activities such as improving the local mosque. Another study from Bangladesh finds that in general participatory budget discussions provide a good opportunity for citizens to participate in the decision-making process, although concerns are also raised that political elites may dominate the discussions (Ullah, 2011, 31).

Building on previous experiences, AAB initiated a pilot project called, "Scaling Up Community-Based Adaptation with Local Government in Bangladesh," beginning in 2011. The project has been ongoing in the same three districts where AAB had already worked on climate change adaptation and DRR (Sirajganj, Patuakhali, and Naogaon), as well as a fourth district, Faridpur. To date, AAB has worked in seven unions and formed 31 GGDs, 17 of which are comprised of women, 13 of which are comprised of men, and 1 of which is mixed. The timelines and exact activities varied somewhat across sites, and in some cases AAB had experience working with communities and building relationships through previous projects.

In addition to continuing to work with the GGDs, in some unions AAB also began working with UP chairmen and members to educate them about climate change and their responsibilities to their constituencies. Furthermore, AAB has worked to build the confidence and capacity of community members by educating them about their rights to demand support and services from their local governments. The project has emphasized the use of participatory planning and budgeting processes, such that the climate adaptation knowledge and evidence generated through the GGD process can be utilized to ensure that community needs and priorities are addressed in UP budgets and schemes. In four unions, UP officials have received various trainings on issues including climate change, financial management,

and relevant laws and regulations. In these unions, AAB has also assisted the UPs in preparing transparent budget books detailing revenues and expenditures, which are published and made available to community members. AAB believes that many of the GGDs now have the capacity to function on their own, without AAB support, and take on additional tasks such as assisting with early warning systems or rescue and relief efforts after disasters (Christensen, *et al*, 2012).

### **4.3: Approaches of Center for Natural Resource Studies (CNRS)**

CNRS is a non-government, non-political development organization formed in 1993 focuses on ecological management of floodplain ecosystem through community-based management approaches.

#### **Approaches:**

In its journey, CNRS adopts diverse approaches and methods, developed by it's as well as with the help of partners. The system has been evolving though a process of challenges and responses. With its flexible structure, CNRS is continuously gaining and sharpening its knowledge base from various sources, especially from participating communities including various development partners.

The key focus of CNRS was to put on community-based/ co-management of natural resources with active engagement and leadership of local user communities and other relevant stakeholders with the understanding that the livelihoods of millions of poor households depend on natural resources for their sustenance. Science formation actors including government and donor agencies through demonstrating innovations in its approaches and producing tangible learning outcomes. Over the years, during the course of journey, CNRS incorporated other areas of development which include skills building, livelihoods options and employment creation, market linkage development, empowerment, WATSAN, waste management, disaster risk reduction climate adaptation and mitigation. Attention is also drawn on gender equit, good governance and advocacy with an objective of ensuring sustainable development through a process of establishing rights of access to resources by the poor user communities. Besides, CNRS runs a micro-credit program of its area of operation facilitating capitation for the small initiatives taken by the poor resources users as means of alternative income generation.

#### **Partnership Approach:**

CNRS works with partners to maximize impact of programs in communities. Long-term partnerships are forged with relevant actors who offer complementary approaches and are able to contribute effectively to programming and address the underlying causes of poverty.

#### **Adaptation and mitigation to climate change:**

CNRS has been facilitating community in climate change adaptation to the changes situation of the natural resource basis (farmlands, wetlands, forest) upon where they are dependent for

their livelihoods. As part of the process, CNRS is involved in adaptation to extreme natural calamities (i.e. inundation, soil- salinity, draught), and hence improved livelihoods of the community by promoting on- farm & off-farm activities. CNRS is very much involved in habitat restoration. As part of IPAC project, CNRS is involved in mitigation (Source: Annexure-1, Organizational Profile- CNRS)

#### **4.4: Community-Based Adaptation (CBA) of Practical Action**

At Practical Action we believe climate change adaptation cannot be solved solely through the top down transfer of technologies. These technologies are unlikely to reach the poorest people because of a lack of affordability and accessibility. Nor will these technologies be specifically designed to meet the needs of local people.

Practical Action believes that adaptation must focus on strengthening communities from the bottom up and build on local strategies for coping with climate change. Resource poor people are not passive, they are already using strategies to adapt and have extensive knowledge of local climate conditions. The problem is that further changes in climate may be beyond their capacities to adapt. So Practical Action is working with local communities in order to: strengthen their capacities to prepare for and respond effectively to climate-related hazards; develop ‘no regrets’ technologies to strengthen people’s livelihoods; enable communities to take part in decision-making processes on climate-related adaptation strategies and influence policy at different levels.

An example of our work includes the international project ‘Increasing the resilience of communities to cope with climate change’ which used a community-based approach to develop strategies for addressing the localized threats of climate change. It was simultaneously implemented in Bangladesh, Nepal, Pakistan and Sri Lanka. See an example of our work in Bangladesh.

#### **Increasing the resilience of poor communities to cope with the impact of climate change**

**Project location:** Gaibandha District.

**Targeted beneficiaries:** 10,000 Women and Men

**Project end:** October 2007

**Supported by:** Allachy Trust

The aim of the project was to bring together issues of poverty reduction, environmental and natural resources management, disaster risk reduction and climate change.

#### **The project had three main components:**

- To strengthen the capacity of communities and government and non government supporting institutions to prepare and respond effectively to future climate-induced emergencies



- To develop and promote practical (technology based) interventions to strengthen peoples livelihoods and natural resource assets.
- To promote the engagement of vulnerable communities in decision making processes on climate related adaptation strategies in order to influence policy change and increase self sufficiency.

### **Project purpose and outcome**

The project aimed to increase the resilience of poor people to cope with, and adapt to the impacts of climate change. This was achieved through strengthening the capacity of vulnerable communities to prepare for and adapt to changing and extreme weather conditions.

**Outcome 1:** Community based disaster preparedness plans

**Outcome 2:** Sustainable technologies for natural resource management, water conservation and agriculture implemented

**Outcome 3:** Capacity support institutions, local and regional stakeholders strengthened to incorporate community based climate change mitigation strategies into development planning and natural resource management strategies

**Outcome 4:** Changes effect in policy and practice at local, regional and international levels to support community based climate change adaptation measures

This project was part of Practical Action Bangladesh's Reducing Vulnerability programme ([Practical Action, 2013](#)).

### **4.5: Approaches of CARE Bangladesh**

According to a CARE staff member, the organization's work in relation to climate change adaptation and risk reduction closely involves local government institutions. This work is based on the notion that communities do not need significant outside resources to overcome the challenges they face. CARE facilitates an empowerment process that helps communities address their poverty and marginalization in a more sustainable way. CARE supports exercises to map vulnerabilities at the village, ward, and union levels. In addition, CARE works with UPs to make the planning and budgeting process more transparent and participatory. CARE utilizes the Community Vulnerability and Capacity Analysis (CVCA) tool to help groups create a Community Action Plan, which prioritizes all the problems that people face, not only those related to climate change and disasters. CARE then helps to organize consultation meetings where these plans are shared with the UP to influence the UP to integrate the ideas into the annual development plan. CARE does not directly provide substantial financial resources for the implementation of these plans, believing that empowered communities can address their problems collectively without significant external support. CARE works with communities and local government bodies to increase UP revenues through activities such as sensitizing local elites to the importance of paying taxes. CARE also helps to connect communities to other sources of funding, such as other agencies and partnerships with the private sector. According to CARE's experiences, social safety net programs, especially if improved to reduce political bias, could be an important avenue for

providing communities with additional resources to address the problems they face (Christensen, *et al*, 2012).

#### **4.6: Approaches of Islamic Relief Worldwide, Bangladesh**

According to an Islamic Relief Worldwide (IRW) staff member, the organization has been working for several years on projects at the intersection of risk reduction and local governance in rural areas. In IRW's view, climate change adaptation activities should build upon existing DRR efforts, while combining additional information, monitoring of long-term trends, and an acknowledgement that in the future, disasters are likely to be more severe than they have been in the past. IRW has been working closely with CDMP activities for several years and, along with AAB and other NGOs, is a member of the National Alliance for Risk Reduction and Response Initiatives (NARRI). The organization's approach is to work on building the capacity of the DMCs at different tiers, with a particular focus on the UDMCs, which are often not initially functioning and do not receive significant funds. IRW also helps to train and build capacity of various community-based organizations (CBOs) to undertake risk reduction planning. IRW facilitates the CRA process and the development of RRAPs. To support the implementation of risk reduction projects, IRW first encourages communities to generate funds from their own resources, under the philosophy that this gives people a greater sense of ownership and involvement in projects. Additionally, IRW provides some funding support directly to UDMCs or community groups and also supports UDMCs in applying for funding from the LDRRF. In one case study, IRW reports that it assisted UDMCs in three unions to create RRAPs. The RRAPs have been integrated into the UPs' annual development plans and many identified risk reduction activities have already been undertaken. (Rahman, 2012).

#### **4.7: Approaches of Oxfam Bangladesh**

As part of its Resilience through Economic Empowerment, Climate Adaptation, Leadership and Learning (REE-CALL) program, Oxfam is undertaking CBA efforts at the local level. As Oxfam staff explain, the organization's approach involves the formation of large, inclusive village CBOs that bring together all households. UP members may serve as advisors to the CBOs. These CBOs work to address all issues facing the community, with a focus on community mobilization, building capacity to address climate uncertainty, skill development, resilient livelihoods, building women's economic leadership, local resource mobilization, and active engagement with local government institutions. Oxfam supports communities in undertaking a Participatory Capacity and Vulnerability Assessment (PCVA). Oxfam views this as crucial to ensuring that those affected by climate change have a voice in the process. Oxfam's role involves providing communities with knowledge about disasters and climate change, along with information about their rights and how to approach their local government officials. Oxfam partner field staff then help to convert the outcomes of this PCVA process into the format of a CRA, which in turn forms the basis for an RRAP. Oxfam then works with UDMCs to help prepare proposals to the LDRRF. Oxfam also helps to set up a joint monitoring committee for each project that is responsible for visiting the site once a year. In Oxfam's experience, UDMCs require capacity building and are often unaware of the LDRRF. Other problems Oxfam has observed include a lack of knowledge among government line agencies and in communities about how to link existing DRR activities to adaptation

initiatives, a lack of research on adaptation, a lack of coordination among social safety net programs, and a large gap between national and local activities related to climate change (Christensen, *et al*, 2012).

#### 4.8: Open Approach of BAPA and BEN

Although an international effort to stabilize climate is going on under the auspices of the United Nation's Framework Convention on Climate Change (UNFCCC), it will take considerable time to reach that goal, and meanwhile the atmospheric GHG concentration will continue to increase, climate change to a significant extent has now become inevitable;

Of all the long term future challenges that Bangladesh faces, climate change challenge is the gravest; Efforts to deal with climate change have proceeded in two directions, namely "mitigation," meaning reduction of GHG emission, and "adaptation," meaning changing the economy etc. in order to live with the effects of climate change; and, to the extent that Bangladesh will be the worst victim of climate change, she has the scope to play an important role in the international effort along both these directions;

Since her emission volume is still very low, and the urgency of fast economic growth is acute, Bangladesh has been exempted from emission reduction undertakings under UNFCCC;

Industrialized countries, under pressure to mitigate GHG emissions, occasionally resort to various cunning strategies, and try to pass on the burden on to developing countries; It has been internationally agreed, in principle, that developing countries, which will be adversely affected by climate change, would be provided with necessary financial and technological assistance with regard to adaptation;

As of now, the attention of the government and climate change related non-government organizations is focused mainly on getting foreign financial assistance for adaptation; even though foreign assistance alone will not be enough for adaptation of Bangladesh to climate change;

The research findings arrived at by the Intergovernmental Panel for Climate Change (IPCC) are applicable to the world as a whole, and there is scope of considerable regional variation, so that it is necessary to conduct research specifically focused on Bangladesh in order to gauge the likely impact of climate change on her;

There are many dimensions along which climate change will adversely affect Bangladesh, and among these are:

- (a) Sea level rise will inundate a large portion of the land resulting in massive loss of habitation and livelihood, and rendering tens of millions of Bangladesh citizens as "climate refugees";
- (b) Even of the part that will escape inundation, will be affected seriously by salinity intrusion that will damage agriculture and flora and fauna, in general;
- (c) The loss of Himalayan glaciers due to global warming will dry up rivers in winter, while excessive precipitation will intensify summer flooding, so together climate change will destabilize Bangladesh rivers;



- (d) There will be a rise in the intensity, scope, and frequency of extreme weather events such as cyclones, tidal surges, etc;
- (e) Vector-borne diseases, including malaria, dengue, yellow fever and encephalitis will proliferate in warmer and wetter conditions, and many new types of diseases may arise and spread;

All in all, climate change will have a devastating effect on Bangladesh; Confronting climate change's adverse effects of different dimensions above is a daunting challenge, and meeting this challenge requires change in policies in many important areas of the economy and social life of the country;

Among the changes required in domestic policies, the most important is the change in the approach to rivers;

Until now, Bangladesh has been following the *Cordon Approach* to rivers, under which flood plains are being cordoned off from neighboring river channels through construction of solid embankments (i.e. embankments without any openings);

The *Cordon Approach*, introduced in Bangladesh by the *Krug Commission* in the 1950s, is a foreign approach and is unsuitable for the deltaic conditions of the country; Implementation of the *Cordon Approach* over the years has, on the one hand, aggravated flooding and created the new problem of waterlogging, and on the other hand, deprived floodplains of the beneficial effects of normal regular inundation; and further, *Cordon Approach* leads to aggradation of river channels and subsidence of floodplains;

Bangladesh is basically a delta, and its geological history shows that the most important protection it has against rising sea level is *sedimentation* caused by rivers, and yet by obstructing the process of sedimentation, the *Cordon Approach* weakens Bangladesh's natural protection against rising sea level;

Similarly, by restricting space over which the summer river flow can spread out, and by not helping to conserve summer water in the floodplains for use in dry winter, the *Cordon Approach* will aggravate the river destabilizing impact of climate change;

The *Cordon Approach* also cannot provide any protection against increasing salinity intrusion; Instead of the *Cordon Approach*, what a deltaic country like Bangladesh needs is the *Open Approach*, which preserves and enhances the organic connection between river channels and adjoining floodplains, maintains process of sedimentation, and thereby allows Bangladesh to benefit from the natural protection that she has against sea level rise;

The *Open Approach*, furthermore, counteracts the river destabilizing effect of climate change by mitigating flood during summer, as river flow can spread over larger areas, and by conserving summer water and making it available during winter, so that the *Open Approach* can also act against rising salinity, which is expected to be more acute during the winter, when river flows diminish;

The *Open Approach* can therefore help counteract three (namely, submergence by rising sea level, destabilization of rivers, and salinity intrusion) of the five most adverse effects of climate change on Bangladesh; so that switching from the *Cordon Approach* to the *Open*

*Approach* to rivers is the most important policy change that Bangladesh needs in order to face the climate change challenge;

Another important area in which Bangladesh needs to bring about policy changes in view of climate change is forests, protection and enhancement of which can help Bangladesh significantly with regard to adaptation, and also allow her to contribute to the international mitigation effort;

The experience of the hurricane SIDR in 2007 showed the role that the coastal mangrove forests, *Sundarbans*, play in protecting the people of Bangladesh's coastal districts, which would otherwise have suffered much more loss of life and property; and this experience reinforces the necessity for preservation and expansion of *Sundarbans* and other coastal forests;

Preservation and expansion of forests is also necessary for protection of legitimate rights of the indigenous (*Adibashi*) peoples who live in forest areas; and conversely deforestation usually goes hand in hand with violation of rights of indigenous peoples, as has unfortunately happened in Bangladesh;

In addition to preservation of coastal forests, there are many other steps that need to be taken in order to prepare the coastal population against the rising incidence, scope, and intensity of cyclones and tidal bores that climate change will bring about;

Since the 1991 hurricane, Bangladesh has made progress in warning system, construction of shelters, and moving people to them, etc, even though this progress is not adequate in view of the climate change, and hence the country needs to increase the number and quality of shelters and promote change in the settlement pattern and cultivation and other livelihood practices of the coastal areas in order to adapt them to climate change;

Important changes are necessary in the *agriculture sector* of the country as a whole, and for that first comprehensive studies need to be conducted to determine the ways in which climate change will affect agriculture and to devise ways in which the adverse effects can be minimized and overcome;

*Energy* is another important sector, the policies of which requires serious re-examination in the light of the climate change, remembering very well that country's energy capacity has to be raised rapidly and significantly in order for the country to achieve necessary economic growth;

In expanding Bangladesh's energy capacity, emphasis needs to be given on the use of *renewable energy sources*, in particular on solar energy, with regard to which Bangladesh has a great potentiality in meeting household power needs of tens of millions of villagers who still await electricity, so much so that experts believe that Bangladesh can bring about a *solar revolution*, and in doing so Bangladesh can set an example in the international arena of following the *low-carbon-path to growth* and contribute to the global mitigation effort;

By bringing about the solar revolution, Bangladesh can, with regard to energy and for the majority of her people, leapfrog to the stage of renewable, bypassing the stage of fossil fuels, just as she has leapfrogged, in the area of telecommunications and for the majority of her people, to the stage of mobile phones bypassing the stage of land (wired) telephones;

The solar revolution can also be helpful for Bangladesh's industrial revolution, because she already produces domestically all the components necessary for solar units, except the solar panel, and since Bangladesh has large amounts of high-quality sand deposits from which solar panels can be manufactured, she can, with appropriate policies in place, develop a large, new industrial sector producing all components of solar units, including solar panels; and the rise of this new industrial sector can be analogous to the rise of Bangladesh's garments manufacturing sector;

Important changes will be necessary in Bangladesh's *health sector* in order to meet the challenge of increased incidence of diseases resulting from climate change, as well as to find out through research and studies the new types of diseases that may arise because of climate change in the tropical conditions of Bangladesh;

Large absolute size and extremely high density of population is one of the main reasons why climate change will exact such a huge human toll in Bangladesh, and they increase Bangladesh's vulnerability by putting pressure on her physical resources, including forests, water, and arable land, and by pushing population to precarious sites for settlement;

Bangladesh did achieve some progress in bringing down the fertility and population growth rates, but even the current rates are too high, and more alarmingly, progress in bringing these rates down has faltered in recent years due to complacency, misguided policies, and lack of adequate funding and effort;

Stabilization and reduction of the population size is a pre-condition for Bangladesh to be successful in coping with the adverse effects of climate change;

The entire population of Bangladesh needs to be made aware and educated about the danger of climate change and its probable effects on Bangladesh; and to that end it is necessary to revamp the *curricula* of the countries educational institutions, beginning with that of the school level; and furthermore *capability for research* on climate change needs to be greatly enhanced through appropriate support to the country's higher educational institutions and other centers for research and study;

Even though climate change affects everyone, the economically disadvantaged sections of the population are affected most adversely, who tragically also has the least wherewithal to deal with these effects, so that there is a "*internal double injustice*" related to climate change, and unless conscious efforts are made to redress this internal double injustice, an unfortunate situation of "climate apartheid" may develop within Bangladesh;

An important role in helping Bangladesh to confront climate change belongs to nonresident Bangladeshis (NRB), particularly those who are residing in developed countries, and they can do so by raising the awareness among the public of these countries about the devastating impact that climate change will have on tens of millions of people of Bangladesh, by providing concrete faces behind the abstract notion that the public of developed countries now have about the threat posed by climate change to far away tropical low lying developing countries (BAPA and BEN, 2009);

#### **4.9: Approach of NGO Forum**

NGO Forum is a national networking and service delivery organization in the area of water, sanitation and environment dedicated to contribute to the improvement of Public Health situation, especially for the poor, marginalized and excluded segment of the society of Bangladesh. Being an adaptive learning and rights-based organization, NGO Forum is committed to contribute to the promotion of Public Health through providing facilities and services in safe WatSan, hygiene, health care and environmental issues. Keeping this focus NGO Forum utilizes its vast experiences and works as development partner with all concerned government bodies, LGIs, NGOs, CBOs, private sector, civil society, media, national and international agencies, development partners and other stakeholders.

With a committed and competent work-force, and strong network, NGO Forum strives to bring an enabling environment by complementing the implementation of all relevant national policies.

#### **Environment and Disaster Management**

The environmental problems of the country are becoming acute creating a huge impact on WatSan & health. Alongside, the country has already started to bear the brunt of climate change impact turning a big number of its population as climate refugees.

NGO Forum analyzes & upholds the existing environmental impact, and is capitalizing that to the environmental conservation programme maintaining a contingency package for disaster management.

#### **Programme Implementation Approach**

- Operate in line with the relevant national policies
- Institution building of the partners for environment, health & WatSan promotion as human rights
- Integration of climate-resilient hardware and software services
- Community management in promotion of services
- Gender sensitive programme intervention
- Focus on the poor in hard-to-reach & disadvantaged communities in line with the Pro Poor Strategy
- Demand responsive & decentralized services ensuring good governance
- Participation & cost-sharing by community through ability to pay analysis
- Ownership to the community to ensure sustainability of the facilities
- Beef up supporting and complementing the national initiatives in the relevant sectors (NGO Forum, 2012).

#### **4.10: Approaches of IUCN (International Union for Conservation of Nature)**

In order to develop an appropriate methodology it is very much essential to assess the potentials and limitations of the area under study in general. These include demographic, biophysical and socio-economic characteristics. The study accentuated on documentation/ understanding about the changes in the local climate and climate related extreme events such

as change in extreme temperatures, rainfall amount and pattern, and the second generation problems like flooding regime, intensity of drought, cyclones, tidal surges, salinity etc. these events create negative impacts on resources/ assets and livelihood of the local people.

### **Field studies for primary data collection of impact of climate change on Agriculture:**

Since the scope of work is primarily focused on agriculture, emphasis was given more to the conditions aggravated due to various climate vulnerability and extreme events. What are the current vulnerability? How do the local population cope with and adapt to such hazards? Focused Group Discussion and consultation were held with various stakeholders, related to agriculture sector including farmer communities and other people directly or indirectly involved with farm and related activities. It was necessary to follow **participatory approach** for assessment of vulnerability to current climate variability and extreme weather events and associated risks (Hussain, 2008).

### **Approach for Promotion of Adaptation to climate change and climate variability in Noakhali District:**

The Activities of NCAP project were designed in order to explain the three common questions: what are the demands of stakeholders (grassroots people), what is available to them and how their needs can be communicated to policy makers to steer necessary action.

The basic approach of the project was participatory and encompassed both the both the top down and bottom-up approaches to development. Along with that, the eventual integration of the lesson learnt into the policy and decision-making cycle is the other main challenge that this project aimed to address.

A combination of the participatory approach and scientific tools and data was adopted in this project, to attain maximum input and ensure the interaction of stakeholders. Sustainable livelihood framework was used extensively to understand the local vulnerability issues. These approaches were based on the premise that there was a need to acquire an in depth understanding of the local issues in terms of people's perception and understanding of climate change and institutional capacities to respond to the perceived changes (Rahman, 2010).

### **Approach for Setting up Monitoring Protocol**

A very basic guideline to develop monitoring protocol was given to each team. These are - what are the impacts of climate change on thematic areas, what are the indicators & why selected viz justification. Where to measure it (location) and when to measure including frequency of measurement. In the end, how to analyze the data. The team was asked to consider the following issues:

- Relevance – importance of the verifier.
- Responsive – change upon impact/intervention and easy to detect
- Cross linkage – easy to connect with other verifiers/indicators
- Accountability – ease of data collection
- Ease of assessment – easy to record and interpret.

- Cost – cost of data collection

The main guiding principle was – a manageable monitoring protocol designed to support adaptation options for the country.

### **Approach for Monitoring Of the Health Impact**

Key steps for monitoring the climate change induced health impacts are (Campbell-Lendrum and Woodruff, 2007):

- Obtaining measurement of exposure: the climate variables that are likely to change through time and space
- Identifying health outcomes for assessment: should include the health outcomes that are known to be climate-sensitive and important in public health terms of the study population
- Quantifying the relationship between the climate and each health outcome: data on each of the climate variation and on each of the health outcomes
- Linking the exposure measurement to climate-health model: coupling the climate projections with the quantitative models to assess possible relative changes in health outcomes
- Estimate the burden of disease in the absence of climate change: using existing projections of likely future trends of disease burden determined by non-climatic factors
- Calculating the climate change attributable burden of specific diseases: applying the relative changes calculated above the estimates of burden of each disease in the absence of climate change

### **Monitoring Mechanism**

Climate change represents one of the greatest environmental and health challenges of our times. Bangladesh is one of the most affected countries due to this climate change phenomenon. Through this proposed monitoring process, long term disease surveillance will be maintained or established in suspected areas of climate change and health risks to enhance detection and prevention of disease resulting in guidelines and recommendation for policy makers at government and international levels to tackle human health problems in Bangladesh due to climate change and variability. Apart from government agencies, public health and environmental health workers as well as clinicians should interplay in a nicely poised manner resulting in a **proactive approach** to combat the grave situation so that we can achieve long range and long lasting prevention of the impact of climate change and variability on health.

### **Approach and Methodology on Indicators to Assess Impacts on Fresh Water Fisheries**

The identification and the development of corresponding methodology was based on the extensive literature survey, and a expert and stakeholder consultation process. Literature survey was undertaken to make a thorough appreciation of the following subject areas.

- Global warming and its consequences on climatic events
- Climatic change and climate variability issues
- Impacts of climate changes on various sectors
- Potential impacts of climate change and climate variability on Bangladesh fisheries

This appreciation process allowed us to grasp fully the requirement for the development of the monitoring protocol. An expert group having representatives from Department of Fisheries, GoB, Universities, Research Institutes, NGOs and individual experts was formed. The expert group held number of meetings and initially developed a monitoring framework and then detailed the methodology. The impact driven indicators were selected for monitoring. In the initial exercises, the various potential impacts on fisheries were identified through literature survey and through expert consultation. In practice, a number of indicators were selected for each of the impact area and then prioritization was done. The following general criteria were considered while prioritizing an indicator:

- the indicator should be responsive to climate change events
- should be precise, specific and should avoid information overload
- indicator should be impact driven, i.e. should reflect the changes in the aquatic biodiversity over time
- should have relevance to the objective of the monitoring program
- should be practical, easy to monitor and should avoid much laboratory analytical techniques/methods
- should be reasonably reliable
- feasible and cost effective (Denmark in Bangladesh, 2012).

#### **4.11: Integrated Approach of Climate Change Cell (CCC)**

##### **Adaptation Research**

Bangladesh is extremely vulnerable to climate change impacts because of its geographical location, high population density, high levels of poverty, and the reliance of many livelihoods on climate-sensitive sectors, particularly rural agriculture and fisheries. Climate change threatens both previous achievements and future efforts to reduce poverty in Bangladesh to date, particularly by reducing water and food security and damage to essential infrastructure during more frequent disaster events.

The Climate Change Cell established with the objective of “Establishing an Integrated Approach to Climate Change Risk Management at National and Local Levels”. Development and application of a research Strategy for Climate Change and Adaptation for Bangladesh is one of the major activity of Climate Change Cell.

Over the past years, the Climate Change Cell facilitated a process to identify priority areas for research on adaptation to climate change in Bangladesh. The Cell is facilitating the overall process of adaptation research in order to

- Fill knowledge gaps in the arena of adaptation to climate change and its impacts on the life and livelihoods;
- Explore options to adapt with the climate change;
- Contribute to better understanding of adaptation options, for sharing and uptake among relevant stakeholder groups and towards adoption and practice.

Through this process, the Cell, assisted by its Technical Advisory Group and other stakeholders, identified a set of research activities related to climate change and adaptation in Bangladesh. The research activities have been prioritized and six adaptation research projects have already been commissioned in the year 2006. The commissioned researches covered the field of Crop Agriculture, Crop Insurance, Health, Gender and disadvantage groups.

The project activities are expected to be completed by December 2007. A National Workshop will be organized at the end of 2007 to share the research findings.

It is expected that a total of five new adaptation research projects shall be commissioned in 2008 (depending on fund allocation after DFID midterm review). The Climate Change Cell aims to facilitate the overall process ([Climate Change Cell, 2013](#)).

#### **4.12: Participatory Approach of CPRD (Center for Participatory Research and Development)**

CPRD emphasizes participatory and people-centered development by exchanging, transferring and maximizing knowledge among the different actors and stakeholders and, generates innovative ideas, approaches, and appropriate technologies through participatory research developing models, demonstration and implementation. CPRD also works as a platform of policy advocates and researchers working as a hub among the development actors.

The internal professional staff and external fellows are grouped into five function-based interactive themes-

- a) economic justice and poverty alleviation,
- b) environmental justice for sustainable development,
- c) social justice for women and minority rights and,
- d) networking and capacity building of NGOs/CSOs
- e) north-south dialogue for equitable growth and trade justice ([CPRD, 2012](#)).



#### 4.13: Community Based Approach for Adaptation- Water Treatment Plant for Removing Salinity- Climate Change and Health Promotion Unit (CCHPU)



Pure and safe drinking water is very rare in the cyclone 'Aila' affected regions, due to presence of Arsenic in tubewell water and salinity in pond water. As a result, the residents of these areas have to buy their drinking water in most of the times.

In order to provide safe drinking water, Climate Change and Health Promotion Unit (CCHPU) took an attempt to purify water for removing salinity in these regions. For this purpose, 10 ponds were taken from these regions and later on 3 ponds were selected from 3 Upazillas of Satkhira as model ponds. These ponds are located in Nangla village of Debhata Union of Debhata Upazilla, Bara Shimla Village (Ward 6) of Bhara Shimla Union of Kaliganj Upazilla and in Dhanna Atti Village (Ward 4) of Ashashuni Union of Ashashuni Upazilla. The populations of these villages are 3500, 3800 and 3200 respectively.



Climate Change and Health Promotion Unit (CCHPU) has installed three water treatment plants near each of the three ponds for removing salinity in Reverse Osmosis Process, and trained the care-takers for the maintenance of the plants. Rural Electrification Board (Palli Biduit) provided power supply to run the plants and local communities provided lands to build houses for the plants. Local Governments (UPO) of the three Upazillas built houses in the lands through 'Food for Work Program (Kajer Binimoye Khaddo Karmashuci)'. They also formed a local committee for supervising the maintenance works of the plants. The committee arrange regular meetings, keep records of charges per pitcher, pay electricity bills, purchase chemical ingredients and supervise other maintenance work.



Now, saline free drinking water is supplied in these three villages after the purification process. This subject is also included in the Baseline Survey Questionnaires for collecting information regarding the arrangements for pure drinking water (CCHPU, 2013).

#### **4.14: Approach of ARCAB (Action Research for Community Adaptation in Bangladesh)**

Action Research for Community Adaptation in Bangladesh (ARCAB) is a long-term programme of action research that aims to address knowledge gaps through the generation of longitudinal data and evidence of effectiveness of CBA. ARCAB conducts and researches Community Based Adaptation (CBA) at locations from five major Ecosystem Zones and one urban site in Bangladesh, working through “action partners”, “research partners”, and “knowledge management partners.” ARCAB has four pillars of work:

##### **CBA Action**

CBA interventions provided by “action partners”. ARCAB supports NGO partners to implement CBA activities in climate-vulnerable communities. These interventions will respond to both slow onset climate changes and sudden-onset climate hazards that are likely to increase in frequency and scale under climate change.

##### **CBA Action Research**

An ongoing programme of action research undertaken by “research partners” supports CBA interventions. The research themes are described in detail below. The first three years will include an assessment of vulnerability and adaptive capacity as well as some initial interventions for long-term study on the scale and nature of ways in which communities can adapt to climate change.

##### **Knowledge management and communication**

The learning that emerges from the action research will be disseminated both back to the “action partners” as part of ongoing capacity building on CBA; and to the wider adaptation

community of practice through “knowledge management partners.” This includes active outreach to government, donor and civil society stakeholders engaged in wider scale adaptation planning. This will ensure the programme actively contributes to shaping and informing ongoing adaptation planning across scales. This component will include interactions and mutual learning between local communities and government actors at both local as well as national scale.

### Capacity building and learning by communities of practice

Of both action research partners and also long-term information users including local and national government stakeholders.

The “research” pillar will examine the effectiveness of the CBA interventions, as well as the effectiveness of CBA communication strategies. This research will feed back into CBA intervention design and implementation through capacity building activities. The research outputs will also inform effective communication strategies (see figure 1).

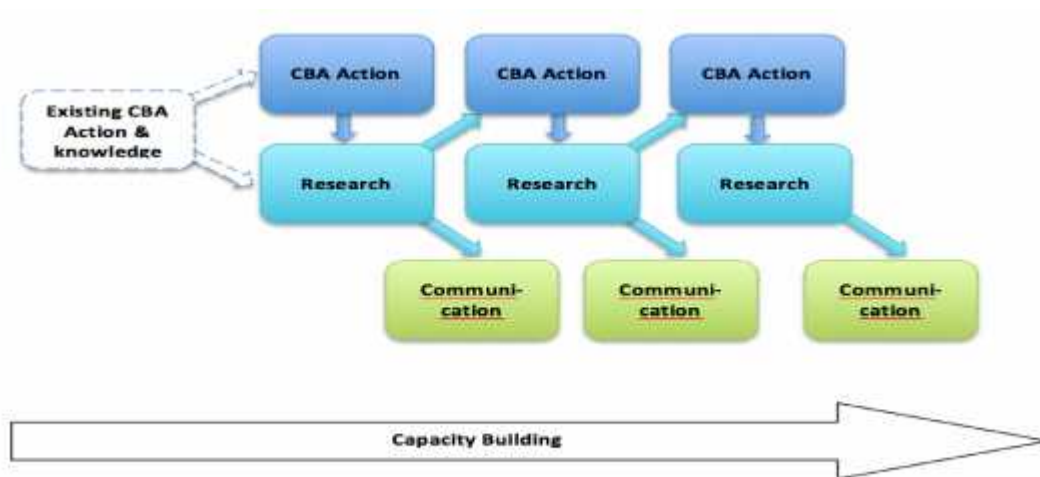


Fig 1: Effective Communication Strategies

### An Ecosystem Zone Approach:

By taking an ecosystem-zone approach, ARCAB ensures that lesson-drawing is undertaken and applied in a systematic way (ARCAB, 2013).

### 4.15: Approaches of CARE BD

#### Rights Based Approaches

CARE's work focuses deliberately and explicitly on people's efforts to achieve the minimum conditions for living with dignity. We work for building internal capacity to empower people to claim and exercise their rights and fulfill their responsibilities. We recognize the poor, the

displaced and victims of violence as having inherent rights essential to livelihood security - rights that are validated by international law.

### **Advocacy**

CARE-Bangladesh is working to develop competency and build the capacity of others in the deliberate process of influencing those who make policy decisions. Our advocacy efforts will focus on policy makers and policy implementers at levels above that of the household, with the aims of addressing the root causes of poverty and discrimination and of improving the livelihoods of significant numbers of people.

### **Partnership**

CARE believe that true partnerships are based on a shared vision regarding the objectives and purpose of the work undertaken together, along with shared contributions of resources, shared risks and shared control of program and financial information.

### **Capacity Building**

Capacity building - the process whereby a person's, an organization's or a society's ability to achieve its purposes is enhanced - will go hand-in-hand with partnership in much of CARE's work. Although CARE often plays the role of capacity-builder, it can also be the beneficiary of capacity building provided by partners and other organizations.

### **Direct/Indirect Service Delivery**

CARE Bangladesh will continue to implement direct delivery of services on a limited scale. This will enable us to stay rooted in field experience and avoid getting out of touch with the practical difficulties of bringing new project designs to fruition.

### **Gender Equity**

We will work through advocacy, partnership and direct project implementation to increase awareness of gender inequities, and to change the conditions that create and maintain them in the communities we serve. Gender analysis will be integrated with all phases of the project cycle, ensuring women's participation in identifying and prioritizing problems, in project design and in project implementation.

### **Household Livelihood Security**

Application of a "livelihoods" approach enables the programs within each region to identify the inter-relationships between one another, and break down the artificial, sectoral boundaries between the different interventions. In this data-driven approach, monitoring and evaluation systems pay particular attention to programme results at the household level, as well as to unintended impact and the dimension of changes happening over time (CARE Bangladesh, 2012).

#### 4.16: Territorial Approach of UNEP

The Territorial Approach to Climate Change (TACC) works with local level governments (states, provinces, cities, municipalities) in developing countries and countries in transition to increase resilience to climate change impact and reduce their carbon footprint. The TACC is a partnership of five agencies that includes UNEP, UNDP, UNITAR, UN-Habitat and UNCDF (UNDP, 2011).

TACC as a global action came into existence after the Saint Malo Declaration. [Saint Malo Declaration, General Assembly Summit of the Network of Regional Governments for Sustainable Development (nrg4SD), October 2008]. Sub-national authorities recognised that urgent and collective action was needed to respond appropriately to climate change.

The United Nations recognised that most investments to reduce Greenhouse Gas emissions and adapt to climate change take place at the sub-national and local levels. Developing the capacity of sub-national governments in low income countries to create conditions that reduce the perceived investments risks and access new sources of environmental finance was seen as key to addressing climate change (UNDP, 2011).

Phase 1 of the programme - Awareness raising and training - was led by the United Nations Environment Programme (UNEP).

Phase 2 - Analysis, assessment and action plan - was led by the United Nations Development Programme (UNDP).

Phase 3 - Projects - was also led by the United Nations Development Programme (UNDP).

Initial projects under TACC were conducted in:

- Uganda
- Uruguay (the pilot project)
- Albania
- Algeria
- Colombia
- Ethiopia
- Peru
- Senegal

TACC helps sub-national governments to

- Access and use up-to-date climate change science, information, tools and good practices
- Put in place a partnership and governance framework to address the cross-sectoral nature of climate change.
- Develop a climate profile and draft a climate change strategy and action plan to ensure a programmatic approach to climate change (UNDP, 2012).

#### 4.17: Holistic Approach/ Multi- Hazard Approach

CDMP II is driven by a **multi- hazard approach** to disasters including climate change risk management, to create and nurture the crucial paradigm shift in disaster management, away from relief and rehabilitation and to a more **holistic approach** towards reducing risks and vulnerabilities. Source: Towards Resilience, Reducing the Risk of Disaster and Climate Change, Brochure (CDMP II).

#### 4.18: Ecocentrism and Technocentrism

**Ecocentrism** (meaning values centred on ecology) and **technocentrism** (meaning values centred on technology) are two opposing perspectives concerning attitudes towards human technology and its ability to affect, control and even protect the environment. Ecocentrics, including "deep green" ecologists, see themselves as being subject to nature, rather than in control of it. They lack faith in modern technology and the bureaucracy attached to it. Ecocentrics will argue that the natural world should be respected for its processes and products, and that low impact technology and self-reliance is more desirable than technological control of nature.

**Technocentrics**, including imperialists, have absolute faith in technology and industry and firmly believe that humans have control over nature. Although technocentrics may accept that environmental problems do exist, they do not see them as problems to be solved by a reduction in industry. Rather, environmental problems are seen as problems to be solved using science. Indeed, technocentrics see that the way forward for developed and developing countries and the solutions to our environmental problems today lie in scientific and technological advancement (Sustainable Environment, 2012).

**Technocentrism** is a term that denotes a value system that is centered on technology and its ability to control and protect the environment. Technocentrics have absolute faith in technology and industry and firmly believe that humans have control over nature. Although technocentrics may accept that environmental problems exist, they do not see them as problems to be solved by a reduction in industry. Rather, environmental problems are seen as problems to be solved using science and technology. Indeed, technocentrics see the way forward for both developed and developing countries, and the solutions to environmental problems, as lying in scientific and technological advancement (sometimes referred to as sustainopreneurship).

**Technocentrism** is often contrasted with ecocentrism. Ecocentrics, including deep ecologists, see themselves as being subject to nature, rather than in control of it. They lack faith in modern technology and the bureaucracy attached to it. Ecocentrics will argue that the natural world should be respected for its processes and products, and that low impact technology and self-sufficiency is more desirable than technological control of nature (Sustainable Development, 2012).

## **Methodology of the Study:**

A method is the way of approaching the problem. In order to find out the truth involved in a problem certain steps must be taken in certain order, and the ordered steps are called a method (Gosh, 1993). The use of appropriate methodology in research is very essential, because, unless the right methodology is followed, thought cannot be arranged in methodological order. As a result, the exact truth can neither be discovered nor be exposed.

In this chapter I describe the principal research method, the data collection process, technique and instruments used for collecting data, and analyzing process. The chapter also highlighted the conceptual definition that is being used in this particular research.

### **5.1: Methodology**

Research work is needed to understand the society and its problem. But it depends on the perspective from which the research is conducted, by whom it is conducted. The present research is totally an academic research work. This research is using the methodology (the approach to systematic inquiry) in order to gather deeper knowledge of specific research work.

### **5.2: Research Methods**

As stated earlier, the objectives of the study is to know experiences about the experiences of GO and NGOs regarding climate change. In this study qualitative description or experience becomes the basis. So I decided to use qualitative approaches so that the participant GO and NGOs can clearly share their experiences from their own perspectives.

In order to understand what the specific practices approach lead local NGO and GO to facilitate in the communities, there is a need to identify when and how they provide their work or activities. The main research method based on both qualitative and quantitative method. Principal data collection method used documentation and Content analysis. Research site selections depend on the general information which collected from documentation survey but fifteen GO and NGOs selected for field data which are working on climate change. The research goal is to identify not only the approaches of the GO-NGO activities for the challenges of the climate change but also lack of those approaches and the strategies used to address the challenges. I follow thematic analysis process and also employ data triangulation method in order to have a thick description.

Among the non-survey data collection methods, documentation methods, study occupies a central position owing to its several advantages. By document we mean any written materials that contain information about the phenomena we are interested to study. These documents are available generally in two forms: primary documents and secondary document. Primary documents are the eye witness accounts written by people who experienced the particular

event or behavior. Secondary documents are those compiled by people who were not present on the spot but received the information necessary to compile document by questioning eyewitnesses or by examining primary documents (Islam, 2015).

Content analysis is a research technique used to make replicable and valid inferences by interpreting and coding textual material. By systematically evaluating texts (e.g., documents, oral communication, and graphics), qualitative data can be converted into quantitative data. Although the method has been used frequently in the social sciences, only recently has it become more prevalent among organizational scholars (University of Georgia, 2012).

The primary goal of content analysis is to take a verbal, non verbal, non quantitative document and transform it into quantitative data. The results of content analysis can generally be presented in tables containing frequencies or percentages, in the same manner as survey data. It thus appears that content analysis is a marvelous approach that can turn words into numbers (Islam, 2015).

### **5.3: Area of the Study**

The aim of this research is to study the approach of GO and NGOs who are working on climate change in Bangladesh. In this research 85 organizations have been selected from thousands of GO and NGOs in Bangladesh. It was not the representative selection yet it is tried to represent the actual approaches of the GO-NGO activities for the challenges of the climate change and lack of those approaches between them and how they will provide solve to overcome that problem.

### **5.4: Population of the Study**

In this research all organizations, GO and NGOs those who are working on climate change in Bangladesh has been selected as the population of the study. The participant organizations have different aims, mission, vision, objectives and approaches for their respective field about climate change.

### **5.5: Sample of the study**

The present study has been conducted on fifteen respondent organizations of respective field about climate change organizations. In this Study purposive sampling methods were used. This study has conducted the interviews through acquaintances. Because it was not so easy to make an interviews with the respondents without informing the organization about the study concern. The interview was conducted as pre appointment at a selected place in a particular time of the day.

### **5.6: Data Collection**

For this study both primary and secondary data were collected, secondary data has been collected from different journal, papers, books, literatures and media. Such important sources of secondary data were as follows:



- United Nations information Center (UNIC) for UNDP reports on human development, UN policies regarding climate change, IPCC policies etc.
- Environment Development ( Agargaon, Sher-e- Bangla Nagar) library, for collecting most recent data relating to climate change, disaster, GO and NGOs policies, program and initiatives regarding the people of Bangladesh.
- Disaster Management Bureau Information Center for publication, Journal and documents related to climate change.
- Climate change unit (CCU) at Ban Vhavan for publication, Journal and documents related to climate change.
- international Union for Convention for Nature (IUCN) and their library not only for collecting most recent data but also publication, Journal and documents related to climate change.
- The Fourth Assessment Report of the IPCC, 2007, Cambridge University Press, Cambridge.
- There were also used of News papers and internet as the secondary sources of data

In order to get a benchmark idea about the participant organizations I have sent the survey questionnaire to the listed organizations with the data collection tool and inquired the concerned personal to fill up the Data Sheet.

### **5.7: Development of Data collection Tools (Questionnaire Survey)**

A format for collection of data from the selected organizations was prepared. The topics to be questioned have been numbered in it. The climate change issues, number and type of projects which have been taken by the different organizations in the past and present and also will be taken in the near future has been enlisted. Annex-2 contains the data collection tool.

### **5.8: Instruments for Analysis and Interpretation of Data**

#### **Thematic analysis:**

Thematic analysis is the most common form of analysis in qualitative research (Guest, 2012). It emphasizes pinpointing, examining, and recording patterns (or "themes") within data (Braun, 2006). Themes are patterns across data sets that are important to the description of a phenomenon and are associated to a specific research question (Daly, 1997). The themes become the categories for analysis (Fereday, 2006). Thematic analysis is performed through the process of coding in six phases to create established, meaningful patterns. These phases

are: familiarization with data, generating initial codes, searching for themes among codes, reviewing themes, defining and naming themes, and producing the final report (Braun, 2006).

### **Triangulation:**

Triangulation is a powerful technique that facilitates validation of data through cross verification from two or more sources. In particular, it refers to the application and combination of several research methodologies in the study of the same phenomenon (Bogdan, 2006).

- It can be employed in both quantitative (validation) and qualitative (inquiry) studies.
- It is a method-appropriate strategy of founding the credibility of qualitative analyses.
- It becomes an alternative to traditional criteria like reliability and validity.
- It is the preferred line in the social sciences.

By combining multiple observers, theories, methods, and empirical materials, researchers can hope to overcome the weakness or intrinsic biases and the problems that come from single method, single-observer and single-theory studies.

Guiding by the principle of triangulation in the research I used both qualitative and quantitative method as well as both primary and secondary data.

### **Pre- testing of interview schedule:**

For avoiding duplicity and most relevant data the interview schedule has been pre-tested taking two organizations concerned persons for fill up data sheet.

### **Data entry, data cleaning, editing, coding and detail analysis:**

The analysis of data was carried out keeping in mind the desired outputs of the study on the topic of climate change and the measures or steps which have been taken to cope or adapt with the change.

## Fieldwork Process of the Study:

### 6.1: Fieldwork process

Fieldwork is the collection of information from workplace setting. The approaches and methods used in field research vary across disciplines. In this research, conducting field work includes interview or observe GOs and NGOs various research and annual report about climate change, vulnerability and digester risk management to know their activities for the challenges of the climate change in Bangladesh.

### 6.2: Conducting field research

The trustworthiness, validity on quality of research findings highly depends on the quality of data. So data collection process plays an important role in providing real data grounding in the real world. The data in turn, depend upon the field worker, his or her level of involvement, and ability to see and visualize things that other individuals visiting the area of study may fail to notice. In this research, I tried to discover new ideas, concepts, and things which may not have seen in before. Better grasping of such material means better understanding of the forces of GOs and NGOs operating in the area of climate change and the ways they modify their views by specific Approaches.

#### Data collection

In my research I have collected data by using both qualitative and quantitative method. The table highlight the source of data collection and context of the phenomena of interested stakeholders (GOs, NGOs, Development partners and Research/ Academic Institute) under mitigation and adaptation aspect to address climate change in Bangladesh that I have used in the said research.

Source of Data	Context of phenomena
Secondary Sources	Reviews of selective GOs and NGOs Research Report, Journals, Annual reports, Prospectors, Newspapers, Policy Documents and Web Literature.
Primary Sources	Interview, Questionnaire Survey

### 6.3: Challenges of data collection

As an M Phil researcher it needs to be aware of the potential challenges may face when using different data collection methods for this research. One challenge is in this research difficult to capture accurately at a large stage of GOs and NGOs provide information without process and

mechanisms in place for data collection not mention documented form the beginning. Another challenge outline at the fieldwork is the challenge of time limitations. For short time frame and tight schedule it's a respondent organizations bias for the collecting data. Challenge draw round at the data collection is difficult to access to information about the approaches of NGOs activities. If more data or information about NGOs activities can be found about their actual approaches, it would better to write down this study outcomes. An additional challenge delineate is expected that the result of this research would be more effective and widely applied if could access implementing areas of the approaches of GO and NGOs activities on climate change. A further challenge sketch at the fieldwork is the respondents of sampled organizations were not found outspoken and failed to adequately reveal the fact lying within their work place. A new challenge outline at the fieldwork is fifteen organizations are not enough for representing the actual scenario of approaches of climate change activities status. An added challenge as researcher have to meet up the expenses financial constrains become a challenge of data collection. An additional, it was a part of M Phil course curriculum, so it was an academic research. That's why the result may not satisfy the interest of the policy makers but will satisfy the partial interest of the policy makers and findings of the study definitely will give a direction for further study.

#### **6.4: Access of the Research**

##### **Gaining Access**

I would say being a scholar from University of Dhaka I faced very little obstacles in gaining access to the different field sites. Some places I faced awkward situation that is noteworthy to mention. Although I had proper identification, still sometimes I had to stop in the main gate provide answers of some question to the people working as security officer sometimes people get curious what do I need to do with will this information, What is my mission. Some NGO's becomes critical whether they should give access me of their data.

As an M Phil researcher of University of Dhaka gaining access is not difficult. The real challenge lies in maintaining access and managing relationships with research participants.

Usually when doing field research, need to get in contact with people of GOs and NGOs from this field very easily. Because introducing as a researcher of M Phil of University of Dhaka most of the GOs and NGOs give access without doubt and difficulty. A good number of the GOs who might get special thanks for their cordial cooperation such as, Climate change Unit, climate change cell of Department of Environment( Ministry of Environment and Forest (MOFF)), CDMP, WARPO, Bangladesh disaster management Bureau(DMB). Respondent of this organization not only generous answer direct questioner but also provide their annual report, prospector and advise to collect some of their data from website. Another opportunity of this research that can be present at poribesh mela, had lots of climate related organizations stool

make available their information like BUP, BAPA & BELA. On the other hand, I would like to mention NIPNIPSOM's who were not happily provided their information rather told me to collect data from online. One of the respondents of the organization advised to collect their online information not to supply any paper document.

Besides, nearly the entire NGOs intake warmly, AAB, IUCN, NCCB, CNRS, ARCAB, BIDS, CPRD, NACOM, CPD, BCAS provide their records like report, Articles, prospector and some of printed data documents. Moreover, some of the head of the organization cordially appreciate this research rolling like NaCOM, IUCN and arrange to provide their information by others of their official/ researcher. For the short time frame, a number of NGOs send their answer of the questionnaire through email.

### **Maintaining access**

However, maintaining access and establishing relationships of trust with research participants was a lot more challenging. Task from the field research experiences that in a first meeting research participants offer very little information. In order to get more accurate information I have assured them about the confidentiality or the data. The anonymity will be maintained I assured them.

### **Managing relationships**

Managing relationships with research participants over a period of time is probably the most difficult part. In fact, remember, Laura Biagioni, IPCC Secretariat for his valuable advice during and send Assessment report 2007 from Geneva 2, Switzerland.

### **6.5: Anonymity and Confidentiality**

In this research collected identifying information (e.g., subjects' names) to subjects' responses (e.g., questionnaire answers), as a researcher must try to do best and creative to provide the utmost confidentiality of topic data. The following are examples try to be implemented to increase the level of confidentiality:

In this research use study codes on data documents (e.g., completed questionnaire) instead of recording identifying information and keep a separate document that links the study code to subjects' identifying information locked in a separate location and restrict access to this document (e.g., only allowing primary investigators access);

As a researcher try to encrypt identifiable data;

According to roles of presenting thesis remove face sheets containing identifiers (e.g., names and addresses) from survey instruments containing data after receiving from study participants.

## **Research Findings:**

The research critically examine the climate change approaches which resort by GO and NGOs activities in Bangladesh. The findings of the study revealed that in order to better fight with the change working with development partners, collaboration and commitment is needed.

The objectives of the study is to know about the experiences of GO and NGOs regarding climate change issues (Adaptation and Mitigation). Specific Objectives of this Study is to know the approaches of the GO-NGO activities for the challenges of the climate change in Bangladesh and what are their lackings. It is important to note that this study has identified how those lackings over come and what are the general strategies are being taken for such kind of activities.

In this study the main research method based on both qualitative and quantitative method. Principal data collection method used documentation and Content analysis. Research site selections depend on the general information which collected from documentation survey but fifteen GO and NGOs selected for field data which are working on climate change.

This chapter contains the findings and analysis of the research. To dig out the different point of views and ideas of different respondent organizations.

### **7.1: Overview of Stakeholders on Climate Change Issues (Adaptation and Mitigation) in Bangladesh**

The study is carried out among different organizations in Bangladesh those have been working with various aspects of climate change. It took several months to get information. The organizations surveyed including governmental agencies and departments, non-governmental organizations, international and donor agencies, development partners, academic institutions and civil society. Annex-1 presents a list of organizations and their contact details.

The number of organizations of different types in given is table 7.1. It is shows that the NGOs are more active on climate change issues in Bangladesh in terms of number of organizations involved followed by government organizations.

**Table 7.1: List and Type of Organization working on Climate Change Issues (Adaptation and Mitigation)**

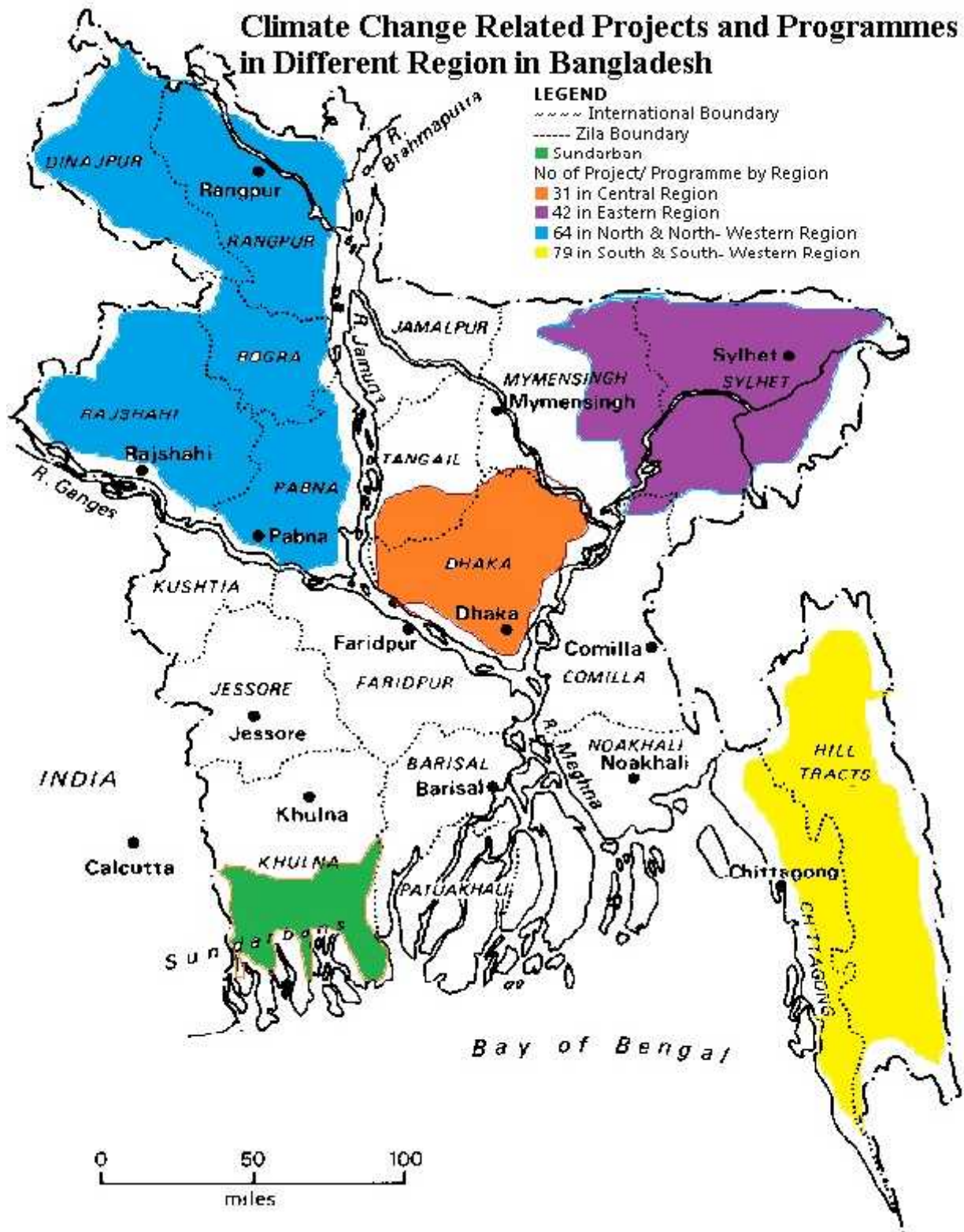
Type and Number of Organization	
Type	Number
Government Organizations	16
Non- Government Organizations	40
Development Organization	17
Research Institution/ Academic Organizations	12
<b>Total</b>	<b>85</b>

**7.2: Climate Change Projects (Adaptation and Mitigation) Implementing Areas in Bangladesh**

Climate change activities in Bangladesh which are government organizations, NGOs, research/ academic institutes cannot cover all sectors of Bangladesh. These organizations are concentrated in a few areas are situated at North-North-West regions which cover Rangpur, Thakugaon, Dinajpur, Kurigram, Lalmonirhat, Rajshahi etc areas. The other major project (climate change) implementing areas are situated at Eastern part of Bangladesh that can cover coastal part of Bangladesh.

**Table 7.2: Distribution of areas according to climate change related projects (Adaptation and Mitigation) in Bangladesh**

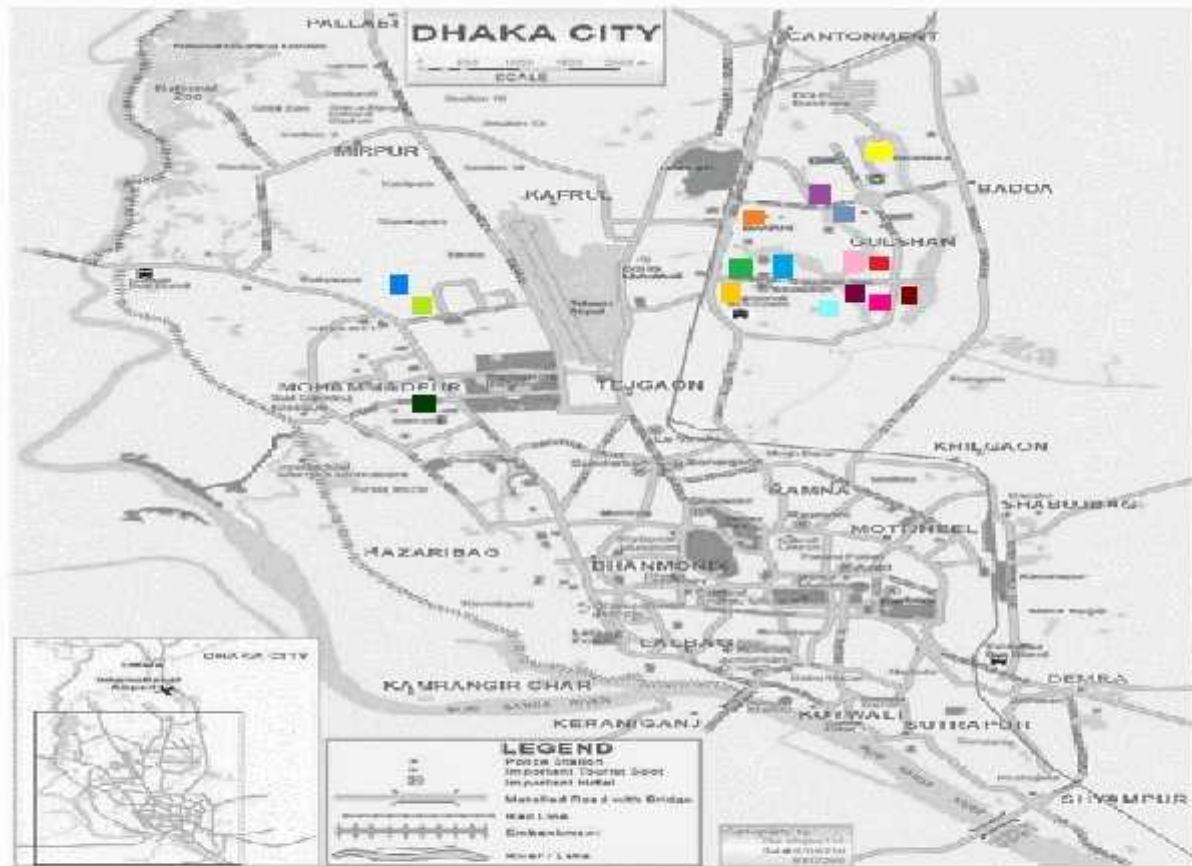
Regions	Number of implemented climate change projects respective to different parts of Bangladesh
SSW ( South- South- West)	31
NNW ( North- North- west)	42
Center	64
East	79



**Figure 7.2:** Area distribution According to the number of implemented climate change projects/Programmes/ Research activities in Bangladesh



**7.3: Head office of participant Organizations working for Climate Change Issues (Adaptation and Mitigation)**



**LEGEND**  
**Respondent Organizations**  
 Department of Environment, DCC  
 Climate Change Unit, Ban Vhaban  
 CDMP Disaster Management & Relief Division  
 Gramen Phone  
 EDPC  
 BIDS  
 NGO Forum  
 CEGIS  
 WORPRO  
 NIPSOM  
 CPRD  
 NaCom  
 AAI  
 IUCN  
 CNRS  
 EC&S

**Respondent Organizations of Climate Change Area Map**

The present study include fifteen organizations who has been working for climate change , adaptation and mitigation. In this Study purposive sampling methods were used. Department of Environment, Climate Change Cell (CCC) And BIDS situated in Agargon, Dhaka-1207. On the other hand, Climate Change Unit, Ban Vhaban; CDMP, Disaster Management & Relief Division and NIPSOM positioned at Mohakhali, Dhaka-1212. In contrast, NGO Forum located in Lalmatia, Mohammmpadpur , Dhaka. On the contrary, placed of IUCN at Banani, road #2A; CNRS at Banani, road# 17 and WORPRO at Banani, road# 1. In addition, BCAS, CEGIS, BDPC and AAI placed at Gulshan#1. Besides, NaCom and CPRD to be found at Niketon, Gulshan#1. Quite the opposite of Gramen Phone Located at Baridhara, Dhaka. The map shows the physical location of the head office of participant organizations.

#### 7.4: Climate Change Issues and Most Vulnerable Sectors

The participant organizations were asked to list the most vulnerable sectors to climate change and the impacts/ issues that they felt was relevant to the sector. According to the respondents the identified vulnerable sectors were agriculture, health, water and sanitation, natural resources, social aspects, economy, forestry, fishery, communication and transport. The climate change issues according to the response importantly were air pollution, cyclone, flood, drought, sea level rise (SLR), salinity intrusion, global warming, seasonal variability, rain fall, deforestation, land slide/ land Subsidence, Industrialization, tidal surge, cold weave, urbanization, infrastructure development, geographical location of Bangladesh, siltation, erosion, storm/tornado. Not all the issues are relevant for all sectors. The table 7.4 shows the impact of each of these issues on the various sectors.

**Table 7.4: Number of organizations mentioning most vulnerable sectors due to climate change**

Vulnerable Sector	Cyclone	Flood	Drought	SLR (sea level rise)	SI (salinity intrusion)	SV (seasonal Variability)
Agriculture	14	30	18	16	21	13
Communication	13	19	10	8	0	0
Env. impact	17	27	21	12	0	0
Social Impact	15	23	16	12	12	16
Economic impact	19	29	18	19	17	21
Fishery	13	30	20	23	24	10
Forestry	19	31	20	13	18	12
Health	19	30	20	13	13	14
WATSAN	9	24	18	13	8	8

To get a clear picture of the impacts of the different issues on the sectors indentified, a sector wise analysis was carried out. The analysis examined each of the impacts in terms of their relevance to each sector. Here the explanation of short terms are – SLR= sea level rise, SI= salinity intrusion, SV= seasonal Variability.

##### **Agriculture**

The issues that the respondent organizations mentioned as having impact on agriculture were cyclone, flood, drought, sea level rise, salinity intrusion, seasonal variability, rain fall, tidal surge and cold wave. According to results of survey the respondent organizations identified the most crucial issues for agriculture. The respondent organizations indentified flood as having the most impact on agriculture while secondly the respondents singled out salinity intrusion and thirdly mentioned about drought.

##### **Communication**

Maximum number of respondent organizations opined flood as the main issue most adversely affecting the communication systems of the country. Cyclone was identified by the next respondents as one of the main events that affect communication. Drought and SLR also affect communications system of the country.

## **Natural Resources**

Natural Resources (soil, water, air, biodiversity, ecosystem etc) are very susceptible to climate change calamities. According to the survey, flood has come out as the highest impact generating concern followed by drought and then cyclone.

## **Social Aspects**

In Bangladesh, a hefty segment of our society is affected by adverse impacts of climate change issues mainly due to poverty, lack of education and awareness. The respondent organizations accepted the flood exerts the maximum impact to social actives. Other impact issues are cyclone, SLR, SI and to some extent rainfall.

## **Economy**

Some experts believe that climate change in the 21<sup>st</sup> century could bring on a global economic disaster like Great Depression (1930). The largest climate change issue that hampers economic growth in Bangladesh is flood. The second most hazardous issue, according to respondent organizations, is drought followed by cyclone and SI. The other issues are SLR, SV over/less rainfall and tidal surge etc.

## **Fisheries**

A large portion of the population depends on fisheries sector for their livelihoods. This sector is threatened by a number of natural and man- made calamities. Among them climate change is one of the factors responsible for production loss in fisheries sector. From the survey it was observed that flood situation is the main climatic issue affecting fishing activities. Moreover, salinity intrusion and SLR are responsible for second and third highest adverse impact on fisheries sectors. Salinity intrusion is most harmful to aquatic biodiversity, agriculture and freshwater resources. Remaining issues liable to cause undesirable impacts on fisheries are cyclone, drought and seasonal vulnerability.

## **Forestry**

Forestry and tree cover are an important part of our landscape and provides many benefits to society and creates an environmental balance. According to the analysis of the survey, flood has a major impact on forest resources. The next events are drought, cyclone and salinity intrusion. The other factors are SLR and seasonal variability.

## **Health**

Climate change is a significant and emerging threat to public health. The most vulnerable climate change issues corresponding to health are flood followed by drought and cyclone. Others are salinity intrusion, rainfall, SLR etc.

## Water and Sanitation

Water resources is probably the most climate change affected sector. Climate change has already caused serious soft water scarcity especially in the coastal areas due to salinity intrusion. The respondents identified flood as having the highest impact on water and sanitation, with drought as being the second.

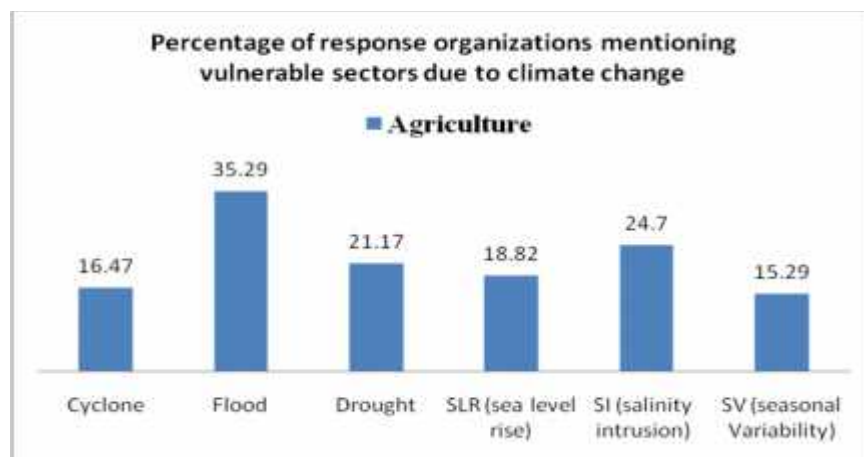
**Table 7.4.1: Percentage of response organizations for different climate change issues on respective vulnerable sectors**

Vulnerable Sector	% of response organizations mentioning vulnerable sectors due to climate change					
	Cyclone	Flood	Drought	SLR (sea level rise)	SI (salinity intrusion)	SV (seasonal Variability)
Agriculture	16.47	35.29	21.17	18.82	24.70	15.29
Communication	15.12	22.35	11.76	9.41	0	0
Env. impact	20	31.76	24.70	14.12	0	0
Social Impact	17.64	27.05	18.82	14.12	14.12	
Economic impact	22.35	34.12	21.18	22.35	20	24.70
Fishery	15.12	35.29	23.52	27.05	28.23	11.76
Forestry	22.35	36.47	23.52	15.12	21.17	14.12
Health	22.35	35.29	23.52	15.12	15.12	16.47
WATSAN	10.59	28.23	21.17	15.12	9.41	9.41

## Agriculture

The issues that the respondent organizations mentioned as having impact on agriculture were cyclone, flood, drought, sea level rise, salinity intrusion, seasonal variability, rain fall, tidal surge and cold wave. According to results of survey the respondent organizations identified the most crucial issues for agriculture. 35.29% of the respondent organizations identified flood as having the most impact on agriculture while 24.70 % of the respondent organizations singled out salinity intrusion and 21.17% mentioned about drought.

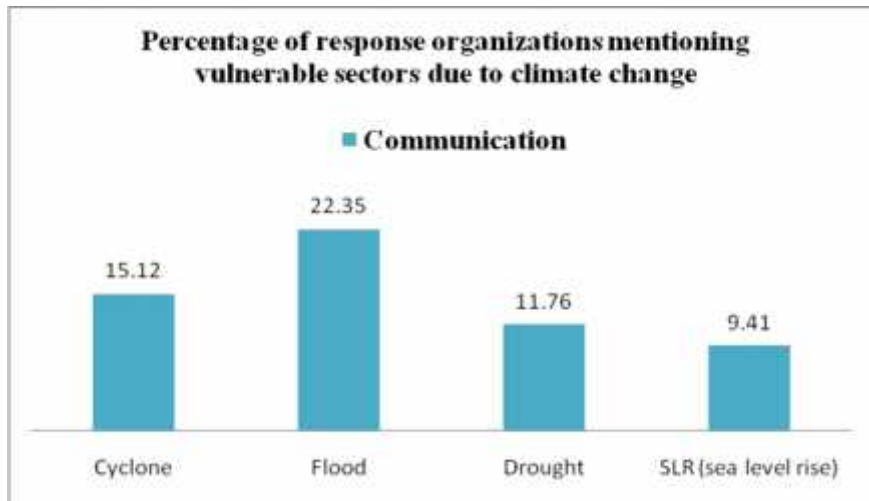
**Chart / Figure: 7.4:1.a**



### Communication

About 22.35% of respondent organizations opined flood as the main issue most adversely affecting the communication systems of the country. Cyclone was identified by 15.12% of respondent organizations as one of the main events that affect communication. Drought and SLR also affect communications system of the country.

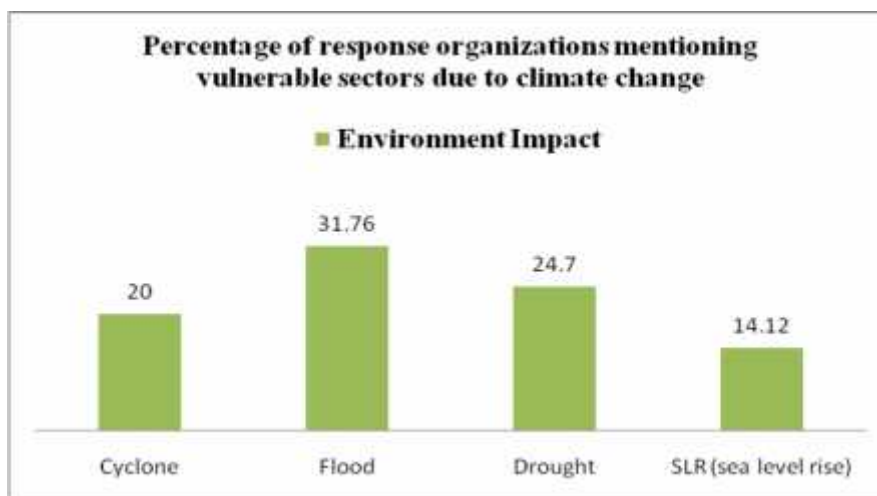
Chart / Figure: 7.4:1.b



### Natural Resources

Natural Resources (soil, water, air, biodiversity, ecosystem etc) are very susceptible to climate change calamities. According to the survey, flood (31.76%) has come out as the highest impact generating concern followed by drought (24.70%) and then cyclone (20%).

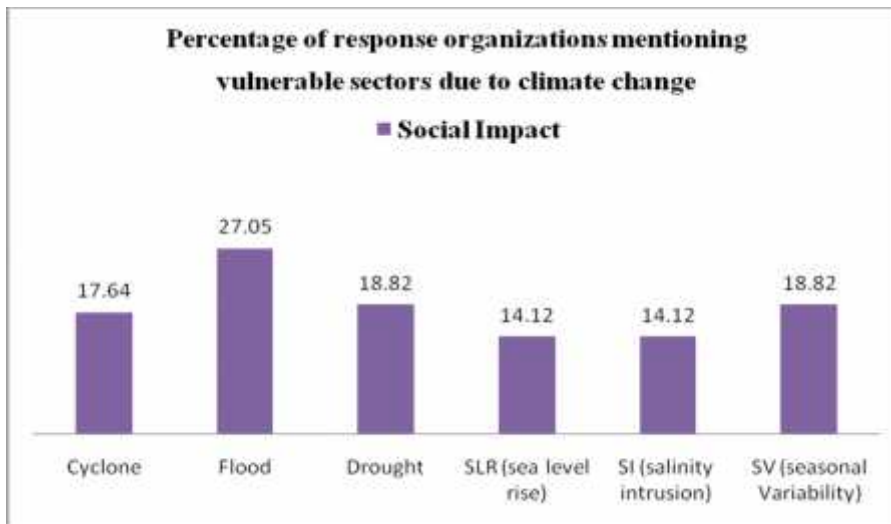
Chart / Figure: 7.4:1.c



### Social Aspects

In Bangladesh, a hefty segment of our society is affected by adverse impacts of climate change issues mainly due to poverty, lack of education and awareness. 27.05% the respondents accepted the flood exerts the maximum impact to social actives. Other impact issues are cyclone, SLR, SI and to some extent rainfall.

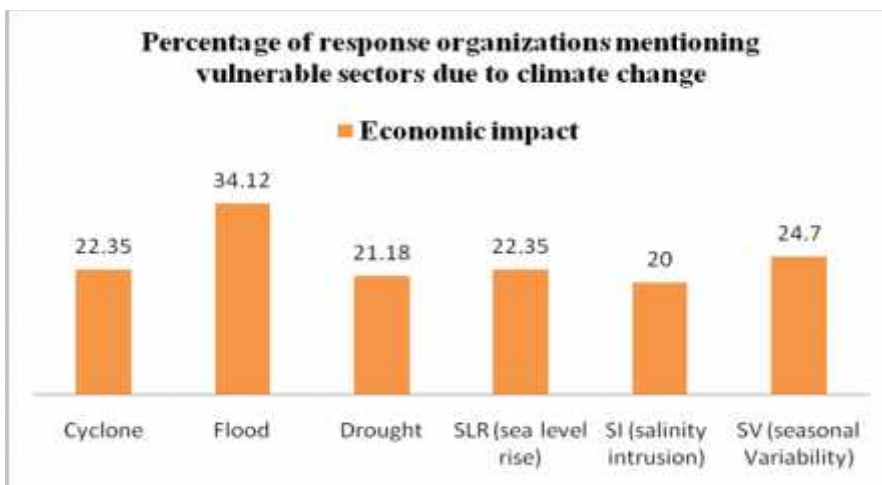
Chart / Figure: 7.4:1.d



### Economy

Some experts believe that climate change in the 21<sup>st</sup> century could bring on a global economic disaster like Great Depression (1930). The largest climate change issue that hampers economic growth in Bangladesh is flood (34.12%). The second most hazardous issue, according to respondent organizations, is drought (21.18%) followed by cyclone (22.35%) and SI. The other issues are SLR, SV over/less rainfall and tidal surge etc.

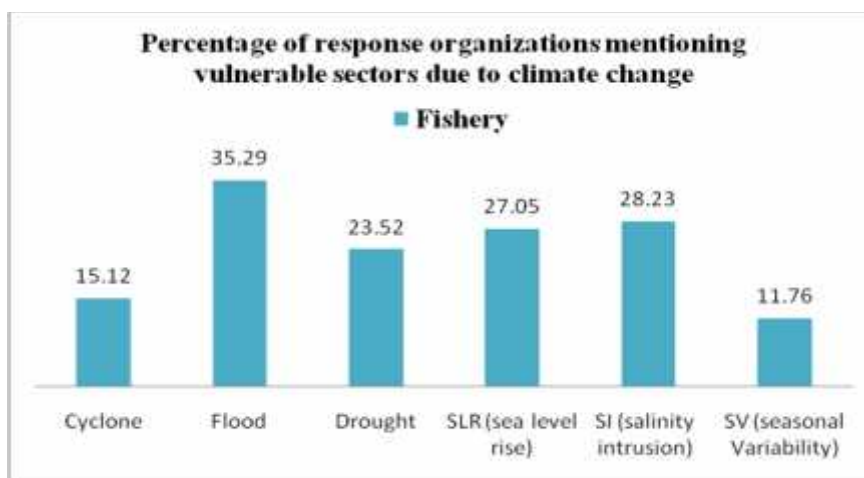
Chart / Figure: 7.4:1.e



## Fisheries

A large portion of the population depends on fisheries sector for their livelihoods. This sector is threatened by a number of natural and man-made calamities. Among them climate change is one of the factors responsible for production loss in fisheries sector. From the survey it was observed that flood situation (35.29%) is the main climatic issue affecting fishing activities. Moreover, salinity intrusion (28.23%) and SLR (27.05%) are responsible for second and third highest adverse impact on fisheries sectors. Salinity intrusion is most harmful to aquatic biodiversity, agriculture and freshwater resources. Remaining issues liable to cause undesirable impacts on fisheries are cyclone (15.12%), drought (23.52%) and seasonal vulnerability (11.76%).

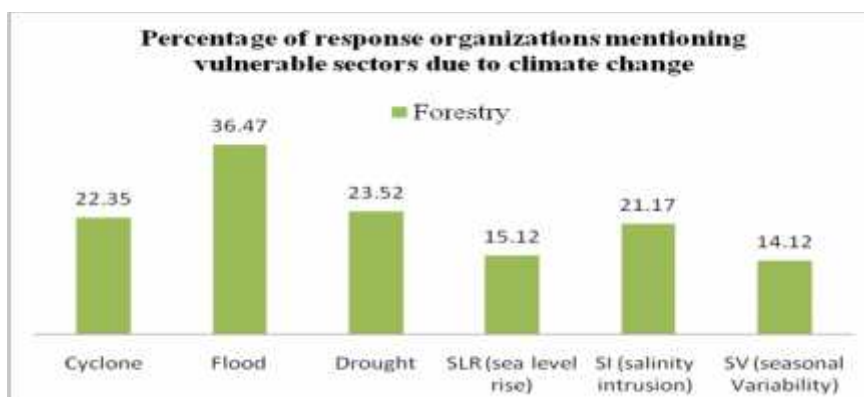
Chart / Figure: 7.4:1.f



## Forestry

Forestry and tree cover are an important part of our landscape and provides many benefits to society and creates an environmental balance. According to the analysis of the survey, flood (36.47%) has a major impact on forest resources. The next events are drought (23.52%), cyclone (22.35%) and salinity intrusion (21.17%). The other factors are SLR (15.12%) and seasonal variability (14.12%).

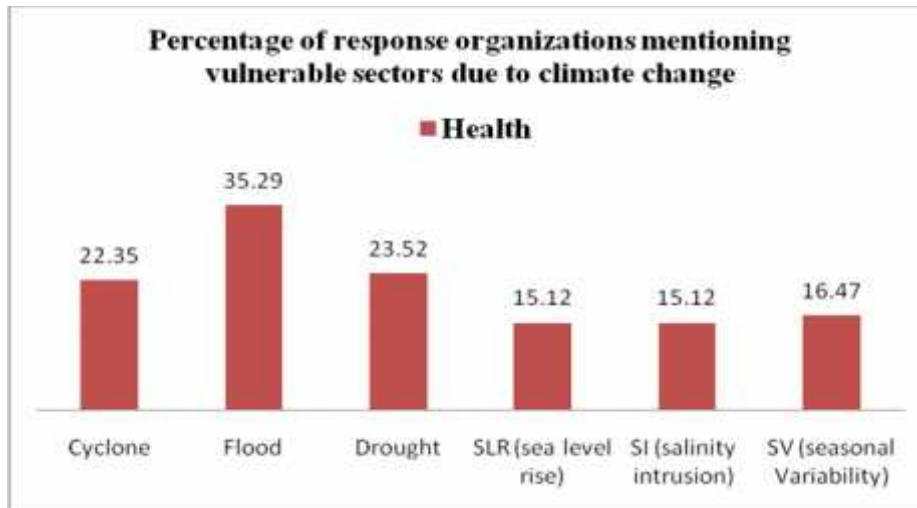
Chart / Figure: 7.4:1.g



## Health

Climate change is a significant and emerging threat to public health. The most vulnerable climate change issues corresponding to health are flood (35.29%) followed by drought (23.52%) and cyclone (22.35%). Others are salinity intrusion, rainfall, SLR etc.

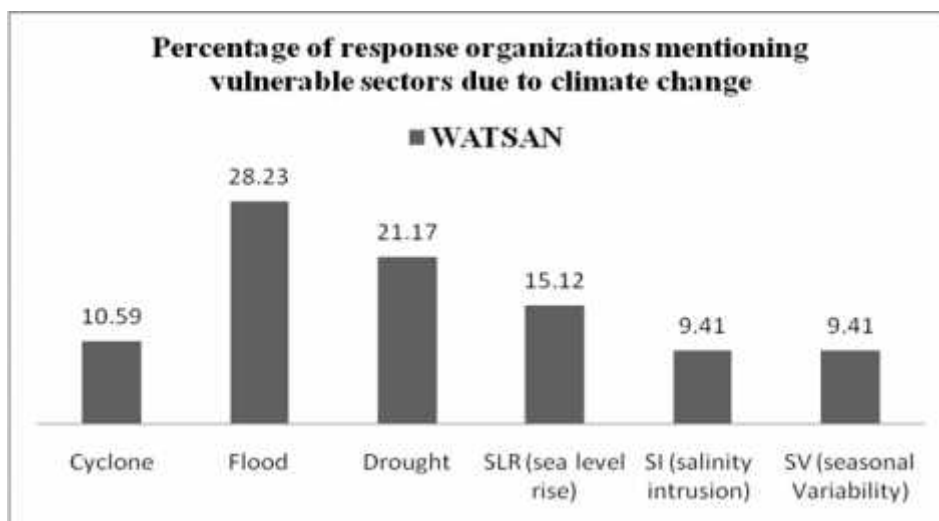
Chart / Figure: 7.4:1.h



## Water and Sanitation

Water resources is probably the most climate change affected sector. Climate change has already caused serious soft water scarcity especially in the coastal areas due to salinity intrusion. 28.23% the respondents identified flood as having the highest impact on water and sanitation, with drought (21.17%) as being the second.

Chart / Figure: 7.4:1.i





## 7.5: Sectors of Interests of Different Stakeholders to Address Climate Change in Bangladesh

### 7.6.1: Adaptation to Climate Change

According to the data collected through the questionnaire survey and personal communication most of the NGOs and the government organizations prefer to work in the agriculture sector while development partners and research institutes are leaning more towards the water sector. However, the government organizations, NGOs, development partners and research/academic institutions are mainly interested to work on agriculture, water, health, fisheries and forestry sectors. In addition, non-government organizations are show interested to work on agriculture, water, health, fisheries and forestry sectors. They also show their interest in sector of livelihood, education, infrastructure, disaster risk reduction etc. On the other hand, different government organizations are interested to their relevant sectors.

**Table 7.5.1: Number of stakeholders on different sector of interests under adaptation aspects to address climate change**

Sector of interest	Stakeholders on different sectors for adaptation			
	Non- Government Organizations	Development partners	Research/ Academic Institutions	
Water	23	7	10	
Agriculture	27	4	8	
Health	16	4	6	
Fisheries	3	2		
Forestry	4	2	1	
Other Sectors	20	4	5	

The findings of the survey represent that the government organizations have completed or carrying out about 38 adaptation projects in our country. Maximum number of projects (11) deals with agriculture sector. So far the survey has showed that the government has only 1 project for disaster management, but it is important to know that this is an extensive Disaster Management Programme (CDMP) carried out under the guidance of the Ministry of Disaster Management and funded by UNDP, DFID.

**Table 7.5.1.a.b.c: Percentage of stakeholders on different sectors of interests under adaptation aspects to address climate change**

Sector of interest	% of Stakeholders on different sectors for adaptation			
	Non- Government Organizations	Development partners	Research/ Academic Institutions	
Water	27.05	8.24	11.76	
Agriculture	31.76	4.70	9.41	
Health	18.82	4.70	7.05	
Fisheries	3.52	2.35	0	
Forestry	4.70	2.35	1.17	
Other Sectors	23.52	4.70	5.88	

Chart / Figure: 7.5.1: a.b.c

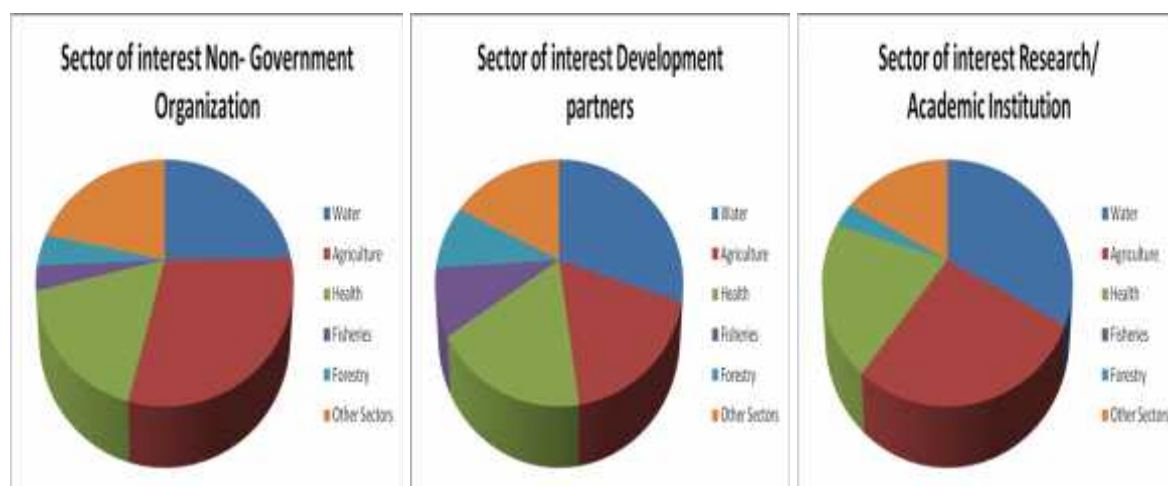


Table 7.5.1.a.b.c. shows the percentage of stakeholder's interest in different sectors on adaptation aspects to address climate change in the country. It is important to note that this analysis has excluded the government organizations since they only work in their respective sectors. NGO's, development partners and research institutions are eager to work in multiple sectors simultaneously and the table shows the percentages of organization's interest in different sectors. It represents that over 27.05% of the NGOs are interested in water sectors while 31.76% in agriculture. On the other hand, 8.24% are interested to work on water sector and less than 4.70% of the same group is in agriculture. Over 11.76% RI/AIs are eager to work on water sector while less than 4.70% are interested in agriculture. But many of the stakeholders showed their interests to work on other sectors including livelihood, education, water management etc (details in table 7.5.1.a.b.c.).

### 7.5.2: Mitigation Activities

Table 7.5.2 highlights the sector wise number of interested stakeholders under mitigation aspects to address climate change in Bangladesh. According to the survey and data analysis, the NGOs are again more interested than the other organizations in mitigation. It shows that the same number 6 of NGOs and DPs were interested on energy sectors while only 4 RI/AI were interested for the same. On the other hand, only 1 DP showed interest on agricultural sector under mitigation aspects while the number of NGOs for the same sector was 14. Only few organizations were interested to work on transport sectors.

**Table 7.5.2: Number of stakeholders on different sectors of interest under mitigation aspects to address climate change in Bangladesh**

Sector of Interest	Stakeholders on different sectors for mitigation		
	Non- Government Organizations	Development partners	Research/ Academic Institutions
Energy	6	6	4
Forestry	7	3	3
Agriculture	14	1	2
Transport	2	1	2

**Table 7.5.2.d.e.f: Percentage of stakeholders on different sectors of interest under mitigation aspects to address climate change in Bangladesh**

Sector of Interest	% of Stakeholders on different sectors for mitigation			
	Non- Government Organizations	Development partners	Research/ Academic Institutions	
Energy	7.05	7.05	4.70	
Forestry	8.24	3.52	3.52	
Agriculture	16.47	1.17	2.23	
Transport	2.23	1.17	2.23	

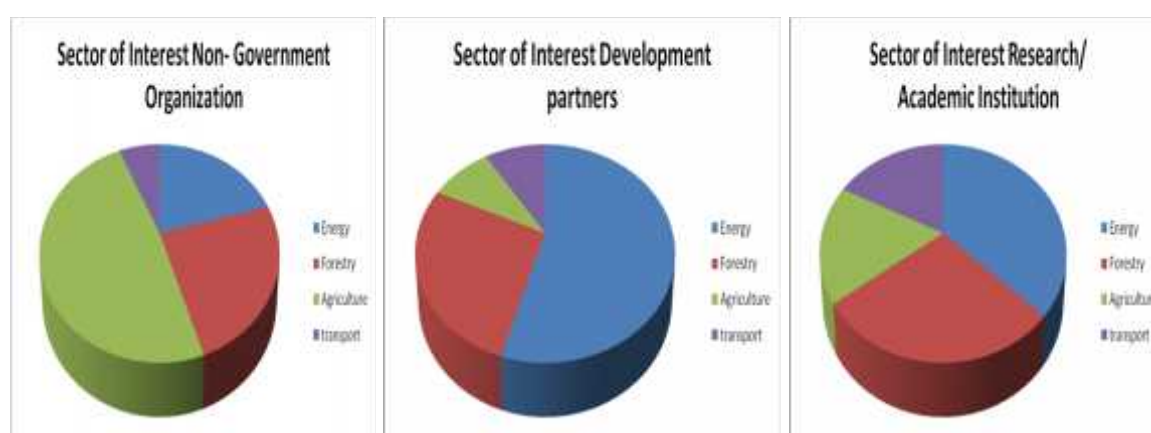
**Chart / Figure: 7.5.2: d.e.f**

Table 7.5.2.d.e.f. shows the percentage of stakeholder's interest in different sectors on mitigation aspects to address climate change. It shows that only 7.05% of NGOs are interested in energy sectors and about 8.24% are for forestry. On the other hand, 7.05% of DPs are interested to work on energy sector while 3.52% of the same group is in forestry. It is noticeable that most of the research and academic institutions are interested in energy sector (details in table 7.5.2.d.e.f.).

## 7.6: Reasons for Interests in Different Sectors

The reason for choosing activities varies for different issues of various organizations. A list of the reasons for interest in various sectors is given in Annex-4. For instance:

**Adaptation in Water Sector:** Some organizations mentioned that adaptation activities in water sector are their institutional mandate. They believe that water sector is more vulnerable than other sector and badly affected by climate change. Hence they designed their projects to look into issues such as empowerment of community, ensuring safe drinking water, creating policy dialogue between government, stakeholders and researches etc.

**Mitigation activity for Energy Sector:** Some organizations have been carrying out mitigation activities in the energy sector since energy sector not only contributes to climate change, but also comparative advantages in mitigation in energy sector are quite high. Energy

availability and access is also prerequisite for economic growth and development. Many of the organizations working in this sector because of having interest in renewable energy options, reforming energy policy and also helping the government to develop this sector further.

### **7.7: Key Stakeholders in Climate Change Issues (Adaptation and Mitigation) in Bangladesh**

The analysis of the questionnaire survey has highlighted the key institutions that carry out mitigation and adaptation activities regarding climate change. Among the organizations Bangladesh Centre for Advanced Studies (BCAS) is the foremost organization working on climate change issues in Bangladesh. DoE comes next. Other organizations mentioned are IUCN, BUET, CEGIS, DNB, IWM, BUP, Action aid and UNDP.

**Key Organizations Working with Climate Change are listed below**

**Table 7.7: List of key institutions/organizations working on climate change issues in Bangladesh**

Sl No:	Name of Organization
1	BCAS- Bangladesh Climate centre for Advance Studies
2	DoE- Development of Environment
3	IUCN- International Union for Conservation of Nature
4	BUET- Bangladesh University of Engineering & Technology
5	CEGIS- centre for Environment and Geographic Information Service
6	DMB- Disaster Management Bureau
7	IWM-Institute of Water Modeling
8	BUP- Bangladesh Unnayan Parishad
9	Action Aid Bangladesh
10	UNDP- United nations Development Program

On the other hand, 27 regional organizations mentioned that BCAS works on adaptation issues, 15 regional organizations referred to IUCN, 14 spoke of DoE and five regional organizations stated about BUET, CEGIS, IWM, BUP and Action Aid. Regarding mitigation 17 regional organizations named BCAS. DoE was mentioned by 11 of them. Four regional organizations said IUCN takes part, three referred to BUET and two mentioned about CEGIS, IWM and UNDP.

### **7.8: Key Development Partners in Climate Change Issues (Adaptation and Mitigation) in Bangladesh**

Climate change adaptation is necessary to tackle the present problem or anticipated changes in the future, aiming to reduce risk and damage cost-effectively, and perhaps even exploring potential benefits. We may need to take both structural and non-structural measures to face such situation.

It appears that in recent years a number of international agencies and development partners/donors including GEF, DFID/ British High Commission/ British council

Bangladesh, UNDP, Danida/ Embassy of Denmark, EC- Bangladesh, JICA, NL, WB, ADB etc are more or less active in supporting both adaptation and mitigation. It shows that some of the mentioned donors provided/ on the process of providing funds to implement at least 24 adaptation projects in Bangladesh. Out of 24, 3 projects have already been completed, 11 are ongoing and the rest of them are on the process.

Brief of some of recent adaptation projects funded by different donors (detail are in annex)

1. National Adaptation programme of Action to climate change (2005)- this project was implemented by Ministry of Environment and Forests in association with other relevant government and non government organizations. It was funded by GEF through UNDP. 15 property projects were indentified under NAPA in 6 major sectoral clusters including areas covering agriculture, water, forestry, fisheries, livestock, infrastructure, communication, industry, health and socio-economic aspects among others.
2. Climate change and disaster Risk (2006-2007) - it was screening of DFID-Bangladesh Portfolio. It was funded by DFID Bangladesh with some support from DIFD London.
3. Climate change Cell (2004-2009) - Currently supported Comprehensive Disaster Management Programme (CDMP) of the Ministry of Food and Management of the Government of Bangladesh. This project was funded by DFID. DFID supported to establish the climate change cell (CCC) under the ministry of Environment and Forests. Current support focuses on adaptation and includes work on modeling, research, cross-ministerial coordination and inputs to community risk assessment processes being carried out by CDMP.
4. Chars livelihoods programme (2004-2010) - A programme working in Jamuna chars on a range of livelihoods support activities. DIFD Supported to implement this project.
5. Structured consultation on climate change strategy and Action Plan for Government of Bangladesh (2007-2008): Dept of Environment/CCC is leading the process of developing a climate change strategy through a process of wide consultation. DIFD is providing funds for the consultation sessions.
6. Economic Empowerment of the poorest Challenge Fund (2008-2015) - challenge fund for NGOs targeting the extreme poor- to help them lift themselves out of poverty. Climate change adaptation measures will be fully integrated. This project is still under process to be implemented in coastal and haor regions of the country. DFID will be funding this project.
7. Community based Adaptation to climate change through costal Afforestation (2007-2010)- NAPA follow- up implementation of the 1<sup>st</sup> project. The goal of the project is to reduce vulnerability of coastal communities to impacts of climate change. In this respect, the project objective is resilience of costal populations, settlements, and ecosystems in areas exposed to costal hazard improved. This project is going to be funded by LDCF/GEF through UNDP.

8. Community-based Adaptation (CBA) Programme under CDMP (2007-2009)- Project interests are in line with national priorities, especially with respect to vulnerability and / or adaptive capacity development of local communities. The National steering Committees involved as part of their customary activities. This project is going to be funded by again GEF through UNDP.
9. Climate management Plan for the Agricultural Sector (2008)- Assist GoB partners in conducting a climate screening and develop a climate management Plan for the Agricultural Sector, taking outset in the GoB – Danida Agricultural Sector Programme Support, Phase II – ASPs II, funded by Danida.
10. EC Support to NAPA implementation (2008- 2012)- this project is still under process to implement one or more of the priority projects indentified under NAPA. This will be funded by EC- Bangladesh.
11. Comprehensive Disaster Management (CDMP-II). This project will implement climate change related components during 2009-2014. It is still under process and will be funded by EC and DFID.

It also appears that about 16 mitigation projects on climate change are supported/being supported by different developing partners. Among them 3 projects are ongoing, 13 projects are in pipeline and there is no completed projects lying on mitigation, in fact, mitigation activities on climate change are a new concept for Bangladesh in terms of implementation and support. Almost all over these activities started at 2007 except “Ozone Depleting Substance Phase-out under montreal protocol” and “Initial National Communication under UNFCCC (INC)” project which were started in 1996 and 2000 respectively. However, some of the development partners for supporting mitigation activities in Bangladesh. Some of the major activities in resent time may include as follows:

1. Improving kin Efficiency in Brick Making Industries (2008- 2012) - this project will look at technical assistance to improve energy in brick industries and to reduce GHG from the fast growing brick making industries. It will be funded by GEF and private sectors through UNDP.
2. Standard Labeling for Efficient Appliance and Equipment (2008-2012) – A regional initiative to Harmonize to the standard and labeling to promote the energy efficiency and to develop the national capacities in 6 Asian countries- funded by GHG through UNDP.
3. Second National Communication (2007-2009) - this project will include the updated national circumstances, inventory of GHG emission, stock taking on vulnerability and climate change strategies. It has been funded by GEF.

## **7.9: Approaches of Climate Change**

I have collected data from fifteen organizations that includes GO and NGOs in this research. Although most of them have some sort of climate change response, only have specific three or four climate change projects. It also shows what kinds of useful activities NGOs are

already undertaking – these help alleviate climate change effects even if they are not explicitly labeled 'climate change'. Climate change gives an opportunity to see how Bangladeshi NGOs adopt new development trends. This research interested in finding out about the climate change Approaches which used by GO and NGOs Activities in Bangladesh.

When asked what kinds of approaches the Go and NGOs needed to work on climate change, typical responses were: working with partners, working with workers or implementing the projects. Another question raises on the same issue how the organization selects the stockholders for this issue or how they select the project. Any response was not the perfect for making the actual answer or findings. On the other hand, it is also crucial to note that most of these GO and NGOs are not in the habit of using the internet for information searches or communication. Official documents are similarly inaccessible.

### **Community-Based Adaptation (CBA) Approach:**

CBA approach is especially salient for Bangladeshi NGOs and can be recommended. CBA relies on an organization's connections with communities to incorporate climate change into long-term community-based, community-owned support.

CBA programme seeks to encourage systemic change in national adaptation- related policy through evidence based results from a portfolio of community-driven climate change risk management projects. The programme promotes global learning related to community adaptation by sharing lessons from a range of initiatives focusing on natural resource management.

The CBA programme addresses this gap by supporting community-driven projects that will pilot a range of climate risk management practices at the local level. The initiative seeks to support 8-12 projects in each of ten pilot countries, and a total of 80-120 projects globally by 2012.

The UNDP approach to adaptation is ultimately about doing development differently — integrating climate change risk management into MDG-focused initiatives. CBA projects add an adaptation layer to sound community-based development initiatives – ensuring that development gains are not threatened by climate change impacts. UNDP's CBA programme officially began implementation in February 2008.

CBA focuses on communities that are most vulnerable to climate change and aims to understand how climate change will affect a community's capacities and assets. The process is bottom-up and community-driven, placing a strong emphasis on incorporating indigenous knowledge, social capital, and local context in adaptation planning.

Over the past several years, ActionAid Bangladesh (AAB) has been pursuing projects at several sites across Bangladesh with the goal of piloting a model for participatory, community-based planning for climate change adaptation.

CNRS (Center for Natural Resource Studies) is a non-government, non-political development organization formed in 1993 focuses on ecological management of floodplain ecosystem through community-based management approaches.

Practical Action believes climate change adaptation cannot be solved solely through the top down transfer of technologies. These technologies are unlikely to reach the poorest people because of a lack of affordability and accessibility. Nor will these technologies be specifically designed to meet the needs of local people.

Practical Action believes that adaptation must focus on strengthening communities from the bottom up and build on local strategies for coping with climate change. Resource poor people are not passive, they are already using strategies to adapt and have extensive knowledge of local climate conditions. The problem is that further changes in climate may be beyond their capacities to adapt. So Practical Action is working with local communities in order to: strengthen their capacities to prepare for and respond effectively to climate-related hazards; develop ‘no regrets’ technologies to strengthen people’s livelihoods; enable communities to take part in decision-making processes on climate-related adaptation strategies and influence policy at different levels.

Oxfam is undertaking CBA efforts at the local level. As Oxfam staff explain, the organization’s approach involves the formation of large, inclusive village CBOs that bring together all households. UP members may serve as advisors to the CBOs. These CBOs work to address all issues facing the community, with a focus on community mobilization, building capacity to address climate uncertainty, skill development, resilient livelihoods, building women’s economic leadership, local resource mobilization, and active engagement with local government institutions.

ARCAB conducts and researches Community Based Adaptation (CBA) at locations from five major Ecosystem Zones and one urban site in Bangladesh, working through “action partners”, “research partners”, and “knowledge management partners.”

In order to provide safe drinking water, Climate Change and Health Promotion Unit (CCHPU) took an attempt to purify water for removing salinity in these regions. For this purpose, CBA was used.

### **Participatory Approach:**

IUCN believes, in order to develop an appropriate methodology it is very much essential to assess the potentials and limitations of the area under study in general. These include demographic, biophysical and socio-economic characteristics.

The basic approach of the project is participatory and encompassed both the both the top down and bottom-up approaches to development. Along with that, the eventual integration of the lesson learnt into the policy and decision-making cycle is the other main challenge that the project aimed to address.



CPRD emphasizes participatory and people-centered development by exchanging, transferring and maximizing knowledge among the different actors and stakeholders and, generates innovative ideas, approaches, and appropriate technologies through participatory research developing models, demonstration and implementation. CPRD also works as a platform of policy advocates and researchers working as a hub among the development actors.

### **Integrated Approach:**

The Climate Change Cell (CCC) established with the objective of “Establishing an Integrated Approach to Climate Change Risk Management at National and Local Levels”. Development and application of a research Strategy for Climate Change and Adaptation for Bangladesh is one of the major activities of CCC.

### **Holistic Approach/ Multi- Hazard Approach:**

CDMP II is driven by a multi- hazard approach to disasters including climate change risk management, to create and nurture the crucial paradigm shift in disaster management, away from relief and rehabilitation and to a more holistic approach towards reducing risks and vulnerabilities.

### **Ecosystem Zone Approach:**

By taking an ecosystem-zone approach, ARCAB ensures that lesson-drawing is undertaken and applied in a systematic way.

### **Rights Based Approaches**

CARE's work focuses deliberately and explicitly on people's efforts to achieve the minimum conditions for living with dignity. We work for building internal capacity to empower people to claim and exercise their rights and fulfill their responsibilities. We recognize the poor, the displaced and victims of violence as having inherent rights essential to livelihood security - rights that are validated by international law.

### **Proactive Approach:**

IUCN believes, Climate change represents one of the greatest environmental and health challenges of our times. Bangladesh is one of the most affected countries due to this climate change phenomenon. Through this proposed monitoring process, long term disease surveillance will be maintained or established in suspected areas of climate change and health risks to enhance detection and prevention of diseases resulting in guidelines and recommendation for policy makers at government and international levels to tackle human health problems in Bangladesh due to climate change and variability. Apart from government agencies, public health and environmental health workers as well as clinicians should interplay in a nicely poised manner resulting in a proactive approach to combat the grave

situation so that we can achieve long range and long lasting prevention of the impact of climate change and its effect on health.

### **Open Approach:**

BAPA and BEN believes, the Open Approach, furthermore, counteracts the river destabilizing effect of climate change by mitigating flood during summer, as river flow can spread over larger areas, and by conserving summer water and making it available during winter, so that the Open Approach can also act against rising salinity, which is expected to be more acute during the winter, when river flows diminish;

The Open Approach can therefore help counteract three (namely, submergence by rising sea level, destabilization of rivers, and salinity intrusion) of the five most adverse effects of climate change on Bangladesh; so that switching from the Cordon Approach to the Open Approach to rivers is the most important policy change that Bangladesh needs in order to face the climate change challenge.

### **Territorial Approach:**

The Territorial Approach to Climate Change (TACC) works with local level governments (states, provinces, cities, municipalities) in developing countries and countries in transition to increase resilience to climate change impact and reduce their carbon footprint. The TACC is a partnership of five agencies that includes UNEP, UNDP, UNITAR, UN-Habitat and UNCDF.

### **Ecocentric Approach:**

Ecocentric Approach is argued that the natural world should be respected for its processes and products, and that low impact technology and self-reliance is more desirable than technological control of nature.

### **Technocentric Approach:**

Technocentric Approach has absolute faith in technology and industry and firmly believe that humans have control over nature. Although technocentrics may accept that environmental problems do exist, they do not see them as problems to be solved by a reduction in industry. Rather, environmental problems are seen as problems to be solved using science. Indeed, technocentrics see that the way forward for developed and developing countries and the solutions to our environmental problems today lie in scientific and technological advancement.

## **7.10: Lesson Learnt During Actions and Implementation of Climate Change Related Projects and Programmes: Gaps to be addressed to Reduce Vulnerability of Climate Change**

The organizations surveyed stated about their experience, lesson learnt and gaps/barriers during implementation of their climate change program and projects. Their responses have been summarized under following categories:

### **1. Effective coordination and communication on climate change**

- Most of the organizations stated that they have realized that climate change is a reality and it is expected to have massive impacts on overall development to the country. As a result, both government and non-governmental organizations should work in a collaborative and integrated manner. Lack of coordination between various sectors is now the major hurdle in the path of climate change and development.
- There is a need of bridge among scientists –policy makers-media to take message and initiatives from top to bottom level.
- Reducing climate related risks requires multi- level stakeholder coordination and communication
- Reinforcing and staining climate observation networks.
- GO and NGO coordination for partnership implementation is essential.

### **2. Resources to implement climate change projects all the grass-root level**

- All present and future development projects should include climate change issues into project planning and have a separate fund to address climate change related impacts on the project
- Funds in ADP for introduction of less polluting and high technology based agro practices, industrial units.

### **3. Climate change integration is crucial for sustainable development**

- Implementation of both adaptation and migration measures with regard to climate change from national to sub national level is important for sustainable development
- For sustainable development, poor adaptation requires pro-poor governance at the grassroots level
- Women and children are readily vulnerable to climate change and climate vulnerability, so they need special consideration in sustainable development

### **4. Awareness on climate change issues at both policy & community level**

- Most of the organizations felt that climate change knowledge is still very poor at the policy making level. Awareness raising is also crucial for proper implementation of projects and program
- Low institutional capacity to plan and implement program and projects for climate resilience development need to be overcome

- 5. In- depth research on different sectors including agriculture, water and health etc.**
  - The promotion of indigenous variety of seed production and increase in biodiversity in terms of agriculture and fisheries is important. Farmers should be encouraged to use salt tolerant and drought tolerant rice species where appropriate.
  - Use of saline tolerant crop varieties should be increased in the coastal regions
  - Develop drought tolerant, long time merged in flood and high yielding rice variety
  - Water efficiency for different ecosystem for agricultural practices need to investigated
  
- 6. Dissemination of best practices and knowledge in light of climate change for national development policies, plan and awareness program**
  - Adaptation activities should be scaled up and the good, successful practices should be widely disseminated.
  - All the organizations strongly supported increase of advocacy and capacity building program at all levels in order to disseminate climate change related knowledge
  - Climate change is included in to development planning to some extent but need immediate consideration in the implementation of the policies e.g. poverty reduction strategy paper
  
- 7. National advocacy, training and capacity building from grass root level**
  - Project should be designed to build up the coping capacity of the most vulnerable communities
  - All development policies and programs should include climate change as cross cutting issue
  - Students from institutions study about disaster from this organization and thus gather their knowledge
  - Technology based awareness are need to be disseminated
  
- 8. Networking among GO, NGOs & International organizations on climate change issues**
  - The output/result will be shared with stakeholders to draw lessons from experiences
  - Effective Networking, lobbying, policy and advocacy in nation and international level
  
- 9. Better understand of micro-geographic, micro-climate, environmental & ecological study**
  - Micro-geographic study need to know
  - Microclimatic data analysis also shows that climate change is happening which is changing the seasonal pattern, rainfall intensity, distribution of rainfall, distribution and intensity of food, drought and other environmental parameters of the nature. Those changes affect the agricultural practice of the country, and ultimately affecting the agriculture-related business
  - Micro-climate variation is not well addressed in different studies and planning

**10. Reintroduction of local crop variety and understanding local coping mechanisms**

- Only and immediately tree plantation and stop deforestation
- Afforestation, solar light, biogas plantation will be reducing environmental instability
- Integrated homestead gardening can be remove our rural povert

**11. Legal frame work on pollution, exotic crops, GMO etc:**

- Every organization should apply EIA concept
- Although Bangladesh does not have specific regulations or policies to climate change, there are a number of legislations and polices aimed to reduce environmental problems
- Should make voice to mitigate the causes at climate change at national level and raise compensate at international level (climate justice)
- Commercialization of agriculture (tobacco, shrimp) can bring less diversification of our crop cultivation and nutrition taking

**12. Energy, transport sector need to be should involve in climate change**

- Energy sector may mainstreaming of climate change
- Introduce renewable power generation in homestead appliances

According to the analysis of data, the following in homestead been highlighted:

- Non-government organizations are engaged in coping activities with inevitable and successive climate change processes. Research and academic institutions are also involved in various climate change activities. The development partners in Bangladesh are interested to provide funds for taking actions against climate change
- There is a major gap in advocacy, networking, awareness and education program for managing climatic disasters in almost every sectors and organizations. It is essential to improve our expertness and dexterity according to this sector (advocacy, networking, awareness and education)
- Government's collaboration with NGOs will be more rewarding for combating against climatic disasters. Technical assistance is needed from the developing agencies for adaptation or mitigation programs. It is necessary to increase awareness at the grassroots corresponding to climate change events
- According to the available data, Bangladesh has many adaptation activities compared to mitigation activities. This shows that more action is required for mitigation.

### 7.11: Future Measures/Activities Need to Combat Climate Change

The questionnaire survey also listed some of the projects already in pipeline and some of the future activities that the organizations are planning to take to address climate change. Many of the future measures were suggested by different organization during survey based on characteristics of short-term, medium-term and long-term approaches to climate change mitigation and adaptation. The main measures discussed by the organizations are listed below:

#### **Short-term:**

- Mass awareness and advocacy programmes
- Research and study
- Tree plantation and afforestation
- Mainstreaming climate change issues into sectoral development
- Integrating and coordination with global network on climate change issues
- Training on climate change issues for people at all level
- Networking within people and organizations such as society as civil society, media etc.
- Effective implement existing policy and program

#### **Mid-term:**

- Awareness and advocacy into deeper climate change issues
- All the plans and policy should integrate climate change issues
- Research on climate change issues
- Crops diversification
- Tree plantation/afforestation
- Renewable energy
- Improve water resource management
- Policy and program on food security issues

#### **Long- term:**

- Research on climate change issue ( various sectors including agriculture, water, health etc)
- Afforestation
- Development of sustainable crop varieties
- In depth research on climate change\
- Climate change issues in educational curriculum
- Generate fund for climate change and disaster management
- Awareness, advocacy and training about climate change issues
- River dredging
- Infrastructure development

**7.12: Differences of GO and NGO Approaches**

<b>GO</b>	<b>NGO</b>	<b>Future Measures/Activities Need to Combat Climate Change</b>
Clear Mission	Not clear but have project based Mission	Mainstreaming climate change issues into sector development
Clear Vision	Project based Vision	Generate fund for climate change and disaster management
Followed unified objectives	Project based objectives	Awareness and advocacy into deeper climate change issues
Mostly followed Community based Approaches	Commonly followed multy disciplinary Approaches	Effective implement existing policy and program
Focused Sustainable Development	Project based development	Development of sustainable crop varieties
Top down Approaches	Bottom up Approaches	Integrating and coordination with global network on climate change issues
Bureaucratic Expert	Participatory Approaches	Networking within people and organizations such as society as civil society, media etc.
Work to affair broader goal of development	Compartmentalized beneficiaries development	Research on climate change issue (various sectors including agriculture, water, health etc)
Conventional printed policy and planning	Advocacy, empowerment, engagement, involvement, conscientization, Group building	Effective implement existing policy and program

## **Recommendation**

The point that was most highlighted in the study was the need for knowledge sharing among organizations and coordination among various sectors that work with climate change related activities. However, chapter 6.9 and 6.10 can be considered for detail and specific programmes to address climate change in Bangladesh. But more facilitate/ support/ implement should follow specific programmes and study to address climate change in Bangladesh.

### **7.1: Programme Recommendation**

1. To initiate a series of meetings/ workshop/ seminars on climate change to establish a network among policy makers-scientist-media personals. This would primarily ensure appropriate/effective communication and dissemination and capacity building among these professionals.
2. Can incorporate climate change adaptation and mitigation issues in the academic / institutional programme.
3. To develop a number of video documents based on climate change indicators, vulnerability and impacts. A serious of video can be shown once in a month or may be arranged with some other programme to aware people.
4. To organize different events and competitions (cultural and educational) on climate change issues such as
  - Debate
  - Art competition
  - Fair
  - Drama/acting (vulnerable population risk prone areas, how do they adapt, gender vulnerability etc) for O' level students, A' level students, graduate and post graduate students etc. these would help the students to be aware and also be prepared themselves for the future impacts (both national and regional) of climate change.
5. To initiate some research especially the climate change impacts on education (rural and urban; elementary/ primary, secondary and higher), culture, health etc.
6. To organize seminar/workshop at both national/ regional; level on disseminating of best practices and knowledge in light of climate change. Teachers, religious leaders (mosque temple, church etc) would participate in these seminars for future dissemination.



7. To forge strong relationship and undertake programmes to promote organizations / institutions engaged in climate change research, advocacy, awareness and capacity building to the benefit of the population groups exposed to climate change related risks and vulnerabilities.

## **7.2: Study Recommendations**

1. To instigate research for climate change issues like Climate Modeling and Forecasting, climate change Effects on glaciers, atmospheric Science and Climate Change, Oceans and climate change, Energy and environmental policy, developing countries, global change, technology and society.
2. To initiate more research About GO and NGO climate change activities of implementing field on various climate change issues.
3. To instigate training Crouse on climate change from various institution for making volunteers for emergency disaster management.
4. To develop advance research on how to make people aware about not only climate change causes, effects, vulnerability and upcoming belongings but also adaptation and mitigation issues.
5. To begin additional research on GO And NGOs collaboration, competition and contradictory activities of climate change.

This study has attempted to present a comprehensive review of climate change activities carried out by various organizations in Bangladesh. The study has put stress on adaptation and mitigation activities in light of sectors and actions taken so far.

Analysis of the data and presentation of the findings have brought to light the gaps in sectoral activities and areas where more work is needed. All the sectors discussed or highlighted in the study are crucial for development and the absence of any of the above component the process of development will be at stake.

Adaptation to climate change is particularly important for a vulnerable country like Bangladesh. The people of Bangladesh are today dependent on national resources such as fisheries, agriculture, and forestry. But the findings have highlighted that adaptation activities in the fisheries sector is very inadequate. A strong commitment for research and integrated activities are necessary to sustain the fisheries sector and protect in from climate change. The other sector where adaptation is crucial is advocacy, networking and awareness raising and capacity building as a whole. All the organizations surveyed felt that unless there is strong awareness raising activities regarding importance of climate change adaptation to development processes, it will be very difficult to successfully implement projects. Advocacy, networking and awareness raising should be implemented from the grassroots level to the topmost level of decision- making as mentioned several times.

According to the data, mitigation activities at still at the initial stages with not enough activities on the ground yet, it is understood that implementing mitigation activities is difficult since it involves technology, funds and technological know-how. There is still a large gap in terms of mitigation measures. Here the donor agencies can play an important role in providing technical assistance and funds to carry out efficient mitigation activities.

## Annex 1

### List of the Organizations

Sl. No.	Name of Organization	Contact Address	Status
Government			
1	Department of Environment (DoE)	E-16, Agargaon, Dhaka-1207	Done
2	WARPO	House#103, Road# 1, Banani, Dhaka.	Done
3	NIPSOM	Department of Occupational & Environment Health NIPSOM, Mohakhali, Dhaka.	
4	Institute of Water Modeling (IWM)	House# 476, Road#32, New DOHS. Mohakhali, Dhaka	
5	SRDI	Mirtika Bhaban Agriculture Extention Sarak Farmgate, Dhaka	
6	Metrological Department/ SAARC Metrological research Centre	Flat# E-4/c, Agargaon Shere-Bangla- Nagar, Dhaka-1207	
7	Department of Public Health & Engineering (DPHE)	14, Shaid Monsur Ali Sarani, Kakrial, Dhaka	
8	Disaster management Bureau	92-93, Mohakhali, Dhaka	
9	Climate change cell, Department of Environment	E-16, Agargaon, Dhaka-1207	Done
10	Dhaka City Corporation (DCC)	Conservancy Department	
11	Department of Agriculture Extension (DAE)	Farmgate	
12	Directorate of Health (DG-Health)	Mohakhali	
13	Bangladesh Atomic Energy Centre	Shahbag, Dhaka	
14	Climate Change Unit	Ban Bhaban, Mahakhali, Dhaka	Done
15	Climate change and health promotion unit (CCHPU), Ministry of Health & Family welfare	14/2 Topkhana Road Ansari Bhaban , Dhaka-1000	
16	Ministry of Food and Disaster Management, Disaster Management and Relief Division, The Comprehensive Disaster Management Programme (Phase II)	92-93, Mohakhali, Dhaka	Done

NGO			
17	Bangladesh Unnyan Parishad (BUP)	House#50, Block#D, Niketon, Gulshan-1, Dhaka	
18	IUCN	Road#2A, Banani, Dhaka	Done
19	BRAC	75, Mohakhali, Dhaka-1212	
20	Grameen Bank	Grameen Banj Bhaban (19 <sup>th</sup> Floor), Mirpur-2, Dhaka-1216	
21	BDPC	House#52, road#13/c, block E, Banani, Dhaka-1213	Done
22	BELA	House#15,Road#3, Dhanmondi R/A, Dhaka	
23	NGO Forum	4/6, Block-E, Lalmatia, Dhaka1207	Done
24	CEGIS	House#6, Road#23/c, Gulsha-1,Dhaka	Done
25	CNRS	House# , Road#17, Banani	Done
26	RDRS	House#43, Road#10, Sec-6, Utara Model Town, Dhaka-1230	
27	CCDB	88, Senpara Parbata Mirpur-10, dhaka-1216	
28	Rahim Afroz	1A, Gulshan Avebue, Gulshan-1, dhaka	
29	Gono Unnanyan Kandro (GUK)		
30	Bangladesh Institute of theatre Arts, Chittagong		
31	Young Power in Social Action		
32	Nowzuan	Chittagong	
33	Center for Global Change (CGC)	House#12-ka/A1, shaymoli Second Lane, Dhaka-1207	
34	CODEC		
35	SHUSHILON	House#18, Road#5, Block# Kh, PC Culture Housing Society, Mohamodpur, Dhaka.	
36	Sustainable Development Research Centre (SDRC)		
37	DRIK	House#58, Road315a (New), Dhanmondi, Dhaka	
38	Development of Biotechnology & Environmental Conservation Centre (DEBTEC)	House#90, Road#11A, Dhanmondi, Dhaka	
39	Nijera kori	House#7/8, Block#C, Lalmatia, Dhaka	
40	Unnayan Shamannoy	2/E?1-B, Mymenshingh Road Shabag	
41	UBINIG	House# 22/13, Block#B, khiliji Road, Mohammadpur, Dhaka-	

		1207	
42	Alternative Movement for Resources and Freedom (AMRF)	House#154, Road#6, Block-ka, PC culture Society, Shamoly, Dhaka.	
43	Network on Climate change, Bangladesh (NCCB)	12/6, ikbal Road, Mahammadpur, Dhaka.	
44	Gono Unnayan Procastha (GUP)	13A/ 3A, Block-B, Babar Road, Mahammadpur, Dhaka	
45	Desaster Forum		
46	Chrisitian Aid Bangladesh		
47	ARCAB	Baridhara, Dhaka.	
48	Islamic Relief, Bangladesh	Baridhara, Dhaka	
49	Bangladesh Poribesh Andolon (BAPA)	9/12, Block-D, Lalmatia, Dhaka-1207	
50	CPRD	Niketon, Gulshan-1, Dhaka	Done
51	NaCom	Niketon, Gulshan-1, Dhaka	Done
52	OSHE		
53	SEHD	1/1 Pallabi, Mirpur, Dhaka-1216	
54	Nagorik Uddyog		
55	BEN		
Dvelopment Organization			
56	Action Aid International in Bangladesh (AAI)	House 19, road# 128, Gulshan1, Dhaka	Done
57	European Commission	Plot#7, Road#84, Gulshan-2, Dhaka-1212	
58	CARE- BD	Pragati Insurance Bhaban (9 <sup>th</sup> - 13 <sup>th</sup> floor) 20-21, Kawran Bazar, Dhaka – 1215	
59	Christian- Aid BD		
60	Practical Action	6/8, Sir Sayed Road Mohammadpur, Dhaka	
61	OXFAM-GB	House#4, Road#3, Banani, Dhaka	
62	CARITAS-BD	2, outer Ciruler Road shantibag, Dhaka and 1/c, 1/A pallabi Mirpur -12, Dhaka	
63	Concern-BD	58 kalabagan 1 <sup>st</sup> Lane, Dhaka-1205	
64	Swiss Agency for Development and Cooperation (SDC)	House3 31B, Road318, banani, Dhaka	
65	Asian Development Bank		
66	Chevron	Gulshan, Avinue, Dhaka.	
67	EPA		
68	iied		
69	The Asia Foundation	Baridhara, Dhaka	

70	Asia Energy Corporation (BD) pty Ltd		
71	Climate Radio Secretariat	Machizo, House - 35, Flat-D5, Road-12A (new) Dhanmondi R/A, Dhaka-1209	
72	Gramen phone (Gp)	Boshundhara, Dhaka	Done
73	ECDO	7 Urmi (1st Floor), Near to Forhadkha Pool, West Shibgonj, Sylhet-3100	
University/Research Institution			
74	BARC	Farmgate, Dhaka	
75	BARI	Gazipur, Dhaka	
76	BRRI	Gazipur, Dhaka	
77	BIDS	Agargaon Sher-E Bangla Nagar, Dhaka	
78	Centre for Policy Dialogue	House# 40/C, Road# 11(new), Dhanmondi, Dhaka	
79	North South University (NSU)	Environment Science & Management Department, Bashundhara, Dhaka	
80	BUET	IWFM	
81	Development of Geology	Dhaka University	
82	Disaster Research Training & Management Centre (DRTMC)	Geography & Environment Department, Dhaka University	
83	Stamford University	Dept of Environment Science	
84	Bangladesh Development Research Center (BDRC)	12 Kemal Ataturk Avenue, Banani, Dhaka 1213	
85	Bangladesh Centre for Advanced Studies (BCAS)	House#10, Road# 16/A, Gulshan-1, Dhaka	Done

**Annex 2**  
**Institute of Social Welfare & Research**  
**University of Dhaka**  
**Dhaka-1205**

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**Research Title: Challenges of Climate Change: GO and NGO Approaches in Bangladesh**

This research is conducting for complementing my thesis for M Phil (2010-2011) at the Institute of Social Welfare & Research, University of Dhaka. You/your organization have/has been selected as a source of data collection. It is noted here that the information that you/your organization will provide would be considered as valuable source for my research and its confidentiality will be maintained properly.

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Schedule No: ..... Date: .....

1. Name of the Organization .....
2. Registered authority .....
3. Year of establishment .....
4. Length of work on climate change.....
  
5. Type of organization: (please use in appropriate position)
  - a) Government Organization
  - b) Non- Government Organization
  - c) Research Organization
  - d) Academic Institution
  - e) Developing Partners
  - f) Others
  
6. (If any), name of the partner organization.....
  
7. Donors for this Organization:
  - a).....
  - b).....
  - c).....
  - d).....
  
8. Activities on climate change
  - a).....
  - b).....
  - c).....
  - d).....
  
9. Climate change Projects implementing areas in Bangladesh
  - a) SSW (South –South- West).....
  - b) NNW (North- North- West).....
  - c) Center.....

- d) East.....
10. Climate change issues in Bangladesh: according to your opinion
- a) Agriculture.....
  - b) Health.....
  - c) Water and Sanitation.....
  - d) Communication and Transport.....
  - e) Natural resources.....
  - f) Social Aspects.....
  - g) Economy.....
  - h) Forestry.....
  - i) Fishery.....
11. Climate change most vulnerable Sectors in Bangladesh:
- a) Air pollution .....
  - b) Cyclone.....
  - c) Flood.....
  - d) Drought.....
  - e) Sea level rise (SLR).....
  - f) Salinity intrusion.....
  - g) Global Warming.....
  - h) Seasonal Variability.....
  - i) Rain fall.....
  - j) Deforestation.....
  - k) Land slide/ land Subsidence.....
  - l) Industrialization.....
  - m) Tidal Surge.....
  - n) Cold Wave.....
  - o) Urbanization.....
  - p) Infrastructure Development.....
  - q) Geographical location of Bangladesh.....
  - r) Siltation.....
  - s) Erosion.....
  - t) Strom/tornado.....
12. Sector of interest for your organization: ( please use in appropriate position)
- **Adaptation**
    - a) Water
    - b) Agriculture
    - c) Health
    - d) Others:
  - **Mitigation**
    - a) Energy
    - b) Transport
    - c) Forestry
    - d) Agriculture
13. Reason for Interest in this sectors:  
.....



14. Which Approaches follows this organization for Activities on climate change.....
15. Total budget for the climate change project.....
  - A) Budget running process: 1) yearly basis 2) project basis
  - B) Have any open Budget system.....
16. Nature of the planning  
.....  
.....
17. Strategies adopted for implementation of the activities
  - a. Curative Measures.....
  - b. Preventive Measures.....
  - c. Development Measures.....
  - d. Rehabilitation Measures.....
18. Level of the local participation on climate change program  
.....
19. Type of Participation about Civil Society .....
20. Who are the local level stakeholders.....
21. Planning for local level participation on climate change  
.....
22. Which type of local resources are being mobilizing at local level on climate change:  
.....
23. Management of this organization
  - A) Local level.....
  - B) Central level.....
24. What are the general problem that you face to operate in community level activities for climate change
  - A) Managements level problems .....
  - B) Budget level problems .....
  - C) Local level problems .....
  - D) Other problems.....
25. What are the lesson learnt during actions and implementation of climate change related projects and progammes  
.....  
.....
26. Future measures to be taken to address Climate change (Short term/long-term)
  - a) Short term (before 3 years).....
  - b) Mid- term (within 3 to 5 years).....
  - c) Long- term (more than 5 years).....

## Annex 3

## List of Organization along with Project Activities:

Name of organization	Title of the project/ program	Duration (year)	Date of Start	Date of End
1. Nagorik Uddyog	REHAB programme for SIDR affected people	1	Nov. 07	
	National level workshop and orientation with young	Continuing	Nov. 07	
	Networking with climate change issue	Continuing	May, 04	
	Awareness building to the community people	Continuing	May, 06	
	Awareness at staff level	Continuing	May, 06	
2. RDRD Bangladesh	Solar panel Project	Unlimited	199	
	Wastes management programamme	Continuing	2003	
	Community health programme	Continuing	1971	
	HIV awareness programme	Continuing	2000	
	Extension of early harvesting & mitigation of Monga	Continuing	2000	
	Awareness raising on water and sanitation	Continuing	2002	
	Rural WaSH (Water, Sanitation & Hygiene) Project		April 2011	March 2016
3. Nijera kori	Social mobilization voice and democracy ( Awareness of the people about employment and environmental issues)		190	
	Community adaptation to climate change and risk reduction	Continuing	200	
	Adaptation to the Impact of Climate Change through Community-based flood Warning System	1	2008	2009
5. CNRS- Centre for policy Dialogue	Evaluation of environment concept in the context of climate change	1	July, 07	Mar, 08
	Communicative tool development and awareness of common people and Govt. officials about climate change	1	Sep, 07	Jun, 08
	Facilitation of national climate change strategy and action plan development process	1	Nov, 07	June, 08
	Development of early warning system of flash flood	1	Dec, 07	Aug, 08
	Adaptive agriculture	1	Nov, 07	Oct, 08
6. CPD- centre for Policy Dialogue	Natural disaster and flood security			
7. BUET- Bangladesh University of	Baseline study for Bio-gas project	-1	Jan 08	Jun 08

Engineering & Technology. (Chemical Engineering Department)	Technology receptivity of South-south North	3	Jan 06	Dec 08
8. NGO Forum for Drinking Water Supply & Sanitation	Coastal Livelihood	2	Jan 07	Jun 08
9. DMB- Disaster management	Incorporate chapter on climate changes in different training programme	9	2000	2009
	Policy given input issues in climate change on NAPA and integrated coastal coastal zone management programme			
10. SDRC- Sustainable Development Resource Centre	Good practices in climate risk mitigation and adaptation	-1	Nov 07	June 08
	Climate change education for community and primary students	3	Jun 06	Dec 08
11. BITA- Bangladesh Institute of Theater Arts, Chittagong	None			
12. CODEC- community Development Centre Chittagong	Forest Project (Nishorgo)	continuing	2004	
	Disaster prepared management	continuing	2005	
13. YPSA- young Power in Social Action, Chittagong	Establishing Partnership for Disaster risk management	4	2004	May 08
	Reducing risk of the vulnerable community to flood and earthquake	2	2006	Apr 08
	Promise Bangladesh Project	3	2006	2009
	Mobilizing communities for disaster risk reduction	2	2007	Aug08
	School based preparedness for earthquake disaster	-1	2008	2008
	Policy and advocacy programme to endure rights & reduce risks of labors	1	2008	2009
14. Nowzuan, Chittagong	River management project	continuing	2004	
	Social a forestation project	continuing	1994	
	Hill management project	continuing	2006	
15. Grameen Shakti	Solar home system		1996	2008
	Biogas plant		2005	2008
	Improve cook shove		2007	2008
16. DF. Disaster Foram	Disaster year report	10	1997	2008
17. DPHE- Department of public health	Water supply and environmental sanitation	20	1978	2008
	Water supply in coastal belt	5	2003	2008
	Char development	18	1990	200
18. Asia Energy corporation- Bangladesh	None			
19. DG Health- Directorate of Health	Emergency preparedness and response programme	7	2003	2010

20. SMRC- SAARC Metrological Research Centre	Extreme weather events in Bangladesh which will be extended to other member states	1	Jan 08	Dec 08
	Climate Variability In Bangladesh	3	Jan 06	Dec 08
21. OXFAM Great Britain	Campaign for sustainable rural land of agro ecological Zone	6	Jun 07	2012
22. Drik	Documentation of Costal areas especially Sundarbans			
	River erosion in different districts			
	Effects and after math of SIDR			
	Industrial Hazardous documents			
23. PA- Practical Action	None			
24. BUP- Bangladesh Unnayan Parishad	End Monga Campaigning	3	Nov 07	Sep 09
	Household risk reduction plan	2	Nov 07	May 08
25. AMRF- alternative Movement for Research & Freedom	Water security for poor and Women	6	Jul 04	Dec 09
26. BUET- Bangladesh University of Engineering & Technology ( Institute of Water and Flood management)	Characterization and vulnerability of climate change	2	Jun 07	Feb 08
	Trend analysis of meteorological parameters from agricultural perspective		Jun 07	
	Economic modeling of physical infrastructural adaptation	1	Sep 07	June 08
27. CARITAS- Bangladesh	Enhancement of Adaptation capacity of drought vulnerable community in North- western Bangladesh	4	Jul 07	Jun 2010
28. DEBTEC- Development of Biotechnology & Environmental Conservation Centre	Medicinal plants and herbs in Eastern Himalayas	4	2006	2010
	Coastal biodiversity conservation thought creation Alternative income Generation (AIG Facilities)	4	Dec 06	Nov 09
	Homestead agro forestry though improved management practice	6	Apr 07	Mar 2012
29. Stamford University ( Department of Environmental Science)	Trend analysis of climatic factor that effect our agriculture		2008	
	Modeling of air population		2007	
	Impacts of air population		-2007	
30. BAEC- Bangladesh Atomic Energy Centre, Dhaka	Temporal variation and spatial distribution of airborne particulate matter	7	2001	2008
	Qualitative and quantitative variation	5	2005	2010
31. NIPsom – National institute of Preventive & Social Medicine	none			
32. Rahim Afrooz Batteries Limited	Air treatment Plant (ATP)	8	1999	2008
	Effluent Treatment Plant (ETP)			
	Solar & Biomass consumption and Wind turbine Utilization Plant	8	1999	2008
33. CCDB- Christian Commission for Development in Bangladesh	Comprehensive rural development program based on tee plantation	5	July 2007	2012
	Utilization of inorganic fertilizer	8	1999	2008
	Road improvement maintenance programme ( based on side plantation)	8	1999	2008

34. NCC- Network on climate change, Bangladesh	Campaign on climate change, Bangladesh	3	May 2006	April 2008
35. DoE- Development of Environment	Climate change, Gender and Vulnerable Groups in Bangladesh			Mar 2008
	Crop insurance as a risk management Strategy in Bangladesh			Feb 2008
	Adaptive crop agriculture including innovation needs for infrastructure in Bangladesh			Apr 2008
	Economic Modeling on Climate change Adaptation needs practices in the coastal Zone			Jul 2008
	Environmental cost of the climate change			Mar 2008
	Preparation of look up table and generation of PRECIS (Providing Regional Climate impact Studies)			Apr 2008
	Impact assessment of Climate change and sea level rise on monsoon flooding			Mar 2008
	Characterizing long term change of Bangladesh climate in context of agriculture and irrigation			Feb 2008
	Development, Delivery and promotion of IEC kit ( Information Education Communication kit) (Lot 1-5)			Apr 2008
36. Christian- Aid, Bangladesh	Drinking water security for poor and Women			
37. IUCN- International union for conservation of Nature	Climate change adaptation target setting			
	Promotion of climate change adaptation in coastal region	5	Nov 2004	April 2008
	Boat development project	2	March 2007	April 2008
38. UBINIG- policy Research for Development Alternative	Cultivation of food crop in place of tobacco		Jan 2005	
	Conservation of agricultural biodiversity		1994	
	Cultivation of indigenous crop, resistance against hybrid and GMO		1994	
39. Unnayan Shamannoy	None			
40. SRDI- soli Resources Development institute	Strengthening of Soil resource management	2	2009	2009
	Food security 2006, soil fertility component	5	2007	2012
41. DRTMC DU- Disaster Research and Management Centre, University of Dhaka	Community risk assessment (CRA) and risk reduction action plan (RRAP)	2 1	Nov 2006 Nov 2007	May 2007 May 2008
	Research: River bank erosion	continuing		
42. Department of	Impact of climate change on shallow	3	Sep 2007	Sep 2010

Geology, University of Dhaka	ground water and possible linkage to arsenic occurrence			
43. BARC- Bangladesh Agricultural Research council	Agricultural technology transfer (ATT)	3	2005	2007
	Climate change and global agriculture potential project funded by FAO	12	1995	2007
	National agricultural technology project (NATP) (preparation phase)	3	Feb 2006	Dec 2008
44. BRRI- Bangladesh Rice Research Institute	For development of submergence tolerant rice variety	continuing		
	Genetic improvement of rain fed lowland rice			
	Improvement of shallow flood deepwater rice			
	Salinity tolerance in rice			
	Submergence tolerance in rice			
	Cold tolerance in rice			
	Drought tolerance in rice			
	Yield potential			
	Climate and rice			
	Water management in rain fed environment			
45. BARI- Bangladesh Agricultural Research Institution	none			
46. SDC- Swiss development Corporation	Sustainable land use program	10	2000	2010
47. DAE- Development of Agriculture Extension	Livelihood adaptation to climate change	2	Feb 2008	June 2009
48. CEGIS- Centre for information and Geographic Services	Economic modeling on climate change adaptation needs for infrastructure	2	July 2007	June 2008
	Adaptive			
49. Delegation Of The European Commission To Bangladesh	Comprehensive disaster management programme	4	2005	2009
	building community disaster preparedness capacity in cyclone prone area of Bangladesh	3	2006	2009
50. Action-Aid international in Bangladesh	Assistance to local communities on climate change adaptation and disaster risk reduction in Bangladesh	2	Jan 2008	Dec 2009
51. CCC- climate change Cell, Department of Environment 4B, (Comprehensive Disaster Management Programme)	Climate change, gender and vulnerable			
• Component 4B is one of the ten	Crop insurance as risk management strategy in Bangladesh			
	Adaptive crop agriculture including			

components of the five strategic focus areas of ministry of food and Disaster management	innovative farming practices in the coastal Zone			
	economic modeling on climate change adaptation needs for infrastructure in Bangladesh			
	Environmental coast of the climate change			
	Preparation of look- up table and generation of PRECIS scenarios for Bangladesh			
52. GUP- Gono Unnayan Prochesta	Building disaster resilience community (BDRC)	1	Jan 2006	Mar 200
	Sustainable livelihood development project	2	2006	2008
53. BELA- Bangladesh rural Advancement committee	Building Adaptation strategy in the selection drought and flood prone Areas in Bangladesh	2	Jan 2006	Mar 2008
54. BRAC- Bangladesh Rural Advancement Committee	Climate change and Environmental Pollution; Experience from selected business sectors of Bangladesh (Study)	continuing	June 2005	
	Environmental surveillance (Special focus on micro- climate change in micro-climate variation and local crop production diseases pattern and livelihood	continuing	Feb 2008	
55. GUK- Gono unnayon Kendro	Coping with climate change	3	July 2006	June 2008
56. CARE Bangladesh – cooperative for Assistance and Relief Everywhere, Bangladesh	Strengthening household Ability to Respond to development Opportunity	5	Oct 2004	Sept 2009
	FRRAS ( Flood Risk Reduction Activities in Sunamganj)	5	Oct 2005	June 2009
57. CGC- center for Global Change	Global environmental change and food systems	12	1999	2011
	School education programme	4	2005	2008
	Alternative brick making	5	2003	2008
	Water logging	1	Aug 2007	Dec 2008
58. DFID- Development for International Development	Environment Transformation Fund	continuing	2008	
59. WB- World Bank	Solar home system-1 {Clean Development Mechanism ( CDM Project)}		2008	
	Brick kiln { clean development mechanism CDM Project)}		2008	
60. UNDP- United Nations Development Programme	Bangladesh climate change Programme	15	2008	2013
	Improving kiln efficiency in Brick Making	14	2008	2012
	Standard and labeling for energy efficient appliance and equipment	15	2008	2012
	Second national communication	3	2007	2009

	under UNFCCC			
	National Ozone Depleting Substance (ODS) Phase –out plan	15	1996	2010
	Conversion of CFC free technology in pharmaceutical sectors- MDI (metered Dose Inhaler)	5	1996	2010
	Institutional strengthening for ODS Phase-out plan	15	1996	2010
	Community based adaptation to climate change through coastal a forestation fund (LDC fund)	4	2007	2010
	Community based adaptation (CBA) programme ( UNDP- Global Environment Facility- GEF’s global programme) under CDM	3	2007	2009
61. EC Brussels– European Commission, Brussels	Implementation of the EU action plan on climate change in development	4	2007	2010
	Global climate change alliance	4	2007	2010
	Sustainable consumption and production- including CC mitigation (SWITCH- Asia)	4	2007	2010
62. Concern WW- Concern World wide	EC Support to NAPA implementation	5	2008	2012
63. ADB- Asian Development Bank	Dhaka clean fuel project	6	2002	2008
64. EoJ-Embassy of Japan	Establishment of meteorological-hydrological S-band Doppler Radar at Moulvibazar	3	2005	2008
65. EoD- Embassy of Denmark	Climate management plan for the agricultural sector programme support (ASPS-II)	Continuing	2008	
	Climate management plan for the water supply and sanitation sector programme support (WSSPS-II)	continuing	2008	
	Assistance to improvement of national flood forecasting and warning system	1	2008	2009
	Strengthening the ability of poor householders to adapt to severe flooding induced by climate change	1	2008	2009
66. JICA- Japan International Cooperation Agency	Food forecast/ warning system (technical cooperation project)	2	2008	2010
	Dhaka Urban Transport project		2008	
	Efficient power generation ( Gas combined cycle power station in Bheramara)	1	Feb 2008	Mar 2009
	Improvement of energy efficiency through TQM (Total Quality Management)	2	2007	2008
67. JBIC- Japan Bank for International Co-operation	Efficient power generation ( gas combined cycle power station in Haripur)	6	2007	2013
	Water resource management ( small scale water resource development	5	2007	2010



	project)				
68. EoN- Embassy of Netherlands	Water management activities	5	2007	2012	
	BRAC Wash	6	2006	2012	
	ICZM (integrated Coastal Zone management)	5	2005	2010	
69. IWM- institute of Water Modeling	Impact assessment of climate changes on the coastal zone of Bangladesh	continuing	2004		
	Investigating the impact of relative sea-level rise on community	Continuing	2004		
	Impact assessment of climate changes and sea level rise on monsoon flooding	continuing	2004		
	Prepare tsunami and storm surge inundation, risk maps for the entire coastal region	Continuing	2008		
	Identify tsunami vulnerable school/hospital/ emergency response and control building in the coastal region and evaluate adaptation capacity to Tsunami events	Continuing	2008		
	Support for disaster management information network: develop a disaster management portal	2	Nov 2007	2009	
	flood forecast technology for disaster preparedness in Bangladesh	3	2006	2009	
	Study, determine sustainable solution for drainage problems in Banardona river catchments area (Noakhali)	1	Mar 2008	Dec 2008	
	70. BIDS- Bangladesh Institute of development Studies	Information dissemination by – based medium by SDNP ( Sustainable development Networking programme)	Continuing 199		
71. SHUSHILON	Emergency food support to cyclone SIDR Families	1	Nov 2007	Feb 2008	
	Emergency food and non-food support to cyclone SIDR families	1	Nov 2007	Mar 2008	
	Blended food for mother and children	1	Feb 2008	Jun 2008	
	Emergency Relief of Bagerthat District	1	Nov 2007	Dec 2008	
	Community Risk Assessment	1	2007	2008	
	Agriculture Development	2	2007	2009	
	Eradication of Hazardous child labour in Bangladesh ( 2 <sup>nd</sup> Phase)	2			
	Promoting Environment Health though sustainable Provision for safe water and sanitation	3	2005	2008	
	Community plant Health clinic	4	2005	2009	
	72. NSU- north South University	Climate change as a risk management strategy in Bangladesh	1	Jan 2007	Mar 2008
Participatory climate risk assent and Development of local adaptation action plan					
73. WARPO- Water Resource Planning Organization	None				
74. BCAS- Bangladesh	Capacity development for clean	1	2008	2009	

Centre for Advanced Studies	development mechanism (CD4CDM)			
	Promoting CDM in Bangladesh	1	2008	2008
	Poverty and climate change: A south north collaboration	3	2005	2008
	European capacity building initiatives (ECBI- south and south East Asia)	4	2005	2009
	Capacity building in Asia and the pacific on issues related to future action on climate change	2	2006	
	Climate change and cities	1	Jul 2007	Jun 2008
	Enhance adaptive capacity of the drought vulnerable community in the north western region of Bangladesh	5	Jul 2007	Jun 2012
	Capacity building of LDCs for adaptation of climate change (CLACC)	continuing	Oct 2003	
	South- South north project- poverty & climate change: A south- north collaboration	2	2006	2008
	National capacity self-Assessment UNFCCC component	2	2006	2008
	Climate change impacts on agriculture (Korean study)	2	2006	2008
	Development and climate (Energy Component)	2	2006	2008
	Indoor pollution and health	2	2006	2008
	Community risk Assessment/risk reduction Action plan	2	2006	2008
	CLACC- DFID: health Study	2	2006	2008
	Capacity of Local Institutions in Noakhali for NCAP	2	2006	2008
	Knowledge infrastructure for climate change Resilience Strategies in Chittagong	2	2006	2008
	Urban Governance Screen for climate Resilience strategies in Chittagong	2	2006	2008
	Video Documentation on Floating Garden in Chanda Beel Area Under CLACC	2	2006	2008
	Gender Vulnerability to Water Related Hazards	1	2007	2008

	Challenging Climate: Adaptation to change	1	Dec 2007	Mar 2008
	Building Adaptation Strategy to climate change for selected Drought and Food Prone Area of Bangladesh	2	2006	2008
	Knowledge infrastructure on community Adaptation Strategies to climate change	2	2006	2008
	Reducing Vulnerability related to Flood and Water Logging in the South Central Flood plan in Bangladesh	1	2007	2008
	Orientation on climate change and Training on Adaptation to climate change and Disaster Risk reduction	1	2007	2008
	Support Campaign on Sustainable Rural Livelihood	1	2007	2008
	Development And Climate	2	2006	2008
	Community Based Adaptation in Africa Under Climate change Adaptation in Africa	2	200	2010
75. DCC- Dhaka City Corporation	Matuail Sanitary Landfill project	continuing	2005	
	Amin Bazar sanitary landfill Project	2	2007	2009
	Post- aware project ( JICA-CITYNET-DCC) on global warming	3	2007	2010

## Annex 4

type	sector	Research for interest in this sectors
Adaptation	water	1. Our vision is community adaptation and empowerment
		2. We have expert in this sector
		3. Most of our people will be benefited by our this sectoral based activities
		4. We are trying to aware Government by creating policy dialogue on the basis of research in this sector for the development of our country Government should have to do right thing
		5. I am expert on water technologies; my expertness can give high level of input in this sector
		6. We want to sustain our livelihood by ensuring use of safe water
		7. It is our organizational mandate
		8. It is our duty to find our livelihood by ensuring use of safe water
		9. In recent time flood and cycle are increasing rapidly, so we have to manage it
		10. This is the most vulnerable sector
		11. To ensure environmental stability
		12. To ensure good health by using safe water
		13. To reduce hydro metrological risk
		14. To reduce water logging situation
		15. To ensure safe drinking water
		16. To aware people about climate change effect by visual presentation, because it could be more effective to water adaptation
		17. It is difficult to mitigate natural disaster. So, we are trying to adapt water vulnerability
		18. Because of our institute is focused on water
		19. To insure economic growth
		20. To aware people about the adverse effect of climate change in this sector
		21. It is the most important factor in our rural life
		22. To minimize the adverse effect of climate change in this sector
		23. Water resources should gradually reach the poor people, they should have water available for livelihood
		24. Ensure safe drinking water and sanitation under PRS-( Poverty Reduction Strategies) programme
		25. Compliance of Millennium Development Goals-7
		26. Better understanding of water management and hydrology
		27. To make water easily available for irrigation system
		28. Research and dissemination of knowledge to avoid water logging
		29. Hydro geological study, research and expertise in ground water resources
		30. Geological study about Arsenic mixed ground water
		31. Research and planning on surface and ground water use for safe drinking water supply, food control embankment and irrigation in drought season.
		32. To avail water resources during drought season by water modeling of surface water
		33. Research and policy making for water resources management
		34. To make policy, plan, implementation of coastal zone policy including climate change issues
Agriculture		1. To increase employment
		2. Sustain our economic growth
		3. Heritage cultivation is friendly wit environment, so we should promote heritage cultivation and try to protect commercial cultivation
		4. Our vision is community adaptation and empowerment
		5. Development of Bangladesh depends on the development of agriculture
		6. We have expert in this sector
		7. Most of our people will be benefited by this sectoral based activities
		8. We are trying to aware Government by creating policy dialogue on the

		basis of research in this sector, because for our country's development, Government should to do right thing
		9. This is the most vulnerable sector
		10. Transforming one crop land to two crop land
		11. We must use technologies for life so it is better to adapt this technologies
		12. To ensure focal supply
		13. Food scarcity is the most dangerous issue in Northern part of Bangladesh, so we have to do something
		14. To decrease global warming
		15. To aware people about the effect of climate change by visual presentation, because it could be more effective to water adaptation
		16. To increase economic growth
		17. To decrease soil/ erosion by creating public awareness
		18. To reduce poverty by agricultural development
		19. It is difficult to mitigate natural disaster, so we are trying to adapt agriculture vulnerability
		20. To aware people about the adverse effect of climate change in this sector
		21. Try to avoid the danger of climate change on agriculture
		22. To avail better agricultural practices which can be more productive in future with climate change
		23. Participate in Governmental policy making process to ensure risk reduction in agriculture
		24. Increase research on high yield crop variety which can survive with changed climate change
		25. Extension of local crop varieties in the agriculture practicesne
		26. Bangladesh is a agro based community, as for the development of national economy we should be more concentrated on agriculture
		27. To ensure food security of large number of populations, extensive agro production should be achieved
		28. Agronomy of our country has a great role, we need to be self sufficient in food production
		29. Poor and vulnerable people should be getting the change in fulfillment of food requirement for better health
		30. Irrigation systems should concentrate on surface water use
		31. To make research, policy to benefit the planning and coordination of agriculture related field of national economy
		32. To increase rice production developing high yielding variety, GMO (Genetically Modified Organism) and dispersion of rice variety to the farmers
		33. To develop environmentally adaptable plant varieties
		34. To disseminate climate change tolerable plant varieties
		35. To develop environmentally adaptable crop varieties.
		36. To research on salt tolerant, long flood ad drought tolerant plant varieties
		37. We should use and practice modern agro science and technology to

		decrease import of food
		38. Develop crop varieties which have short life low fertilizer intake, pest resistant but high yielding
		39. Take measures to protect extinction of crop variety
		40. Reduce dependency on rice and direct to crops, eg. Wheat, maize
		41. To implement satellite based geographic information about crop selection in flood plain land
	Health	1. Heritage cultivation can give us diversified production of crop, which will make our baby capable to protect from disease.
		2. Our vision is community adaptation and empowerment
		3. We are trying to aware Government by creating policy dialogue on the basis of research in this sector because for our country's development Government should have to do right things
		4. We want to ensure good health by ensuring sanitation
		5. We are interested in this sector for safety management of our community
		6. This is the most vulnerable sector
		7. To ensure environmental stability
		8. To decrease mortality by ensuring the sanitation
		9. Save the human health from the climate change effect because health vulnerability is directly related with climate change impact
		10. To aware people about the effect of climate change in the sector
		11. To avail high value nutrient up take of poor people
		12. Cyclone prone coastal region people should be aware about climate change related hazards specially in human health
		13. Benefits of research should reach the people
		14. Immunization and vaccination programme for all babies
		15. Control spread of water borne diseases during flood and drought
		16. Donation in health sector for decrease of child mortality and maternal death
		17. To reach vulnerable people for reduction of malnutrition
		18. To help/ cooperate with statistical analysis, policy making, research about national health programme of government

		19. To adapt and cope people with storm, cyclone and avoid climate change
	Fisheries	1. Our vision is community adaptation and empowerment
		2. It is our organizational mandate
		3. We have expert in this sector
		4. Fish being the major protein source regime more production
		5. To help the fisherman to develop a secured design of boat which can cope with storm surge
		6. Coastal people should be aware about climate change and prepare how to cope with natural calamities
		7. Help in scientifically sophisticated method for fish farming and fishing
		8. Extension of paddy and fish farming in submerged land in rainy season
		9. Use satellite based or remote sensing based information in sea fish capturing
		10. To help sea fishermen by information dissemination, training about tidal wave and better fishing system
	Forestry	1. Our vision is community adaptation and empowerment
		2. It is our organizational mandate
		3. Now a days, it is the most vulnerable of all sectors
		4. To protect mangrove forest for our economic benefits
		5. To minimize climate change effects most of which is responsible for deforestation
		6. Reforestation in hilly area with endemic plant species
		7. Increase salt and strong wind tolerant tree plantation in coastal region
		8. To reduce exploitation of forest resources from sunderban, by change of livelihood dependents.
	biodiversity	1. We want to protect biodiversity resources by networking and advocacy
		2. It is the most vulnerable sector
		3. To minimize the adverse effects of climate change
		4. Protect biodiversity from over exploitation
		5. To building awareness against deforestation
		6. To make satellite based data and map about vegetation of different

		geographic region of Bangladesh
	Others ( Education, Rural Development, Women Advancement, Livelihood)	1. To improve human life
		2. To improve their status
		3. On account of vulnerability of Bangladesh in climate change issue
		4. Worked on climate change negotiation in world regime
		5. To save our livelihood. Because livelihood is more related with disaster vulnerability
		6. To reduce poverty and increase economic growth
		7. Research about climatology, topography and micro geography to meet disasters threats
		8. Quick disaster response and recovery plans
		9. Proper management and settlements of displaced people for environmental calamities
		10. Rehabilitation and new livelihood on sundarbans by making alternative livelihood
		11. To reduce dependency on sunderbans by making alternative livelihood
		12. To secure and generate new livelihood
		13. To generate water resources related livelihood in poor people
mitigation	energy	1. To increase environment stability
		2. I am expert on energy technologies and my expertness will provide high level of output in this sector
		3. The whole world is suffering from energy scarcity. We are trying to manipulate it.
		4. To decrease global warming
		5. For our own consciousness
		6. For the present condition of Bangladesh mitigation is the most intellectual solution of face any environmental disaster
		7. Input on face renewable energy source research and development
		8. National energy policy must be focused on national interest and



		sustainable development
		9. Introduce energy saving and environment friendly home appliances
		10. To ensure legal framework in power generation which must be environment friendly
		11. to cooperate with Bangladesh government in energy sector
		12. to make policy, implementation and des
		13. Statistical support and data system to help government in energy sector
	Transport	1. We are expert on transport technology
		2. Awareness and support low carbon di-oxide emitting vehicle
		3. Legal support and trial about air pollution by vehicles
		4. To model and design national high ways and roods to protect from submergence of flood water
	Forestry	1. To maintain environmental stability
		2. It is our organizational mandate
		3. We are trying to aware government y creating policy dialogue on the basis of research
		4. Forest has great role in our ecosystem and biodiversity
		5. Enhance social a forestation programme
		6. Reforestation of coastal and hilly area
		7. Generate large canopy in coastal region to reduce storm surge and tidal wave
		8. Protect mangrove forest, stop over exploitation from forest
		9. Make safe migration and life cycle of wild life in sundarbans
		10. Networking and influence government tree plantation against exotic plant species
		11. To conscious people about the importance of forest and a forestation
	Agriculture	1. To maintain environmental stability
		2. Promote heritage cultivation and protect commercial cultivation because heritage agriculture is the most environmental friendly
		3. Our vision is community adaptation and empowerment
		4. To increase development activities in Bangladesh

		5. We are expert in this sector
		6. To survive community people and their safety management
		7. We are interested to solve the food scarcity problem at northern part of Bangladesh
		8. To decrease global warming
		9. Increase use of organic fertilizer instead of inorganic fertilizer
		10. Educe excessive use of ground water in drought season for irrigation
		11. To ensure legal barrier against import of harmful fertilizer and insecticides
		12. Awareness and concern about GMO (Genetically Modified Organism ) in our agriculture
		13. To aware farmer about flash flood in upstream by satellite based data
		14. To help government by statistical analysis of agricultural production and other agronomy information
		15. To train and advocate people with techniques of different cropping pattern
	Others (biodiversity, water and sanitation)	1. By preserving biodiversity, we can mitigate climate change impact
		2. Prevent extinction of local fish species
		3. To build up awareness for reduction of insecticide use
		4. To make sure of river flow in drought season from upstream by international treaty
		5. To mitigate arsenic problem by new technology
		6. To fund local organization for safe water supply in urban and rural areas
		7. To prepare and take action about upstream flash flood early warning system by GIS RS applications.

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