An Enquiry in to Community Based Climate Change Adaptation Practices in Bangladesh: Selected Cases

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Submitted By

Anwar Hossain Chowdhury
Registration no: 120
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Department of Development Studies
University of Dhaka, Bangladesh

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An Enquiry in to Community Based Climate Change Adaptation Practices in Bangladesh: Selected Cases

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Anwar Hossain Chowdhury

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Department of Development Studies

University of Dhaka, Bangladesh

Declarations

It is hereby declared that this thesis or any part of it has not been submitted elsewhere for the award of any degree or diploma.

Signature of the Candidate

Anwar Hossain Chowdhury
Registration No. 120
M. Phil Session: 2011-2012
Department of Development Studies
University of Dhaka, Bangladesh

Under the supervision of

Professor Niaz Ahmed Khan, Ph.D.
Professor and former Chairman
Department of Development Studies
University of Dhaka, Bangladesh

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List of Abbreviations

Word	Meaning
TSO	Thana Samabay Officer
UP	Union Parishad
DOE	Department of Environment
FGD	Focus Group Discussion
LG	Local Government
ECA	Ecologically Critical Area
CCA	Climate Change Adaptation
IPCC	Intergovernmental Panel on Climate Change
CBA	Community Based Adaptation
CBO	Community Based Organization
CBNRM	Community-based Natural Resource Management
TNO	Thana Nerbahi Officer
NAPA	National Adaptation Program of Action
PPM	Parts Per Million
MDG	Millennium Development Goals
DOF	Department of Forests
CTFs	Conservation Trust Funds
RWHS	Rain Water Harvesting System
PM&E	Planning, Monitoring and Evaluation
PRA	Participatory Rural Appraisal
MCG	Micro Capital Grant
VCG	Village Conservation Group formed by CBA-ECA Project
IUCN	International Union for Conservation of Nature
ODI	Overseas Development Institute
NGO	Non-governmental organization
UNO	Upazila Nerbahi Officer
DRR	Disaster Risk Reduction
VCC	Village Conservation Center
SLR	Sea Level Rise
MOEF	Ministry of Environment and Forest
SDG	Sustainable Development Goals
CDMP	Comprehensive Disaster Management Programme

Dedication

This Thesis is dedicatedto

My Mother, Mrs. Nurjahan Begum

&

My Mentor, Professor Dr. Niaz Ahmed Khan

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CHAPTER 01
Introduction

1.1Introduction

This Chapter starts with a description of Climate Change incidentsthat are happeningin Bangladesh,it then follows theoperationalization of the important key concept, the Objectives and Rationaleconsidered for this research; also pronounces the methodologies which were used in the fieldwork for this research , then the justification for selecting the location of the study and reason for the size of the sampling are explained in detail , at the end the total configuration of the thesis was presented chapter wise to give the reader idea about the linkage in between the chapters, what s/he is going to expect from which chapter ; and then this chapter ends with a brief conclusion.

Impact ofclimate change in Bangladesh is now globally known to all. During the last 45 years, it has already experienced almost 200 climate-related disasters including drought, extreme temperature, floods, and storms. Due to those events thousands of peoples werekilled, their homes and livelihoods destroyedcompletely, and the cost of such damages was estimated around US$16 billion (Oxfam International, 2011).

The climate forecasts for the future also predict additional extremeevents anduncertainty for Bangladesh. The Climate impact is massive in Bangladesh because of not only its Physiographic and demographic position, but also the fact that most of the coastal community people are also ultra-poor and uninformed about climate change impacts and adaption actions. (Huq et al. 2003). Erosion in the River banks, annihilation of regional biodiversity and severe landslides have already happening in parts of Bangladesh and will result in big number of Climate Refugees in the coming future (Mahtab, 1989; BIDS, 1996; Rahman&Alam, 2003; Huq, 2003). It was estimated by experts that, by 2050, for Bangladesh, annually almost 70 million people could be affected by floods; 8 million people could be affected by drought and up to 8% of the low-lying lands may become permanently inundated (INC, 2002; IPCC 2001; 2007). Climate Change is now not only a country based environmental issue; it is now alsoadevelopmentissue, which can only be solved by Community, based effort from the common people of the land. (INC,2002).

The impacts of climate change are happening progressively, and every day they becoming visible as scientists are probing to identify the linkbetweenpresent development pattern and climatic disorder. Now scientists can predict future climatic sinario, for specific communities,which validate that only adaptation responses are inbuilt component of early preparation. It is more cost-effective to implement adaptation measures earlier then the occurrence of the change, mostly for its long run progression. The awareness of climate change and policy resources for implementation are the most frequently stated in mainstreaming adaptation to climate change within development motion. But it is a fact that, specific operational guidance on how to take adaption measures it into account in local community lacksin South Asian countries, i.e. speciallyin Bangladesh. Therefore, it is important to quickly formulate proper adaptation policies relevantto the adaptive framework of climate change, as well as to preserve proper networking and communication. Being a Bangladeshi, I personally feel that, it's now time for us to master the concern of Environment alteration due to Climate Change impact and need to prepare our vast costal and local communities for long term solutions.

As said, this is not so easy to linkup the gap between the climate change adaptation and development of various communities in the same time. Various communities may (simultaneously adaptation solution and economic development) have different urgencies; which often operate on different time and space scales. Specific information of the Project location is therefore critical on the significance of climate change for selecting suitable adaptation actions. The main argument of this thesis is to focus on successful Community based adaptation intervention's for future Adaptation initiatives in Bangladesh to deal Climate Change.

1.2 Operationalization of the Key Concepts

In order to take this researchonward, we need to realize and define few key concepts and thus the parameter of our research domain can be realized in to field work as follow:

1.2.1 Climate

"Climate" is the average weather experienced over a long period, typically a minimum of 30 years. This includes recording and comparing the temperature, wind and rainfall patterns of different years (UNEP, 2008).

Climate in a wider sense is the state, including a statistical description, of the climate system. For this thesis, I accept the definition as operational definition for Climate provided by IPCC in 2007 as follow:

Climate in a narrow sense is usually defined as the average weather, or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years. The classical period is 30 years, as defined by the World Meteorological Organization (WMO). These quantities are most often surface variables such as temperature, precipitation, and wind. (Source: https://www.ipcc.ch/ipccreports/tar/wg1/518.htm)

1.2.2 Climate Change

In most of the developingnations, it is expected that Climate change will affect the extreme. Its effects includeincreasing temperature, variations in precipitation patterns, rising of the sea levels, and more frequent weather-related catastrophes, will pose different kind of perils for different segments of the Economy including agriculture, food, and clean water supplies. Attempting this enormous challenge must comprise both Adaptation whichmeans to manage the unavoidable, and Mitigation that refers to evade the unmanageable, and all while upholdinganemphasis on its social dimensions.

"Climate Change "refers to any alteration in climate over a given period, whether due to natural variability or as of human activity (IPCC AR4, 2007).

For this thesis, I accept the definition as operational definition for Climate change provided by IPCC in 2007 as follow:

"Climate change refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer).

Climate change may be due to natural internal processes or external forgings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use. (IPCC AR4, 2007). (Source: https://www.ipcc.ch/ipccreports/tar/wg1/518.htm)

1.2.3Climate Change Adaptation

If we look at the history of developing practices from the beginning to till now, we can picture the adaptation capabilities of humans to their environments by cultures and livelihoods. They prefer the adaptation measures that suited to local conditions and protect the commons against natural calamities. Butnow, climate change endorses the likelihood that existing civilizations will experience unexpected climaticswings (in temperature, storm frequency, flooding and other factors). So, in order to deal with such invisible challenges, we need to understand few definitions of adaptation as follows:

Adaptation to Climate change refers to human-driven adjustments in ecological, social or economic systems or policy processes, in response to actual or expected climate stimuli and their effects or impacts (LEG, 2011).

Adaptation to climate is the process through which people reduce the adverse effects of inmate on their health and well-being, and take advantage of the opportunities that their climatic environment provides (Burton, 1992; Burton, 1997)

For this thesis, I accept the definition as operational definition for Climate change Adaptation provided by IPCC in 2001 as follow:

The IPCC (2001) outlines adaptation to climate change as a process of, ‘adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities’.

We have to recall the fact that, various kinds of adaptation can be considerable on the basis of Project location and type of challenges faced by the community, like Anticipatory and Reactive Adaptation, Public and Private Adaptation, Autonomous and Planned Adaptation, (IPCC Fourth Assessment Report (AR4), 2007).

This measures for adaptation can be planned well in advance or may be put in place spontaneously in response to a local demand or necessity. Some time it is needed to embrace large-scale infrastructure changes – such as building few big dams or Barrages to protect against sea-level rise or improving the quality of road surfaces to withstand warm and rising temperatures – as well behavioral shifts including less waterusing by the community individuals, different variety of crops planting by farmers and more flood insurance done by local households and businesses. The IPCC defines vulnerability due to climate change is being determined by three specific aspects as follow:

1. Exposure to hazards (resulting from condensed or amplified rainfall),
2. Sensitivity to those hazards (such as an economy subjugated by rain-fed agriculture), and
3. The capacity to adapt to those hazards (for example, whether farmers have the money or skills to grow more drought-resistant crops).

Adaptation measures can only support the specific community to mineralizecertain level of vulnerability – for example by lowering sensitivity or building adaptive capacity allows people to gain from opportunities of climatic changes preparedness, like as those people are now cultivating new saline water tolerant variety crops in areas which was earlier unsuitable to use for agriculture.

1.2.4Meaning and Definition of Community

The term “Community” is the combination of two Latin words i.e. 'cam' means together and 'munis' means serve i.e. people serve together is called community.The members of any group small or large, liver together in such a way that they share, not this or that particular interest, but the basic conditions of a common life. The basic condition of the concept is that one can live a whole life within a community i.e. city, tribe or village. It may be self-sufficient in fulfilment of basic needs. Small communities exist within larger communities as cities within district, within a province, the provinces within larger communities as cities within district, the districts within a province, the provinces within the whole state and the states within the whole world.

In simple terms a community is a population rooted in one place where the daily life of each member involves contact with and dependence on other members. Taken together, the wide variety of tasks performed by members within are an attempt to ensure that ensure that social and economic needs will be met in a stable and predictable way. Some definitions of Community include, the followings:

Bogardes: It is a social group with some degree of "we feeling and living in a given area"

W. Ogburn: "Total organization of social life with in a limited area"

Definition of community according to Davis: "It is the smallest territorial group that can embrace all aspects of social life"

Bertrand definition of community is a functionally related aggregate of people who live in a particular geographical locality at a particular time, show a common culture, are arranged in a social structure, exhibit an awareness of their uniqueness and separate identity as a group.

For this thesis, I accept the definition of Community provided by oxford dictionary as the operational definition for Community as follow:

A Community can be defined as a,

1. Self-organized network of people with common agenda, cause, or interest, who collaborate by sharing ideas, information, and other resources. Virtual communities consist of participants in online discussions on topics of mutual concern, or of those who frequent certain websites.
2. Cluster of common interests that arise from association.

(Source: https://en.oxforddictionaries.com/definition/community)

It is a fact that, the problems of defining who a ‘community’ is for a particular study area is not easy, because identifying who exactly we mean by ‘the community’ is not as easy as it seems and we need to be clear about this issue. In any community there will be the ‘haves’ and the ‘have- nots’ who vary tremendously in their capacity to undertake adaptation activities, and those with voices (perhaps local chiefs or powerful elites), and those without them (often women and children) who struggle to make their priorities and

concerns heard. Should CBA target the 'have- nots' and the voiceless, and if so, how? Or should CBA necessarily be inclusive of everyone in a community? when working on CBA, It is known that climate change impacts will affect the poorest and most vulnerable the most (Huq et al. 2006), so it seems logical that it is these people who should be the focus of any CBA initiative. But ensuring that a CBA intervention benefits the poorest and most vulnerable rather than reinforcing existing power differentials and supporting the priorities of entrenched elites is a challenge that development practitioners have been grappling with for many years, and one for which there are no easy solutions.For this thesis, I did not face much of the problem with defining a community as the project we consider already done asset mapping of the local community, and defined specific territories of different Communities and selected which households will be included in communities. in most of the cases, the "have-nots" and marginal people were always prioritized in such consideration, with very few exceptions. (Only one of two cases)

1.2.5Community BasedAdaptations

The Third Assessment Report of the IPCC in 2001 defined adaptation as "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities."

Community based adaptations(CBA) is a bottom-up approach that considers the communityin the central position to determining how to respond to the effects of climate change. It is completely different from top-down approaches, and so CBA actually stresses oncommunity-orientedparticipation that buildsupon urgencies, knowledge and capacities of any selected community. These comprise features relating to the development and transmission of technology to improve adaptive competence and reducing the community's vulnerability through valuations of risks. As a development-related concept, CBA is a relatively new technique that is still being tested in the coastal areas of Bangladesh.

For this thesis, I accept the definition of Community Based Adaptations provided by as the operational definition for Community Based Adaptations (CBA) as follow:

> "Community-Based Adaptation (CBA) takes the approach of adaptation as development. Responding to the concept that adaptation is local and place-based, it addresses the locally and contextually specified nature of climate change vulnerability because it takes place at local levels where people encounter impacts, build adaptive capacity, and respond accordingly."

A community-based approach considers that adaptation strategies must be generated through participatory processes, involving local stakeholders and development and disaster riskreduction practitioners, rather than being restricted to impacts-based scientific inputs alone. As such, expertise in vulnerability reduction must come from local community-based case studies and indigenous knowledge of locally appropriate solutions to climatic variability and extremes.

Source: http://eprints.lse.ac.uk/24188/(Ayers, Jessica and Forsyth, Tim (2009) *Community based adaptation to climate change*. Environment: Science and Policy for Sustainable Development, 51 (4). pp. 22-31. ISSN 0013-9157)

1.2.6Adaptation is a response to Climate Change

Reid et al. (2009: 13) explain that 'Community based adaptation to climate change is a community led process, based on communities' response to priorities, needs, knowledge, and capacities, which should empower people to plan for and cope with the impacts of climate change.'Bangladesh is frequently cited as one of the most vulnerable countries to climate change impacts because of its flat and low-lying topography and location on the coast at the top of the Bay of Bengal, which make it vulnerable to cyclones and tidal surges.

Moreover, Bangladesh also suffers from a history of impoverishment, high population density, weak political governance, and a reliance of many livelihoods on climate-sensitive sectors, particularly agriculture and fisheries. Many of the anticipated adverse effects of climate change, such as sea-level rise, higher temperatures, enhanced monsoon precipitation, and increased cyclone intensity, will aggravate the existing stresses that already impede development in Bangladesh.

Adaptation can be stated as the capability of the selected community to respond and adjust to potential impacts of changing climate conditions in ways that will result in most moderate harm or takes advantage of any positive opportunities that the climate may afford. Adaptation can be anticipatory where systems adjust before the initial impacts take place or it can be reactive where change is introduced in response to the onset of impacts. Adaptation takes place at all levels from changes to global system through changes at national or regional levels to adaptations made by local communities and individuals. It can be planned where pre-meditated decisions that reflect an awareness of impacts are made or it can be autonomous where people or natural systems adjust to climate impacts deprived of conscious decisions.

If adaptation processes are aimed in the reduction of present vulnerabilities and intensifying the resilience of poor people, then this will bring immediate results and strengthen their competence to deal with future threats from climate change. The approaches to adaptation should ideally advocate the idea of locking for 'win-win' solutions: actions that serve immediate needs and bring immediate benefits and contribute meaningfully to longer-term process of capacity building and structural change.

The developing countries are poorest in economic aspect and will be hit hardest by the impacts of climate change although they have contributed very little in the so called "Climate Change". The low incomes of those countries made it difficult to finance adaptation process by self-finance. As it's a global common problem, so the developed nations are committed to support the poor and most effected nations for adapting to climate change through a global Climate Fund. Without such adaptation measures, there is possibility to have serious naturalhazardglobally,that will hamper the global Sustainable development till date (stern 2006).

Adaptation to climate change is a complex issue that offers abundant challenges. This involves a process of sustainable and permanent adjustment in response to new and changing environmental situations. So, adaptation cannot be treated as standalone issues and should be premised on the following factors:

1. Adjustments for Adaptation to Climate Change must be at every level of the community in each nation: starting from the communitylevel, to locallevel,

regionallevel,sectorial and national level in terms of performance, livelihoods, infrastructure, laws, and polices. This should be enclosed by international negotiations and efforts.

2. Governmental institutions (includingministries, governmental organizations and agencies) private entities and NGOs must consider integrating climate change in their planning and budgeting at all levels of decision making and synchronize their actions among themselves.
3. Strategies should be developed to address on long term climate change adaptation impacts with considering sustainable development and poverty reduction efforts as well as disaster risk minimization.
4. Assessments for Vulnerability and Adaptation should be done in order to prioritize selected adaptations policies and actions. Adaptation must be mainstreamed in investment planning both in public and private sector. Government therefore needs to devise policies, incentives and regulation to public and private enterprise toward strengthening adaptation for Climate Change.
5. We need to develop or Capacity for both short and long-term adaptation planning. Innovative risk sharing mechanisms (i.e. Insurance) are needed to reply to emerging challenges including lossof biodiversity and land degradation from Climatic effects.
6. Existing approximations indicate that additional funding is required for adaptation of developing countries is approximately tens of billions of dollars annually. At national level, manyrequirements of resources to be completed to determine how much is resources are required for adaptation to climate change and where these resources should be allocated.
7. Adaptation should essentially be dispersed across all socioeconomic sectors including fresh water supply, agricultural and infrastructure each of which present in own

challenges and will involve stakeholders in different if overlapping groups. Adaptation measures are likely to be less capital intensive and more amenable to small scale intervention.

8. In any given community there will be the 'haves' and the 'have- nots' who vary tremendously in their capacity to undertake adaptation activities, and those with voices (perhaps local chiefs or powerful elites), and those without them (often women and children) who struggle to make their priorities and concerns heard. Should CBA consider only the "have- not's" and the voiceless or should necessarily be inclusive of everyone in a community.

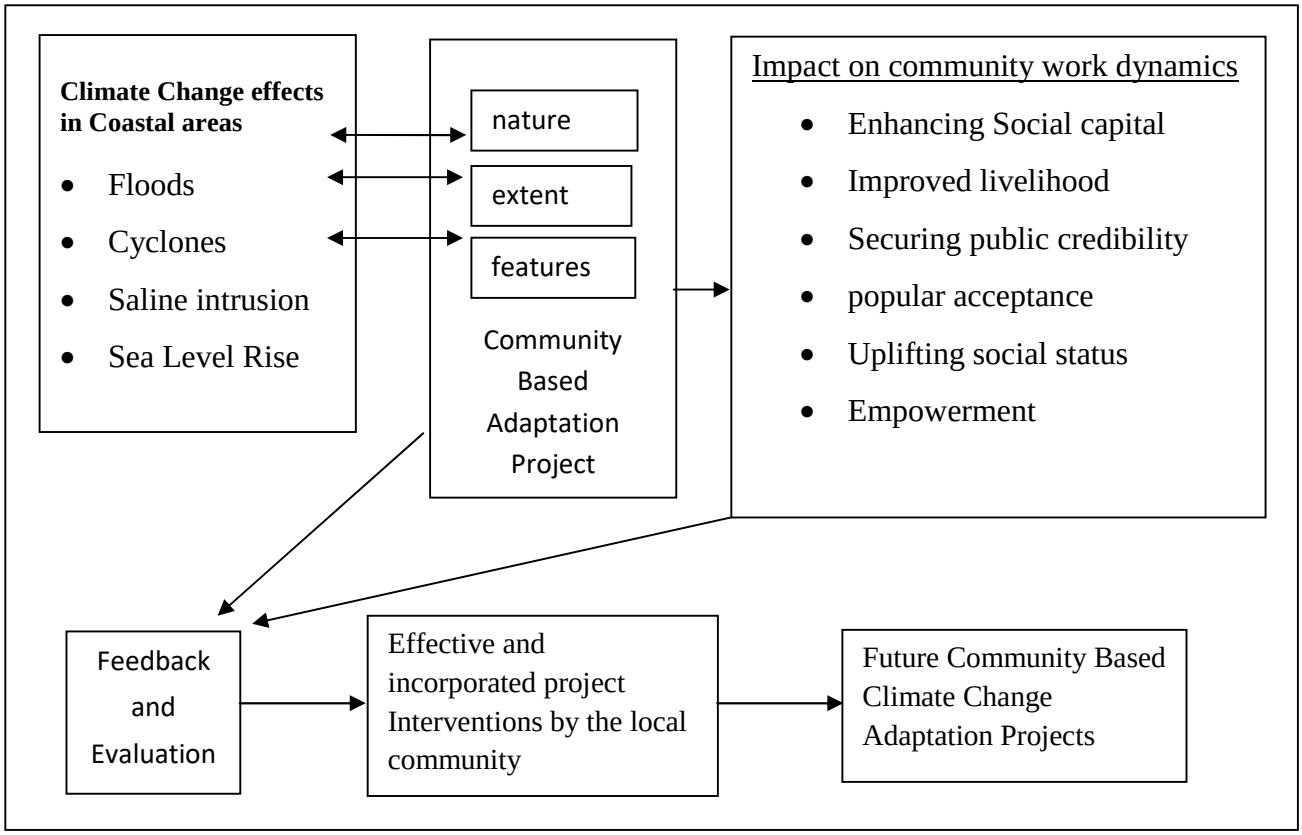
1.3Objectives and Rationaleof CBA

CBA has emerged as one of the most rapidly expanding bodies of knowledge in the greater field of adaptation to climate change. The inclusiveness and lesson- based approach of CBA has clearly hit home with many people; the growing body of researchers, practitioners and community members interested in this approach to adaptation is a evidence to the fact that many of us now acknowledge its potential in the fight against climate change. This research will help me to expand my exposures on how any given community respond to environmental changes, how they try to adopt successfully to the impacts of climate change and how they act to implement sustainable, eco-friendly environmental programs and policies for better adaptation.So, the specific objectives of the proposed research are mentioned below:

1. To understand the nature,extent, and features of Community Based Climate Change Adaptations in Bangladesh.
2. To examine the community work dynamics in relation to Community Based Climate Change Adaptation in the studied project.

1.4 Conceptual Framework

Any CBA embodies adaptation practice that is small- scale, place- based and often grassroots community driven, engages development practitioners and development approaches, and most importantly is community-based. Thus, it takes into account recommendations that have emerged from nearly two decades of research and practice on adaptation.On the basis of the Research Objective and Rational of the research , the Conceptual frame work for this research will be as follow:



Source: Developed by the Author

Fig 01: Conceptual Framework for this Research.

The Framework begins with the fact that certain Climate Change effects are happening in Coastal areas like Floods, Cyclones, Saline intrusion, Sea Level Rise which initiates local communities to pledge to INGOs and local government to initiate Community Based Adaptation Project. The nature, extent and features usually aligned to the potential disasters.

Such projects have impact on community work dynamics like Enhancing Social capital, improved livelihood, securing public credibility, popular acceptance, Uplifting social

status, Empowerment. We have to collect the feedback of project features and feedback from the field, and on the basis of such feedback, we need to evaluate and identify effective and incorporated project Interventions by the local community for Future Community Based Climate Change Adaptation Projects of Bangladesh

1.5 Methodology

To fulfill the stated objectives this research uses certain empirical data collection tools specifically as secondary literature review, focus group discussion, informal interviews for selected members and also for selected beneficiaries of the project, and a field work diary. For a deeper understanding, few case studies were also done to address and observe issues like the impact and implications of specialized training and concretization activities for Climate Change adaptation, factors determining community motivation, demands and aspirations of selected project members and beneficiaries. A detailed description ofthe researchtools used during the fieldwork arementioned below in detail:

1.5.1Research Action Plan

Primarily Ihave developed a “Field work Schedule” andpresented itto my Supervisor for his endorsement, to carry on the research work, and after his approval of the Schedule, I start to formulate my field team, and then started to conduct my research in the field according to the schedule. My Supervisor Professor Dr. Niaz Ahmed Khan counseled me from time to time, about what to do and how to organize things appropriately in the field, he also made some in time phone calls to get the ball of my research work to get rolling in the field. I am indebted for his timely and prudent advice and guidance, and support.

It is also important to mention here that, he (mysupervisor) alsopays me a surprise visit while I was doing a field work in Sonadia area, just to validate my field work. He also facilitates me to arrange a one to one meeting with the Local Government officials, specially the Thana Samabay Officer (TSO) and Thana Nerbahi Officer (TNO) there, and we discuss briefly about CBAECA operations and its effectiveness in the community and try to grasp their mindset about the project. I used a two-member field team, Mr. Arup Baruya and Mr. Shamon (NACOM Staff) to help me in the arrangement of the field activity. Ms. Saima Chowdhury, and Ms. Maisha Samiya used to summarize the findings from the FGD Proceedings and Ms. Hosna Tasnim summarized the One to one interviews

and Case Studies for further processing. The membership of each VCG comprised of approximately 20 - 60 people on average. A total of 1540 household with 9,412 people represent in theseVCG's. At the Cox's Bazar- Teknaf sites, 36% of the total VCG members are represented by women. In this Project there was in total of 38 VCG in my selected project area so, the total population of my researcharea is,

Total Population, N =38.

After discussion with my Supervisor and approval from him, I decided to select specific Sample population from the Total Population which is only 10 VCG, and expressed by "n"which was a Selective Sampling. So, for this research

Sample Population n= 10

So, the sample population (n) is 26.31 % of the Total population(N), for this research fieldwork and is acceptable and approved by my Supervisor. In each of the VCG, I have decided to conduct minimum 3 FGD separately. So total number of FGD done for this research was (10 X 3) = 30.

Beside this for this research, a total number of (10 X10) = 100 + 4 (TNO, UNO, TSO 1 Project Manager- from Dhaka office of NACOM+ and + 6 members of the Civil Society from the local community was interviewed) = (100+ 4+ 60) = 110, "One to One" interview was conducted.

The total field work duration was of five (5) month starting from 01st March 2016. We covered two VCG in a monthas following the Gantt chart given below:

Month	1		2		3		4		5	
VCG	1	2	3	4	5	6	7	8	9	10
FGD	3	6	9	12	15	18	21	24	27	30
One to One Interview	25		20		20		20		25	
SWOT ANALYSIS	1				2					

Source: Developed by the Author

Fig 02: Gantt chart for research Field Work

We made necessary plans ahead of the schedules, did proper coordination with the concerned community in advance and then arranged the VCG meetings. The VCG where we conducted the First FGD there for the Second and Third FGD, we take time and consideration from the local staffs to invite specific and related persons and groups to conduct FGD. We visited the area frequentlyduring the stated period and stayed in each VCG area for at least 5-6 days to conduct our field work. Firstly, we organize the FGDs separately, and then started to conduct the "One to One" interview for each VCG. Some time we revisited to one VCG just to take a single "One to One" interview of some important and key individuals who was planned to interview at first, but was not available in the locality throughout the fieldwork. For this research the following was the Data collection plan for using different data collection tool:

Table01: Data collection plan using different data collection tool for this research.

SL	Method	VCG× n	Total
1	FGD (at least 3 in each 10 VCG)	10 ×3	30
2	One to one interview (at least 10 in each 10 VCG) (VCG Officials, members, Female)	10×10	100
3	One to one interview (TNO, UNO, UCO, 1 Project Manager)	----------	4
4	One to one interview- Civil Society - Cox Bazar Area	----------	6
5	SWOT Analysis	----------	2
Total			142

Source: Developed by the Author

The more specific research tool-based descriptions are presented below, with proper justification for taking such numbers and also the names of the persons who participated are listed and annexed with the thesis in Appendix 3, Page 184.All this data collected were analysed and then a summary statement was prepared about each VCG. After this a SWOT analysis was done for each VCG to identify the common strengths and weakness, and to understand the opportunities and threats of the selected VCGs. then another SWOT analysis was done for all the VCGs combined to identify the Strength Weakness, Opportunity and Threats of the CBAECA project. The findings from the SWOT analysis were shared in VCG level and Project level to check their conformity and agreement.

1.5.2Secondary Literature Review

A Secondary Literature Review (SLR) is a summary manuscript of multiple scholarly paper, articles and book chapters which includes the current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic. Any Literature reviews are basically done using the secondary sources, and do not report new or original experimental work. For this research I have used numerous books and articles which were referred properly following the international convention. Still several reports and books are mentionable as follow:

1. A Question of Balance , by Professor William Nordhaus, Yale University Press
2. Adaptation and Mitigation by IPCC
3. IPCC 4th Assessment Reportby IPCC
4. A. Gore, Earth in Balance: Ecology and the Human Spirit (Boston, MA: Houghton Mifflin, 1992), 240.
5. "Adapt or Die," The Economist, 13 September 2008, http://www.economist.com/world/international/displaystory.cfm?story_id=12208005 (accessed 1 May 2009).
6. A. Leopold and L. Mead, "Third International Workshop on Community-Based Adaptation to Cli- mate Change," Community Based Adaptation to Climate Change Bulletin 135, no. 2 (2009).
7. S. Huq and H. Reid, "Community Based Adaptation: A Vital Approach to the Threat Climate Change Poses to the Poor," International Institute of Environment and Development (IIED) briefing (London: IIED, 2007).
8. R. Jones and A. Rahman, "Community-Based Adaptation," Tiempo 64 (2007): 17–19. 31. Leopold and Mead, note 28.
9. "Community-Based Adaptation to Climate Change- Scaling it up", Edited by E. Lisa F. Schipper, Jessica Ayers, Hannah Reid, Saleemul Huq and Atiq Rahman. Published by Routledge, 2014
10. National Adaptation Programme of Action (NAPA) by the Ministry of Environment and Forest (MOEF), Government of the People's Republic of Bangladesh
11. CHANGING THE WAY, WE DEVELOP' by CDMP
12. Livelihood Adaptation to Climate Change Project (LACC) by CDMP

13. Economic Modeling of Climate Change Adaptation Needs for Physical Infrastructures by CDPM, CEGIS.

Beside this I have also utilize few of project publications collected from NACOM Head office and Daily local newspaper reports clips collected from NACOM Cox Bazar Office, which are annexed with the research report at Appendix 6, page no 213.

1.5.3Focus Group Discussion

A Focus Group Discussion (FGD) is a good way to gather together people from similar locality or experiences to discuss a specific topic of interest. The group of participants is guided by a moderator (or group facilitator) who introduces topics for discussion and helps the group to participate in a lively and natural discussion amongst themselves. The strength of any FGD relies on letting the participants to agree or disagree with each other so that it provides an insight into how a group thinks about any subject, about the assortment of opinion and ideas, and the inconsistencies and variation that exists in a community in terms of beliefs and their knowledge's and practices.

FGDs can be used to explore the meanings of survey findings that cannot be explained statistically, the range of opinions/views on a topic of interest and to collect a wide variety of local terms. In bridging research and policy, FGD can be useful in providing an insight into different opinions among different parties involved in the change process, thus enabling the process to be managed more smoothly. It is also a good method to employ prior to designing questionnaires.

Focus Group Discussions (FGDs) are part of most experiences of participatory research and action, and perhaps the most commonly used method in the participatory toolkit. In participatory research, a FGD is usually convened, mediated and recorded by a team of at least two people, including a facilitator and a note-taker. A focus group is different in three basic ways:

1. The core alteration is the group has a precise, focused discussion topic.
2. The group has a qualified leader, or facilitator.

3. The group's formation and the group discussion are carefully pre-arranged to create an environment in which people are free to exchange of ideas willingly. In any FGD, participant members are vigorously encouraged to express their opinions.

Focusgroup discussions are usually prearranged,focused, and alsoopen for expressive approach, because they can collect a lot of information in a very short time.It helpsresearchers tostudy more about group or community views and requirements. This method is that it can be very useful; as responses in a focus group, are typically spoken**,** open-ended**,** relatively broad**,** and qualitative. Sessions of any FGD are need to be prepared carefully through identifying the main objective(s) of the meeting, developing the crucialand appropriateinquiries needed, and planning for how to record the assembly.

The next step is to identify and invite appropriate participant groups in the discussion. For any FGD theminimum number is between six and eight, but if more participants join it, than its more better. The reason is simple, as more participant, opinions are more in number and either supported or rejected by them on the spot. The crucial element of any FGD is the facilitation. In facilitating any FGDs some important points to bear in mind includes: to ensure even participation, careful phrasing of the key queries, upholding a unbiased attitude and appearance, and summarizing the session to reflect the opinions evenly and fairly. A detailed report should be prepared after each of the session is over. Any observations during the session should be noted and included in the FGD report.

For this research, I have used a specific FGD Questionnaire, which is annexed in Appendix 2. Page178. There was a total of 38 Village Conservation Group (VCG) formed and nurtured under the CBA-ECA Project, in Cox bazar-Teknaf area with an aim to achieve better management of Ecologically Critical Area (ECA) resources and enhance Climate resilience of community in the long run.

The membership of each VCG in this project comprised of approximately 20 - 60 people on an average. Total of 1540 households with 9,412 people represent in all theseVCGs. Women represent 36% of the total VCG members till todayat the Cox’s Bazar- Teknaf sites.For conducting the Focus Group Discussion, (FGD) we requested the NACOM Cox bazar office to identify the different categories of VCG based on their managerial performance as follow:

Table 02: Category of VCG Considered for this research

Sl	Category of VCG	Number (n)
1	Best Performer	3
2	Average Performer	3
3	Worst performer	4
Total		10

Source: Developed by the Author

I decided to consider the worst performer extra in number because I want to identify and understand the factors that lead them for their worst performance. I want to focus on the mistakes or problems they have faced, that weakens their overall performances. If we can identify those challenging factors and can successfully eliminate them from the project flow in advance, for the future days, then the project will be more effective and efficient. In each of the selected VCG, I have conducted 3 FGD separately. So total number of FGD done for this research was (10 X 3) =30. The three FGD conducted in each specific VCG separately was categorized as follow:

Table 03: Category of FGD conducted in each VCG

Sl	Category of FGD	Frequency (n)
1	FGD with the Common Beneficiaries of the VCG. (Open meeting)	1
2	FGD with the President, Secretary, Treasurer of the VCG (Closed Door Meeting)	1
3	FGD with the female members of the VCG (Closed Door Meeting)	1

Source: Developed by the Author

1.5.4 One to One Interview

According to Ryan et al 2013, the One-to-One interview is a frequently used as a data collection method in social research. The individual interview is a valued method of acquisition ofinsight into people's perceptions, understandings and experiences of a given phenomenon and can contribute to in-depth data collection.

However, the interview is more than a conversational interaction between two people and requires considerable knowledge and skill on behalf of the interviewer.Growing attention has been given in the literature to the process of directing an interview, mainly with respect to the part of the interviewer and the rapport between the interviewer and interviewee.

Depending on their philosophical orientation, the Interviews may vary in type and structure. While conducting an interview, several important stages need to be monitoredproperly like:

The nature of the enquiries, questioning practices, listening and the interviewer-interviewee exchanges are crucial to attaininganeffectiveresult. Similarly,ethical considerations and the protection of participant’s rightsare important features of interviewing. Although interview data may be used as evidence about people's perceptions and understanding on certain issues, it is relevant to recall that responses may be shaped by variables such as if and how the interviewer has subjective towardsthe interviewee, and also the level of trust is in between the two individuals. Hence, it is crucial that interviewers are cognizant of the various techniques underpinning the interview process to maximize results.

For this research, a total number of (10 X10) = 100 + 4 (TNO, UNO, UCO, 1 Project Manager- from Dhaka office of NACOM and 6 members of the Civil Society from the local community was interviewed) = 110 one to one interview was conducted.One to one interview was conducted inthe selected 10 VCG's on the basis of following consideration:

Table 04: Persons who were considered for One to one Interview in each VCG's

Sl	Persons who were considered for One to one Interview in each VCG	Frequency (n)
1	With the best female performer of the VCG	1
2	With the best male performer of the VCG	1
3	With the worst female performer of the VCG (If Applicable and Available)	1
4	With the worst male performer of the VCG (If Applicable and Available)	1
5	With the President of the VCG	1
6	With the General Secretary of the VCG	1
7	With the Treasurer/ Cashier of the VCG	1
8	With the UP Chairman/ UP member of the VCG (If Applicable and Available)	1
9	With the Thana Nerbahi Officer (TNO) / Thana Samabay Officer (TSO) of the VCG (If applicable and available)	1
10	With the NACOM assigned Field Officer of the VCG. (If applicable and available)	1
Total		10

Source: Developed by the Author

The One to one interviews for this research was steereddistinctlywith a standard form of questionnaire. The sample questionnaire used for One to one interview is also annexed with the thesis in Appendix 2 Page 178.

1.5.5 SWOT Analysis

For any community organizing, Change is an inevitable. So, if you know how to take stock of the considered communities or VCG's strengths, weaknesses, opportunities, and threats, you are more likely to plan and act effectively. For me conducting the SWOT analysis, actuallyoffersme to discover both internal and external factors that may influence the project performance in the long run.

The term "SWOT" stands for: **S**trength, **W**eakness, **O**pportunity, and Threat. A SWOT analysis essentially leads you to identify any givenProjects' strengths and weaknesses (S-W), as well as opportunities and threats (O-T) within a short time. Developing a

fullawareness of the situation helps the related managers with both strategic planning and decision-making for the long-term projects like the considered one.

The SWOT Analysis was originally designed for business and industry analysis, but nowadays it is quiteconvenient in evaluatingthe performance of any community-based projects like Climate change adaptation and development, education, and even for personal growth.SWOT analysis can offer quite a helpful perspective at any stage of any project to achieve the followings:

1. Helps to discover possibilities for new efforts or solutions to problems.
2. Aids to made decisions for selecting the best path for your enterprise. Identifying your opportunities for success in context of threats to success can clarify directions and choices.
3. To identify where change is a necessity. If you are at a turning point with a long-term project, astocktaking of your strengths and weaknesses can reveal certain priorities as well as possibilities.
4. If Necessary, to adjust and refine plans during mid-course, it shows where to intervene.
5. To sort out any new opportunity which may lead to wider avenues, while to find a new threat which can also close a path.

For conducting the SWOT analysis for this research, I have questioned my participants to responsetheir experiences with the following simple questionslike: what are the strengths and also the weaknesses of your group, community, or individual effort in this specific Project, andalso what are the felt opportunities and threats facing by it, in the field. A sample layout for my SWOT analysis looks just as follow:

Figure 03: SWOT Analysis Matrix

Strength		Weakness	
Opportunity		Threats	

Source: http://ctb.ku.edu/en/table-of-contents/assessment/assessing-community-needs-and-resources/swot-analysis/main

A SWOT analysis attempts to discover the Strengths, Weaknesses, Opportunities, and Threats for any given project. SWOT analysis provides practicing managers a simple way of communicating about the project's resourcefulness and an excellent way to organize positive information for future course of action.

The purpose of performing a SWOT is to reveal the positive forces that will work together and also the potential problems that need to be recognized and possibly addressed in advance. I have conducted two specific SWOT analysis for this research in the field area which are as follows:

1. SWOT Analysis matrix for informal administrative structure of CBAECA, and
2. SWOT Analysis matrix for creating group norms and awareness- for community.

Both of the SWOT Analysis is annexed here with the report at Annexure 5, Page:221-225for the concerned readers.

1.5.6 Associated Field Diary

For this Research, I maintained a Field diary. This was done intentionally to confirm, wherever virtually any observed phenomenon of interest may be found andis noted quickly. Attention was also given in observing the facial and body languages (gestures and postures, eye signals) of the respondents along with the general features of the locality. A list of the respondents (including participants in FGDs) and other persons met during the fieldwork is also collected and annexed here.

The field diary was maintained to preserveand record the reactions of the interviewees. Mention of any significant incident in the specific VCG or even individual and group example was noted with proper highlights. Beside this the monthly meeting files with attendance of each VCG was also scrutinized on demand from the local project officials, physically to identify the internal management and accountability practices are being followed in the said VCGs or not.

1.6 Location and Justification of the Study Sites

This research was actually based on impact analysis of adaptation practices for climate change over fewselected Costal based Communities of Bangladesh, particularly those communities, who are applying some adaptation measures in their daily livelihood activity. Actually, it seems like a real laboratory for Climate Change impact measurement and also to test the effectiveness of the adaptation practices.Now days the impact of Climate change is expected to bring frequent extreme weather events, like floods, cyclones, tidal surges, erratic rain, flash-flood, drought, making most ECAs of Bangladesh significantly vulnerable. Super Cyclone like"Sidr" of November 2007 totally devastated about one fifth of the Sundarbans and part of the coastal areas. Intrusion of Saline water, in the agricultural area after storm surges has altered coastal ecosystems severely by changing the land use forms in recent years. Agro-biodiversity of the coastal areas have reduced remarkably because of the growth in shrimp farming. Small freshwater ecosystems beside the coastal area, suddenly converted into saline water systemsovernight, has mostly spoiled marine biodiversity of the area.

My emphasisfor this research was in the Cox Bazar-Teknaf Region, as it's a well-knownarea for Climate changeimpacts like floods and Salinityimpacts, and thus considered as anEnvironmentally Critical Area (ECA) by the Government of Bangladesh.For this research, I have decided to identify and assess the impact assessment of selected activities of the Project titled '**Climate Change Adaptation in Ecologically Critical Areas through Biodiversity Conservation and Social Protection'** (hereafter, **CBA-ECA** or **the Project**). It was funded by the Government's Climate Change Trust Fund, and the Project is managed and overseen by the Department of Environment (DoE) under the purview of the Ministry of Environment and Forest (MoEF), and the field actions are carried out by the **Nature Conservation Management** (NACOM)-led consortium (comprising of NACOM, SBF and IUCN-Bangladesh) in Ecologically Critical Areas (ECA) of Cox's Bazar-Teknaf Peninsula and the Sonadia Island.

For this research work, Iwas trying to identify the successful adaptation intervention undertaken by NACOM under the nationalClimate change adaptation policy issues. I was trying to identify the components of this project which in reality creates changes in the level of understanding and awareness among the community members and participants of the coastal area VCGs and develops an adaptation mind-set among them.So, for the sampling distribution, my decision was, all the samples considered mustbe from the area of the project where it was being deployed.For this project, one of the silent feature, was to incorporate the local techniques silentlyin the adaptation practices as a part of the Community based Adaptation to Climate Change Adversities.

So, this is another reason why, I have selected to analysis the success of this this project intervention. In this Project there was in total of 38 VCG in my selected project area. So, the total population of my project is, TotalPopulation, N =38. After discussion with my Supervisor and approval from him, I decided to select a specific Sample population from the Total Population which is only 10 VCGs and expressed by "n" which was a Selective Sampling. So, for this research, the Sample Population is, n= 10. The sample population (n) isapproximately 26.31 % of the Total population (N), for this research fieldwork and is acceptable.

1.6.1 The Project Summary

The key Project documents summarize the contextual setting and the rationale for the Project selected to be consider in this thesis in the following manner:

Rapid degrading situation in country's important biodiversity assets spurred Government's effort to declare and designate some country's important and fragile ecosystems as Ecologically Critical Areas (ECA). Department of Environment (DoE) of the Ministry of Environment and Forest, is mandatedfor the management of these ECAs.

Department of Environment with support from the Global Environmental Facilities (GEF) field implemented a project called Coastal and Wetland Biodiversity Management Project

(CWBMP) for conserving the biodiversity of national and global significance of some of pilot Ecologically Critical Areas, including Cox's Bazar-Teknaf Peninsula, St. Martins Island, Sonadia Island during the period July 2007-June 2010. The aim of the project was to demonstrate a replicable case for sustainable management of coastal biodiversity and proper adaptation to climate change.

The project took a strategic approach to involve the local community in the planning and implementation process with a view to create a caring local community for the future sustainability of the local biodiversity. Management Plans were prepared for the long-term biodiversity management of each of the concerned ECAs. While the project made significant progresses, the project period expired and as a result many activities initiated were not sustained.

The Cox's bazaar-Teknaf ECA is especially important for its unique and globally significant not only for its rich biodiversity, but also for its rapid degradation. The rapid and unplanned commercialization and tourism development of the area caused huge degradation in local biodiversity. Further, being located on the seafront, the area is very vulnerable to climate change induced impacts, which is adversely affecting the life and livelihood of local people and further causing additional stress on the local biodiversity.

The degrading state is unlikely to reverse unless the climate change issues are considered in biodiversity management.Grasping the situation, the Department of Environment with financial support from Climate Change Trust Fund has undertaken another project, called Climate Change Adaptation in Ecologically Critical Areas through Biodiversity Conservation and Social Protection.

The project is continuing with the activities initialled under the previous project as well as the project also initiated some new activities for addressing the climate change issues. The Department of Environment engaged NACOM led consortium (NACOM, SBF and IUCN Bangladesh), to field implement the activities under the new project in Cox's Bazar-Teknaf Peninsula ECA and the Sonadia Island ECA. (Also see, Inception Report 2011, pp.2-5).

1.6.2 TheRationale of the Major FieldworkArea selection from the Project

The impacts of climate change on coastal areas are a growing global concern.As mentioned before, the activities for CC Adaptation in the field level were carried out by the Nature Conservation Management (NACOM)-led consortium (comprising of NACOM, SBF and IUCN-Bangladesh) in Ecologically Critical Areas (ECA) of Cox's Bazar-Teknaf Peninsula and the Sonadia Island.

ForBangladesh, the most climatesrelated hazards comprisecrisislike unavailability of fresh drinking water, lake of safe accommodation, proper medication and mass malnutrition. Many people in the coastal areas struggle to secure safe water to meet their regular needs. Poor living conditions in remote village areas, which are tough to reach (especially along the coast),suffer from certain problems like securing safe and continuous supply of fresh drinking water.

Many poor communities in the coastal area heavily depend on small isolated fresh water wetlands (ponds) for their day-to-day drinking water and other domestic requirements such as cooking, bathing and washing. It is also evident that the livelihoods (small scale irrigation for rice farming, vegetable farming and home gardening) of many poor households in these villages depend on these types of small wetlands or ponds.In 2007, Cyclone Sidr and in 2009, Cyclone"Aila"in the coastal region of Bangladesh inundated several thousand of such kind of costal ponds with saline water.

This has huge implications for the availability of safe drinking water, and the health and hygiene practices and livelihoods of poor households. They have to adopt to such situation, which have long term effects on community livelihood and sustainable adaptation capacity of the whole community.

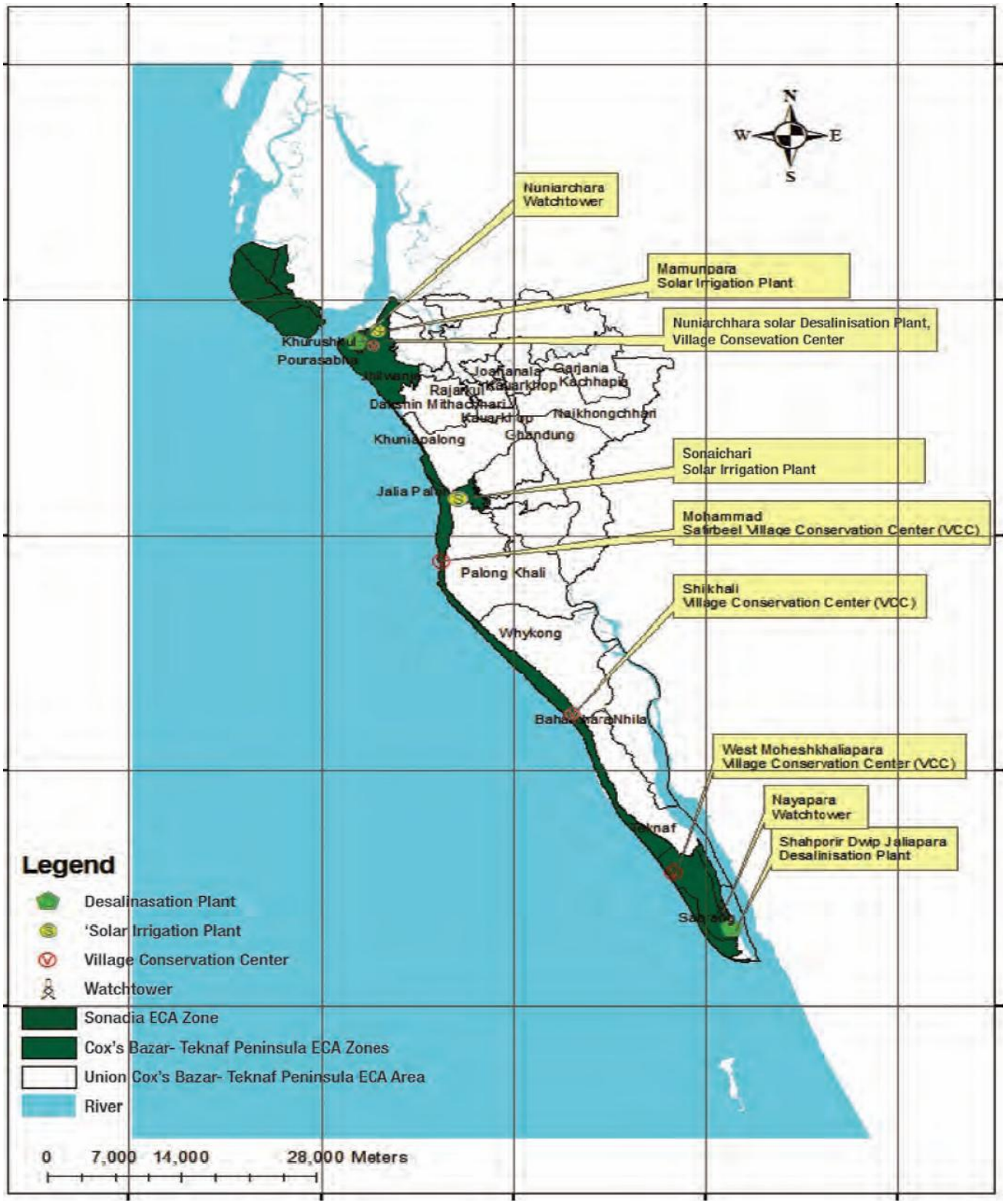


Figure 04: Physical interventions of CBA-ECA project in Cox's Bazar ECA*Source: NACOM Inception Report 2007*

For determination of the Adaptation Practices in the following selected sites and spots, out of total 38 VCGs of the selected area, 10 VCG groups were selected on the basis of their overall performance and then visited by the research field team from time to time depending on the intensity of field work planning and its timely implementation and related activities. The major rational for choosing the Major fieldwork areas included the following issues:

Table 05: The Choice and Rationale of the Major Fieldwork Areas

Upazila:	• Cox's Bazar
Union:	• Khurushkul, Teknaf and Sonadia Regions
Visited Sites	Rationale and Major Points of Considerations
01. Kawarpara with representations from neighbouring VCGs	1. This is a VCG with **"Mixed Performer"** performance. 1. Multiple cases of livelihood training and adoption of the learning 2. Acute incidents of environmental degradation through hill cutting 3. Coastal- Mangrove ecosystem; mudflats, salinity intrusion, saltpans (South-eastern Bangladesh) 4. Opportunity of observing a good number of groups 5. Relatively active female members in VCGs 6. Within Cox's Bazar-Teknaf peninsula ECA – declared by the government (under the Bangladesh Environmental Conservation Act 1995/2010)
02. Ramu, VCGs	1. This is a VCG with **"Mixed Performer"** performance. 2. Efforts towards raising coastal-sand dune plantation and mangrove conservation 3. Relatively weaker links with the local government 4. Serious anthropogenic disturbances on the local ecosystem: 5. Presence of hatcheries and their extension is a challenge, creates land encroachment problems for the community 6. The operations of real-estate developers are critical here 7. Intrusion of Rohingya refugees is a socio economic and humanitarian issue
03. Ukhia, Sonaichari	1. This is one of the **'Best Performer'** VCG of the Project 2. Evidence of greater community level awareness 3. Working of the classic 'poverty-environmental degradation' nexus 4. The area is prone to indiscriminate shell-mollusc collection; the practice of 'poison fishing' (mel bish) 5. Mixed results in IPM 6. Higher representation of women in the group

04. Teknaf Sadar, Silkhali and Sabrang VCG	1. This is one of the **‘‘Worst Performer”**VCG of the Project 2. Lowerrepresentation of women in the group 3. Within Cox’s Bazar-Teknaf peninsula ECA, but close to border area 4. There are cases of poor MCG performance 5. Emerging tourism and associated infrastructure development activities going on and this have implications 6. Efforts towards raising coastal-sand dune plantation and mangrove conservation 7. Excessive intrusion of Rohingya refugees creates a social problem 8. Turtle nesting ground, agricultural land conversion. 9. People are involved to do illegal activities like, drug smuggling and have no idea of conservation and community participation
05. Maheshkhali VCG	1. This is one of the ‘**Best Performer’** VCG of the Project 2. Utilization and investment of MCG in collective/cooperative projects 3. Distinct ecosystem characteristics, within the Sonadia Island ECA 4. Best practice examples of Upazila ECA Committee activities 5. Good plantation activities from the Project 6. Good cases of law enforcement happened here 7. Developing as a tourism spot with eco-friendly concepts. 8. Best practice examples of Upazila ECA Committee activities
06. Sonadia VCG	2. This is a VCG with **“Mixed Performer”**performance. 3. This is Proposed deep sea port site, with land acquisition (and its implications) 4. Predominant fishermen communities 5. Good plantation activities from the Project 6. Major problems of manipulation and interference by local elites on local ecosystems leading to siltation, restrictions on community access, biodiversity loss etc. 7. Good Turtle nestling available here as well as presence of hatcheries 8. Relatively weaker links with the local government offices 9. Land encroachment, operations of real-estate developers 10. Presence of multiple hatcheries. 11. Developing as a tourism spot with eco-friendly concepts.
07. Kutubzom VCG	1. This is one of the ‘**‘Worst Performer”** VCGof the Project 2. Predominant fishermen communities 3. Good plantation activities from the Project 4. Interference by local elites on local ecosystems for making leading to siltation, restrictions on community access, biodiversity loss etc 5. Distinct ecosystem characteristics, Within the Sonadia Island ECA 6. Turtle nestling group, presence of hatcheries 7. Mixed performance of Micro Credit Grant observed 8. The representation of women is significantly Weak

08. Baharchora and Borodeil VCG	1. This is one of the ‘**‘Worst performer”**VCG of the Project 2. Lower representation of women in the group activities 3. This is within Cox’s Bazar-Teknaf peninsula ECA 4. This is a good Turtle nesting area 5. Agricultural land conversion, shell-mollusc harvesting is happening 6. There are few cases of poor MCG performance 7. Merging development activities (and their implications) fortourism and associated infrastructure 8. From this VCG the communication is not so easy and thus good time management for services and health care are hampered
09. Md. Safirbeel VCG	1. This is one of the ‘**Best performer’** VCG of the Project 2. Opportunity to observe effective negotiations by the communities with local government 3. ‘Best practice’ exampleshappenhere: a VCG member wasthe recipientof nationalEnvironment Award. 4. Female members are relatively active in this VCGs 5. Presence of other projects and relevant institutions: lesson learning and leveraging opportunity 6. Presence of various livelihood/occupational groups: fishers, farmers, manual labourers, traders 7. Evidence of superior community level awareness 8. The area is prone to indiscriminate shell-mollusc collection; the practice of ‘poison fishing’ (mel bish) 9. Agricultural land conversion, shell-mollusc harvesting. working of the classic ‘poverty-environmental degradation’ nexus.
10. Pechardwip VCG	1. This is one of the ‘Worst performer” VCG of the Project 2. This is aMajor fishermen communitywith aCoastal- Mangrove ecosystem; 3. Critical environmental issues: use of set-back nets for fishing; conversion of mangroves to shrimp farms 4. Opportunity to observe various land tenure regimes including usufruct rights (patronized by local, powerful elites; not recognised by law) 5. Cases of community action by Proactive community engagement with the local government 6. Relatively active female members in VCGs, and 7. Developing as a tourism spot with eco-friendly concepts for the future. 8. It contains mudflats, faces salinity intrusion and results in growing saltpans (South eastern Bangladesh)

Source: Developed by Author after first project briefing from the Cox bazar NACOM Office.

As presented earlierthe category of VCG Considered for this research, includes the following number of different categories, are maintained as planned as follow:

Table 06: Category of VCG Considered for this research on the basis of VCG performance

Sl	Category of VCG	Number (n)
1	Best Performer	3
2	Mixed Performer	3
3	Worst performer	4
Total		10

Source: Developed by Author

The fieldwork time Cox's Bazar was about five months or (150) days in duration. Given the limitation of time, it was acknowledged that it might not be possible to address all aspects of the Project operation and to explore the concerned issues in great details. At the end of the fieldwork, however, it was expected to develop a general and down-to-earth picture of the performance of the Project and deepen the understanding of the field realities.

In each of the above selected sites and spots, 10 specified VCG Groups were visited. As mentioned earlier, the fieldwork period in Cox's Bazar was detailed for about 150 days. So, the field research team got on an average one month, to asses every Two VCGs. Given the limitation of time, it was acknowledged that it might not be possible to address all aspects of the Project operation and to explore the concerned issues in great details. At the end of the fieldwork, however, the field work team was expected to develop a general and down-to-earth picture of the performance of the Project and deepen the understanding of the field realities.

1.7 Composition of the Thesis

The thesis contains five chapters. The first chapter describes the background and research in sets the initial concepts, methodology used, justification of the site selected and samples consideredfor the research.This Chapter develops an overview of Climate Change impact in Bangladesh,Operationalization of the key concept, the objectives and Rational of this research; This chapter then narrow the focus of the research on the specific methodologies are followed, the location of the study and sampling justification, composition of the thesis; the chapter ends with a linked Conclusions.

The second chapter develops an overview of with the current Secondary Literature reviews on Climate Change effects and impacts, its global context; then this chapter narrow down its focus specially for the Bangladesh context; then an overall overview of Community Based Adaptation (CBA) including the global context and the Bangladesh context are described; and it ends with a related Conclusions

The third chapter presents the existing knowledge and understanding of people about Climate Change adaptation and group formations in the selected project area. This Chapter starts with providing a project over view of CBAECA in Bangladesh and also the nature and extent of Community based Climate Change Adaptation in this country context. The discussion is based on the cautious review of the key Project documents, interview of the beneficiaries of the Project as well as project officials of Dhaka Headquarter and Cox bazar Field office. Then an overall overview of Community Based Climate Change Adaptation (CBA)is presented and discussed to identify the areas to determine its successful intervention; then the chapter ends with a correlated Conclusion.

Chapter Four attempts to assess the selected activities and interventions of the Project and the resultant accomplishments. These activities analysed here, include the following: awareness program for Climate Change Adaptation, livelihood skill development training, functioning of VCGs, and local government relations. The assessment is based on the fieldwork (as delineated in Chapter 1,) and the associated empirical observations and

consultations. Additionally, the analysis also reflects observations from the secondary review of project documents. then the chapter ends with a linked Conclusion.

The fifth chapter presents the views of the survey population about climate change adaptation polices, development plans and programs. This chapter also highlights the learningand link up with project objectives. This chapter attempts to make an assessment of the selected activities and interventions of the Project and the resultant accomplishments. Such activities analysed here, helps to draw a consolidated summary and specific recommendation for future, as well as long-term sustainability of the Project activities and interventions projects on Community based Climate Change Adaptations.The chapter presents an overall summary; a complete set of recommendations for future days to follow the community-based Adaptation Practices for Climate Change.The chapter also ends with a connected Conclusion.

1.8 Conclusion

This chapter sets up the basic parameter of this research, its related background and sets the initial concepts of Climate Change Adaptation,methodology used for data collection and Analysis, Articulated justification of the sites selected and samples considered for the research.

This Chapter also develops an overview of Climate Change impact in Bangladesh and use of Community for Adaptation, Operationalization of the key concept, the objectives and Rational of this research; This chapter also emphasis on the specific methodologies are followed in this research, the reason for site selection for the study and sampling justification,and the arrangementpattern of the thesis.

Chapter 02

Literature Review on Climate Change and CBA: Bangladesh Contexts

2.1 Introduction

This Chapter provides a detailed literature review of the concept of Climate Change and the Bangladesh context of Climate change. The discussion is based on a review of the key secondary literatures. A Secondary Literature Review (SLR) is a summary manuscript of multiple scholarly paper, articles and book chapters which includes the current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic. Any Literature reviews are basically done using the secondary sources, and do not report new or original experimental work.

2.2 Literature on Climate Change

For this research I have used numerous books and articles which were referred properly following the international convention. Still several reports and books are mentionable as follow:

1. A Question of Balance , by Professor William Nordhaus, Yale University Press
2. Adaptation and Mitigation by IPCC
3. IPCC 4th Assessment Reportby IPCC
4. A. Gore, Earth in Balance: Ecology and the Human Spirit (Boston, MA: Houghton Mifflin, 1992), 240.
5. “Adapt or Die,” The Economist, 13 September 2008, http://www.economist.com/world/international/ displaystory.cfm?story_id=12208005 (accessed 1 May 2009).

6. A. Leopold and L. Mead, “Third International Workshop on Community-Based Adaptation to Cli- mate Change,” Community Based Adaptation to Climate Change Bulletin 135, no. 2 (2009).
7. S. Huq and H. Reid, “Community Based Adaptation: A Vital Approach to the Threat Climate Change Poses to the Poor,” International Institute of Environment and Development (IIED) briefing (London: IIED, 2007).
8. R. Jones and A. Rahman, “Community-Based Adaptation,” Tiempo 64 (2007): 17–19. 31. Leopold and Mead, note 28.
9. “Community-Based Adaptation to Climate Change- Scaling it up”, Edited by E. Lisa F. Schipper, Jessica Ayers, Hannah Reid, Saleemul Huq and Atiq Rahman. Published by Routledge, 2014
10. National Adaptation Programme of Action (NAPA) by the Ministry of Environment and Forest (MOEF), Government of the People’s Republic of Bangladesh
11. CHANGING THE WAY, WE DEVELOP’ by CDMP
12. Livelihood Adaptation to Climate Change Project (LACC) by CDMP
13. Economic Modeling of Climate Change Adaptation Needs for Physical Infrastructures by CDPM, CEGIS.
14. http://9pprsenvironmentalism.weebly.com/environmentalist-beliefs.html
15. http://www.thegreenmedium.com/blog/2015/9/2/a-brief-history-on-environmentalism

A complete overview of Community Based Climate Change Adaptation (CBA)withthe global context and the Bangladesh context are explained here and then related and this chapter also ends with a linked Conclusion.

The World Meteorological Organization and the United Nations Environment Programme (UNEP) combined formed intergovernmental Panel on Climate Change (IPCC), with a view to produce its first assessment report in 1990 about the complications resulting from Climate Change (DE pledge & Lamb 2005). For this initiative, hundreds of scientists from

numerous countries across the globe review thousands of published scientific articles which comprise research findings using advanced scientific modeling to predict future deviations, as well as research observing historical and current changes resulting from climate change, to produce the future IPCC assessments. Furthermore, the worldwide scientific community, as well as being endorsed by all major governments of the world (Houghton, 2005) supported this ground-breaking research of the IPCC.

Presently, scientists have proven that global warming is happening and its socio-economic impacts on developing nations due to massive production of energy and their consumption in the developed nations. The cause and impacts for such events are now scientifically justified and linked and the big polluters are clearly identified and pointed as liable by the amount of Co2 they produce as a byproduct of their energy usage.

The Fourth Assessment Report of the IPCC in 2007 specified that: "Most of the observed increase in global average temperatures since the mid-20th century is because of the observed increase in anthropogenic (human caused) greenhouse gas concentrations", even though"the observed widespread warming of the atmosphere and ocean, together with ice mass loss, support the conclusion that the global climate change of the past 50 years can be explained not only by known natural causes alone but also considering human influence," (Alley et al, 2007, 257).

The comprehensive reasons of Climate Change have been simplified in many research studies, though the models, approaches and projections , which are still contested (Aldy, Barrett, & Stavins, 2003; Beckerman & Hepburn, 2007; Carter et al., 2006; Füssel, Toth, van Minnen, & Kaspar, 2003; JRC, 2013). For instance, climate risks are broadly reported by the IPCC and other related studies (Hansen et al., 2006;IPCC, 2007; Nordhaus, 2008; Stern, 2007). There is also sign of damaging climatic consequences by numerous countries, which has affected economic development in these states(Keith, 2000; Kelly & Kolstad, 1999; Schimmelpfennig, 1996;Bonfils et al., 2008; McKibbin & Wilcoxen, 2002; Nordhaus, 2001; Oreskes, 2004). In total, there is also prove that the world would

experience a certain major geophysical changes in the coming eras as a consequence of human exploit, which threatens the long run sustainability of our civilization (Byatt et al., 2006; Carter et al., 2006; Nordhaus, 2007, 2008; Pizer, 1999; Tol, 2003; Weitzman, 2007).

Societies have always searched for sanctuary for both climate incident's and the supply of basic resources like: water, food and energy. This security is a prerequisite both for meeting fundamental human needs and also for economic growth and development for any community. Climate and such resources are all closely linked together. Food and water are dependent on both climate and energy. Before the industrial revolution, energy was generated mostly from animal and manpower and wood as fuel. The severe use of fossil fuels (carbon, oil and gas) has transformed the climatic situation for the four basic reasons as follows:

1) For the last two centuries, billions of tons of carbon dioxide were returned by us in the atmosphere, which were possibly managed by plants and plankton and later deeply buried, thus retreating a process that has led to the conditions which have saw the development of Nature and human societies as we know them now.

2) The scientific evidence in favor of a possible climate alteration is due to the release of extra massive amount of carbon dioxide and other greenhouse gases, which nature can't manage alone any further. This will result in a massive change in climate pattern, which is still uncertain and unpredictable. But now scientist believe, that as such natural imbalance created already, there is a possibility of a large modification in climate processes, and may result in unknown results, and might give rise to gigantic unexpected natural penalties.

3) This eventual climate alteration creates the possibility of an unavoidable and catastrophic natural impact on our food and water supplies globally, but on the long run the developing and poor nations will suffer the most.

4) There is a now a high awareness and demand for finding alternative to fossil fuel based energy both mechanically and economically reasonable. In order to meet the rising demand of Energy by the growing populations, we need to finds an eco-friendly sustainable alternative source for future energy.

For discovering the fuel alteration for future of Mankind, we need long term projections of all these activities and processes. The climate arrangement is very complex with many responses, and dynamic in nature. We only know the system to some extent, but many uncertainties make it difficult to quantify the local impacts of future climate change with accuracy. Furthermore, suitable climate policies are not easily acknowledged. There are numerous lobbyists including the present US President Donald Trump, who still not only overlook the scientific facts and advocates in favor of using coal and fossil fuels, but also investing in groups in to such projects for their individual gains.

2.3 The Adaptation Efforts on Climate Change

Since1991, the Intergovernmental Panel on Climate Change (IPCC) raised up the concern for and their global effects on the commons by presenting scientific evidence of global warming and emission upsurge and impacts of climate change. This result in a worldwide recognition that some serious actions are essential to save our planet. In 1992, United Nation produced an inter-governmental environmental treaty known worldwide as United Nations Framework Convention on Climate Change (UNFCCC). This agreement aimed at blocking and reducing emission of certain greenhouse gas concentrations in the atmosphere at a certain level. In1994 Bangladesh with 192 countries endorsed the UNFCCC. Other treaties deal with such matters as pollution of the oceans, dry land degradation and damage to the problems recognized and corresponding responses of the Convention.

The Developing and Least Developing Countries (LDC's) are the most vulnerable to climate change impacts because they have insufficient resources available to adapt to such impacts: socially, technologically and financially. Climate change can affect these nations so much that there is possibility for them to miss their United Nations Millennium Development Goals partially by 2015 (UN 2007). So, few LSD's have specified adaptation actions in a high priority, and Bangladesh is leading those nations globally.

To support the adaptation activity in the context of national planning for sustainable development both Developing and Least Developing nations need international aid. They need funds specifically for capacity-building and transfer of new adaptive know-hows. Capacity-building and Systematic planning are also needed to reduce the hazard of natural disasters and increase the resilience of communities to growing extreme climatic events such as droughts, floods and tropical cyclones. Funds for adaptation must be releasing fast, adequate to need and the operation to be prudent. The Least developed countries (LDCs) and small island developing States (SIDS) need special consideration due to their extreme vulnerability to such natural catastrophes.

2.4 An Overview of Climate Change: The Bangladesh Context

The population of Bangladesh is around 160 million (2011) with a life expectancy of around 63 yearsat birth, and an adult literacy rate of 47.5%. The recent Human Development Report ranks Bangladesh in 140th Position out of 177 nations. The average annual population growth rate is around 2% (4.6% in urban areas), almost 75% of the population lives in rural areas and a population density of 954.4 (people per sq. km.). Bangladesh ismostly Agricultural with two thirds of the population engaged in farming or Agro-based industrial activity.The climate of Bangladesh can be characterized by High

temperatures, Heavyrainfall, High humidity, and easily distinguished three seasonal differences like Hot Summer, Shrinking Winterand the wetly Rainy season.

According to Denissen,2012, Bangladeshs, the largest deltas in the world which is extremely exposed to Natural Disasters because of its Topographical location, specially a flat and low-lying landscape with higher population density and other socio-economic glitches like Poverty, Illiteracy, Lack of Institutional setup etc. Physical, Social as well as Economic settings of Bangladesh are typical to any of the most vulnerable countries to Natural Catastrophes in the world. The total land area is 147,570 sq. km. covers mostly of Floodplains (almost 80%) leaving major part of the country (except for the north-western highlands) prone to flooding during the rainy season. Moreover, the hostile effects of Climate Change – especially High Temperature, Sea-level Rise, Typhoons and Storm Surges, Salinity Intrusion, Heavy Monsoon Downpours etc. has intensified the overall Economic Development scenario of the country.

IPCC impact assessments identify Bangladesh as one of the most 'susceptible countries'

Fig 5: Map of Bangladesh
Source:https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjtj_va1oTXAhWCN48KHQpQB3MQjRwIBw&url=http://www.mediabangladesh.net/map-of-bangladesh/&psig=AOvVaw3Lj-fU04WUaV0N-SKYscFi&ust=1508777044298748

of the world designed for the negative impacts of climate change. Numerous projections have suggested that these impacts comprise an overall likelihood of upsurge in sea

level,atmospheric mean and general temperature and unstable rainfall to result in more intense natural disasters in the form of Floods, Cyclones, Storm surges and Drought (IPCC 2007).

Amplified vulnerability to these threats and unpredictable climate situations dictates that Bangladesh will experience more extreme climate conditions in the long run. Identifying the risk environment is now the priority factor of any national policy making. The building blocks of climate change policies of Bangladesh stand on four pillars as:

1. Natural infrastructures (e.g., physiology, proximity to the sea, landscape and watersheds, land type characteristics etc.)
2. Socioeconomic infrastructure (e.g., socio-economic profile of major livelihood groups, poverty dimension etc.),
3. Physical infrastructure (e.g. roads and highways healthcare canters urban center village growth centers industries and factories school building etc.) and
4. Institutional infrastructure (e.g., community organizations, local government institutes arrangements of government wings etc.).

The Fourth Assessment report published by IPCC in 2007 supports the following changes have been observed and noted in climate variability and extreme events issue for Bangladesh.

1. In Bangladesh, average temperature has registered an increasing trend of about 1’c in May and 0.5’c in November during the 14-year period from 1985 to 1998.
2. The annual mean rainfall shows increasing trends in Bangladesh. Decadal rain anomalies are above long-term averages since 1960s.

3. Serious and recurring floods have taken place during 2002, 2003 and 2004. Cyclones from the Bay of Bengal have been decreased since 1970 but the intensity of the floods has increased. Moreover, Frequency of monsoon depressions and cyclones formation in Bay of Bengal has augmented.
4. Water shortages has been attributed to rapid urbanization and industrialization, population growth and inefficient water usage which are aggravated by changing climate and its adverse impacts on demand supply and water quality.
5. Salt water from the Bay of Bengal is reported to have penetrated 100 km or more inland along tributary channels during the dry season.
6. As the precipitation declines and droughts has resulted in, and the drying up of wetlands results in severe degradation of ecosystems.

The consequences of climate change in Bangladesh are generally articulated in terms of 'extreme events' and recognized such as sea levels rise, unpredictable precipitation patterns, higher tidal inundation, intrusion of saline water and soil erosion. Some of the major impacts of Climate Change on Bangladesh are discussed below.

2.4.1 Floods

The most serious impact of Climate Change in Bangladesh will be on the water resources. Many projections recommend variability in future monsoon patterns with severe impacts on agriculture and other key sectors due to either excess or low flows of water.

Two thirds of Bangladesh is only less than 5 meters above the sea level and vulnerable to river and rain water flooding and in the low laying coastal areas vulnerable to tidal flooding during the storm surges. On an 'average' year roughly one quarter of the country

is always water-logged. Every 4 to 5 years there is a severe flood in Bangladesh that may affects over 60% of the country's land mass and cause loss of life and substantial damages to infrastructure, housing, agriculture and livelihoods.

Table 07: Impacts and estimated damage of Different Floods in Bangladesh

Event Year	Impact	Estimated Damage
1984	Inundated over 50,000sq. km,	US$378 million
1987	Inundated over 50,000sq.km,	US$ 1billion, 2,055 deaths
1988	Inundated 61%of the country	US$ 1.2billion, more than 45million homeless between 20,000-6500 deaths
1998	Inundated nearly 100,000sq.km, rendered 30 million people homeless damaged 500,000 homes heavy loss to infrastructure.	Estimated damage US$2.8 billion 1,100 deaths
2004	Inundated 38% damage US$6.6 billion affected nearly 3.8 million people.	over $2 billion 700deaths
2007	Inundated 3200sq.km,over 85000houses destroyed and almost 1 million partially damaged, approximately 1.2million acres of crops destroyed or partially damaged	over $1billion 649 deaths

Source: Government of Bangladesh (2005), National Adaptation Program of Action Ministry of Environment and Forests, Page 08

In the past 25years, Bangladesh has experienced 6 severe floods in the community level. In 2007, two consecutive floods, flooded the country in the same season. Flash floods can also be an emerging problem in the north-eastern and south-eastern regions of Bangladesh. It is projected that by the year 2030, an additional 14.3% (IUCN 2004) of the country would become extremely vulnerable to floods while the existing flood prone areas will face higher levels of flooding. Study of the past floods suggest that about 26% of the

country is subject to annual flooding and an additional 42% is at risk of flood with varied intensity.

2.4.2 River Bank Erosion

Throughout the time period of long and high floods, river bank erosion is also common,

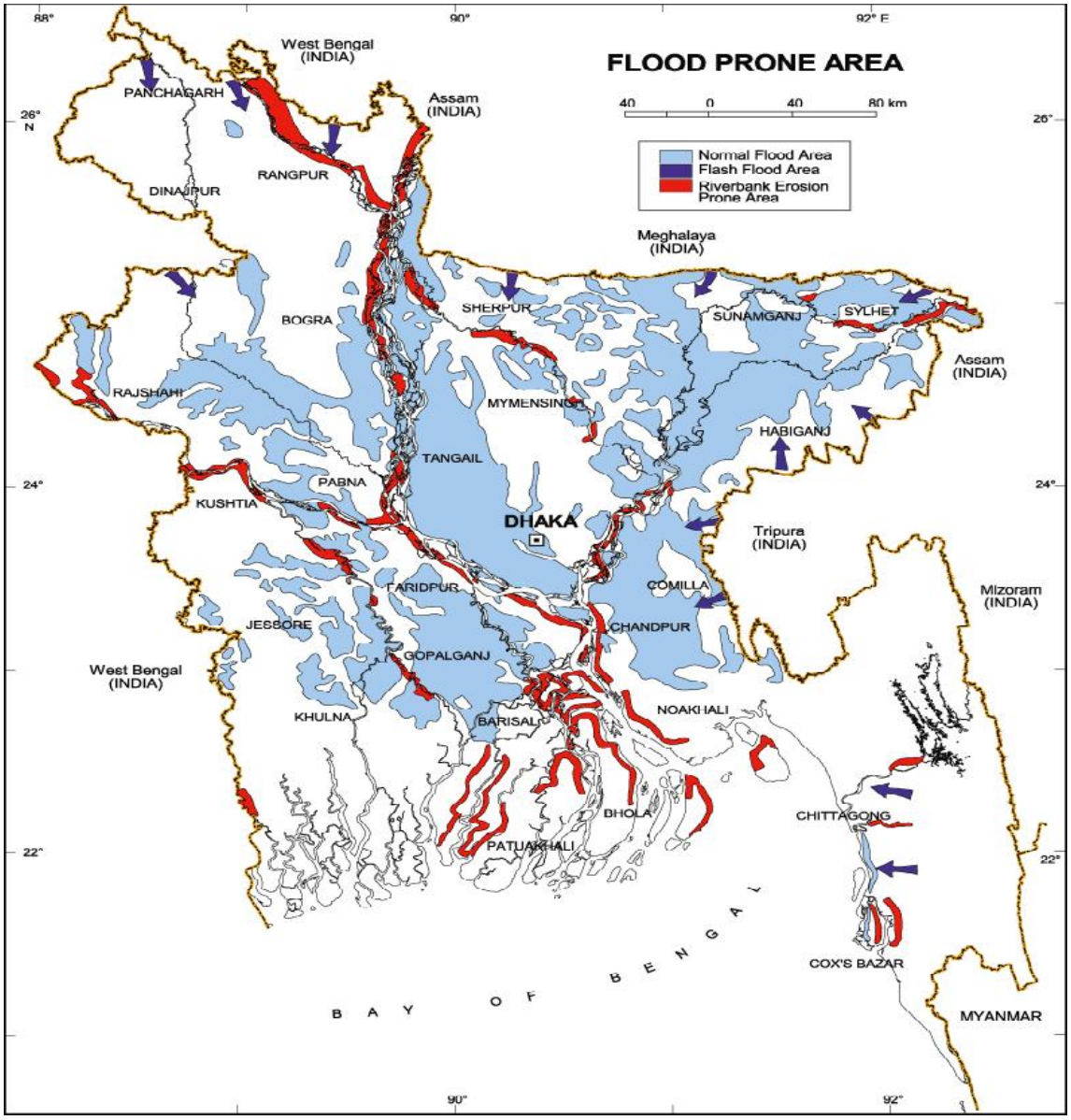


Fig 6: Flood Prone Areas of Bangladesh
Source: http://www.saarc-sadkn.org/countries/bangladesh/hazard_profile.aspx

which marks in loss of thousands of hectares of agricultural land and scores of villages and dislocates many thousands of people from their households. Morphologically the Rivers

flowing through Bangladesh are extremely dynamic and the main rivers are braided forming island or chars in between the braiding channels.

These chars of which many are inhabited move with the flows and are extremely sensitive and affected to changes in the river morphology. Out of the 462 administrative units (Than as) in Bangladesh currently almost 100 thanes are subjects to any form of river bank erosion affects, and result in displacement of about a million people on a yearly basis. Such conditions are also foreseen to worsen in the event of climate change.

2.4.3 Cyclones

On an average, within every 3 year an immense tropical cyclone hits Bangladesh. The tropical cyclones in 1970 and 1991 are estimated to have killed around 500,000 and 140,000 peoples respectively.

The storm surges are higher in Bangladesh than in the neighboring countries because of the Bay of Bengal, which narrows towards the north, as it moves upward, and that is

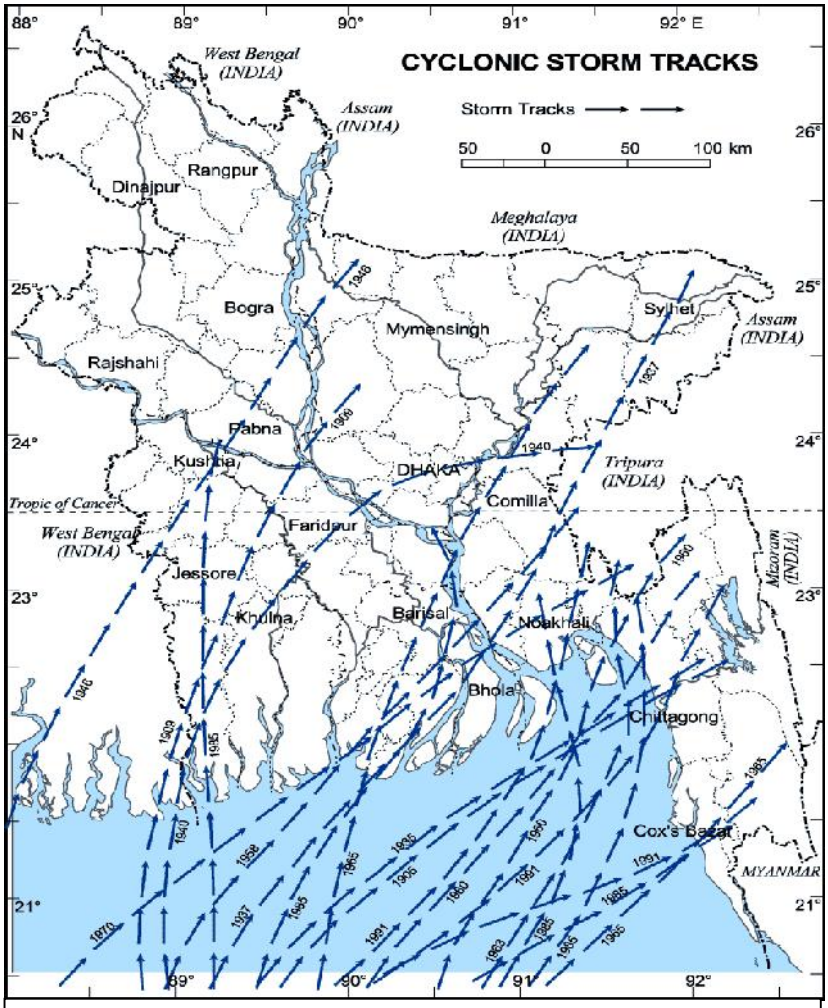


Fig 7: Cyclonic Storm Tracks of Bangladesh

Source: http://www.islandnet.com/~see/weather/events/sigcyclonebangladesh-images.htm#a

exactly where Bangladesh is positioned. In recent years' general cyclonic movement in the Bay of Bengal has become more regular and causing rough sea conditions that is certainly dangerous for fisherman to go out for fishing with their small boats , and very little or no safety equipment's on board.

In 2007, Cyclone "Sidr" and in 2009, Cyclone "Aila" hit Bangladesh violently and flooded several thousand costal fresh water ponds with saline water. This has huge inferences for the availability of safe drinking water, and the health and hygiene practices and livelihoods of deprived households in the coastal community. In order to survive in such encounter, the community-based adaptation actions are the only option available for the coastal areas of Bangladesh.

2.4.4 Sea Level Rise

Now it is a proven and a scientific fact for Bangladesh that because of the sea level rising effect, the coastal areas of Bangladesh have already experienced the worst impacts. This is especially in terms of coastal inundation and erosion, saline intrusion, deforestation, loss of bio-diversity, abrupt effects on agriculture and large-scale migration. About 830,000

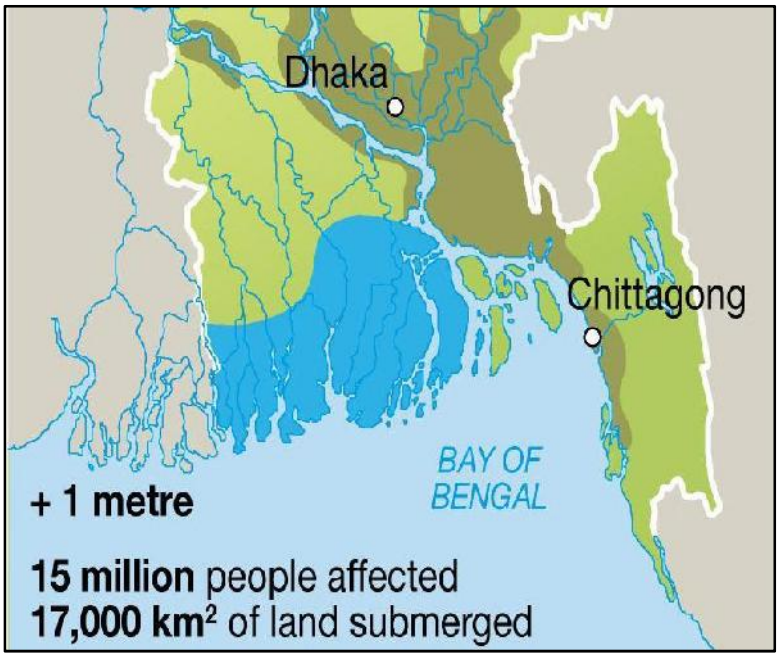


Fig 8: Impact of Sea Level Rise of Bangladesh

Source: https://www.google.com/search?q=Impact+of+Sea+Level+Rise+of+Bangladesh&client=firefox-b-ab&source=lnms&tbm=isch&sa=X&ved=0ahUKEwjD99HmwsDZAhUJKo8KHUOkAbUQ_AUICigB&biw=1366&bih=654#imgrc=GZ2rLzPi-kl6GM:

million hectares of farmable land is affected by varying degrees of soil salinity. During the period 1973-1987 about 2.18 million tons of rice was damaged due to drought and 2.38 million tons due to soil salinity resulting from flood.

The projections for temperature and rainfall of Bangladesh over the next decades shows significant temperature upsurges for both monsoon and winter season. The projections for rainfall designate additional rains through monsoon and slighter during dry seasons. Very small changes in the temperature rainfall or sea level rise can lead to severe consequences for a country.

2.4.5 Salinity Intrusion

For Bangladesh, the issue of Salinity Intrusion in the agricultural land and water resources resulting from Climatic impact is a critical matter. Due to lower river flows from the upstream, as well as decrease of the underground fresh water level and rise in the drainage congestion because of higher water levels in the main sewage structure of the coastal area,

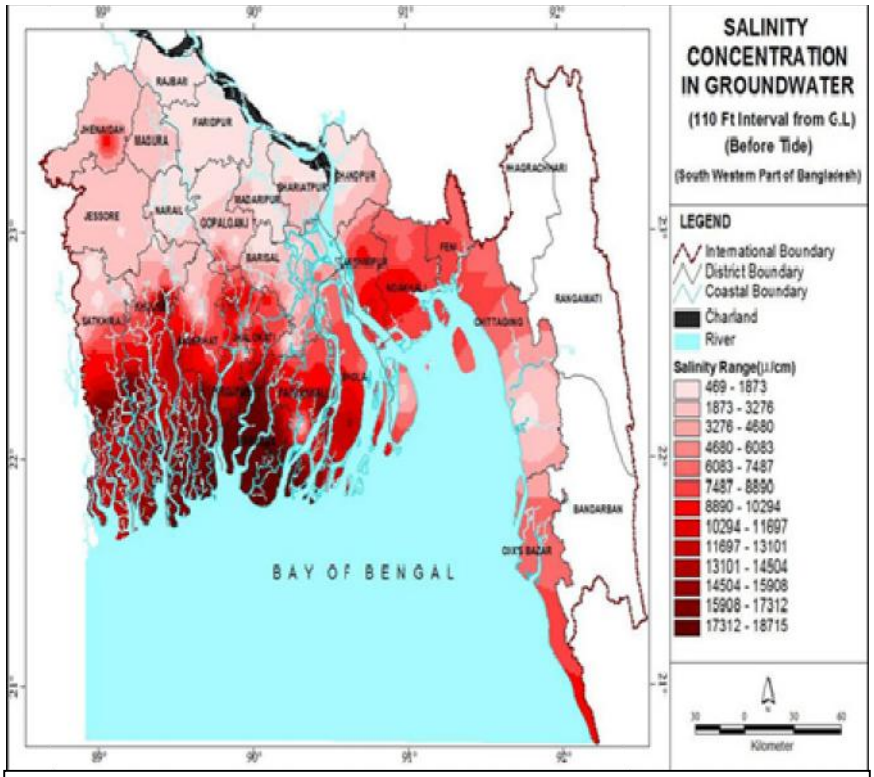


Fig 9: Salinity Concentration in Underground of Bangladesh

Source:https://www.google.com/search?q=Salinity+Concentration+in+Underground+of+Bangladesh&client=firefox-b-ab&source=lnms&tbm=isch&sa=X&ved=0ahUKEwirosbYw8DZAhUcSo8KHajUCOQQ_AUICigB&biw=1366&bih=654#imgrc=L1B1ONxj4LRnvM:

makes the over-all water flow from the rivers reduces and thus it creates the unintentional opportunity for saline water to come in easily and fill up the gaps. Furthermore, increased pressure on fresh water availability during climatic crisis sinario for the coastal community creates new challenge on human livelihood.

> Actually, issues like climate change will intensify the salinity intrusion for Bangladesh further through several means. As the intrusion of the saline water in the rivers, saline water interface in the ground water and into the ground water systems and will create inferior Sinario. Storm surges have the capacity to carry sea water inside the coastal area and flood out 2.85 million hectares of the coastal and offshore areas. Of the total accounted land, in the Coastal region already about 1.2 million hectares of arable land are affected by varying degrees of soil salinity. The severity of salinity problem has amplified over time with the desiccation of the soil (NAPA, 2005).

2.4.6 Drought

In Bangladesh, Droughts are also occurring unseasonal basis and they also devastate crop productions and creates misery for the poor farmers, agricultural labors and other unemployed. In any of the drought prone part of Bangladesh, the unemployment situation is very severe and sometime it generates to seasonal famine. This is often a life-threatening and complex issue especially in the months of the November –December, when its usually the rice harvesting period. In case of climate change, Drought is predicted to create more severe impact on the community, bringing hardships on to the lives and livelihoods of the northern regions of Bangladesh. Bangladesh's capability to achieve the future sustainable development goals, are critically challenged by impacts of Climate change, and these sustainable development goals are much needed to be fulfilled to reduce

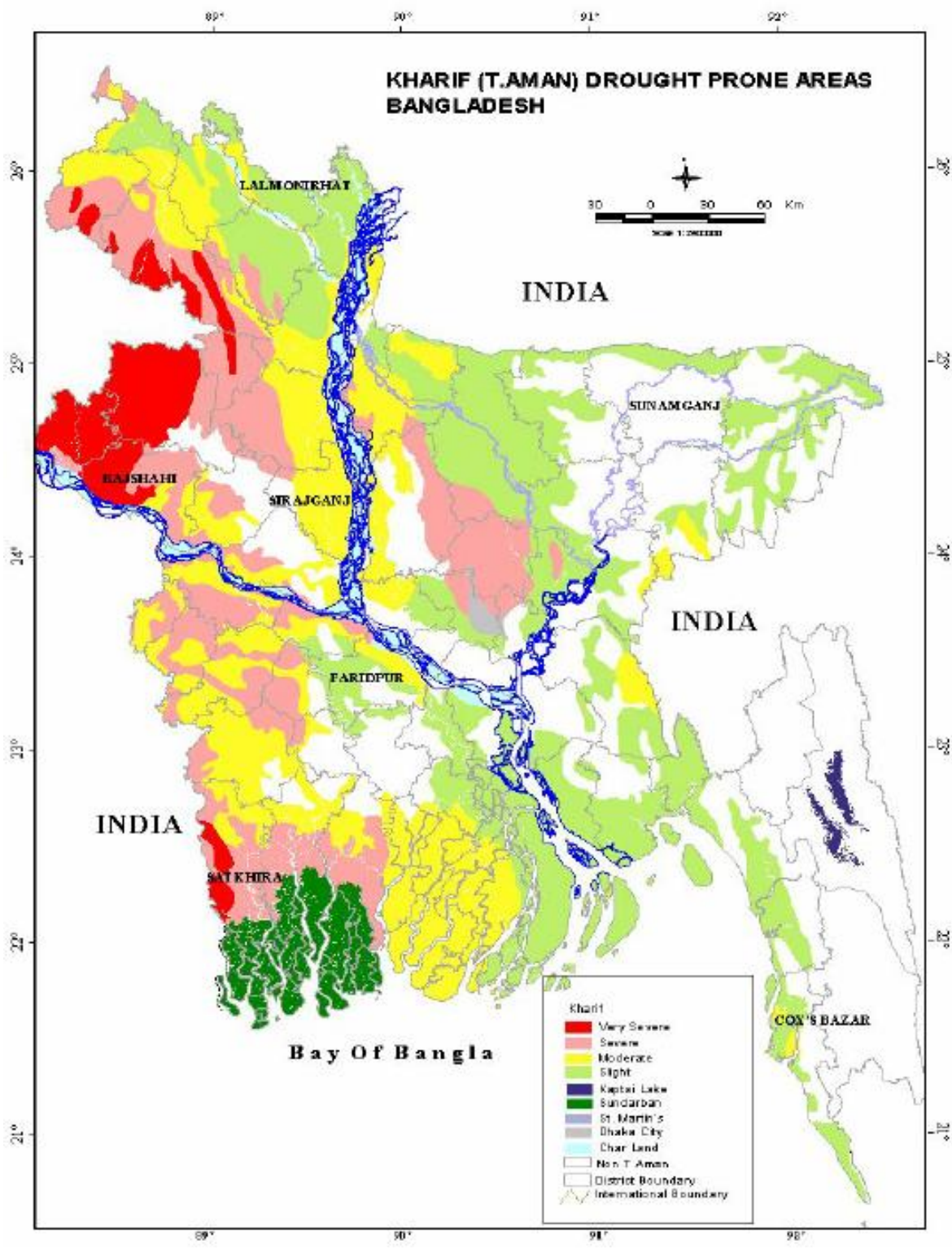


Fig 10: Map of Drought Prone Areas of Bangladesh
Source: https://www.researchgate.net/figure/Drought-TAman-prone-areas-of-Bangladesh-Source-SRDI-2001_fig6_235707918

Poverty and will contribute to Improve resilience in the long run. It is forecasted in Inter-Governmental Panel on Climate Change (IPCC)'s FourthandFifth Assessment

ReportandBangladesh Climate Change Strategy and Action Plan (BCCSAP)that in the forthcoming years, there will be additional and severe floodson regular basis, tropical cyclones, storm surges, and drought, which will also disrupt the life of the coastal areas and create significant impacts on the economy.

In the Ecologically Critical Areas (ECAs) like Cox's Bazar-Teknaf Peninsula (including Sonadia Island) in Bangladesh, local people have testified that they are already facing so called unpredictable and untimely occurrence of climatic events, which in turn affect the hydrological system and cropping patterns. The changes in climatic pattern also affect the freshwater ecosystem in marine and coastal ecosystems of Cox's Bazar and adjacent Teknaf areas.In the Cox's Bazar-Teknaf Peninsula and Sonadia Island, salinity intrusion is a major climate tempted problem that interrupts the coastal ecosystem and traditional crop calendar. Now days, particularly the Deep-sea fishermen groups sense that the weather is more unpredictable than ever before, and its risky to go for fishing in the deep sea ever before. Consistent floods and cyclones are anticipated by the people of this region, along with landslides because of soil mining, deforestation,and hill cutting all coupled with torrential rainfall.

Increase or decrease in temperatures is also one of the manyconsequences of climate change happening here. Change in level of the Sea Level or changes in wind patterns and an increases of extreme weather events like cyclone, flood are other examples. Fragile and vulnerable species of this area are now suffering from consequences of these changes and will face the worst part in the future. Like other species, humans will also have to adapt to new climatic conditions. Yet, the indirect consequences of climate change like changes in agricultural patterns, agricultural methods, and also fresh water availability will possibly be even difficult to assume.

2.5 Environmentalism

The Earth is much like a home but we never care to look after it like our only homes. We utilize all of its resources, pollute it with our waste or trash, and we never thought that what things will be like in the coming days or future, never thinking what shape things will be in for our children in future. Billions of tons of waste is produced in the world every day. It a high time to think about our environment and what can we do to make our environment free from pollution.

Environmentalism can simply be considered as a social movement that mainly concerns for environmental conservation and improving the state of the environment. Green color often represents environmentalism and environmental concerns. In simple words, it is just a social movement that strives to persuade or induce the political process by lobbying, activism as well as education for protecting natural resources & eco-systems.

Talking about environmentalism, it has now become very essential for people to care about the planet Earth and the long-term survival of life on this planet. The overview to environmentalism clearly shows the importance of being earth friendly. We need to start recognizing the environment problems and should come up solutions to save our environment and make a healthy environment for living.

In other words, recognizing a problem is the first step in finding the solution. For instance, environmental concepts like eco-system, sustainable development, biodiversity , climate change etc will help us to understand the vulnerability of our environment, and framing our environmental problems as well as coming up with different solutions.

Going further with environmentalism introduction, the solutions actually come up with a mixture of several approaches which involves conservation, law, economics, technology,

education, social justice, personal change, and activism. Moreover, it is important for all of us to be earth friendly or ecofriendly as possible. It's in our hands as well as we have the ability to make our earth or world a better place for ourselves, our children and for future generations.

2.5.1 A brief history on Environmentalism

The environmental movement is a truly fascinating one with a long and complicated history. Being over two centuries long, the movement's history of this subject is full of many great ups and downs. A brief history on the environmental movement is discussed below:

In the very early 1800s, in Europe, environmentalism came into existence through another ideology; Romanticism. Unlike what the name suggests, Romanticism was not an artistic and intellectual movement based on love but on emotion! Romanticism placed a lot of emphasis on nature, wanting people to appreciate the woods for their beauty, which challenged the solely scientific view many had of nature at the time. Later, the environmental movement grew strongly in Britain due to the Industrial Revolution. With no environmental regulations to stop the Industrial Revolution, the factories of the Industrial Revolution polluted air and water and expanded out into beautiful farmland. Quickly, there was a backlash to the factories with people calling for wild spaces to be protected. Early conservation groups, like 'the Society for the Protection of Birds (1889)' and 'the National Trust for Places of Historic Interest or Natural Beauty (1894),' began popping up all over England.

The environmental movement began to take shape in North America when John Muir, one of the earliest environmentalists, convinced the U.S. congress to create the Yosemite National Park to preserve the beautiful valley. Many other conservation efforts began to take place across the continent with people trying to protect the dwindling American bison population. And in 1916, President Woodrow Wilson founded the National Park Service, which deeply supported the growing environmental movement. In the early 20th century, environmental laws and government agencies began to pop up all over the world but especially in Nazi Germany! Several of the high-ranking Nazis were environmentalists and wanted to protect the German forests.

The environmental movement continued to grow in the 1950s, 60s, and 70s with many influential books being published, such as 'A Sand County Almanac (1949)' and 'Silent Spring (1962).' Silent Spring, written by American biologist Rachel Carson, is especially influential as it exposed the harmful and dangerous effects of the pesticide DDT. The book was so important for the environmental movement that it lead to the creation of the Environmental Protection Agency in 1970 and DDT was banned in 1972. The 1970s were greatly important for the green movement with many groups, like Greenpeace, forming in the 1970s. The first Earth Day and the UN's first environmental conference also happened in the 70s. Into the 1980s, a growing awareness on global warming brought the environmental movement even more into the mainstream. Unfortunately, the environmental movement's strength has declined somewhat since the late 2000s after it hit a high with the anger following the great recession.The history of environmentalism and its movement is one full of interesting twists and turns. There is perhaps no other movement in history where the Nazis actually did something good! With such a long history, it's important that we keep the environmental movement alive and well in the modern era!

Environmentalism can be described as a social movement or as an ideology focused on the welfare of the environment. Environmentalism seeks to protect and conserve the elements of earth's ecosystem, including water, air, land, animals, and plants, along with entire habitats such as rainforests, deserts and oceans.

For this thesis, I accept the definition of Environmentalism provided by Cambridge dictionary as the operational definition for Environmentalism as follow:

Environmentalism refers to an interest in or the study of the environment, in order to protect it from damage by humanactivities.

(Source: https://dictionary.cambridge.org/dictionary/english/environmentalism)

An Environmentalist, or environmental scientist, helps companies and the public make educated choices regarding the environment. You may spend your day campaigning, raising funds, lobbying, composing press releases, lecturing, writing articles or reports, and researching.

Environmentalism is a philosophy regarding concerns for environmental protection and improvement of the world. An environmentalist is a person who may speak out about improving the world and someone who informs the community about how we are destroying the natural environment and what changes that can be made. Environmentalists believe that as an entire population, we can work together to improve the world. They are focused on creating a balance between humans and nature. They are also incredibly fixated on repairing the damage that has already been done, and preserving what is left in its natural state.

The study of environment is important because the growing populations and higher standards of living put cumulative pressure on our environment.Environmental problems and their associated solutions typically involve social, political and economic aspects

which the scientist must be aware of. This is why the dedicated study of environmental science is so important. With these rapid changes, there is a need to study each step that may alter the environment so that the natural ecosystem may still be protected or replaced by a better one. Environmental science is important to save our world from destruction. Because of man's abusive actions, the environment is not safe anymore.

The main components of the Environment mainly consist of atmosphere, hydrosphere, lithosphere and biosphere. But it can be roughly divided into two types such as (a) Micro environment and (b) Macro environment. It can also be divided into two other types such as (c) Physicalenvironment and (d) biotic environment.An Examples of environmental factors include soil, water, climate, natural vegetation and land forms. Environmental factors entail everything that changes the environment. Some factors are visible, while others cannot be seen. In some situations, only the effects of environmental changes are evident.

The potential of an environment to provide services and materials is referred to as an "environment's source function", and this function is depleted as resources are consumed or pollution contaminates the resources. This is true for all parts of the surface of the Earth including the land and the upper parts of the ocean. The four natural resources; soil/rock, air, water, sun; constitute the major components of the physical environment.

Human Environmental Interactions can be defined as interactions between the human social system and (the “rest” of) the ecosystem. Human social systems and ecosystems are complex adaptive systems (Marten, 2001).Human activities contribute to climate change by causing changes in Earth's atmosphere in the amounts of greenhouse gases, aerosols

(small particles), and cloudiness. The largest known contribution comes from the burning of fossil fuels, which releases carbon dioxide gas to the atmosphere.

2.6 Community Based Adaptation (CBA)

Adaptation was not a major part of climate change in the beginning, The Initial methods generally focused on mitigation by reducing greenhouse gas emissions at source or increasing the sequestration of carbon through managing reforestation and land use. The United Nations Framework Convention on Climate Change (UNFCCC) in 1992 mentioned adaptation only few times, never defining it. Since then, adaptation has gained standing within the international climate change arena.

The Third Assessment Report of the IPCC in 2001 defined adaptation as "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities." After Six years later, at the 13th Conference of the Parties of the UNFCCC, adaptation formed one of four steps of the so-called Bali Roadmap, which paves the way for a post-Kyoto policy framework to include adaptation alongside mitigation, technology cooperation, and finance.

Emerging from this climate change policy context, the most common approach to adaptation considers how far processes of adaptation can reduce dangerous impacts of climate change and therefore defines the highest acceptable thresholds of greenhouse gas concentrations. This approach also supports adaptation practices that aim to lessen the impacts of increased atmospheric greenhouse gas concentrations, for example, through

engineering and technological measures including new seed varieties, water management, and early warning systems based on projections of future climate conditions and an expected severity in events such as storms, droughts, or tidal surges.

According toS. Huq et al. 2014, a newly establishing, more development-oriented outlook to adaptation considers development and adaptation risks as complementary. In this approach, adaptation is not only focused on anticipating enhanced physical risks associated with increased greenhouse gas concentrations. But it also addresses developmental needs such as improving access to livelihoods and productive assets to increase the adaptive capacity of poorer, more vulnerable people. Some observers have said any adaptation intervention cannot stand alone but must go hand-in-hand with development, either through main- streaming adaptation into development (adaptation plus development), or even by being synonymous with development (adaptation as development).

CBA has emerged as one of the most rapidly expanding bodies of knowledge in the greater field of adaptation to climate change. From the outset, the appeal may seem intuitive: CBA embodies adaptation practice that is small- scale, place- based and often grassroots-driven, engages development practitioners and development approaches, and most importantly is community-based. Thus, it considers recommendations that have emerged from nearly two decades of research and practice on adaptation. The inclusiveness and lesson- based approach of CBA has clearly hit home with many people; the growing body of researchers, practitioners and community members interested in this approach to adaptation is a testament to the fact that many of us now acknowledge its potential in the fight against climate change. The term “Community Based Adaptation

(CBA)" can be defined as a bottom-up approach that brings the local community at the epicenter of determining how to respond to the impacts of climate change.

Reid et al. (2009: 13) explain that 'Community based adaptation to climate change is 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.'

For this thesis, I accept the definition of Community Based Adaptations provided by as the operational definition for Community Based Adaptations (CBA) as follow:

> "Community-Based Adaptation (CBA) takes the approach of adaptation as development. Responding to the concept that adaptation is local and place-based, it addresses the locally and contextually specified nature of climate change vulnerability because it takes place at local levels where people encounter impacts, build adaptive capacity, and respond accordingly."

S. Huq et al. 2014, advocates that, CBA focuses more on participation of all community members as a unified body which reflects on the instant priorities, traditional knowledge and capabilities and capacities of local community people. These include aspects relating to the development and transfer of technology to improve adaptive capability and the ascertainment of community vulnerability through assessments of risks that communities face.

2.6.1 The Key issues in CBA

As a community development concept, CBA is a new approach comparatively that is still evolving. There are certain key issues in CBA as follows:

Table 08: Key issues in CBA

Key issues in CBA		
Sl	Issues	Aspects of issue
1	Local Capacity	1. Participation 2. Nature of Resource Base 3. Degree of Communal Cohesion 4. Local Governance
2	Economic Factors	1. Nature of Resource Base 2. Markets
3	Management	1. Local Governance 2. Adaptive Management 3. Planning and Planning Process 4. Vertical and Horizontal Integration 5. Learning and Diffusion
4	Politics and Policy	1. Tenure (Rights of access, Degrees of rights) 2. Framework (Policy, Legislation, Institutions)
5	Resource Base	1. Nature of Resource Base 2. Competing Land Uses 3. Conservation 4. Adaptive Management
6	Outsiders	1. External Inputs (Funding, Technical Support, Training) 2. Planning and Planning Process
7	Cross-Cutting Issues	Participation Incentives
8	Stand-Alone Issues	Community Conservation Protected Areas

Source: SASUSG (1997) CBNRM and CBA: theory and practice

Adaptive capacity for any given community mentions to a given system's capability to take instant decisions and actions to reduce vulnerability resulting from climate change and it is dependent on certain influences such as:

1. Available Economic resources (to pay for adaptation);
2. Awareness and information (identification of problems and knowledge of solutions);
3. Technology (the tools needed to adapt); skilled labor (the ability to use available technologies);
4. Infrastructure (how the services, information, and resources needed to adapt reach communities).

Although communities have wide-range of knowledge of local changes happening within the environment, they often have inadequate knowledge of the reasons and impacts, to associate it with issues of climate change. Therefore, several CBA initiatives have used co-learning tactics, whereby both local and external scientific knowledge on climate change and adaptation complement each other through a process of regular "knowledge sharing" sessions among communities, scientists, and development workers.

In well-executed CBA projects, local peoples participateinallstagesoftheprocess– fromassessmentandplanning, through to implementation and evaluation – and all sections of local society and relevant stakeholders are represented. Active, free, and meaningful participation ensures that vulnerability assessments and the development of appropriate adaptation responses are guided by local priorities, concerns, vulnerabilities and capacities as articulated by the people themselves, according to their cultural perspectives. Effective participatory processes not only have the potential to strengthen local autonomy (Chambers, 1997), but are also likely to result in adaptation actions that are suitable to the local context and congruent with local worldviews, beliefs, values and aspirations (Reid et al., 2009b). Such adaptation measures are more likely to be adopted and endorsed by

targeted communities, and thus more likely to produce more effective and sustainable outcomes (Sherman & Ford, 2014).

2.6.2The Aim of CBA Approach

For this thesis, I accept the definition of Community Based Adaptations provided by as the operational definition for Community Based Adaptations (CBA) as follow:

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The aim of the CBA approach is to endure the adaptation needs of 'those who are most vulnerable' in a given community, from any form of Climate change impacts. At present, there are numerous poor and marginalized peoples living in high-risk environments, mostly in the developing nations like Bangladesh. Defenselessness of these individuals against climatic impacts is a function of their own low capability to adapt and cope up, as well as their exposure and sensitivity to climatic variability and change. It is sad to comprehend the fact of social injustices resulting from climate change, as 'those who are most vulnerable' people or group, actually contribute the minimum greenhouse gas emissions in the world so far. Therefore, it is considered significantly that vulnerable peoples are provided with adaptation support most of the true Polluters as planned, in participatory and specific to different local contexts.

CBA is a vulnerability-led approach: it begins with an assessment of a group's climate-related vulnerabilities and the factors that underlie them (Ensor & Berger, 2009b). Such an assessment recognizes that vulnerability to climate change is a function not just of

exposure to climate-related stressors, but also of an array of interacting economic, social, physical and cultural factors (Ayers & Huq, 2013). CBA practitioners attempt to address vulnerabilities by working to strengthen communities' 'adaptive capacity': 'The ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences' (IPCC, 2014d, p. 2). Adaptation approaches that focus on strengthening adaptive capacity have sometimes been described as 'adaptation as development' approaches (Ayers & Dodman, 2010), since building adaptive capacity not only improves communities' ability to deal with climate stress, but also often addresses existing 'development deficits' (Parry et al., 2009). This approach is closely linked with the principle of 'no regrets,' according to which CBA practitioners work with communities to strengthen the overall adaptive capacity to environmental change regardless of whether or not specific climate change impacts manifest (Ensor & Berger,2009b,p. 16; Heltberg,Siegel, &Jorgensen,2009). CBA is also strengths-based. CBA practitioners attempt to identify and engage the existing adaptive capacities of vulnerable groups, using lessons from successful autonomous adaptation efforts to develop planned adaptation measures. Humans have been adjusting autonomouslytoclimaticandbiophysicalstressesforallofhuman history (Orlove, 2005), and many communities have embraced a culture of adaptability, innovation and experimentation in order to survive and flourish in marginal environments and in variable and extreme climates (Berkes & Jolly, 2001; Ensor & Berger, 2009a).

CBA is also receiving amplified consideration at the international level, including at the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP). In some cases, it is also unified into government-led policies and programs focused for Adaptation. In practice, CBA is delivered in the form of specific project interventions by non-governmental organizations (NGOs). It is often anticipated that there

are up to several hundreds of CBA style projects in existence or already completed—primarily in Africa, Asia and the Pacific Islands.

2.6.3 An Overview of CBA: The Bangladesh Context

The emphasis on community-based adaptation is a serious issue for Bangladesh because this is the process in which climate change will be experienced and dealt mostly by the poor and untrained community people, and they will have to adjust to such impacts. So, this is why the necessity to channeling adaptation training at the community level is more significant in Bangladesh. Also, most local coastal communities are dependent for natural resource for their livelihood and thus extremely sensitive to climate change impacts. Here most of the people live in systems that are not closely supported by the local or central government. Furthermore, most of the costal land and some inshore fishing areas are communally owned and so if we focus on changing choices that involve the use of local natural resources, then it must originate from the community level.

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So, the primary aim of CBA is to enhance the adaptation preparedness process within communities through different set of trainings and assistances to enhance their adaptive

capacity and to reduce their vulnerability to climate change as a community. CBA allows to compare the characteristics of other approaches like, community-based such as participatory development, community-based natural resource management (CBNRM), and community-based disaster risk management (CBDRM). In Bangladesh, at the community level CBA is a very novel concept, which is been widely considered. For Bangladesh, CBAs in the Coastal areas have two main features as follows:

1. Rising awareness on climate change and its impacts on Community and in what way to adopt to such challenges, and
2. The incorporation of future climate risks into the design of project activities.

A development project helping communities cope with floods or saline water intrusion in their cropland, for example, is not CBA unless it can be demonstrated that the floodwaters or saline water intrusion causing the problems are a result of climate change as opposed to regular climate variability. Strong scientific or local knowledge about the past, current and expected climate change impacts is needed in order to make the assessment of whether or not an activity can be described as adaptation or not. This is a challenge on the ground, where in most cases it remains difficult to categorically attribute any one climatic event such as a flood or storm directly to climate change.

Bangladesh is often cited as one of the most vulnerable nations to climate change because of its flat and low-lying topography and location in the coast at the top of the Bay of Bengal, which make it vulnerable to cyclones and tidal surges. Furthermore, Bangladesh also suffers from high population density, weak political governance, and a dependence of many livelihoods on climate-sensitive sectors, particularly agriculture and fisheries. Many of the expected adverse effects of climate change, such as sea-level rise, higher

temperatures, enhanced monsoon precipitation, and increased cyclone intensity, will worsen the existing stresses that already impede development in Bangladesh.

Bangladesh was one of the first countries to submit its National Adaptation Programme of Action (NAPA) to the UNFCCC and more recently has developed a national climate change strategy to deal with mitigation and adaptation. At the same time, community-based adaptation responses are emerging both autonomously and supported by NGOs and local partners. One example can be drawn from the Gaibandha district in northern Bangladesh, which is covered by water during the monsoon season, making it impossible to grow crops using traditional methods. The IPCC Fourth Assessment Report notes that climate change will bring greater precipitation extremes, including more intense monsoonal rainfall, which will exacerbate flooding in Gaibandha. Source: IPCC, note 1.

According to S. Huq et al, 2014, in the coastal areas of southern Bangladesh, one further threat of climate change is increasing salinity, the encroachment of saltwater onto and beneath agricultural land. Saltwater makes it difficult to grow crops historically irrigated by freshwater, and it can accelerate the deterioration of buildings. In Mongla district, near the mangrove forests of the Sundarbans, villagers are responding to the threats of salinity by building houses on raised platforms and installing sealed containers of freshwater. Small containerscalled “Mokti” are often made of pottery and partly buried into the clay soil surrounding houses to provide reservoirs of freshwater for every house. Larger water tanks of plastic or even concrete are also installed near schools or in villager centers to provide a more communal and robust reservoir. The freshwater usually comes from rain that is channeled off roofs into containers. Some wealthier farmers are also converting old

rice fields to fishponds and using these to fatten crabs for local restaurants or for consumption in Dhaka, Bangladesh's capital city.

In the coastal district of Noakhali, South Bangladesh, the International Union for Conservation of Nature (IUCN) has been implementing the Promotion of Adaptation to Climate Change and Climate Variability Project, which aims in part to increase adaptive capacity at the community level. One community-based adaptation project under this program involves raising and reinforcing homesteads to make them more resilient against flooding and cyclonic activity, reducing the need for people to flee their homes during extreme weather events and reducing losses. The project brings together a design team of local individuals engaged as village-level house-building specialists, architects, planners, an engineer, a geographer, architecture students from local universities, user groups, and local builders and carpenters to develop preliminary design options. The team selects one family in the community for whom to build the first demonstration house. Once built, a new local design and construction team is formed from the now experienced local members of the first team, who move the project forward in their community, building other houses in the locality along with the house owners. House design is based on traditional cultural preferences but incorporate modest technological innovations that help strengthen or otherwise improve parts of the house that are particularly weak and vulnerable in the local climate. These include raising foundations, reinforcing house structures, and creating raised plat- forms within homes where people can take shelter during floods. Planting extensively along edges of homesteads is a local way of reducing wind impacts.

The CBA approach is increasingly being discussed, endorsed and deployed. However, the guiding principles of CBA, and how the approach is to be implemented, remains loosely

interpreted, and is occasionally weakly defined and poorly applied. In principle, CBA aspires to be an effective, socially just and sustainable approach to adaptation. It seeks to use adaptation financing to support the adaptation needs of place-based communities that are vulnerabletoclimatechange.TheCBAapproachischaracterized by a bottom-up and participatory process that is inclusive, community-led, strengths-based and empowering. Practitioners attempt to work in partnership with communities to co-produce adaptation measures that are congruent with local cultural contexts, perspectives, priorities and motivations. For its proponents, CBA presents an opportunity to learn from potential failures of top-down, 'one size fits all' approaches to development, as well as 'hard', impact-led approaches to adaptation. However, as with any development paradigm, achieving these goals can be challenging in practice. Attempts to realize the principles of CBA areconstrained by deficiencies in financing; embedded institutional cultures and professional attitudes; 'western scientific' framings of adaptation; conflicting interests and diverse perspectives; the challenging realities of seeking participatory, effective and meaningful collaborations between implementing agencies and local communities; and difficulties scaling up CBA activities beyond local stand-alone initiatives and mainstreamingthemintonational-levelpoliciesandprograms

2.7 New Knowledge in the Research Area.

To understand the nature and extent of community-based climate change adaptationsexperienced in Bangladesh, we need to discuss and summarize the recently operated CBA Projects. This will help us to understand the inner work dynamics of the communities of Bangladesh, which are affected by Climate Change in upcoming future. Experience from such Projects and program, already executed or running by the United

Nations Development Programme and other NGOs was providing evidence that CBA initiatives could operate at scale, for example, through mainstreaming into broader government and non-government policy and planning processes. Operating at scale can lead to tensions and challenges, for example, government structures are notoriously slow to act and respond to local needs and many have a very chequered history of responding to the needs of the poorest and most vulnerable. But experience has shown that it is possible for CBA to remain centered on the priorities and processes chosen by the community but not necessarily limited to work implemented at the level of the community (Reid & Schipper, 2014). Moreover, in order to recognizethe role of communities in the supervisionof adaptation of Climate change projects, the following literature are appropriate to create a new knowledge base:

2.7.1 The National Adaptation Programme of Action (NAPA): The National Adaptation Programme of Action (NAPA) is prepared by the Ministry of Environment and Forest (MOEF), Government of the People's Republic of Bangladesh as a direct response to lessen the adverse effects of Climate Change in certain parts of Bangladesh. The basic methodology used to develop NAPA was aligned with the Sustainable Development Goals (SDGs) of Bangladesh. Wherever it has recognized the need of addressing environmental concerns with the participation of community members, it was organized locally to discuss issues like natural resource use, allocation and distribution. Therefore, participation of different stakeholders from the selected vicinity was a crucial part of evaluating impacts, vulnerabilities, urgent adaptation measures and immediacy principle of the NAPA. Policymakers from Government side, local representatives of the Government (Union *Parishad* Chairman and Members), scientific community members of the various research organizations, researchers, academicians, teachers (ranging from primary to tertiary levels), lawyers, doctors, ethnic groups, media, NGO and Community Based Organization (CBO) representatives and indigenous women participated in the development of the

NAPA for Bangladesh. The strategic goals and objectives of upcoming coping mechanisms, includes to reduce adverse effects of climate change including variability and extreme events and to encourage sustainable development. Sharing knowledge and experiences of existing coping strategies and practices to other locality that would come under similar difficulties related to climate change. Development of actions for transferring knowledge and experiences from one area/ecosystem, to other, is also significant. Some initial activities of Napa have already been established in Bangladesh for the adaptation to climate change at the community level. It is now proven from the science of climate change and impacts studies that severity of impacts and frequency will upsurge in future and therefore existing coping strategies need to be appraised fast. So, preparation for such initiativeon regular basis will weaken theimpacts to some degree but will not solve the problem for good. Considering the situation, the following adaptation measures have been recommended for Bangladesh to deal adverse effects of climate change including variability and extreme events based on existing coping mechanisms and practices. The recommendation for future adaptation strategies includes:

1. To create huge coastal afforestation.in order to reduce the risksof climate change by community participation
2. Ensuring fresh drinking water facility to coastal communities to deal with the salinity intrusion due to sea level rise.
3. Capacity building for climate change incidents by considering its impacts in planning, designing of infrastructure, management of conflict and land water zoning management for fresh water.
4. Broadcastingof weather forecast related to Climate change and information for adaptation practices to vulnerable community in time for emergency preparedness, and awareness raising for climatic disasters.
5. Building of multipurpose Community based flood shelter, and using as information and assistance center to empower the community to cope with regularand higher floods in major floodplains.We need to mainstream

adaptation of climate change into policies and programs in different sectors (focusing on disaster management, agriculture, water, health and industry).

6. Inclusion of climate change issues and its impacts in school and college level curriculum and also in tertiary level educational institution.
7. We need to develop eco-friendly knowledge (including indigenous knowledge) for adaptation to deal with future climate change.
8. Need to promote research on drought, flood and saline tolerant varieties of crops to facilitate future adaptation and to use such saline tolerant crops to combat increased salinity in flash flooding areas and salinity intrusion zones.
9. We need to research and introduce the salt tolerant fish species for coastal areas fisheries practices.
10. Exploring opportunities for Crop and livestock insurance to cope with greater climatic disasters.

2.7.2 Economic Modeling of Climate Change Adaptation: Economic Modeling of Climate Change Adaptation Needs for Physical Infrastructures in Bangladesh is published byClimate Change Cell,Department of Environment, Ministry of Environment and Forests. The study has been conducted by Center for Environmental and Geographic Information Services (CEGIS), commissioned by the Climate Change Cell. It is widely projected that Bangladesh is one of the countries of the world which is most exposed to climate change impacts. For Bangladesh, Adaptation to climate change has already started putting additional stress on development efforts.

For Adaptation actions to be realistic, the economic cost and the associated social and environmental costarevital to any CBA project. Industrializednations have made promises to share the adaptation costs of Climate change with the developing nations, accepting the Polluters pay Principle. The need for developing an economic model is vital to the debate on climate change and adaptation to the variations, which will be tough for Bangladesh to absorb. Considering such fact, a forward-looking economic modeling exercise was conducted in this study to develop the methodology to compute the economic cost of

adaptation for physical infrastructural needed due to climate change. The total study has been completedinto three stages; the first stage of the study identifies related knowledge gaps and developed a knowledge base from secondary literature review. This phase gives an outline of the framework to analyze climate change phenomena, primary and secondary impacts of climate change, sectors which are possibly exposed to climate change and conception of economic costs of adaptation measures. The second stage of the study was done based on an economic model for the water management infrastructural needs for the coastal areas of Bangladesh, which is already vulnerable to the sea level rise due to climate change. The economic model used for this phaseis based on the hypothetical model suggested by Gunasekera and Ford (2005) on climate change. The third stage develops the economic model for two other vulnerable sectors: including health and transportation, following the same methodological steps as approved in Phase-II.

The study has opened a new window to dive deeper into the issues of climate change with respect toits impacts on land, water and environment. More integrated approach such as this one towards assessing impacts of climate change may be a welcome attempt for the government.

2.7.3 Livelihood Adaptation to Climate Change Project (LACC): The "Livelihood Adaptation to Climate Change Project (LACC)" is a subsection of the Comprehensive Disaster Management Programme (CDMP) and jointly implemented by the Food and Agriculture Organization of the United Nations (FAO) and the Department of Agricultural Extension (DAE) of Bangladesh. The project started actions to promote livelihood adaptation and reducing vulnerability resulting from climate change to poor local communities who have the lowest capacity to adapt. The project has ended its 1st phase in September 2007. At present, the Project activities took place in two districts in the NorthWest (NW) of Bangladesh, namely in Chapai Nawabganj and Naogaon. The project focusedon conducting field demos of possible adaptation options aiming at increased resilience to drought in three villages per Upazila.

The demos ofalternativeoptions for crop cultivation during the impacts of Climate Change was practiced for the Rabi season in 2005, the Kharif I, Kharif II and Rabi seasons in 2006 and the Kharif I and Kharif II seasons in 2007. The Community Field Monitoring Officers and Upazila Technical Implementation along with Working Group members facilitatedthe initiative. With backing from the DAE extension staff, the farmertofarmer learning process was prepared and practiced through several methods such as orientation meetings, field days, folk songs and dramas, demonstration rally, and exchange visits. This report sum-up the field results, benefits, lessons learnt and feedback received from the farmers for the impact of Climate change on crops in different periods of the year. So, this report is also relevant and vital for the adaptive research.

2.7.4.The Adaptive Capacity to Climate Change in the Agricultural Sectors: TheReportImproved Adaptive Capacity to Climate Change for Sustainable Livelihoods in The Agricultural Sectors, the Case of the High Barind Tract is founded on the study undertaken in four different sites viz. Nachole, Gomastapur. Porsha and Shapahar during the Kharif-I, Kharif-II seasons of 2006 and rabi season of 2007 to intensify the use of homestead spaces for increased vegetable production and to meet the demand of family nutrition.

Data analysis from the field reveals that the intake of vegetable improved to a significant level (on the average 136 g/h/day instead of 40 g/h/day base mark), which assisted the farmers to meet the required demand of vegetables and decrease the daily expenditure of vegetable buying. Though the intake of 136g/h/day was below the recommended daily vegetable consumption (200 g/h/day). Despite that wide spread malnutrition was reduced to a marked level, hence nutrition and food insecurity were marginalized. Actually,production of vegetable was compact in Rabi season due to drought and farmer's engagement for T. Aman rice harvesting and processing.

It is accustomed that farmers from the droughty area suffers a lot from food and nutrition insecurity due to low productivity of vegetables, rice and other crops due to water shortage and high temperature. So, farmers earned a small amount of cash income from vegetable selling after meeting their daily requirement and free distribution among the relatives and neighbors. From house to house enquiry it was identified thatwomen saved most of the sell proceeds touse for children education and severe needs.

Thus, a good social and environmental impactswere also formed among the cooperator farmers in the society, which gave them mental gratification and improved their economic stability. For drought prone areas, efficiency of the water use by the particular vegetable would preferably be high to adapt with the local conditions.

2.7.5 Costal and Sea Level Rise:Hugh Bramber (2014)steered a study on Bangladesh's dynamic coastal regions and sea-level upsurge situation, where he try to test the link in among a rising sea-level with global warming which will devastate thecoastal area of Bangladesh and will create minimum 10–30 million climate refugee in the upcoming 21st century. In such states, it will be more intensified by high rates of land subsidence, almost doubling of the rate of sea-level rise and coastal erosion. The state recorded till today recommend that the people of Bangladesh remain helpless against a rising sea-level and will be incapable to resist the rising water level. Those assumptions and descriptions areessentiallyincorrect in reality. As the coastal areaof Bangladeshis not uniform by nature, nor is it static. It is very dynamic, and so are the people ofthis community. Environmental scientists have an important role to play in establishing environmental facts to identify practical, area-specific, adaptation measures to counter realistically-probable impacts of sea-level rise in different geographical regions.

This study illustrates the kinds of data on geomorphology, hydrology, soils, land use and socio-economic geography that are needed to provide a sound basis for planning for area-

specific adaptation measures to counter sea-level rise in low-lying coastal areas elsewhere in the world like Bangladesh.

2.7.6 Changing the Way, We Develop:'CHANGING THE WAY WE DEVELOP'was designed under the Comprehensive Disaster Management Programme and operatedby Ministry of Disaster Management and Relief of Bangladesh Government. This policy was developed with a view to address the following conditions:

a) The levels of disaster risk are rising due to various social and community level pressures, including climate change.The impacts of global warming and climate change is already challenging many development initiatives around the world. This focuses on such cases of Bangladesh, as one of the most vulnerable nation, undefended to natural disasters and adverse impacts of climate change. As a nation, our priority concern is to find out the quickest way we can transform our status from vulnerable state toward a climate resilient state. Bangladesh now recognizes what will happen under climate change impacts, and what it will need to do to safeguard themselves in the years ahead.

b) Any Disasters,will affect the poorest communities and poor nations at the most. These brief highlights how a nation of 160 million people who are mostly poor, getting ready to address the impacts of global warming nationally. The idea is to share our experience till date with other countries, which urgently requires planning and mobilizing national efforts toward climate resilient development.

c) Any disasters bring a significant threat to sustainable development. They generally challenge prospects for achieving the Millennium Development Goals (MDGs), in particular the target of halving extreme poverty by 2015. National preparedness to deal with Climatic impacts is critical to develop relevant capacity to mobilize and utilize necessary resource flows, both domestic and international effortsto fight climatic impacts. This brief aim isto elevate the spirit, will and capacity of vulnerable countries

to support each other in preparing to address emerging adaptation techniques to face climate challenges.

2.7.7 Reducing Vulnerability to Climate Change Project: The Reducing Vulnerability to Climate Change Project was funded by CIDA and executed by CARE, Bangladesh, which is working with local communities and institutions to raise awareness on climate change, how to adapt to environmental changes that could be exacerbated by climate change, and influence such relevant policy. The project is working to at four levels as follow:

a. **Household level:** At a "Household levelsthe project is improving the capacity of selected vulnerable households,using a group based approach,to adapt to climate change impacts by making them aware of new livelihood strategies, which reduce the vulnerability of the Household.
b. **Community level:**At a "Community level" the local partner and community organizations are being trained and briefed to work with Union Parishads/councils and community leaders to increase their awareness on climate change impacts and to develop and implement more community-friendly adaptation strategies.
c. **Institutional level:** At an "Institutional level" we need to build up the capacity of six local organizations in four target areas as:

1) Collection and dissemination of information related to climate change;

2) Advocacy on salinity and its impact on potable water; and awareness,

3) Campaigns on climate change issues, using a flipchart that has been developed with over 50 related pictures,

4) Illustrating the causes and effects of climate change and possible adaptation strategies using traditional folk songs, drama shows, posters and a series of radio programs will be developed, focusing on proven adaptation strategies.

5) Local journalists are also invited to participating in field visits and writing articles for national and regional newspapers.

6) While Eco-clubs are conducting awareness sessions on climate change at the village level.

An 8-session module on climate change has been developed (including a flipchart, easy-to read book and teacher's handbook) and will be implemented within selected secondary schools starting in March 2004, by school teachers that have received training on the impacts of climate change and potential adaptation strategies.

d. **National level:** At the "National level" the project will be advocating with national level stakeholders' interest and ways to increase awareness of local climate change implications and local people's needs, focusing on critical issues such as, lack of fresh drinking water due to salinity intrusion.

In order to increase climate change awareness or to promote adaptation measures, we need to prioritize forwomen and children,and the poor, as they are the most vulnerable to climate change incidents. Moreover, in the Asian community, it's observed that usually women are the primary care-givers in times of disaster and environmental stress, so such burdens are likely to make them less mobile, and therefore they will not be able to get to safety in time of disaster.

Also, as climate change is predicted to reduce scarce resources, the time taken to fetch water or wood will increase, usually it's the women in Asian region, who do it and thus their workloads are increased. Thus,it is limiting their opportunities to use adaptation measures or start alternative income generation schemes (Röhr, 2006). Focusing on women's needs may include measures that men do not normally consider for survival like arranging proper sanitation facilities that can be used in disasters (Dutta, 2007) or arranging swimming lessons as most Bengali women have never learned how to swim, which diminishes their survival chances during floods or storm surges (Röhr, 2006).

Most of the community in coastal region of Bangladesh already experienced certain level of losses due to climate change impacts, but unfortunately the adaptation measures were taken up by only a very insignificant proportion of these people.The outcomes of the household awareness surveys showed significant differences in the awareness of climate change between the project and non-Project site. The people of Costal region of Bangladesh identified project activities such as community workshops, workshop handouts, and informal discussions with the project fieldworkers as their principal forms of information, which is not surprising given that their access to national media is far less than people living in the project site. Remarkably for people in Cox bazar, it was identified thatthe social media and news media,performs as their main source of information for climatic events and updates.

The One to one interview result from this research confirms that the CCA Project enhanced the knowledge levels of Costal community on the causes and possible future impacts of climate change and the importance of adaptation. While community members had already observed changes in the local environment, scientific interpretations of climate change were disseminated by the project implementers to compliment this already existing knowledge. This additional climate change awareness was particularly appreciated by community leaders and decision makers who encouraged and supported the community members' involvement in the project and accepted and recognized the new water management plan and committee as part of the community governance regime. While these outcomes are a direct improvement in community-based water management, they are also indicative of an enhanced local capacity to respond to climate change.

The Costal community had already established a marine protected area based on a district level marine management plan. The described process and outcomes of the CCA Project illustrate five key lessons that may be considered for future CBA initiatives as follows:

1. CBAs are mainly focused with enhancing the capacity of local communities to accomplish change resulting from Climatic alteration. The CBA's more distinctive

features are its emphasis on levitation awareness of the total community on climate change and incorporating future climate risks. The CCA Project in Bangladesh experience validatesthat deliberate planning and adequate resources are vital to ensure that the climate change message are spreading to every person of the selected community.

2. Developing specific networks and partnerships are significant forinformation accessing, technical and engineering knowhow, and resources necessary for CBA to be beneficial. Given the structural barriers village communities face in retrieving resources for adaptation, identifying and developing partnerships with key technological and engineering organizations should be a key purpose ofany CBA project implementers.

3. The experience in the coastalregions by the CCA project identifies that adaptation projects can have both reactionary and anticipatory features. Like for the first project step (site selection) was based on responding to a local problem, enhancing the awareness levels of the community on the greater influence of climate change on other sectors of community life as well as allowing a decision making and planning approach that can respond for future problems suggests the 'anticipatory' nature of the project. But, improving the capacity of people to deal with unforeseen adversity may be the best option as the future cannot be anticipated very well.
4. The CBA works efficiently and effectively only when the people facilitating it are from the same culture, speak the same local dialect or language, and understand local customs.
5. Doing a CBA appropriately takes time and patience to ensure actual changes are occurring as expected.

Individual and societal based adaptation to climate is not a new concept. The resource irregularities offered by different climates and the precariousness which emerges from the vicissitudes of climate have both acted as significant stimuli throughout human history for social and technological innovation. Irrigation, insurance and weather forecasting are three of the many human institutions which have been prompted and shaped by the interactions between our physical and imaginative encounters with climate. They are examples of how we have adapted our social practices in the face of variable climates.Adaptation to climate change has now become part of the contemporary discourse about the politics and economics of global climate change.

2.8 Lesson learnt from past CBA Projects in Bangladesh

Measuring the success of any community-based adaptation project is inherently problematic, mainly because the impacts are in the form of outcomes that have not happened—in this case, the crops not lost due to inundation and the economic impacts that did not result. Now, it is too early to tell whether the project has resulted in long-term resilience building, given that the project is only four years old, and the project implementers suggest that the real test for the project will depend on whether it can be scaled up.One approach to the problem that deserves greater support is community-based adaptation (CBA), which can be viewed simply as an additional (though fairly new) layer of community-based development activities, practices, research and policies. CBA begins by identifying the communities in the developing world that are most vulnerable to climate change. These are generally very poor, depend on natural resources and occupy areas already prone to shocks such as floods or droughts.Once a community's vulnerability has been established, using the best available science on climate change impacts, the process of engagement with the communities can begin. According to Huq and Reid, 2007,

anumber of early lessons have already been learned from the limited set of CBA activities done around the world so far. They include:

1. To do any good, outsiders must first gain the trust of the communities they want to help. Normally this would mean spending a long time with the community. But if trusted local intermediaries (e.g. NGOs, community groups or government bodies) are available, it is best to start dialogue with them before moving to the communities themselves.

2. Climate change is an esoteric and initially confusing concept to many. Communication about it must use a community's own language and terms they can understand. This means not only translating scientific texts into local languages but also giving up on the written word altogether and using traditional means of communication such as art and theatre, or modern methods such as video

3. When the cooperation of the local intermediary and the community has been obtained, the process of identifying what adaptations are appropriate can start. This requires initial learning about the community's indigenous capacities, knowledge and practices of how to cope with climate hazards in the past. New activities, technologies or practices can then be introduced.

4. Once set up, an adaptation project looks much like any standard development project (e.g. for water harvesting in drought conditions) rather than a stand-alone response to climate change. The difference lies not in what the intervention is but in the inputs to the intervention. It is not what the community is doing but why and with what knowledge. The adaptation element introduces the community to the notion of climate risk and then factors that into their activities. This makes them more resilient both to immediate climate variability and long-term climate change. It should be noted though that the few existing CBA projects are so new that they have hardly been tested for resilience to climate variability let alone to climate change.

5. One important feature of the lessons from CBA so far is that learning itself requires practice. It is not possible to learn the theory of CBA in a university or training workshop and then apply it in the field — the learning comes from the practice itself. Adaptation is a classic case of learning-bydoing or 'action-research'.

6. The theory and practice of CBA are in their infancy but both are likely to grow very rapidly. It is important now to allow as many pilot activities to be carried out as possible and to share the experience and knowledge gained from them. This is a major challenge of networking in real time between practitioners, policymakers, researchers and funders and the communities at risk.

The international NGO Practical Action is working with local communities in this district to develop ways of allowing farmers to grow food on flooded land, using a process of community-led identification and prioritization of natural resource management options and technologies. Detailed consultation meetings, in addition to assessments of the needs, skills, assets, and capacities of the community through household surveys led to the development of participatory action plans of development, which identified a number of options for tailoring existing and new technologies to meet the needs of the community. For example, the innovative technology of floating gardens, or hydroponics, that villagers have taken up in many other waterlogged and flooded areas of Bangla- desh (Source: http://www.practicalaction.org id=climatechange_floatinggardens (accessed 5 May 2009). has been introduced to Gaibandha. A floating garden is built from a raft of water hyacinth typically about 8 meters long and 1 meter wide. The raft is covered with soil, compost, and manure, in which vegetable seeds are planted. The raft will last just one year but can be used as fertilizer during the dry season. To ensure sustainability of the program, training and input support was tailored to the particular profile of household members, and technologies were accompanied by a widespread climate change aware- ness program.

The work in Gaibandha was partly inspired by bad flooding in 2007, which prompted organizations such as Practical Action to look into long- term methods of reducing vulnerability to inundation, as well short-term disaster relief. Villagers in Gaibandha use floating gardens to grow vegetables such as bitter gourds, green okra, and leafy greens, which provide subsistence for people even during the annual monga (period of food shortage). Indeed, in some cases, these vegetables also provide an alternative source of income when surplus is sold in the market. Because the rafts can be moved from place to place, they are also suitable for those who have temporarily or permanently lost their homes and land during increasingly severe flooding conditions.

2.9Conclusions

This chapter attempts to clarify the reader about the main apparatuses for CBA to be successful in the field. It starts with explaining the international efforts for Climate ChangeAdaptation, the global and Bangladesh context of Climate change as well as the consequence for Bangladesh on the long run due to such change and its impact of different entities. It also discusses the ideas about how the local people from different community deals with it as a community, the overview of CBA is presented from global as well as Bangladesh perspective. This chapter essentially summaries the concentration of the reader to understand what and how CBA is obligated to create lasting impact and awareness to deal with Climate change on the long run.

The Intergovernmental Panel on Climate Change's (IPCC) latest report states clearly that climate change is already having discernable impacts. These are disproportionately affecting poor communities — especially those in poor countries.These impacts are set to intensify, yet the poorest communities are unable to cope with current climatic (and other) shocks, let alone any future risks related to climate change.It is vital that these

communities are helped to adapt to climate change. Such communities are often marginalized, remote and receive limited services or support from their governments. Reaching the hundreds of millions of people in them will be an immense challenge for any international or national funding mechanisms.

CHAPTER 03

The Nature and Extent of Community Based Climate Change Adaptation (In the Study Areas)

3.1INTRODUCTION

This Chapter starts with providing an overall project over view of CBAECA in Bangladesh and also the nature and extent of Community based Climate Change Adaptation in this country context. The discussion is based on the cautious review of the key Project documents, interview of the beneficiaries of the Project as well as project officials of Dhaka Headquarter and Cox Bazar Field office. Then an overall overview of Community Based Climate Change Adaptation (CBA)is presented and discussed to identify the areas to determine its successful intervention; then the chapter ends with a correlated Conclusion.

3.2 The Project Overview of CBAECA (Climate Change Adaptation in Ecologically Critical Areas Through Biodiversity Conservation and Social Protection) In Bangladesh

For this research, I have decided to identify and assess the impact valuation of selected activities of the Project titled 'Climate Change Adaptation in Ecologically Critical Areas through Biodiversity Conservation and Social Protection' (hereafter, CBA-ECA or the Project). This project was Funded by the Government's Climate Change Trust Fund, and managed and supervised by the Department of Environment (DoE) under the purview of the Ministry of Environment and Forest (MoEF), and the field events are carried out by the Nature Conservation Management (NACOM)-led consortium (comprising of

NACOM, SBF and IUCN-Bangladesh) in Ecologically Critical Areas (ECA) of Cox's Bazar-Teknaf Peninsula and the Sonadia Island. I want to emphasis on the actions that was actually effective for Community based awareness development and adaptation practices used in this Project.

Launched in 30 April 211, the Project has been implemented in the above context,with a territorial coverage of the two key ECAs of Cox's Bazar-Teknaf Peninsula and the Sonadia Island spanning over five Upazilas (Sadr, Rami, Maheskhali, Ukhia and Teknaf) in the district of Cox's Bazar- pertaining to the south eastern coastal and associated mudflat zones of Bangladesh. The Project is currently in the winding up phase and expected to end in December 2013. The Project has attempted to pursue the following broad objectives:

1. To halt or curb the degrading trend in biodiversity/resource base
2. To restore and rehabilitate the degraded ecosystems to improve habitat quality to reduce the dependence of local people on local critical resources through providing alternate income streams and resource substitutes
3. To ensure the effective participation of the local people in the process of implementation of the project activities with a further view to develop a caring community for the local biodiversity and resources.

Within the above broad objectives, the specific tasks of the Project include the following:

a) Preparation of Action Plan for Biodiversity Conservation and Climate Change Risk Reduction
b) Capacity Building and Livelihood Diversification of the Community People
c) Implementation of Priority Actions on Biodiversity Conservation and CC Adaptation

d) Adaptation measures for Community Protection Against Climate Change

e) Monitoring and Enforcement of Awareness Raising and Media Campaign

This field work was part of my research activity for M.Phil. Degreerequirement and fielded in August 2013 with the "main purpose of assessing the adaptation impacts of selected project activities on the targeted communities". More specifically, the "assessment concentrated on the following activities: "awareness raising program for Adaptation to Climate Change Adaptation, livelihood skill development training and evaluation of VCG (Village Conservation Group) strengthening and Climate Change adaptive and sustainability issues".

3.4 The ParadigmShift in the Local Community of the Costal area: From Vulnerable to Community Based Climate Change Adaptive Community

For this thesis, I accept the definition of Community Based Adaptations provided by as the operational definition for Community Based Adaptations (CBA) as follow:

> "Community-Based Adaptation (CBA) takes the approach of adaptation as development. Responding to the concept that adaptation is local and place-based, it addresses the locally and contextually specified nature of climate change vulnerability because it takes place at local levels where people encounter impacts, build adaptive capacity, and respond accordingly."

Some climaticeffects like risingtemperatures, variation in precipitation patterns and sea level rise are already being experienced in Bangladesh. There is an increasing trend in numbers of extreme weather events including more intense floods, drought and storms. Bangladesh will suffer from such effects of climate change. Key disruptions associated

with large-scale climate change impacts occurring elsewhere could affect Bangladesh through diverting flows of goods, services and financial resources. Several studies and research have been carried out by IUCN Bangladesh Country Office to understand and document local people's perceptions regarding climate change. A shortlist of their perceptions is presented here:

1. Excessive, untimely and irregular rainfall patterns.
2. Increase in the tidal bores, cyclonic episodes and variations in tidal flow.
3. Increase in the frequency of flash floods and tidal surges.
4. Rise in surface air temperature heat spells and cold waves.
5. Increase in droughts and dry spells storms and hailstorms.
6. Higher intensity of mist/fog in the winter season.
7. Shifts in season and preparation time, effects crop plantation and harvest.
8. Reduced winter temperatures and duration.
9. Higher insect/pest infestation in the crop fields.
10. Shortages in the supply of freshwater for drinking increased outbreak of water borne diseases like diarrhea as well as vector borne diseases such as Malaria.

Community based adaptation can also be defined 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."[1] On the other hand the term Resilience can be defined as the ability of a system, community or society to resist, absorb and cope with (recover) from the effects of hazards, and to adapt to longer term changes in a timely and efficient manner without undermining food security or wellbeing.[2].

[1]Reid, H., Cannon, T., Berger, R., Alam, M. and Milligan, A. (Eds.), 2009. Community-based adaptation to climate change. Participatory
Learning and Action 60. IIED, London.
[2]Pasteur, K. 2011. From Vulnerability to Resilience: A framework for analysis and action to build community resilience. Practical Action Publishing, UK.

It is therefore noteworthy to shape the adaptive capacity of vulnerable people of Bangladesh so that they have the assets, resources and capacities to respond not only to present threats, but also to potential encounters in the forthcoming. The sustainable livelihood framework, on the other hand, focuses on five capitals of a community to ensure its wellbeing: as social, natural, human, financial and physical.

Depending on the needs of a selected community, these can be translated into actions like strengthening community organizations, supervision of natural resources, promoting access to skills and technologies, enhancing market linkages and employment opportunities and ensuring secure living conditions. The overarching goal of the CBA-ECA Project is to strengthen the ecosystem-based co-management model of ECAs. This approach is basically capitalizing on communities' social capital as demonstrated through formation of Village Conservation Groups (VCG) and ECA Management Committees. Capacity building of the VCG members on different aspects has directly improved the human capital in the community to manage these organizations, financial and physical resources. To decrease people's livelihood dependency on natural resources, ECA communities have also been provided with alternative income generation possibilities. These in turn has upgraded their financial capital, while wisely managing their natural capitals. Funds like Micro Capital Grant (MCG) and Endowment Fund further enhanced financial capital for ecosystem conservation. Biological interventions like defending, inspiring and restoring wide range of habitats in the coast improved the natural capital of the ECA dwellers. Physical interventions, like Village Conservation Centre (VCC) buildings and watchtowers contributed to building physical capital as well financial capital through multi-layered use of these structures.

The CBA-ECA Project has introduced several community-based adaptation measures, such as mangrove and swamp forestation, green belt creation, solar irrigation and solar desalinization plants. These physical ventures improved the physical and natural capitals of the ECA communities against natural calamities, and at the same time improved human and financial capitals by improving human health and safety, and food security. The CBA-

ECA Project actions geared towards forming more resilient communities, while conserving the unique biodiversity of the ECAs. People's needs and priorities were at the core of the project, especially in terms of empowering women, and ensuring well-being of communities, including children. The hard and soft adaptation measures to building resilient ECA communities are described in the following sections.

3.4. 1 Formation of Green Belt

Formation of green belt on submersible embankment is an inimitable ecosystem-based option that can contribute to biodiversity conservation, as well as adaptation to climate change. It's a new approach, gaining popularity in the local community, as its environmental friendly process, and cost effective. For this activity, asubmergible embankment is designed and build by the community members in such a way that it can restrict flood of certain portion of a wetland for certain period, and people can get opportunity to harvest their seasonal yields. When substantial rainfall starts then such an embankment goes under water, and fish and other aquatic species can traffic freely throughout the wetland. The swamp plantation is usually done on an embankment, on the one hand, offers strength and protection to the embankment from wave action during the monsoon and heavy rain. Additionally, the swamp plantation acts as new habitats for numerous aquatic animals and birds.

This aspect of the project added a new dimension in the project area , as now the community have a tangible natural resource to guard and protect and they realize it will do the same for them in climate hazards.

3.4.2 Coastal Afforestation

Swamp forests are an essential part of the Costal ecosystems, and restore naturally in the raised lands along the periphery of the Islands, similar Sonadia and Moheshkhali ECA

with species, such as hijol, koroch, borun, nol and khagra, and various other species of herbs and shrubs. To protect and allow restoreof the forests, the CBA-ECA Project has undertaken plantations as well as mobilized resources to preserve the resources, and protect it from encroachment and deforestation. Community guards have also been deployed, along with areas demarcated with boundary fencing.

In Nuniarchhara, Cox's Bazar, more than 250 acres of mangrove forest has been recreated and regenerated beside the Bakkhali River, which is maturing. This has been completed by mobilizing of the local community, and getting rid of the shrimp farms during the Coastal and Wetland Biodiversity Management Project (CWBMP) of the Department of Environment. In Sonadia Island, 361 hectares of mangrove and in Cox's Bazar, 62 hectares of sand dunes with species namely (*Pandnaus furcatus*), nishinda (*Vitex negundo*), haora/ khair (*Saccharum sp.*), sagarlata (*Ipomoeapes-caprae*), akonda (*Calotropis gigantea*) and Kolmi (*Ipomoea fistulosa*) have been implanted, along with the protection of about 500 hectares of natural vegetation. If there is free interplay of tides, natural regeneration can take place at a steady rate.

In Jaliapara (near Shah PorirDweep), there are natural and planted forests and watchtowers constructed near the mangrove patches are aimed not only for monitoring the ECAs, but also a strategy to stop land encroachment and promote eco-tourism at the sites. The VCG members strongly believe that mangrove forests protect them from disasters and they are not willing to trade it with money or whatever else. They are well trained and aware to identify and report to the authorities andswore not to catch or eat the crabs or the birds that are spotted in these forests, like egrets, magpie robins and sparrows or the migratory winter birds that come here to roost.

This aspect of the project added a new level of awareness among the involved communities about natural resources and their scarcity as well as what will happen if they are endangered by numbers , so the communities now proactively guard and protect such resources.

3.4.3 Awareness, Education and Training on Adaptive Options

To improve communities understanding of climate change and resilience, training and capacity building activities have been carried out by the CBA-ECA project. Besides, focused group discussions have been held at all project sites, along with workshops, observance of landmark events, such as the World Environment Day and performance of folk drama and art camps in schools, to make communities more aware of their circumstances.Under the CBA-ECA Project, hands-on training sessions on income generating activities, like duck rearing, cow rearing, fish culture, small business, handicrafts, tailoring, vegetable and betel leaf cultivation have been provided to the communities to diversify their livelihood options as coping mechanism.

Demonstrations of alternative technology and practices, like cultivation of salt tolerant rice varieties (BRRI Dhan 47), cultivation of short duration rice varieties, less water tolerant varieties, integrated pest management and crop diversification have also been introduced through hand on training to improve adaptive capacity of the ECA dwellers, in the Cox's Bazar ECAs.

The climate variations are affecting the traditional cropping patterns and cycles, and to enhance the coping capacity of farmers, Farmers' Field Schools were organized in Cox's Bazar ECAs following curriculum of the Department of Agricultural Extension. About 40 farmers from two Upazilas have been trained for 11−14 weeks, and have been introduced to organic methods of farming.

The elevation of crop diversification has also reduced demand of water than traditional rice cultivation, and improved soil quality by balancing nutrient uptake from different levels of soil. A total of 170 farmers have been capacitated through training on crop diversification techniques, to better cope with changing climatic conditions. In addition, to enhance the coping capacities of the members (primarily farmer and fishermen communities), 94 members (both men and women) from four different VCGs, have been trained on adaptation strategies.

All the training sessions have had follow-up activities, where the VCG members have been provided with financial support or materials, like duck, materials for handicrafts making (bamboo, cane, bits and threads etc.), goods for small business, tea stalls, grocery shops, fish culture, vegetables cultivation, cow rearing, and hair cutting, to pursue activities related to their newly acquired skills and training, under the supervision of the local officials of Department of Agricultural Extension and other relevant agencies.

This aspect of the project added a new skill set among farmers of the community to go for test and trail basis profession and irrigation patterns to ensure the sustenance of their livelihood , , during severe climate hazards.

3.4.4 Diversification of Livelihoods

About 500 men and women have been trained on alternative income generating activities, such as, training on paramedics, sewing, tailoring, small business, handicrafts, duck and poultry rearing and raising livestock. About 230 persons received material support to reduce their reliance on the ECA resources.

This is especially true for female VCG members, who now have a voice and more decision-making authority, driven by their incomes and social status in the family. Besides conventional alternative livelihoods, in both the ECA sites, there is immense potential for promoting sustainable and responsible eco-tourism.

Both sites attract tourists because of the adjacent attractions like the Cox's Bazar-Teknaf sea beach, the longest stretch of unbroken sandy beach in the world. These places are potential hubs of demonstrating climate resilience by vulnerable communities along with nature based tourism.

As Bangladesh, the most vulnerable country to climate change impact, so this research will try to analysis the effect of climate change over environment, especially on selected

communities, and will try to identify the level of awareness to formulate eco-friendly adaptation process and systems to deal with environmental problems resulted from climate change impacts.

Being the largest delta in the world, and located at the downstream of the second largest river system, Bangladesh is always subject to a series of climatic events like Flood, Cyclones, and Hurricanes etc. The probable impacts of global climate change (GCC), particularly sea-level rise and the associated impact on ecosystems and economic loss, adds to the already daunting array of environmental issues.

The diversification of livelihoods through alternative incomes have not only enhanced the skills of the local people of the community , but also strengthened their capacities to tackle climatic disasters, and situations leading to poverty and insecurity.

3.5The Scope, Structure of the Field Research

The major happenings of the fieldwork started with initial briefing meetings with the senior Project officials in Dhaka and Cox's Bazar; literature survey including a desk review of the key project documents.

Selective empirical visits and fieldwork; FGD and meetings with selected stakeholders notably group/MCG beneficiaries, relevant field staff of DoE/CBA-ECA, NACOM and IUCN-Bangladesh, selected specialists and experts, and local government representatives;

key informant interviews with selected staff and beneficiaries; and experience-sharing meetings with the project staff (and invited representatives of other projects).

In following the research mandate and the initial briefings with the key Project staff, the main topics, issues and focus of the fieldwork were determined to be the following from the whole project:

Table09: Summary of the Major Topics and Issues Explored During FGDs and Interviews

1. **Awareness Raising Program for Adaptation to Climate Change**
    a. Nature and activities relating awareness raising campaign, especially the training and capacity development support
    b. Nature and activities relating to documentation and dissemination.
    c. Effectiveness in reaching and informing the target communities (respondent VCG members, local people, fishermen, etc.) about the various aspects of NRM and climate change issues
    d. 4. Observations on the methods and tools used for awareness raising
    e. Key problems and challenges (as perceived by the respondents)
2. **VCG Operations**
    a. Nature and extent of VCG activities and interventions
    b. Selected organizational and management dynamics
    c. Extent and effectiveness of capacity building efforts
    d. Considerations of sustainability.
3. **Livelihood Skill Development Training**
    i. Nature, types and extent of the training
    ii. Impact and effectiveness of the intervention:
        a) Level and Extent of Follow-up/refresher training
        b) Extent of uptake and actual use of the learning by the recipient/trainees (based on the sample/respondent interviews)
        c) Backstopping (including materials, advice, and logistics) support for Adaptation to Climate Change
        d) Evidence of replications and further expansion
    iii. Targeted beneficiaries' views, preferences and opinion
        a) Key problems and challenges (as perceived by the respondents)
4. **Understanding on the part of the visited Local Government Offices**
    i. General impression about the understanding and responsiveness of the Project and its activities on the part of the selected relevant local UP Chairman and Upazila Nirbahi Officers (convener Upazila ECA Committee) and other relevant members
    ii. Their views on and assessment about the project performance
5. **Overall impact and effects of the Project**
    i. Contribution to Social Capital formation
    ii. Contribution to Livelihood enhancement
    iii. Degree of Public credibility and popular acceptance
    iv. Extent of Empowerment

Source: Developed by the author

For the Field work, a specific plan was developed and annexed here for consideration in Appendix 1, Page -175. I have visited all the five Upazilas with my field team under the purview of the Project, namely, Cox's Bazar Sadar, Ramu, Maheskhali, Ukhia and Teknaf spanning over the two ECAs. The specific fieldwork sites were selected based on–

1) A careful review of literature (Project documents, reports etc.),
2) Consideration of the specific purpose and goals of the Mission, and
3) The suggestions and views of the project staff and other concerned stakeholders (e.g. local civil society representatives, local government representatives).

3.6 The Extent of Participation in Different Activities of The Project

I was focused to identify the different actions of the selected project, where the members as well as stake holders of the projects participate as a community member to enhance their capacity to adopt to climate changes impacts and hence can survive in the natural catastrophe.

3.6.1 Livelihood Skills Development Training

The following table summarizes the skill development, gained by the community people (Females) from the project – mainly sewing and handicraft (bag, mat weaving, *mora*) - training imparted by the Project. A total of 403 persons (selected members of VCGs) – female 395 and male 8 - have benefitted from this project intervention.

Table 10: Summary of Skill Development Training (October 2011 – March 2013)

SL No	***Venue/Location***	***Date***	***No. of Trainee (Male)***	***No. of Trainee (Female)***	***Total Trainee***
1	ShahporirdwipMajherpara	01.12.11	00	16	16
2	Kawarpara	01.12.11	00	16	16
3	Dailpara, Khuruskul	02.12.11	07	08	15
4	Ghotivanga	02.12.11	00	20	20
5	Rakhainpara	03.12.11	00	10	10
6	East Kutubdiapara	04.12.11	00	22	22
7	Sonadia Westpara	25.01.12	00	20	20
8	Sonadia Eastpara	28.01.12	00	20	20
9	West Kutubdiapara	29.01.12	00	18	18
10	Nuniarchara	02.03.12	00	13	13
11	Pacherdwip	02.03.12	00	12	12
12	West Sonarpara	03.03.12	00	15	15
13	North Sonarpara	03.03.12	00	13	13
14	Shafirbeel	04.03.12	00	12	12
15	Shahporirdwip Jaliapara	02.03.12	01	20	21
16	Tulatoli	05.03.12	00	16	16
17	Rastarpara	01.06.12	00	15	15
18	Borochara	02.06.12	00	14	14
19	Nuniarchara	01.06.12	00	14	14

20	Khurermukh	01.06.12	00	21	21
21	Lombori	01.06.12	00	21	21
22	Sonaichari	02.06.12	00	20	20
23	Kawarpara VRC	12.12.12	00	11	11
24	NACOM Office, Cox's Bazar	23.12.12	00	12	12
25	South Lombori VRC	20.01.13	00	16	16
			08	*395*	*403*

Source: Compiled from NACOM Cox Bazar office records

The following observations may be made based on The field work team's report and associated consultations (including findings from the FGDs):

1. The training programme has predominantly targeted and benefitted the women, and this gesture has been much appreciated by many female respondents.
2. The training has been generally well received, but the topics (only two – sewing and handicrafts) covered are considered very limited. There is local demand for a good number of other subjects of training (some of these topics, as suggested by the respondents – have been noted in the 'recommendation' section [chapter 4]).
3. In terms of retention of the training lessons, the results seemed mixed. There has been no refresher or follow-up training. Although nearly all respondents appreciated the value of the training, only a limited number – some 55% of respondents - noted that they have actually used the training – especially as an avenue to alternative income generation.
4. The timing of the training is mainly determined by the Project, which sometimes conflict with the beneficiaries' livelihood engagements, especially women's household chore hours.

Source: Compiled from NACOM Cox Bazar office recordsSource: Compiled from NACOM Cox Bazar office records

Figure 11: Handicraft training at South Lombori VCG

Figure 12: Handicraft products (*mora*) by training recipients

In line with the case of IPM training, the major constraints and challenges relating to the livelihood training, as revealed in the course of the fieldwork, include: inadequate duration (typically one month) of the training scheme (most respondents preferred a duration of 2 to 3 months; some earlier projects – notably Empowerment of Coastal Fishermen Community Project [ECFC] - provided for 3 months' long training program), inadequate opportunities for intensive hands-on trials and practice, lack of material support and technical

Figure 13: A MCG recipient owned medicine dispensary

Source: Compiled from NACOM Cox Bazar office records

Backstopping, lack of (or inadequate) access to financial capital (including start-up and recurrent capital), difficulty in arranging competent local trainer, lack of support towards accessing markets and selling outlets. In limited number of cases, some socio-religious

restrictions on the movement of targeted women to participate in public venues were reported (e.g. in Borodail and Shilkhali in Teknaf).

3.6.2.Awareness Raising Campaignfor Climate Change Adaptation

The major activities of the Project in this regard include the following: development and dissemination of selected communication materials including posters and bill boards, liaison with the media, 'exposure visits' targeting selected key stakeholders, celebration of various national and international environmental events and milestones and conduct of a series of village level mass Conscientization meetings. The major observations and findings in this regard include the following:

- Nearly all the relevant stated targets of the Project have been achieved (see the following table):

Table11: Summary of Progress Regarding Selected Awareness Raising and Conscientization Activities of the Project (May 2011 – May 2013)

Nature of the Activity	Volume	Brief Description	Achievement against Target (%)
Develop communication materials-posters	4 posters	Produced and distributed 4 posters on ECA rules and Climate change (7000 copies each)	100%
Develop communication materials- billboards	60 billboards	Produced and posted **59** billboards at strategic places for awareness creation.	98%
Increase visibility of project activities through media campaign	4 meeting and 1 training, 4 exposure visit, 6 folk drama show.	Conducted one training with the journalist, four meetings and organized 3 exposure visits with media people. Performed 6 folklore drama. At least 300 news published in the daily local and national newspapers. Also broadcast the news on the project activities in the	100%

		4 TV channel.	
Observe environment related day	6 days	Observed **6** environment related days and organized rallies, quiz competition and discussion meeting (International Biodiversity Day 2011, 2012 &13, World Wetland Day 2012 and World Environment Day 2011 & 2012). Participated by government officials, public representatives, school children and teachers, VGCs members, NGOs members, environmentalists, journalists, etc.	100%
Conduct village level awareness meetings with local communities	300 Awareness program	Conducted 291 village level awareness meetings on goal & objectives of the project, climate change adaptation, disaster management, conservation & management of natural resources and their sustainable resource uses and biodiversity conservation & Management. A total of 18463 people were present in the meetings, of them 13212 ware male and 5251 are female.	100%

Source: Compiled from various office records of NACOM Cox Bazar office by the author

It is difficult to carve out the exclusive impact of these activities as most VCGs and associated communities have benefitted from similar awareness raising and Conscientization interventions from earlier projects (e.g. NRG, CWBMP). The field work team recorded observations during the field visit, however, suggest that group members have received the Project messages as part of their discussions and interactions during the fortnightly and monthly meetings.

Over all, the Project activities seem to have contributed a degree of rise in the consciousness among the group members and other participating villagers about pressing environment and natural resource conservation issues and challenges - especially in the context of their respective locality and the implications thereof for the life and livelihood of the concerned communities. This can, to a large extent, be attributed to the Project interventions including various Conscientization and training programmes. Some examples of such issues - on which respondent local communities have shown a heightened sense of concern, and they have acted upon with the help of the Project are given in the following table.

Table 12: Examples of Issues on which Local Communities Show Greater Awareness (and Have Acted Upon Collectively)

Key issues and challenges addressed	**Examples of Project actions and interventions**
1. Elite capture and sabotage of common lands used for polders and embankments – designed to saving localities from tidal surges and storms **2.** Conspiracy to lease out public common lands to influential elites (often politically linked outsiders) for shrimp cultivations and salt pans **3.** Weak role of the local government offices in acting in favor of poor and powerless communities **4.** Increasing cases of hill cutting, destruction of mangrove forests, and indiscriminate killing of various species of fingerlings while harvesting shrimp-spawns	**1.** Strengthening and reactivating UP Standing Committees to act on behalf of common villagers **2.** Provision and successful negotiation with the relevant local government authorities to include VCG members in UP Standing Committees **3.** Community managed plantations **4.** Collective protest, with active involvement of the UP and relevant line government departments – against encroachment and land use changes/ conversion **5.** Mass public conscientization regarding biodiversity conservation, checking the local forms of environmental degradation

Source: From the Fieldwork Notes

The Field work's major observations were summarized based on recorded observations during the field visit:

1. As noted during the fieldwork, local communities and VCG leadership consider and conceive the above problems to be critical for the localities, and remain thankful for the Project interventions.
2. The Project has also tapped (mostly local) newspapers to disseminate key Project messages; a list of such newspaper reports isappended.
3. Among the planned promotional materials, the posters and brochures were produced maintaining adequate quality. The dissemination and circulation, however, have still been limited; the work for wider distribution of the materials is currently in progress.
4. In line with the above, another 'exposure visit' to a renowned community based natural resource management site – the Hakaluki Haor system - was organized in March 2013 for a group of 19 persons representing members from VCGs, members of Union and Upazila ECA committees, DoE and NACOM officials. The primary objective was to 'understand and to exchange of views and knowledge about the inter-linkages between economic and ecological functions of the Hakaluki Haor system and to understand the pros and cons with respect to changes in the quality of the environment'. Several participants of the visit – especially selected VCGs leaders – spoke highly about the usefulness and relevance of the visit; while discussing with the field work team the participants particularly focused on the comparative advantages and disadvantages of the governance structures between Hakaluki and CBA-ECA.

3.6 Conclusion

This Chapter starts with portraying the category and level of Community based climate change adaptation for the study area of the project, then it obtained the overview and summary of the CBAECA Project, This Chapter also conditions how this project contributed in the shift of the community perception from vulnerability to community based climate resilience in Bangladesh with precise intervention actions like Formation of Green Belt, Coastal afforestation, Awareness of Climate change impacts and adaptation necessities, education and training on adaptive options were discussed . then the scope and structure of the field research as well as the extent of participation in different activities of the project were discussed.

CHAPTER 04

The Inner Work Dynamics and Successful Cases Of CBAECA

4.1 Introduction

This chapter attempts to assess the particular activities and interventions of the Project and the resultant accomplishments. These activities analysed here, include the following: awareness program for Climate Change Adaptation, livelihood skill development training, functioning of VCGs, and local government relations. The assessment is based on the fieldwork (as delineated in Chapter 3, section 1) and the associated empirical observations and consultations. Additionally, the analysis also reflects observations from the secondary review of project documents.

Bangladesh is already experiencing climate change as predicted and observed by the scientific community. Although average number of people killed and affected by disaster has fallen over time, the fact remains that more than 50 million people have been affected every five years from 1986 to 2007. The nation spent around USD 10 billion over the last thirty years in the management of disasters (BCCSAP 2008). The country's physical location together with widespread poverty makes it particularly vulnerable to climate change. The agriculture sector, the key employment provider for Bangladesh, is badly hit by climate change. Historical inequalities based on gender, age and income continue to determine people's vulnerability to climate change. Climate change is now among the key drivers that perpetuate poverty.

The Intergovernmental Panel on Climate Change (IPCC) places South Asia and the Coastal Region of Bay of Bengal among the region's most vulnerable to climate change in the world. Cyclone frequency during November and May over the North Indian Ocean has

increased two-fold in the last 122 years (Singh, Khan, and Rahman, 2000). Bangladesh and India already top UNDP's list of countries exposed to high cyclonic mortality risks—75.5% in Bangladesh and 10.8% in India (United Nations, 2009).

The projected sea level rise could flood the homes of millions of people living in the low-lying areas of South Asia. Salinity is already changing the poverty map of Bangladesh making salinity hit districts a new poverty pocket (Daily Star, 2011). According to Bangladesh Soil Salinity Report (SRDI,2009) prepared by Soil Research Development Institute (SRDI), there has been a 22% increase in salinity affected agricultural land since 1973.

4.2 Formulation of Village Conservation Group (VCG) and Its Operations

One major accomplishment of the Project concerns the formation and consolidation of some 38 community-based organisations –VCGs. Although the performance of these organisations differs from one site to the other, they seem to have achieved a level of local grounding and acceptability.

The Project VCGs consist of a total of 1810 members (1179 male or 65%, 631 females – 34.86%). There are wide variations in terms of number of female members among the VCGs. While there is no woman at all in such VCGs as West Moheshkhaliapara and Kachabunia (Teknaf), women membership accounts for 74% of the total members in West Kutubdiapara (Cox's Bazar) (see the following table).

Table 13: Membership (with Gender) Composition of VCGs Supported by the Project

Sl. No.	Name and Address of the VCGs	Male Members	Female Members	Total Members	Male Members %	Female Members %
1	Rastarpara VCG, Khurushkul, Cox's Bazar	69	49	118	58.47	41.53
2	Kawarpara VCG, Khurushkul, Cox's Bazar	29	6	35	82.86	17.14
3	Mamunpara VCG, Khurushkul, Cox's Bazar	37	15	52	71.15	28.85
4	Rakhainpara VCG, Khurushkul, Cox's Bazar	15	13	28	53.57	46.43
5	Dailpara VCG, Khurushkul, Cox's Bazar	22	22	44	50	50
6	Adarshagram VCG, Khurushkul, Cox's Bazar	21	31	52	40.38	59.62
7	Nuniarchara VCG, Cox's Bazar	21	42	63	33.33	66.67
8	East Kutubdiapara VCG, Cox's Bazar	12	49	61	19.67	80.33
9	West Kutubdiapara VCG, Cox's Bazar	13	37	50	26	74
10	Barachara VCG, Jhilongjha, Cox's Bazar	19	52	71	26.76	73.24
11	Pacherdwip VCG, Khoniapalong, Ramu	33	12	45	73.33	26.67
12	North Sonarpara VCG, Jaliapalong, Ukhia	25	6	31	80.65	19.35
13	West Sonarpara VCG, Jaliapalong, Ukhia	24	13	37	64.86	35.14
14	Sonaichari VCG, Jaliapalong, Ukhia	49	9	58	84.48	15.52
15	Dailpara VCG, Jaliapalong, Ukhia	19	11	30	63.33	36.67

16	Inani VCG, Jaliapalong, Ukhia	28	3	31	90.32	9.68
17	Mohammad Safir Beel VCG, Jaliapalong, Ukhia	44	9	53	83.09	16.98
18	Shamlapur VCG, Baharchara, Teknaf	38	3	41	92.68	7.32
19	Shilkhali VCG, Baharchara, Teknaf	41	2	43	95.35	4.65
20	Baradail VCG, Baharchara, Teknaf	31	3	34	91.18	8.82
21	Mithapanirchara VCG, Baharchara, Teknaf	30	0	30	100	0
22	South Lombari VCG, Teknaf	21	20	41	51.22	48.78
23	North Moheshkhaliapara VCG, Teknaf	28	14	42	66.67	33.33
24	South Moheshkhaliapara VCG, Teknaf	25	11	36	69.44	30.56
25	West Moheshkhaliapara VCG, Teknaf	22	0	22	100	0
26	Tulatali VCG, Teknaf	0	35	35	0	100
27	Kachabunia VCG, Teknaf	42	0	42	100	0
28	Baharcharapara VCG, Teknaf	22	6	28	78.57	21.43
29	Hadurchara VCG, Teknaf	19	11	30	63.33	36.67
30	Khurermukh VCG, Teknaf	49	29	78	62.82	37.18
31	Shahporirdwip Paschimpara VCG, Teknaf	37	3	40	92.5	7.5
32	Shahporirdwip Majherpara VCG, Teknaf	23	20	43	53.49	46.51
33	Shahporirdwip Mistripara VCG, Teknaf	25	29	54	46.3	53.70
34	Shahporirdwip Jaliapara VCG, Teknaf	121	39	160	75.63	24.38

35	Sonadia Eastpata VCG, Moheshkhali	28	6	34	82.35	17.65
36	Sonadia Westpara VCG, Moheshkhali	29	13	42	69.05	30.95
37	Ghotivanga VCG, Moheshkhali	39	2	41	95.12	4.88
38	Bordia VCG, Moheshkhali	29	6	35	82.86	17.14
	Total	*1179*	*631*	*1810*	*65.14*	*34.86*

Source: Compiled from COX Bazar field office records by the author.

(Note: During the fieldwork, empirical verification was done of the above information in selected visited sites.)

The Fieldwork's major observations with regard to VCGs and their operations are as follows:

1. I have observed and collected information on selected features of the three key positions of the visited VCGs with a view getting a better understanding of the socio-economic profile of the VCG leadership; the summary of the findings is presented inTable 4.2. The majority of these leaders represent relatively well-off sections of the local community with an average land holding of size of 169 decimal[3], overwhelmingly male by gender, and businessmen (including traders) by profession.

2. When enquired about the issue of inclusion of elites in the VCG leadership, some Project staff argued that a degree of involvement of local elites in the committee has been a strategic and diplomatic move on the part of the project management, and this helped the Project in avoiding direct confrontation with local elites and also helped in such matters as exerting pressure on deviant (e.g. members who

[333]The total area of land under de-facto control of the 54 studied Executive Committee members of selected VCGs 9168 decimals (approximately).

have defaulted MCG) members, facilitating linkage and access to important local institutions especially local government offices, and playing a role in arbitration and conflict resolution involving members.

3. Although the VCGs have statutory documents (such as constitution) as part of their requirement for registration with the government, field observations suggest that some 15 to 20% of the visited group leaders (office bearers) and members do not have clear and comprehensive idea and understanding of the roles and functions of the respective groups and committees (and for that matter, the overall orientation of the Project).

4. The following are examples of the regular functions of the visited VCGs: (fortnightly or monthly) meetings, collection and estimation of savings form members, issue-based discussion (prompted mainly by the Project staff), participation in external events by invitation from the Project (e.g. in celebrating national events and ceremonies), and MCG operations.

5. In several VCGs (e.g. Borodail, East Moheshkhaliapara (Teknaf Sadar) and Jaliapara (Sabrang), a degree of domination and elitist behaviour by relatively powerful members and office bearers are noticeable – especially in terms of voice and decisions in the meetings and other public forum.

6. There is still plenty of scope to form new VCGs and expand VCGs operations in general. For example, there is no VCG coverage in the long stretch of some 20 km between Md Safirbeel and Shaplapur (Ukhia). In other cases, some VCGs remain dormant (e.g. in St. Martin – formed under the CWBMP) which deserve to be resurrected.

Table 14: A Profile of the Selected Leaders of the Visited VCGs

Upzila/Union	*Visited /observed VCG*	*Designation*	*Education*	*Sex*	*Profession*	*Experience in group leadership**	*Agri &other productive land holding status***	*Comments*
(Khrushkul)	Mamun Para VCG	President	SSC	M	Land surveyor	4	120 Decimal	
		Secretary	SSC	M	Clothing Shop Salesman	2	120 Decimal	
		Treasurer	SSC	F	Unemployed	2	80 decimal	
	DeilPara VCG	President	Class V	F	House wife	2	80 decimal	
		Secretary	SSC	F	NGO staff	4	40 decimal	
		Treasurer	Illiterate	M	Shop owner	2	20 decimal	
Cox Bazar Pourashova	East Kutubdia Para*** VCG	President	SSC	F	House wife	2	20 decimal	Husband is Local Village Doctor
		Secretary	Class IX	F	House wife	2	60 Decimal	
		Treasurer	SSC	F	House wife	2	30 Decimal	Husband is a local restaurant owner
(Khrushkul)	Kawarpara VCG	President	SSC	M	Farming	4	60 Decimal	
		Secretary	LLB (Ongoing)	M	Law trainee	1	60 Decimal	
		Treasurer	Class VIII	M	Petty (fish & Fuel)Business	2	40 Decimal	
Teknaf/ Baharchora	Shilkhali VCG	President	Class VII	M	Fish Trader	4	800 Decimal(8 acre)	
		Secretary	SSC	M	Farmer/Land Owner	2	600 Decimal(6 acre)	
		Treasurer/Vice President	Class V	M	Fish Trader	2	100 Decimal(1 acre)	
	Boro deil VCG	President	SSC	M	Pharmacy Owner / Educational Entrepreneur	5	200 Decimal(2 acre)	
		Secretary	Class	M	Social Worker/	3	100 Decimal(1	

			VIII		Land Intermediary		acre)	
		Treasurer/Cashier	Class VIII	M	Farmer/Land Owner	2	500 Decimal(5 acre)	
Ramu / Khuniapalong	Pacherdwip VCG	President	Class VIII	M	Grocery Shop Own	4	40 Decimal	
		Secretary	Class V	M	Fisherman	2	40 Decimal	
		Treasurer	Alim	M	Local Moktob teacher	1	60 Decimal	
Ukhia/ Jaliapalong	West Sonar Para VCG	President	Class VII	M	Lead Fisherman (*Majhi*)	4	10 Decimal	
		Secretary	HSC	M	Fish trader/Poultry Farm owner	1	40 Decimal	
		Treasurer	Class III	M	Fishing Boat Owner	3	10 Decimal	
	Md. Safir Beel VCG	President	Class III	M	Farmer	2	160 Decimal	
		Secretary	SSC	M	Village Police - VDP	3	60 Decimal	
		Treasurer	Class IV	M	Betel nut trader / Plantation Owner		40 Decimal	
Kutubjom, Moheshkhali	Sonadia East Para VCG	President	Nil	M	Fish Trader	2	120 decimal	Total Member-50 MCG Loan - 12 ,2 default case, Reason for default – Investment in Unproductive Sectors; Taking advantage of the uncertainty during the project Transition
		Secretary	Class VIII	M	Fish Trader	2	200 decimal	
		Treasurer	Class V	M	Fish Trader	3	120 Decimal	

								period from CWBMP to CBA-ECA ; some members did not repay their installments
	Sonadia West Para VCG	President	Class VIII	M	Fish Trader Wild Life Guard	3	88 Decimal	Total Member-45 MCG Loan - 45 no default case, Reason for no default – Investment in productive Sectors (Water Mellon, Vegetables) 5000-15000 tk MCG range
		Secretary	Class VII	M	Fish Trader	2	640 decimal (16 kani)	
		Treasurer	Class X	M	Fish Trader Grocery Shop Owner	2	**600 decimal** (15 Kani)	
	Ghotibhanga VCG	President	Class VII	M	Fish Trader	2	100 decimal Land	Total Member-44 MCG Loan - 44,14, no default Reason for no default – Supervision of UNO Office Productive investment (Water melon, Vegetables)
		Secretary	Class IX	M	Fish Trader	2	80 Decimal (2 Kani)	
		Treasurer	Class V	M	Fish Trader	2	40 Decimal (1 Kani)	
	Borodia VCG	President	Class X	M	Fish Trader	3	400 Decimal (10 Kani)	Total Member-30 MCG Loan - 14, no default Reason for no
		Vice President	Illiterate	M	Fish Trader	2	120 Decimal	

		Treasurer	Illiterate	M	Fish Trader	2	400 Decimal (10 Kani)	default – Productive investment (Water melon, Vegetables)
	Tulatoli VCG	President	Literate	F	Brac Nursery	4	40 Decimal	Total member-25 (all female)
		Secretary	Class V	F	Brac School teacher	3	20 decimal	
		Treasurer	Illiterate	F	Housewife	4	40 decimal	
	Mithapanirchara VCG	President	Literate	M	Seasonal Business	3	20 decimal	Total member- 31 (all male)
		Secretary	Class VII	M	Fish Trading	3	15 decimal	
		Treasurer	Literate	M	Plumber	3	20 decimal	
Teknaf	South Lombori VCG	President	Literate	F	Housewife	3	3 decimal	Total member – 31 (Male-15; Female-16)
		Secretary	Literate	F	Sewing	3	10 decimal	
		Treasurer	Literate	F	Sewing	3	40 decimal	
	South Moheshkhali Para VCG	President	SSC	M	Betel-field; Agriculture	4	400 decimal	Total member – 22 (all male)
		Secretary	Class IX	M	Agriculture	4	600 decimal	
		Treasurer	Class V	M	Betel-field; Agriculture	3	40 decimal	
Teknaf	Khurer Mukh VCG	President	SSC	M	Community Health worker	4	150 decimal	Total member -60 (male-41; female 19)
		Secretary	HSC	M	Govt employee	4	200 decimal	
		Treasurer	Literate	M	Fish trading	3	20 decimal	

Source: The Fieldwork Notes collected by author

Notes: *Scale 1-5 where 1 is minimum and 5 is maximum; based on perception of the field observation and FGD

**Includes individually owned or share cropping /leased –in lands.

*** Most VCG members here represent displaced refugees from Kutubdia Island - victims of bank erosion and loss of habitat.

7. Most VCGs have their origin in the foundation work done under such earlier projects as CWBMP and ECFC. Over the years, these organisations have - to some extent – come of age. There is still however much scope and need to work on enhancing institutional capability of most of the observed groups and associated VCGs. Representatives of nearly all VCGs have received a short training on Finance and Accounts from the Project. This has been generally well received and appreciated. There were suggestions for further training on a number of topics considered 'vital' by the respondent group members and leaders (these are listed in the 'recommendation' section – chapter 4).

8. Some leaders and office-bearers have little or no education, and face difficulties performing such basic group functions as preparation of proceedings of meeting, maintenance of registers without outside, especially Project staff, help.

9. The Project's gender sensitivity has been somewhat low. All listed beneficiaries have been men. Correspondingly, there has been just one female staff in the Project. The field staff, however, did a good job of (partially) striking the balance through such measures as (i) allowing the participation of female members of the targeted households in the absence of, or alongside their male counterparts (the officially listed 'beneficiaries' of the Project); (ii) providing for IGA training opportunities to a few women (some 15% of the total trainees) in lieu of their husbands or sons; and (iii) making it a point, wherever possible, to ensure the presence of some women, and talk to them during the group meetings.

10. Nearly all VCGs have completed the process of securing government registration (from the Department of Cooperatives as 'ECA Management Multi-Purpose Cooperatives' or ECA Baboshthapana Bohumukhi Somobay Samity. This has reinforced the legal character and government recognition of the VCGs, and thereby, instilled a sense of confidence among the members.

11. Most VCGs enjoy a degree of social credibility and esteem from other key local institutions including the relevant Upazila and Union Parishad, and educational institutions. In two cases, as the field work team noted, VCG members moved to become UP members.

12. Nearly all the VCGs (35 out of 38) have undergone government audit carried out by the Department of Cooperatives. Although such audit exercises are rather mundane and less than intense, these surely serve the purpose of maintaining external vigilance and scrutiny on the activities of the VCGs, and help to exert a degree of pressure on these organisations to keep their basic work – especially accounts and documentation – tidy and up to date.

13. Villagers (*para* residents) who remain outside the Project's coverage (i.e. not included in the concerned VCGs) generally show a great deal of interest to become members, and participate in the Project activities. A sense of deprivation and neglect is also noticeable among these villagers, as echoed by a local villager (a fisherman by profession):

> … What is our fault? [Aren't] we equally deserving? Do we have more 'rice' in our houses than they (the Project beneficiaries) possess, or do you think, we have three hands while they have two? We are also poor and need the help …

This feeling is particularly strong in the areas where the benefits of the Project are clearly noticeable.

4.4 The Local Government Relations

The Project has attempted to maintain regular communication and specific activities with Upazila and Union local government political representatives and public officials. The staff have regularly met the local government leaders. The level of impact of the Project especially in terms of (i) general sensitization of the local government leaders on ECA and associated environmental issues and (ii) securing support of the local government offices, however, seems to be mixed.

Source: The Fieldwork team

Figure 14: Meeting with UNO and selected members of ECA committee (Maheskhali)

Source: The Fieldwork team

Figure 15: Visiting the Upazila office premises (Maheshkhali)

Based on the Field work discussions and interactions with selected local government leaders, the following observations may be made:

1) In terms of,

   (i) use of the Project-supported Endowment Fund,

   (ii) the zeal and interest of the relevant leadership, and

   (iii) degree of cooperation to the Project, the field observations and stakeholder consultations suggest that the following Upazila and Union Parishad have been particularly supportive to the Project: Moheshkhali, Cox's Bazar Sadar, and Teknaf, while there are clear opportunities for improvement and more interactions in the case of the following: Ramu and Ukhia.

2) The local government leaders generally hold the Project staff and the implementing organisations in high esteem as locally grounded organisations; but the level of knowledge and actual understanding of this particular Project and its activities on the part of the local government leaders varies considerably. Some 20% of the local government offices show very limited knowledge and interest in the Project and its orientation. They however continue to assure their full support to the activities of DoE and associated partners including NACOM in the area; this commitment may be more effectively used for any future intervention in the locality.

3) The ECA Committee meetings and local activities (supported by Endowment Fund) are a major manifestation of the vibrancy of the concerned local government. The following table provides a summary of the frequency of such meetings. It may be noted that there has been no meeting in Ramu and Ukhia. The allotted Endowment Funds of Taka 5 (Ramu) and 10 Lakhs (Ukhia) also remain unutilized so far. Endowment fund-supported local government activities (notably, sandune plantation, some conservation – especially endangered turtles, bird sanctuary – projects, various meetings and mass conscientization, and law enforcement campaigns against environmental polluters and encroachers) are most visible in Maheshkhali, closely followed by Teknaf and Sadar Upazilas.

4) In line with the above, the field work team has made the following reckoning of the UPs as they relate to the Project:
    a. Most active and supportive: Khurushkul, Kutubzom
    b. Moderately active and supportive: Sabrang, Baharchora and Jaliapalong
    c. Requires improvement: Jhilongja, Teknaf Sadar, and Khuniapalong
    d. At the Union level, Endowment Fund activities have been taken up at Kutubzom (Maheshkhali), and Action Plans have been formulated for trying out some activities in three UPs at Teknaf.

Table 15: Frequency of Upazila and Union ECA Committee Meetings

Upazila ECA meeting:

Sl. No.	*Date*	*Name of Upazila*	*Venue*
01	30/05/12	Cox's Bazar Sadar	UNO Office, Cox's Bazar Sadar.
02	15/10/12	Moheshkhali	UNO Office, Moheshkhali.
03	15/11/12	Teknaf	UNO Office, Teknaf.
04	30/12/12	Moheshkhali	UNO Office, Moheshkhali.
05	31/12/12	Teknaf	UNO Office, Teknaf.
06	31/03/13	Moheshkhali	UNO Office, Moheshkhali.
07	29/07/13	Teknaf	UNO Office, Teknaf.
08	09/01/13	Moheshkhali	UNO Office, Moheshkhali.
09	24/06/12	Moheshkhali	UNO Office, Moheshkhali.

Union ECA meeting:

Sl. No.	***Date***	***Name of Union***	***Venue***
01	15/09/12	Khurushkul	UP Conference Room
02	13/10/12	Khurushkul	UP Conference Room
03	21/10/12	Jaliapalong	UP Conference Room
04	15/11/12	Baharchara	UP Conference Room
05	18/11/12	Sabrang	UP Conference Room
06	28/11/12	Kutubjom	UP Conference Room
07	05/03/13	Teknaf Sadar	UP Conference Room
08	30/07/13	Kutubjom	UP Conference Room
09	12/08/12	Khurushkul	UP Conference Room
10	22/07/13	Kutubzom	UP Conference Room
11	30/03/13	Kutubzom	UP Conference Room

Source: Compiled from NACOM Cox bazar office records by author.

1. The field work team's observations suggest that the relative performance of local government institutions depend on a number of factors, such as the following:

    (i) zeal and interest on the part of the key members of the ECA Committees – especially the presidents;

    (ii) reasonable continuity of the relevant key officials in their office;

    (iii) intensity of rapport and communication between the Project staff and the local government leaders;

    (iv) effectiveness facilitation on the part of the Project;

    (v) support of the local political leadership. Frequent transfer of local government officials – key members of the ECA Committees hinder smooth operations of the Project and its relations with the concerned local government office.

    (vi) Activation and effective functioning of ECA Committees require considerable external support and facilitation. Currently the Project is playing this role. Any gap or inadequacy (e.g. through the discontinuation of the Project) in ensuring this facilitative role will negatively impact the performance of these Committees and the relevant contribution of the local government.

    (vii) The gap arising out of the closure of the CWBMP and initiation of CBA-ECA Project and the resultant sloth in ECA Committee and related other activities is a case in point.

2. It was noted that the local government offices undertake their own development projects and programmes. Some of these projects and activities have a direct

relevance for the CBA-ECA Project. There has been no effort to explore the idea of linking up to the relevant Upazila and UP projects.

3. The Project staff – representing both DoE and NACOM maintain reasonably good personal and informal linkages with most of the local Upazila and Union leadership.
4. Most of the respondent local government leaders and office bearers often view the implications of climate change in terms of loss of physical infrastructure (notably dwellings, embankments, roads, bazaar places) and resultant human sufferings. Their felt-needs and responses then are correspondingly explained in terms of demand for physical interventions (such as construction and refurbishment of civil infrastructures). This orientation and outlook is not always compatible with the strategies promoted by projects such as CCA. This disconnection between the approach and thoughts behind the Project and those of the local government leaders needs to be carefully considered.
5. The idea of incorporating environmental conservation (including climate change)-related issues and considerations in the formulation and execution of development planning at the Upazila, Union and community levels has been well received by the respondent local government leaders. There has so far been, however, very limited concrete example or steps taken to actually translate this idea into action.
6. The field work team noted that the local government offices, especially UPs, have started to attach importance to VCGs in consideration of the following factors: (i) VCGs potential power and role as 'vote banks'; (ii) their legal character and legitimacy (gained mainly through the government registration under the Department of Cooperatives) as community development organisations.

4.5 SUCCESSFUL CASE

Box 1: Putting the Learning to Use: Successful Case of Mr. Md. Hasan Ali

(aged 28; Secretary, Uttar Rastarpara VCG, Khurushkul) is a farmer, and he has been practicing agricultural farming in following the traditional methods and tools learnt and inherited through generations. He typically ploughs a parcel of land of about 2 *kani* (80 decimals), and harvests between 40 to 50 *ari* in two crop seasons. His farming methods included heavy use of chemical pesticides and unplanned sowing. After being a member of VCG, he availed himself of the training on IPM, and the training focused on several practical issues such as: seedbed preparation and appropriate selection and application of organic fertilizer; appropriate application of insecticides suited to the local field condition; pest control using various indigenous techniques and means.

It was a 10-day training session that included theoretical and practical learning, and the sessions were conducted by local Upazila Agricultural Extension Officer. Mr. Hasan identified the 'most useful points' from the training as follows: Knowing and matching different types (varieties) of rice in different seasons; Optimum and judicious application of organic fertilizers, and least usage of chemical fertilizers; Application of various low cost and easy to use indigenous techniques of pest control; Networking with the local agricultural office; Regular feedback and mutual cooperation from the Project and fellow VCG members (recipient of the training) Mr. Hasan applied his learning immediately in his farm; the notable changes that he brought in his farming practice included preparation of seedbeds in a scientific way such as uniform row making; application of fertilizers in consideration of the seedbed condition and farm size; use of locally available organic fertilizer to strengthen the base of plants; use of sticks in the field to attract birds towards

control of unwanted pests. Furthermore, in following the advice by the trainer, he planned BINA paddy and made good harvest in the off-season. His main benefits have been twofold: the training has led to reduced use of fertilizer (especially urea) from some 150 kg per kani to just over 60 kg (including urea, MP, TSP, zip sum), and an additional off-peak crop.

Source: From The Fieldwork Notes collected by author

4.6Summary of the Overall Impact of the Project

Besides the assessment of accomplishments vis-à-vis selected interventions of the Project, in this section, we attempt to reckon overall impact of the Project. It may be relevant here to recall, once again, that the Project bases itself on, and deeply ingrained in the other similar (past, current, and forthcoming) projects such as notably the Empowerment of Coastal Fishermen Communities (ECFC, Ministry of Fisheries and Livestock) and CWBMP (MoEF/DoE), and Natural Resources Governance (IUCN-NACOM). In this context, it is difficult to neatly separate out the contributions of the Project and identify its exclusive impact. It is nevertheless possible to chart out a broad picture as regards the overall impact of the Project in the locality:

4.6.1 Contribution to Enhancing Social Capital

The Project has provided for a collective platform for the targeted communities to come together. The various institutional structures, despite the limitations, have contributed to forging linkages among the group members. A marginal link has also been established with some quarters of the local government offices and other institutions including significant sections of the civil society. There have been evidences of some group members negotiating direct access to local UP, land, fisheries, livestock, and forest offices.

4.6.2 Contribution To Improved Livelihood

The impact of the Project in direct poverty reduction is limited, but at least two positive contributions are plain to see in the field: (i) the livelihood training and skills infusion activities have led to a degree of capacity enhancement amongst the targeted groups; and (ii) some 40% of the respond beneficiaries have directly benefited from an additional income of up to 15% directly accruing from the Project's training (and associated) inputs.

4.6.3 Securing Public Credibility and Popular Acceptance

Considerable interest is noticeable among the targeted communities about the activities and relevance of the Project. The local people in most places have high expectation from the Project, and eagerly look forward to its continuation and expansion. Currently many respondents – especially VCG members and local government representatives - consider the existing level and extent of support to be generally insufficient; however, they seem to be otherwise satisfied with and appreciative of the commitment of the Project staff.

4.6.4 Contribution to Uplifting Social Status

There is evidence that involvement in the Project has resulted in some degree of rise in the social status and recognition of the beneficiaries. The following forms of engagement in the Project, as revealed from the field work team's discussions with the beneficiaries, have an immediate relevance for their social status and community acceptance:

a) a marginal rise in financial solvency amongst selected households through successful utilization of livelihood and IPM-related training and interventions;
b) interaction with and visit of 'outsiders' (government officers, official visitors of the Project, expert trainers and resource persons etc.);

c) attending training sessions, fortnightly/weekly collective gatherings (meetings);

d) occasional visit to 'towns' (e.g. to Upazila and District headquarters);

e) exposure visits to other areas and regions; however only a select group of persons (journalists, local government and VCG leaders) have benefited from these activities.

4.6.5 Paving the way for 'Empowerment'

By supporting community based natural resource management and livelihood enhancement practices, the Project has contributed, to an extent, to the local community empowerment process, and paved the paved the way for local communities to demand their rights especially on the relevant public sector service provisions.

Some encouraging signs of empowerment of VCGs and their concerned members have been noticed on a few occasions. Examples of such manifestations include:

(i) VCGs successfully negotiating with the relevant local government offices in stopping encroachment (by a politically influential quarter) on a vital part of the embankment and water-pass, and thereby ensuring smooth flow of water for agriculture;

(ii) (ii) successful establishment and (community-led) management of conservation areas and sanctuaries targeting endangered local species (e.g., birds, turtles);

(iii) successful campaign against attempts by the local elites to convert embankments and sand dune lands (including paddy lands) into salt pans and shrimp spawn (prawn culture) farms; and

(iv) convincing the government to stop leasing out part of a life-saving coastal embankment (that protect the inland local communities from sea waves and tidal surge) to private individuals, and raising and maintaining 'greenbelt' plantations for fortifying the embankment.

In a rather simplistic way, the following table summarizes the Project's impact and achievement vis-à-vis the characteristics of 'empowerment' as advocated and prescribed by the implementing organisations. The assessment of the progress is based on the field work team's experience and observations during the course of the intense consultations and opinion sharing with the beneficiaries, staff and a range of other stakeholders (e.g. civil society representatives and local government officials).

Table 16: A Summary the Project's Achievement* *vis-à-vis* the Characteristics of 'Empowerment'

Characteristics of Empowerment	*Perceived (indicative) degree of empowerment (as observed during fieldwork)**	*Manifestations at the beneficiary/community level (as observed during fieldwork)*
Power of thought and articulation	3	Initial, but cogent, signs of the development of the skills in expressing and discussing their views and opinions in meetings are noticeable. A limited number of women are actively present in some groups. Some of these women are observed to be quite active and articulated (in a number of VCGs in Khurushkul – for example).
Power of organization	3	Limited organized behaviour (e.g. regular meetings, participation in public events) is noticeable; Most VCGs have been registered under the Department of Cooperatives – thereby, securing a legal character and official legitimacy.

Access to resources	3	The Project has facilitated some access to the formal sectors and external resources (e.g. governmental facilities) by the targeted communities. Most groups also show broad-based awareness and understanding of the changing life and living conditions (especially in the context of local natural and man-made disasters) and their expectations from external sources of support and resources.
Resist injustice and ready for struggle	2	Some awareness about varied causes and manifestations of social inequities and injustices are found among the beneficiaries; Cases of organised or collective resistance by the communities are still limited, but seem to be on a positive track of development and progress.
Advocacy and lobbying capacity	2	In the absence of effective integration and regional coordination of the various institutional structures of the Project, initiative and capacity in this regard have been limited. Efforts for forging broad-based network and partnership among like-minded organisations are also limited.
Capable to identify their strengths and weaknesses	3	Good understanding and appreciation of the community level problems, vulnerabilities and weaknesses among the beneficiaries. However, understanding of and confidence in their own strengthens and potentials are relatively low.
Source: From The Fieldwork Notes collected by author		

** Note A: In this table, the full range of activities of the Project has not been considered; the implications of the selected activities – studied by this The field work team – have been analysed.*

Note B: 1= initial signs of development; very limited. 2=limited progress so far, but gradually developing. 3=Moderate progress. 4=Considerable progress.

Note C: The manifestations and attributes of empowerment are determined from the stated mission, vision and associated strategic statements of the Project (e.g. in the Project Proposal document and the Inception Report [CBA-ECA, Dhaka 2011) and its

implementing organisations (e.g. in the case of NACOM - as reflected in their official introductory brochure (see, 'NACOM: Organizational Profile', [NACOM, Dhaka, 2011] and for IUCN-B their official website: http://www.iucn.org/about/union/secretariat/offices/asia/asia_where_work/bangladesh/*).*

4.7SWOT Analysis of Informal Administrative Structure OfCBAECA

SWAT Analysis conducted by the Fled team to get a overall idea about the Informal Administrative Structure of the said project. By the term Informal Administrative structure, here we mean to refer at the staff/management level of the CBA-ECA project. The key findings of that analysis is presented below in the summary form:

4.7.1 Strengths

1. The Project has put a particular emphasis on programmatic monitoring and stringent feedback system. This has contributed to a greater degree of transparency at the field operations.
2. The Project operations appear to have adopted a 'step by step' (gradual) approach development as opposed to sudden rapid expansion.
3. Good and friendly interaction and communication (through field visits, rapport building at the household level etc.) of the field staff with the targeted beneficiaries.
4. Respect to site-specific culture, norms and socio-religious practices during the Project operations (e.g. personal contact with socio-religious leaders, paying attention to religious/cultural etiquettes and norms).

5. The Project has established offices and ensured regular presence of staff at the sub-national and community levels, and encouraged access to these offices by the targeted beneficiaries and local community people.

4.7.2 Weakness

1. The beneficiaries still look on to the Project services as 'help or grant', rather than their 'rights and entitlements' (in the meetings, beneficiaries frequently referred to the Project interventions by using such words and expressions as *Upakar, Sohay; Daan, Sahajjo* etc.). This may somewhat undermine the basic premise and philosophy of the 'right based approach' to development.
2. Some of the services (e.g. livelihood/income generation training) are limited and confined to 'software' inputs (such as awareness raising, motivation, quick orientations), rather than more tangible and direct hardware support (e.g. provision of appropriate equipment's and raw materials, market linkage for materializing the acquired knowhow to practical action and enterprises). Such services are presently nominal and too thinly spread.
3. Despite the great local demand and potential, there have been limited efforts as regard local demand-led income generating activities (especially in the non-farm sectors) and entrepreneurship development. Currently, such initiatives (especially handicrafts [mat weaving, handbag manufacturing]) are in an experimental and nascent stage.
4. In many cases, effective linkages have not been established between the beneficiaries who received training (from the Project) and the relevant markets.

5. In consideration of the difficult terrain conditions, inaccessibility and large territorial coverage, the level of effective supervision of field staff in some sites has been inadequate.
6. The logistics and equipments (e.g. transports, computers, office supplies), concerning the Project operations, are presently at a basic and scarce level.

4.7.3 Opportunity

1. Further scaling up and consolidation of the local credibility and support that the Project currently enjoys. In this regard, the current efforts for leveraging the experience and resources of relevant other projects may prove very effective in terms of producing synergistic results.

2. The groundwork has been done, and a reasonable platform exists to enable long term planning and strategizing for improved and extended natural resource governance in the localities.

3. Within the current working area, there is still plenty of scope to include local communities and groups that remain outside the Project intervention.

4.7.4 Threat

1) The Project has raised the expectation and demand of the local people. There is now a clear demand and need for follow-up and more concrete material support and services at the community level. If this is not forthcoming, the groundwork and

hard- earned rapport, created by the Project in all these years, may be somewhat jeopardized.

2) There is some degree of uncertainty and discontent among the field staff, especially as regards the contractual/interim nature, discrepancy in their pay structure, and the prospect of career development through continuation of the Project.
3) During scaling up of the Project operations in the future, the ratio of field staff to number of beneficiary groups needs to be carefully considered especially in light of geographic coverage and terrain conditions, so that rapid expansion may not jeopardise the required close interaction and supervision of the groups.
4) Some senior management staff and other respondents (e.g. local government leaders) opined that the Project – given its community rights and governance emphasis - would eventually need to address more sensitive and 'political' issues - notably resource use and access rights, assertion and recognition of occupational identity, community representation and voice in local government institutions - which may prove to be 'too hot to handle', unless the Project can forge partnership with other concerned institutions and make a strong footing at the national level. Such experiences as the *Gher* eviction operations in Sonadia and encountering land encroachment and trafficking in sea shells and molluscs in Md. Safir Beel are cases in point.
5) A number of factors, such as heavy workload, difficult terrain conditions, and wide territorial coverage, may constrain the maximization of the potential of the Project human resources.

4.8Creating Group Norms and Awareness for Community

Assessment of the Project Environment through SWOT (Strengths-Weaknesses-Opportunities-Threats) Analysis by the field research team is done here, At the community/beneficiary level, for creating Group norms and Awareness for the community.

4.8.1 Strength

At the community/beneficiary level, the strength includes:

1) The Project operations have a clear grassroots focus and appear to be well-grounded in the targeted communities. It has attempted to develop and consolidate community level organisations.
2) A considerable degree of local acceptance and credibility is noticeable; the Project services have generally been well received by the communities.
3) Wherever possible, as a matter of policy, the Project has hired and employed the field staff (especially FAs) from the specific/targeted communities; they are also fully conversant of the local language/dialect and culture.
4) The Project has identified and addressed some vital local demands and (long outstanding) issues on a priority basis, most notably, better pest management in cropping fields, encountering land encroachment and various other forms of environmental degradation by elites and vested interest groups, greater community access to surrounding natural resources, opportunities of better livelihood and alternative income generation, effective negotiations with local government offices.
5) The Project has been able to secure reasonable support from local leadership and other influential persons through such institutional mechanisms as the Upazilas and UP ECA Committees, and other activity-specific community level committees.

The Project bases itself on other larger and wider interventions in the localities – most notably the Empowerment of Coastal Fishermen Communities (ECFC, Ministry of Fisheries and Livestock) and CWBMP (MoEF/DoE), and can draw on the strengths of these holistic, rather than compartmentalized, development initiatives.

4.8.2 Weaknesses

1) The field work team's observations suggest that many beneficiaries still look on to the Project services as 'help or grant', rather than their 'rights and entitlements' (in the meetings, beneficiaries frequently referred to the Project interventions by using such words and expressions as *Upakar, Sohay; Daan, Sahajjo* etc.). This may somewhat undermine the basic premise and philosophy of the 'right based approach' to development.

2) Some of the services (e.g. livelihood/income generation training) are limited and confined to 'software' inputs (such as awareness raising, motivation, quick orientations), rather than more tangible and direct hardware support (e.g. provision of appropriate equipment and raw materials, market linkage for materializing the acquired knowhow to practical action and enterprises). Such services are presently nominal and too thinly spread.

3) Despite the great local demand and potential, there have been limited efforts as regard local demand-led income generating activities (especially in the non-farm sectors) and entrepreneurship development. Currently, such initiatives (especially handicrafts [mat weaving, handbag manufacturing]) are in an experimental and nascent stage.

4) In many cases, effective linkages have not been established between the beneficiaries who received training (from the Project) and the relevant markets.

5) In consideration of the difficult terrain conditions, inaccessibility and large territorial coverage, the level of effective supervision of field staff in some sites has been inadequate.

6) The logistics and equipment's (e.g. transports, computers, office supplies), concerning the Project operations, are presently at a basic and scarce level.

4.8.3 Opportunities

1) Further scaling up and consolidation of the local credibility and support that the Project currently enjoys. In this regard, the current efforts for leveraging the experience and resources of relevant other projects may prove very effective in terms of producing synergistic results.

2) The groundwork has been done, and a reasonable platform exists to enable long term planning and strategizing for improved and extended natural resource governance in the localities.

3) Within the current working area, there is still plenty of scope to include local communities and groups that remain outside the Project intervention.

4) Further exploration and utilization of indigenous knowledge and local practices especially in relation to avenues of land and agro-based income generation and livelihood.

5) Forging wider partnership with relevant other development organisations and stakeholders (especially media professionals, civil society organisations), and existing networks especially in the more delicate areas of the Project operation – e.g. farmers' and fishers' right promotion, encountering elite domination and capture of local resources, etc.

4.8.4 Threats

1) During its operation and existence in the field, the Project has raised the expectation and demand of the local people. There is now a clear demand and need for follow-up and more concrete material support and services at the community level. If this is not forthcoming, the groundwork and hard- earned rapport, created by the Project in all these years, may be somewhat jeopardized.

2) Interference and manipulation of local elites and intermediaries.

3) Uncertainty over project continuation and the transition gap (discontinuity of work) during the period between end of one project and beginning of another may render it difficult to retain communities' interest and involvement, and to ensure smooth operations of such community level activities as MCG. It may be recalled that the gap of about 11 months between the end of CWBMP and initiation of CBA-ECA led to several complications including defaults in MCG and unsettling effect on VCGs.

4.9Spread of Massage: TheKey Learning

Bangladesh is already exposed to many climate change related extreme events and natural disasters. It is expected that climate change will bring changes in the characteristics of natural hazards and may gradually change the attributes of the physical system. Studies and assessments of impact vulnerabilities and adaptation to climate change and sea level rise for Bangladesh clearly demonstrate that Bangladesh is one of the most climate vulnerable countries in the world.

The overall impacts of climate change on Bangladesh are expected to be significant. It is estimated that climate change could affect more than 70 million people due to the

countries geographic location., low elevation, high population density, poor infrastructure, high levels of poverty and high dependency on natural resources. Ultimately adverse impact has the potential to undermine poverty reduction efforts and could compromise the achievement of the Millennium Development goals (MDGs) such as the eradication of poverty and hunger by 2015. Furthermore, the OECD and World Bank estimated that the 40% of the Overseas Development Assistance (ODA) to Bangladesh may be climate sensitive or at risk.

To develop future climate change scenarios both General Circulation Model (GCM) and Providing Regional Climates for Impacts Studies (PECIS) have been run for Bangladesh. The GCM is a global scale model whereas PRECIS is a regional scale model. Both model's outputs indicate a steady increase in temperature along with increased trend of summer monsoon precipitation with higher level of inter- seasonal variability.

4.9.1 Context of Vulnerability

The types and contexts of vulnerability to climate change and sea level rise for Bangladesh vary across the country. The context may be characterized by geographical region with predominant ecosystems. A summary of the characteristics of the climate related vulnerability context by major geographical region and ecosystems are provide in Table 1 below.

Table 17. Summary of Vulnerability Context

Types of Geographical Areas with Dominant Ecosystems	Climate Change Vulnerability Context and Characteristics.
Floodplain (freshwater aquatic ecosystem, fisheries, Transplanted	Change in Flooding Characteristics .
	Coverage of inundated area in monsoon season will increase (more flood vulnerable area).

Aman)	Changes in depth and duration of inundation (depth of water will be higher and period of flooding will be longer).
	Changes in recession period of flood water (water logging).
	Changes in flood frequency (more frequent and intense flooding).
Drought Prone (dryness, moisture stressed condition)	Changes in Drought Characteristics .
	Changes in drought intensity (grater area under serve drought).
	Changes of extent of drought prone area (expansion of area).
	Changes in timing of drought (erratic behavior of rainfall and temperature).
Coastal Zone	Changes in Coastal Characteristic.
	Expansion of sanitized areas.
	Increase in salinity intensity.
	Increase drainage congestion and coastal flooding.
	Cyclone and storm surges.
Haor Basin (tectonically depressed area)	Changes in Haor Basin Characteristics.
	Changes in timing of flash flood.
	Changes in recession period.
Hilly Region	Changes in distribution of rainfall and intensity.
	Changes in erosion of top soil.
	Increase possibility of landslide.

Source: National Adaptation Programme of Action (NAPA), 2005

The above-mentioned vulnerability contexts of climate change are likely to affect agricultural sectors including crops, livestock and fisheries; freshwater for drinking and agricultural purpose; and rural infrastructure including water supply and sanitation and rural roads. Table 2 below illustrates level of impacts of climate change on different sectors.

Table18. Level of Impacts of Climate Changes on Different Sectors

Physical Vulnerability Context								
Extreme Temperature	Sea Level Rise		Drought	Flood		Cyclone and Storm Surges	Erosion and Accretion	Sectoral Vulnerability Context
	Coastal Inundation	Salinity Intrusion		River Flood	Flash Flood			
+++	++	+++	+++	+	++	+++	-	Crop agriculture
++	+	+	++	++	+	+	-	Fisheries
++	++	+++	-	-	+	+++	-	Livestock
+	++		-	++	+	+	+++	Infrastructure
++	+++	++	-	++	+	+	-	Industries
++	+++	+++	-	++	-	+	-	Biodiversity
+++	+	+++	-	++	-	++	-	Health
-	-	-	-	-	-	+++	+++	Human Settlement
++	+	-	-	+	-	+	-	Energy

Source: National Adaptation Programme of Action (NAPA), 2005

Source: From The Fieldwork Notes collected by author

In above table the sectors more related to the water and sanitation sector are Infrastructure (e.g. related to water infrastructure), health (e.g. related to sanitation and hygiene education) and Human Settlement (e.g. related to sanitation chambers).

4.7.2 Effects on Water Supply and Sanitation

The context of vulnerability of water and sanitation to climate change stimuli include variability and extremes. It is likely that the gradual phenomenon such as temperature rise and erratic behavior of rainfall will lead to increased water demand and drought while sea level rise and salinity intrusion will deteriorate water quality in the coastal region. Climate change related extreme events particularly cyclone and storm surge will damage water

supply and sanitation infrastructure especially in the coastal regions. Increase in summer temperature will increase water demand in the urban area for drinking and bathing as well as demand may aggravate the current conflict between domestic and industrial water supplies in the urban areas. The situation will be different in the rural areas where availability and quality of rivers and artesian wells pond water in the dry season will deteriorate.

Climate change would increase saline intrusion through several means:

1. Directly pushing the saline /fresh waterfront in the rivers through higher sea levels.
2. Lower river flows from upstream, increasing the pushing effect from the sea.
3. Upward pressure on the saline/fresh water interface in the groundwater aquifers (every cm of sea level rise will result in a thirty- fold rise of the interface because of the hydrostatic pressure balance)
4. Percolation from the increased saline surface waters into the ground water systems
5. Increasing evaporation rate in winter, leading to enhanced capillary action, and
6. Subsequent Stalinization of coastal soils.

Shortages of safe drinking water are likely to become more pronounced, especially in the coastal belt and drought –prone areas in the north-west of the country. It is also likely that the saline water boundary will be pushed further inland and vast areas will face severe water crisis in the future. People now heaving access to fresh water will no longer enjoy this service. Due to cyclone and storm surge, huge volumes of saline water will come onto the land area and contaminate freshwater ponds. These will severely damage the existing drinking water sources. For instance, ponds for the Pond Sand Filters (PSF) and dug wells may be flooded with saline water. It may also contaminate hand tube wells and other sources.

4.9. 3 Climate Change effect on Health Sector

Climate change also effects health sector significantly in the following manners:

1. Increased water and vector borne diseases

2. Increased diseases due to salinity and water logging

It is likely that unavailability and low quality will accentuate the prevailing drinking water crisis in the dry season. This will impose hardship on women and children who are responsible for collecting drinking water for their families. Increasingly saline drinking water may also result in health hazards, especially for pregnant women and it appears that climate change is likely to adversely affect women more than men.

4.9.3.1 Climate Change effect on Water Supply

The major climate change hazards for each of the five zones were identified and the impacts on the sanitation installations due to the hazards were determined. The major hazards in the five zones are similar to those described for sanitation. However, one additional but serious hazards in the coastal zone in the saline intrusion which severely impacts the water supply installations.

Table 19: Main Climate change hazards and impacts onWater Supply Installations

Ecological/ Hydro-Geological Zone	Main Climate Change Hazard	Impact on Water Supply Installations
Flood plain	• Water Logging • Inundation	• Contamination of water sources • Damage of infrastructure
Low water table area	• Excessive decline of ground water level • Drought	• Depleted water resources • Increases in repair and maintain of water installations

Coastal zone	• Saline intrusion • Tidal/storm surge • Inundation	• Damage of water installations • Increased salinity of ground water abstracted by hand pumps or other means source • Drainage congestion
Haor Basin/ low lying area	• Water logging • Inundation	• Damage of infrastructure • Contamination of surface water sources
Chittagong Hill Tracts/ Hilly regions	• Drought • Excessive lowering of ground water level • Increased rainfall • Land slide	• Depleted water resources • Damage due to land slides

Source: From The Fieldwork Notes collected by author

4.7.3.2 Sanitation

Like water supply, Table 20 presentedbelow summarizes the different climate change hazards and the impact on the sanitation installations as they appeared from field trips consultations with key stakeholders, examination of literature, and the screening undertaken in cooperation with the implementing agencies.

Table 20: Main Climate change hazards and impacts on sanitation installation in different zones

Ecological/Hydro-geological Zones	Main Climate Change Hazards	Impact on Sanitation Installations
Flood plan	• Water logging • Inundation	• Damage of latrine pits • Poor performance of latrines
Low water table area	• Excessive lowering of groundWater level • Drought	• Depleted water resources (Sanitation with less water is difficult)
Coastal zone	• Tidal/storm sugar • Cyclone • Water logging	• Damage of latrine pits • Damage of latrine superstructure

	• Inundation	• Poor performance of latrines
Haor Basis /Low lying area	• Water logging • Inundation	• Damage of latrine pits • Poor performance of latrines
Chittagong Hill Tracts/Hilly	• Excessive lowing of ground water level • Drought • Increased rainfall • Land slide	• Depleted water resources (Sanitation with less water is difficult) • Damage due to land sliding

Source: From the Fieldwork Notes collected by author

4.10Identification of Adaptation Options

Three aspects of adaptation options are focused here for the CBA ECA Project as follow:

1) adaptation measures already being taken up (by the projects),

2) options possible but not yet to be taken up, and

3) options available but need to be taken outside the scope of the present projects.

4.10.1 Water Supply Installations

The adaptation status of Water Supply installations is show in Table 20. The adaptation options are not considered in most cases. Some measures, although taken on a limited scale are very effective. For example, the levels of tube well platform are raised so that they are above the flood level. Another good example is fixing an extra pipe to raise the level of hand pumps during floods. After flooding the extra pipe is removed. This practice has been adopted in many areas of the country for a long time and by doing so people are coping with frequent floods. There are also some adaptation options available within the scope of the present projects.

To address the problem of excessive lowing of ground water levels new types of hand pumps can be used to abstract ground water from greater depths. Raising the level of the bank of the ponds used for drinking water can be done to protect them from flood waters. R&D activities are also suggested within the scope of the present projects; emphasis is given to test desalinization plants in the coastal saline zones.

Table 21: Adaptation Options for Water Supply

Present adaptation measures	Options available within the scope of the existing project	Options available outside the scope of the existing project
Not considered or on a limited scale: • Raising the level of tube well platforms • Fixing extra pipe length to raise the level of hand pumps during floods	• Using appropriate/new types of ponds • Protection of surface water sources (e.g. raising the banks of ponds) • R&D for appropriate technologies (e.g. desalinization plants)	• Establishment of Water Safety Plan (WSP) • Establishing disaster and post disaster management (with integration of water, sanitation and hygiene services) • Flood control measures • Integrated water resource management • Coastal zone protection and drainage improvement measures • Tree plantation , land erosion control

Source: From The Fieldwork Notes collected by author

One option that is necessary and that needs to be taken outside the scope of the projects is the introduction of a Water Safety Plane (WSP). WSP is a routine inspection, maintenance and protection measure. Similarly, to that of sanitation installations, cross- sect oral adaptation interventions such as flood control measures integrated water resource management and establishing disaster management mechanisms are recommended for water supply.

2.6.3 Sanitation Installation

Table 6 presented below summarizes the adaptation options. Virtually no adaptation measures are considered at present by the different projects. Only in limited scale, improved water supply is provided in low water table areas which help in better operations of the latrines. There are opportunities to take up some adaptation options within the present projects. These are building stronger latrine chambers (superstructure) to withstand cyclone especially in the coastal zone and raising the plinth of the latrines to keep them above the flood level in flood plain and Costal zones. Technical solutions and appropriate technologies for flood plains and for hilly areas are still not well known. Concerted research and development (R&D) activities aimed at developing appropriate technologies which to some extent is possible with the scope of the present projects, could be suggested.

Table 22: Adaptation Options for Sanitation

Installation-Hardware

Present adaptation measures	Options available within the scope of the exiting project	Options available outside the scope of the existing project
Not Considered or only in limited scale	• Raising Plinth of latrines • Stronger superstructure • R&D for appropriate technologies	• Flood control measures • Integrated water resource management • Coastal zone protection measures • Establishing disaster and post disaster management (with integration of water sanitation and hygiene services) • Tree plantation ,land erosion control

Source: From The Fieldwork Notes collected by author

However, to have a comprehensive solution for sustainable sanitation installations, some measures outside the scope of the present projects are necessary. Examples are flood control and integrated water resources management. Coastal zone protection is strongly suggested. Similarly, land erosion control measures such as tree plantations for hilly areas are suggested. Furthermore, the establishment of disaster suggested.

4.11 Next Steps – Way Ahead

One issue that also comes out clearly is that adaptation options for the Costal and ECA is not only limited to that single sector. It would need linkages and actions with other sectors such as the water resource management sector, health sector and disaster management. Therefore, future adaptation options need to be undertaken at three levels

1. Within the scope of the communities targeted (community level adaptation)
2. Sector level adaptation
3. Cross-sectoral adaptation

In addition to the more technical options for adaptation (such as changes in technologies, design criteria or implementation /training manuals) there is continued need to be build awareness and capacity among the communities and sector professional on the impacts of climate change and what can be done about it.

It is true that knowledgeable community is crucial to the social development, policy responses and adaptation programs. It’s also a concerning fact that Public outreach and education programs are not enough and effective to increase support for Climate Change Adaptation policy, for collective action and behavior change.

Behavior change to bring social change in context of anthropogenic climate change is crucial and most pressing aspect. To facilitate social change and bring improvement in understanding of the public in the coastal region, there is an urgent need to address the issues of behavior change in diversified groups of people.

It's not simple that those who are categorized as educated, effluent and in power are facilitated with same approach as with majority with either no education or very little literacy level, less resourceful or poor. In current scenario we cannot attempt to use the unified approach to provide the right information about climate change and risk of associated impacts to the right people at the right time.

It is a common fact that lay persons understand impacts of any change in their surrounding and perceive risks differently than do the experts. Risk perception is more related to beliefs, traditions, culture, experiences, processing of information and level of knowledge. Bringing climate change and its impacts to a layman in least developing countries like Bangladesh is not simple. It requires very clear and effective, collective approach.

Dealing with qualitative and quantitative aspects of climate change requires very careful but effective communication strategies to inform and influence individuals and community decision that enhance awareness and motivation for mitigation measures. Communicating to public is a very challenging and communicating climate change; more publicity about the problem to create awareness is not only important but taxing too.

Planning is the prior step before implementation; without evaluation, the communication strategies will not to be effective to produce desirable result. Increasing knowledge of intended audience, influencing perceptions and beliefs that could shape norms, policy and reinforcing healthy behavior and simple lifestyle are the way forward but with strategic approach.

4.11.1 Strategies to Improve Public Understanding

Prioritizing the challenges for Climate Change, includes the need to develop strategies for easy understanding of the complex issues of the common civic of the coastal community:

1. Identification of Challenges
2. Significance with reference to public and socio-economic status
3. Impacts: direct and indirect impacts of climate change with reference to the general public in specific geographical areas

4.11.2 Education and Communication about Climate Change

1. Highlight potential local, national and regional climate change impacts
2. Emphasize “Climate Change is happening now “, we cannot delay further
3. Highlight the potential impacts of climate change on human health (including direct impact of extreme weather, indirect impacts of natural environmental hazards and change in epidemiological pattern and spread disease.)
4. Holistically bringing change in behaviors and attitude as “only information is not enough”.
5. Wheel of change towards sustainable development rolls on business, industry, academic, researcher’s, community and civil society, there interaction is essential to achieve the goals

4.11.3 Addressing Social, Cultural, Scientific and Technological Barriers

Climate change has several characteristics i.e. social, economic and environmental. It is a concerning fact that the climate change is generally not perceived as “urgent”. Remoteness of the impact makes it less urgent resultantly face many barriers for the effective development of the action plans in this regard.

1. Cultural barriers and beliefs.
2. Socio –economic barriers.
3. Psychological and cognitive barriers.
4. Lack of peer support, political will and leadership.
5. Resource constraints and organizational inertia.
6. Technological and scientific barriers.

4.11.4Facilitating Social Change

To facilitative Community based social change and bring improvement in the understanding of the public in the Coastal regions there is an urgent need to bring:

1. Change in behavior of general pubic within the community.
2. Change in organizational ethics and practices.
3. Change in business and market place practices.

Critical issues related to general state of environment and specifically with reference to global warming and climate change are crucial and require careful planning and approach for the implementation of strategies. Like many nations, Bangladesh has also endorsed Kyoto Protocol. “Bangladesh is attempting to minimize the emission of greenhouse gases and to achieve sustainable development through legally, administratively and technically sound institution”. Legally administratively and technically sound institution reflects the ideal situation of any developed society.

But it is a fact that Least Developing countries encounter many hazards as a result of the global strategies changes. They become victims of internal and external political scenario resultantly suffer from serious economic crises, inefficiency of institutional and administrative set up, decrease in efficiency of the implementing efforts and weakness of the legal set up.

To implement strategies for better understanding about climate change in Bangladesh focus must be on the development of human resource that has ability, skill and attitude of concern for the social development and environmental protection.

To improve community understanding of the climate change and prepare them for taking action at individual levels through change in their own behavior and for supporting policy change, we need to develop mental framework through formal and informal way of education and / or creating awareness among masses through multi-method approach. We do not disagree with common understanding that scientifically literate public can be better equipped to understand the climate change impacts and can play their role more effectively for taking actions. We emphasize that greater scientific literacy among policy makers is also important. This required for greater transparency in policy making with reference to environment and climate change science.

It is very important that a multidisciplinary community based collective approach to be adopted to communicate the climate change to public by involving scientists, planners and community workers. The common strategies could be; as follow:

1. Increase surveillance and disease awareness.
2. Distribute emergency massages in a real-time manner through the media and other techniques. Stringency of organizational relationships.
3. Showing the benefits of behavior change and prompt action can also be considered.

In targeting low income and low educational level groups of the coastal region specially females; simple but more effective channels of communication must be adopted for promoting the messages. Messages regarding water shortage, diseases and children health could be priority the impacts of climate change. It is also very important to consider the methods of communication commonly prevalent in cultures.

Considering emotional, humorous, serious and scientific way of communication is also well recommended. It is also noteworthy that threat apples are not usually effective for most audiences especially youth. The message has to be motivating simple and relevant. Talking about climate change is reasonably complex and difficult. Informing public and

persuading people to respond and act on a problem of climate change or global warming is a difficult task. Maybe they know the meaning of these phrases but the issue may not be immediate or relevant. Many myths are still prevalent regarding environmental crises and environmental actions and general public usually becomes influenced. Communication about climate change to general masses requires special care and consideration. Developing simple conceptual framework to integrate many perspectives together is important for communication to facilitate social change. Role of dialogue in this regard is significant, as "many controversies are resolved through analysis, argument, compromises and resolution." (Moser and Dolling, 2007). Using Metaphors and analogies, providing understanding about the causal mechanism of specific community and description of certain climate change issues, their consequences, remedial actions or solutions can be the common themes in this regard.

4.12 Conclusion

This chapter attempts to assess the selected activities and interventions of the Project and the resultant accomplishments. These activities analysed here, include the following: awareness program for Climate Change Adaptation, livelihood skill development training, functioning of VCGs, and local government relations.

The assessment is based on the fieldwork (as delineated in Chapter 1, section 1) and the associated empirical observations and consultations. Additionally, the analysis also reflects observations from the secondary review of project documents.

CHAPTER 05

Summary and Recommendations

5.1 Introduction

This chapter links up the key activities and interventions of the CBAECA Project identified in the previous chapter as critical for success and list out the subsequent accomplishments necessary to recognise successful future Adaption practices in the coastal areas of Bangladesh.These activities are already scrutinised in the previous chapters, and on the basis of those assessment only functional and real interventions are consolidated as a summary and specific recommendation for future, long-term projects on Community based Climate Change Adaptations.

As mentioned before the objective of my research is to understand the nature, extent, and features of Community Based Climate Change Adaptations and to examine the community work dynamics in relation to Community Based Climate Change Adaptation in the studied project. So, from this research I try to identify the nature, extent, and features of community-based adaption practices were effectively and efficiently implemented and linkup to grass root people by NACOM through this project and also how the community responds to such social interventions, do they really believe what they were told and trained or, can they link up the impacts of climate change to the reasons which are visible and are they acting as a community to respond to such changes?

We already witness in the field that, thisproject isseriously contributing to enhance the social capital in the community level by providing a collective platform for the targeted communities to come together. The various institutional structures, despite the limitations, have contributed to forging linkages among the group members.

A marginal link has also been established with some quarters of the local government offices and other institutions including significant sections of the civil society. There have been evidences of some group members negotiating direct access to local Union Porishod (UP), land, fisheries, livestock, and forest offices.

Efforts were also observed in the field to improve livelihood by two positive contributions as: (i) the livelihood training and skills infusion activities have led to a degree of capacity enhancement amongst the targeted groups; and (ii) some 40% of the respond beneficiaries have directly benefited from an additional income of up to 15% directly accruing from the Project's training (and associated) inputs.

Moreover, considerable interest is noticeable among the targeted communities about the activities and relevance of the Project. The local people in most places have high expectation from the Project, and eagerly look forward to its continuation and expansion. Presently, numerous respondents especially VCG members and local government representatives-consider the existing level and extent of support to be insufficientgenerally; however, they seem to be otherwise satisfied with and appreciative of the commitment of the Project staff.There is evidence that involvement in the Project has resulted in some degree of rise in the social status and recognition of the beneficiaries.

The following forms of engagement in the Project, as revealed from the field work team's discussions with the beneficiaries, have an immediate relevance for their social status and community acceptance:

1. A marginal rise in financial solvency amongst selected households through successful utilization of livelihood and IPM-related training and interventions;
2. Interaction with and visit of 'outsiders' (government officers, official visitors of the Project, expert trainers and resource persons etc.);
3. Attending training sessions, fortnightly/weekly collective gatherings (meetings);
4. Occasional visit to 'towns' (e.g. to Upazila and District headquarters);
5. Exposure visits to other areas and regions.

5.2General Conclusions and Recommendations

Based on the overall observations from the fieldwork and the respondent stakeholders' feedback, thischapter begins by furnishing the general recommendations and conclusions for the research. The second section offers several clues that are more specific and suggestions for further improvement of the performance of the Project activities for

implanting in other areas of Bangladesh. The third section of this chapter then elicits the issues and suggests measures that have immediate relevance to be considered as part of the sustainability of the Project.

1. The Project, despite some weaknesses and limitations (as noted in), has generally been on track in terms of reasonable achievements of its stated goal and outcomes (related to the selected activities and interventions covered in this study), and has maintained an acceptable level of progress.

2. There are clear signs of the Project's progress towards creating a positive impact especially in terms oflocal acceptability and credibility, some successes in articulating the respondent community's interests and voices in decisions regarding local natural resource use and management, piloting of selected 'best practice' livelihood skills and agricultural activities, relevant capacity enhancement and greater legitimacy of local stakeholders especially community organisations (e.g. VCGs), and a degree of contribution to the enhancement of social capital and empowerment.

3. There is good rationale for continuation and further expansion of similar programmatic interventions in the region and also in part of Bangladesh provided that the following recommendations are addressed to. There are many deserving communities (including very marginal [e.g. indigenous groups, disaster victims, and/or religious minority] groups) in the localities that still remain unattended and outside the Project's coverage. The field work finds that it's important to ensure gradual extension of the services to these equally deserving people, where climatic effects are eminent and critical. In this regard, program selection for different communities need tobe designed more carefully based on the present learning and needs of the communities.

5.3 Specific Recommendations

This section presents some suggestive agendas draw based on(a) the experience and observations gathered from the fieldwork; (b) views expressed by the project staff and

other key stakeholders (beneficiaries of the project); (c) recommendations of selected earlier reports; and (d) feedback from the various briefing and debriefing sessions.

The strategies, modalities and actions are not meant to be universal or infallible; they are essentially suggestive and indicative. The aim is to explore and furnish a wide range of ideas, which the Project in close consultation and collaboration with the field staff and beneficiaries may consider and implement after careful consideration of the particular context, condition and realities of the field.

1. Follow-up services (such as technical know-how on agricultural technologies, equipment and logistics for handicrafts) need be carefully planned and adequately performed. The contents and mode of delivery of various training programs and capacity development initiatives should more clearly focus on (and geared towards) a 'right based approach' as distinct from mere philanthropic orientations.

2. The cases of failure in capacity enhancement and livelihood interventions require proper local level documentation and scrutinises, which may offer important lessons for any future Project.

3. As far as possible, the training contents and literature should use visual and pictorial materials as well as physical demonstrations, where applicable. Other experimental models of training and learning, practiced by other projects/institutions in the region, may provide valuable lessons in this regard.

4. The following topics should (continue to) receive priority in community level training and capacity development efforts: 'beef-fattening' (livestock rearing), pest management in agriculture, fish culture, existing NRM laws and policies, handicrafts (especially sewing), poultry, homestead gardening/forestry, and nursery raising.

5. Wherever possible, the training sessions should be arranged and organised locally -- close to the targeted communities based on the beneficiaries' convenience and opinion. This has often been the case so far, and need to continue.

6. Systematic and regular consultation with the target beneficiaries should be done by the concerned staff before designing and/or implementing any training scheme especially its contents, time and location.

7. Livelihood skills development interventions should combine and consider the following: quality inputs and production, regular product development training, and establishment market linkages.

8. Women should be given preference or at least equal opportunity in availing various skills development training and associated inputs and facilities. The Project may strengthen its material and back-up support for enabling the beneficiaries to put their skills and trainings to practical use. Such support may include establishing market linkages, flexible and easy to repay credit for acquiring specialized equipment, tools and/or inputs for livelihood and income generation.

9. While promoting new and innovating technologies (e.g. pest management through organic means) and strategies (community-managed sanctuaries), it may be strategically important to link up to, and engage with relevant other government and non-governmental initiatives; promotional materials are best disseminated at the local/community level public places (such as weekly bazaars, local government institutional premises).

10. Exposure and 'cross' visits may be further expanded involving more zealous group and committee members (as well as relevant local government and traditional leaders) in order for them to visit and benefit from the experiences of better functioning situations and cases. Essentially, the purpose of these visits is to facilitate cross fertilization of good practice idea and create a demonstration effect.

11. The efforts to record and document the existing best practice examples of conservation and (off-and on-farm avenues of) livelihood and income diversification should be continued, efforts must continue to engage with the relevant line and local government offices at the different levels as well as traditional local government offices as the community level in terms of sensitization on the Project goals and activities and linking their services to the

communities. Maintaining continuous dialogue with these offices is vital; and adequate time and resources should be planned and provided for this purpose.

12. In view of the sensitivity and complexity of the natural resource governance and community rights issues, the Project (or any future intervention in this regard) should attempt to develop networking and regular liaison with other local government bodies and associations (e.g. the UP chairpersons' forum, conservationists, environmental rights and good governance activists) and institutions active at the national/policy level.

13. Local and national level advocacy efforts must continue and further expanded; in this regard some preferred topics and issues (as revealed from various FGDs and stakeholder consultations) include the following:

    (i) conservation of endangered species of flora and fauna in the project localities (including conservation of 'iconic' spp. – e.g. turtles);
    (ii) community ownership/management in lieu of private exclusive leasing of natural resources;
    (iii) protection and conservation of natural resources of critical community use and common value – such as road and embankment sides ('strips') and slopes, canal/steam 'head' (and associated flow conservation), common wetlands;
    (iv) expanding national level advocacy for policy and institutional reform for greater community rights and access to natural resources.

14. Wherever possible, local knowledge and wisdom (including some of popular agro-forestry, fisheries and cropping technologies observed during the fieldwork) may be analysed, documented, disseminated and promoted.

15. Greater emphasis should be given on forging network and partnerships. Many leaders of various groups and committees (notably, UP Standing Committees, journalists) have requested the Project's support in linking up to the national level – e.g. to the national media and television networks, for projecting the site-specific

environmental and conservation challenges and problems, and promoting community rights and access to natural resources.

16. Some concerned staff and other development workers, based on their personal experiences, suggested that dissemination and documentation efforts should be geared towards such socially recognised, long standing institutions as local educational institutions, religious seminaries and other faith establishments, and bazaar committees.

17. The relevant promotional literature and publications may be more widely disseminated locally; involving local educational institutions may be particularly useful in this respect. For any similar Project in the future, the staff composition may be carefully reviewed for reasonable gender balancing by exploring means of bringing on board more appropriately qualified women – where possible.

18. The field staff appointed by the project should be adequately trained and oriented with (i) relevant community mobilization and development (including group formation and nurturing), (ii) participatory methodology and approaches (including community-led critical/problem analysis); and (iii) supervision and monitoring tools and techniques (including field-based reporting).While the field work team's consultations with the staff, a number of training topics were suggested that have an immediate relevance in the field:

    a) Facilitation,
    b) Conflict management and dispute resolution,
    c) Interpersonal Skills,
    d) Monitoring and Evaluation (including report writing),
    e) Office Administration and Management,
    f) Human Rights Approach to Development,

g) Community Governance (Community-focussed Leadership Development and Project Management),

h) Practical Agriculture and Agro forestry (including popularly used agro-technologies – e.g. grafting)

i) Project Planning and Proposal Drafting

j) Cultural and heritage conservation (with a focus on relevant national and international policy and legal framework and obligations).

19. As further avenues of mass awareness and Conscientization for Community based Adaption to Climate Change, the following may be considered:

    a. 'mobile based school program';
    b. locally specific problem-based audio-visual (AV) production and communication material;
    c. use of Environment Club (promoted by CWBMP),
    d. more intense and expanded use of folk theatre,
    e. 'bayescope',
    f. street folk drama;
    g. inter-school competition (e.g. quiz) and
    h. fair and demonstration ceremonies.

Culture and community specific livelihood training may be considered (e.g. beautification and aesthetic training to the Rakhain community; cell phone repairing in the relatively isolated *paras* in Shahporir Dwip (Teknaf)).

5.4 Points to consider for long term Sustainability of the Project activities and Interventions

It is imperative to start thinking about the issues and actions that are most relevant for reasonable consolidation and sustainability of the Project interventions and activities done so far, to adopt to climatic effects. From the field assessment indicators, this research, analyse and identifies that, for this sort of Adaptation focused projects need to follow certain specific measures and thus suggested what is needed to be considered for the future sustainability of such Project interventions. Facing this challenge will require careful thinking and continuous adjustments in the Project's approach and strategies. This remains a formidable challenge for such projects, and there is no quick-fix solution here. Drawing on the overall observations and stakeholder and project beneficiary's opinions, some food for thoughts on issues relating to sustainability are furnished here:

1. This Project has made significant accomplishments and headways towards establishing a community-based conservation and development scheme matching with the sensitivity and unique value of the ECAs. It is important to continue these efforts and maintain the tempo for at least another 4 to 5 years to allow a degree of sustainability and grounding. Possible sources of funding for a new project (or extended phase of this project) should be actively explored. Until such project/funding is secured, reasonable provision should be made in the regular ('revenue') budget to continue and maintain the basic project supervision activities throughout the bridging period.

2. Considering the complexity of ECA management, it may be prudent to consider a full-fledged regular set-up for ECA management within the DoE. Possibilities of mainstreaming and bringing the Cell into the standardised DoE arrangement, for example establishing a regular 'ECA Wing' – should be explored.

3. Greater efforts are desirable in linking the community level livelihood and training interventions to other locally available services and provisions (e.g. the governmental services available in the Upazila offices, similar relevant interventions by other NGOs, etc.).

4. The VCG members have, generated reasonable monthly savings, which provides a degree of confidence and hoper towards sustainability of these institutions beyond the Project period. Efforts to ensure more stringent vigilance of fund management must, however, continue in this regard. In the same vein, the MCG support to VCGs is also helpful; the size and impact of MCG, as discussed earlier, however, are considered somewhat limited.

5. Some VCGs (and the relevant leader's/office bearers), are involved in the establishment and management of socio-religious institutions (e.g. schools, seminaries, cemeteries). Such initiatives help VCGs gain greater social credibility and grounding in the local context.

6. Rather than individual investment through the MCG support from the Project, some VCGs have opted to make collective investment in relatively larger projects (for example,commercial plantations); this is expected to raise greater financial return and nurture collective spirit and responsibility.

7. Management and maintenance of any substantive asset created through the Project, especially all infrastructures[4] and physical resources (notably, the forest plantations, various conservation estates – such as hatcheries, sanctuaries) must involve an appropriate form of institutional public representation (through the respective UP, for example). These facilities ought to be locally grounded and rooted in terms of legal ownership and management by the targeted community members.

8. VCG managed resources such as commercial plantation projects and collective savings schemes, the following may be considered: (a) the VCG/*Samity*members – not just few select leaders , must play a more proactive role in the day to day management of the respective project; such participation may take the forms of regular discussions on the subject in the routine group meetings, community-led visit and inspection of the project site, collective maintenance of the site by group members in (agreed- upon) rotation; (b) the contents and implications of the 'deed' (agreement) document on the 'ownership', use and management need to be more widely disseminated amongst all members of the group – not just to selected office bears; (c) it is imperative to include greater number of common members of the groups/community in such formal ownership or usufruct documents; (d) efforts should be made to press and convince the UP to play a more active role in the management of the VCG resources/projects (currently the UP's engagement in the actual implementation of the agreement and management of the VCG projects is often superficial or ceremonial).

[4] The CBA-ECA project has no or very little provision for physical infrastructure; some VCGs and local government offices (via Endowment Fund), however, have plans for taking up small scale construction activities or maintaining existing such infrastructure as Village Resource Centres.

9. Better emphasis should be given on forging network and partnerships. The idea of establishing a regional – even national network of VCGs should be further considered. Many VCG leaders from Cox Bazar region have requested the Project's support in linking up to the national level – e.g. to the national co-management organisations' and relevant media networks – for projecting the challenges and problems faced by them as community level conservation organisations operating in an increasingly complex environmental degradation and climate change context.

10. The idea of resourcing the innovative IPM, agro-forestry, and other livelihood technologies and means through MCG and similar micro-finance programmes should be carefully explored; the targeted communities also need to be further consulted on the matter. Continuous research and exploration are required to make the suggested agricultural, pest management, and other livelihood strategies and technologies cost effective at the community level.

11. To allow necessary local acceptability and grounding of the technologies and knowhow imparted thorough the Project-supported training interventions, systematic and regular field testing and demonstration of the suggested technologies and strategies are required, and this must be done in full consultation and participation of the targeted communities.

12. The local 'success stories' concerning particular VCGs need to be more effectively disseminated and shared at the community level; cross-visits and sharing of

experience among various VCGs (even with other CBOs/similar projects) and associated communities may be considered; this may help implant a better sense of ownership of these efforts by the concerned communities, and thereby, enhancing the possibilities of long term sustainability.

13. It is important to establish and consolidate the links between VCGs and respective UP ECA Committee. This may facilitate the process of developing greater functional relations and rapport with the UP and bring the VCGs closer to a public leadership and scrutiny.

14. To keep the local government ECA Committees fully operational, a degree of external facilitation may be required; this role needs to be considered while formulating future projects. Special care must be taken to ensure that all infrastructures and physical facilities or assets (e.g. plantations, resource centres, sanctuaries) developed and supplied through the Project (or implementing NGOs) are locally grounded and rooted in terms of legal ownership and management by the targeted community members.

15. There are several relevant alike initiatives (notably the co-management efforts by FD, DoE and DoF) in the Project's working areas. There is a clear need to coordinate these rather disjointed efforts. The possibility of sharing and leveraging resources from these immediately relevant (donor-supported GoB) projects (notably CREL and GiZ-supported initiatives) may be explored.

5.5Conclusion

This chapter attempts to present the selected activities and interventions of the Project and the resultant accomplishments. As said earlier, based on the overall observations from the field work and the respondent stakeholders' feedback, this concluding chapter begins by furnishing the general recommendations and conclusions for the research. The second section offers several clues that are more specific and suggestions for further improvement of the performance of such kind of future Project activities for implanting in other areas of Bangladesh. The third section of this chapter then elicits the issues and suggests measures that have immediate relevance to be considered as part of the sustainability of the Project.

These activities analysed here, helps to draw a consolidated summary and specific recommendation for future, long-term sustainability of the Project activities and interventions for projects on Community based Climate Change Adaptations.

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Appendix1: Field Work Plan

A. FIELD WORK PLAN

Field Work Team	
SL	Name
1	Anwar Hossain Chowdhury
2	Mr Arup Baruya
3	Mr. Shumon(NACOM Staff)

Analysis Team	
SL	Name
1	Anwar Hossain Chowdhury
2	Ms. Maisha Samiya
3	Hosna Tasnim
4	Ms. Saima Chowdhury

B. Time Plan and Gant Chart for the Fieldwork

- The total field work was of five (5) month long. We covered two VCG in a month time.

Month	1		2		3		4		5	
VCG	1	2	3	4	5	6	7	8	9	10
FGD	3	6	9	12	15	18	21	24	27	30
One to One Interview	25		20		20		20		25	
SWOT ANALYSIS	1				2					

- Gantt chart for research Field Work

- We made necessary plans, did proper coordination with the community and arranged VCG meetings. Where we conducted the First FGD. For the Second and Third FGD, we take time to invite specific and related persons and groups to conduct those FGD.
- We visited the area repeatedly during this period and stayed in each VCG area for at least 5-6 days to conduct the FGD's separately,
- For conducting the One to One interview, some time we revisited to one VCG just to take single one to one interview of a person who was planned to interview initially, but was not available during the fieldwork.

C. Field Work Calculations for Sample Size Selection

- The membership of each VCG comprised of 20 - 60 people. A total of 1540 households with 9,412 people represent in these VCGs. At the Cox's Bazar-Teknaf sites. 36% of the total VCG members are represented by women.
- In this Project there was in total of 38 VCG in my Selected project area so, the total population of my project is , So, for this research,

Total Population, N =38.

- After discussion with my Supervisor and approval from him, I decided to select specific Sample population from the Total Population which is only 10 VCG, and expressed by " n" which was a Selective Sampling.So, for this research,

Sample Population n= 10

- So, the sample population (n) is **26.31 %** of the Total population (N), for this research fieldwork and is considered acceptable.
- In each VCG I have decided to conduct 3 FGDseparately. So total number of FGD done for this research was (10 X 3) = 30.

- Beside this for this research, a total number of (10 X10) = 100 and 4 (TNO, UNO, UCO, 1 Project Manager- from Dhaka office of NACOM) and 6 members of the Civil Society from the local community was interviewed). So, Total One to One Interview = (100+ 4+ 60) = 110 was conducted.
- For this research the following was the Data collection plan using different data collection tool:

Table: Data collection plan using different data collection tool for this research.

SL	Method	VCG* n	Total
1	**FGD (at least 3 in each 10 VCG)**	**10 *3**	**30**
2	**One to one interview (at least 10 in each 10 VCG) (VCG Officials, members, Female)**	**10*10**	**100**
3	**One to one interview (TNO, UNO, UCO, 1 Project Manager)**	**----------**	**4**
4	**One to one interview- Civil Society - Cox Bazar Area**	**----------**	**6**
5	**SWOT Analysis**	**----------**	**2**
Total			**142**

Source: Developed by the Author

- Two SWOT analysis was done for all VCG' combinedly. First one was done to identify the common strengths and weakness, and to understand the opportunities and threats of the selected VCGs, and the second one was done for all the VCGs combinedly to identify the Strength Weakness, Opportunity and Threats of the CBAECA project. The findings from the SWOT analysis were shared in the annexure here below.

Appendix 2:Field Work Checklist

1	Site Number	
2	Site Name:	
3	Managed by	NACOM
4	Union/Thana	
5	District	
6	Date	
7	Name of Data Collectors	1. Anwar Hossain Chowdhury 2. Arup Barua

1. Awareness Raising Program for Climate Change Adaptation

Awareness Raising Program for Climate Change Adaptation

(i) Nature and activities relating awareness raising campaign – especially the training and capacity development support;

(ii) Nature and activities relating to documentation and dissemination

(iii) Effectiveness in reaching and informing the target communities (respondent VCG members, local people, fishermen, fry and shell collectors, etc) about the various aspects of NRM and climate change issues

Observations on the methods and tools used for awareness rising.

(iv)

Location	Project Topic	No of trainees	Duration	No. of trainees actually using/applying the learning	No. of Refresher/follow-up training/activities	Backstopping support (Y/N)	Comments

(v) Key problems and challenges (as perceived by the respondents)

Nature, types of awareness raising activities	
Respondents' views and general impressions about the project	
Observations:	

2. VCG Operations

VCG Operations

(i) Nature and extent of VCG activities and interventions
(ii) Selected organisational and management dynamics
(iii) Extent and effectiveness of capacity building efforts
(iv) Considerations of sustainability

Membership composition		
Male	Female	Total

Leadership composition:

Designation	Education status	Gender	Profession	Experience in group activities*	Agri &other productive land holding status	Comments

*Scale 1-5 where 1 is minimum and 5 is maximum, based on perception and FGDs.

Sl	Attributes	Comments
1	Democratic practices within the Group	
2	Any note-worthy collective action or achievement of the Group	
3	Training received by VCG members: Types, frequency, and number: observations on effectiveness	

4	Sustainability: regularity and extent of savings, income generation opportunities for VCG, link to other resources, zeal of the leaders, any other evidence	
5	Key constraints and challenges (including serious allegations or mishaps regarding the Group performance)	

3. Livelihood Skill Development Training

Livelihood Skill Development Training

(i) Nature, types and extent of the training
(ii) Impact and effectiveness of the intervention:
Level and extent of follow-up/refresher training

Extent of uptake and actual use of the learning by the recipient/trainees (based on the sample/respondent interviews)

Backstopping (including materials, advice, and logistics) support

Evidence of replications and further expansion

(iii)Targeted beneficiaries' views, preferences and opinion

(i) Key problems and challenges (as perceived by the respondents)

Sl	Topic	Remarks
1	Nature, types and extent of Training	
2	Training beneficiary selection process (political influence, democracy in decision making, etc.)	
3.	Impact of Training (including any note-	

	worthy cases of success)	
4	Key problems	
5	Key challenges	

4. Understanding on the part of the visited Local Government Offices

Understanding on the part of the visited Local Government Offices

(i) General impression about the understanding and responsiveness of the Project and its activities on the part of the selected relevant local UP Chairman and Upazila Nirbahi Officers (convener Upazila ECA Committee) and other relevant members

(ii) Their views on, and assessment about the project performance

Sl.	Topic	Remarks
1.	General impression	
2.	Understanding and responsiveness local UP Chairman and members visited	
3.	Understanding and responsiveness Upazila	

	Nirbahi Officers	
4.	Assessment about the project	

Thank you for your valuable time

Appendix 3: One to One Interview Checklist

One To One Interview Checklist

1	Site Number	
2	Site Name:	
3	Person name :	
4	Designation	
5	Managed by	NACOM/
6	Union/Thana	
7	District	
8	Date	
9	Name of Data Collectors	1. Anwar Hossain Chowdhury 2. Arup Barua

5. Awareness Raising Program for Climate Change Adaptation

Awareness Raising Program for Climate Change Adaptation

(vi) Nature and activities relating awareness raising campaign – especially the training and capacity development support;

(vii) Nature and activities relating to documentation and dissemination

(viii) Effectiveness in reaching and informing the target communities (respondent VCG members, local people, fishermen, fry and shell collectors, etc) about the various aspects of NRM and climate change issues

(ix) Observations on the methods and tools used for awareness raising

(x) Key problems and challenges (as perceived by the respondents)

Location	Project Topic	No of trainees	Duration	No. of trainees actually using/applying the learning	No. of Refresher/follow-up training/activities	Backstopping support (Y/N)	Comments

Nature, types of awareness raising activities	
Respondents' views and general impressions about the project	
Observations:	

6. VCG Operations

Membership composition		
Male	Female	Total

Leadership composition:

Designation	Education status	Gender	Profession	Experience in group activities*	Agri &other productive land holding status	Comments

*Scale 1-5 where 1 is minimum and 5 is maximum, based on perception and FGDs.

Sl	Attributes	Comments
1	Democratic practices within the Group	
2	Any note-worthy collective action or achievement of the Group	
3	Training received by VCG members: Types, frequency, and number: observations on effectiveness	
4	Sustainability: regularity and extent of savings, income generation opportunities for VCG, link to other resources, zeal of the leaders, any other evidence	
5	Key constraints and challenges (including serious allegations or mishaps regarding the Group performance)	

1. Livelihood Skill Development Training

Sl	Topic	Remarks
1	Nature, types and extent of Training	
2	Training beneficiary selection	

	process (political influence, democracy in decision making, etc.)	
3.	Impact of Training (including any note-worthy cases of success)	
4	Key problems	
5	Key challenges	

2. Understanding on the part of the visited Local Government Offices

Understanding on the part of the visited Local Government Offices

(iii) General impression about the understanding and responsiveness of the Project and its activities on the part of the selected relevant local UP Chairman and Upazila Nirbahi Officers (convener Upazila ECA Committee) and other relevant members

(iv) Their views on, and assessment about the project performance

Sl.	Topic	Remarks
1.	General impression	
2.	Understanding and responsiveness local UP Chairman and members visited	
3.	Understanding and responsiveness Upazila Nirbahi Officers	
4.	Assessment about the project	

Thank you for your valuable time

Appendix4: List of the selected Respondents (Including Participants in FGDs) and other Persons meet and consulted during the Fieldwork

Key Project Officials and Other Experts in Dhaka

1. Mr. A.K.M Rafiqul Islam, Deputy Project Director, CBA-ECA, DoE
2. Mr. Mahbubur Rahman, Project Manager, CBA-ECA, DoE
3. Mr. Abdullah Z. Ahmad, M&E Specialist, CBA-ECA, DoE
4. Professor Dr. A. R. Mollah, NACOM Chairman
5. Dr. Pronob Kumar Mozumder, Project Coordinator, CBA-ECA, NACOM
6. Mr. Nasim Aziz, Senior Programme Officer, IUCN-Bangladesh, Dhaka
7. Dr. Niaz Ahmed Khan, Professor, Department of Development Studies, University of Dhaka

Cox's Bazar Initial Briefing

1. Mr. Md. Faruk Hossain, WRMO/CXB, CBA-ECA, NACOM
2. Mr. Md. Arif Hossain, CF, CBAECA, NACOM
3. Mr. Sardar Sariful Islam, AD, Dept of Environment, MoEF
4. Mr. Safiqur Rahman, Regional Coordinator, NACOM
5. Mr. Puspak Barua, CF, NACOM
6. Mr. Md. Nazrul Islam, FM, CBAECA, NACOM
7. Mr. Yousuf Khan, FA, NACOM
8. Mr. Arup Barua, Dept of Development Studies, University of Dhaka
9. Mr. Anwar Hossain Chowdhury, Dept. of Development Studies, University of Dhaka

VCG Members and Associated Persons who attended the FGD (All together)

Site Number	Site Name	Members attended the FGD =18
***Site 01: Kawarpara* VCGs**	***Kawarpara VCG with representation from neighboring VCGs***	1. Ms. Shamima Akhter, President, Kawarpara VCG 2. Ms. Rowsan Akhter, General Secretary, Kawarpara VCG 3. Ms. Selima Sultana, Treasurer, Kawarpara VCG 4. Ms. Bibi Amena, Member, North Nuniyarchara VCG 5. Ms. Nasrin Sultana, Member, North Rastarpara VCG 6. Ms. Rahena Khanom, Member, East Kutubdiapara VCG 7. Ms. Rubi Akhter, Member, East kutubidapara VCG 8. Ms. Umme Habiba, Member, North Rastarpara VCG 9. Ms. Hasina Begum, Member, Nuniyarchara VCG 10. Mr. Shahnewaz, Member, Kawarpara VCG 11. Mr. Ramjan Ali, Member, Kawarpara VCG 12. Mr. Najirul Mamun, Member, Kawarpara VCG 13. Mr. Nuruz Salam, Member, Kawarpara VCG 14. Mr. Md. Islam, Member, Kawarpara VCG 15. Mr. Nurul Amir, Member, Kawarpara VCG 16. Mr. Nurul Karim, Member, Kawarpara VCG 17. Mr. Md. Rafik Ullah, Member, Kawarpara VCG 18. Mr. Md. Akbar, Member, Kawarpara VCG

Site Number	Site Name	Members attended the FGD =26
Site 02: **Ramu VCGs**	**Adarshagram Site with representation from neighboring VCGs**	1. Ms. Samsun Nahar, President, Adarshagram VCG 2. Ms. Mobassara Begum, General Secretary, Adarshagram VCG 3. Mr. Rahim Abdul, Treasurer, Adarshagram VCG 4. Ms. Mobassara Begum, Member, Adarshagram VCG 5. Ms. Rina Akhter, Member, Adarshagram VCG 6. Ms. Bibi Amena, Member, Adarshagram VCG VCG 7. Ms. Nasrin Sultana, Member, Adarshagram VCG 8. Ms. Farida Begum, Member, Adarshagram VCG 9. Mr. Monowara begum, Member, Adarshagram VCG 10. Ms. Sahera khatun , Member, Adarshagram VCG 11. Mosamat Rasheda, Member, Tulatoli VCG 12. Ms. Nur Halima Member, Tulatoli VCG 13. Ms. Meher Asma, Member, Tulatoli VCG 14. Ms. Anowara begum, Member, Tulatoli VCG 15. Ms. Mnowara Khatun Member, South Lombori VCG 16. Ms. Joynab, Member, Tulatoli VCG 17. Mr. Badshah Mia, President Mithapanirchara VCG 18. Mr. Nurul Boshor Siddique, Secretary, South Moher VCG 19. Mr. Md. Rafik Shah President, South Moher

		VCG 20. Mr. Hosen Ali, President, Mithapanirchara VCG 21. Ms. Sokina Bibi, Member Tulatoli VCG 22. Mr. Md. Sahedul Islam, Member, Adarshagram VCG 23. Mr. Nurul Anwar, Member, Adarshagram VCG 24. Mr. Rabiul Karim, Member, Adarshagram VCG 25. Mr. Nurul Amin, President, Raster Para ECA Committee 26. Mr. Mohaimen alam, Member, Raster Para ECA committee.
Site Number	Site Name	Members attended the FGD = 19
Site 03: **Teknaf Sadar, Silkhali and Sabrang VCGs**	***Raster Para Site with representation from neighboring VCGs***	1. Mr. Najimuddin, President Raster para VCG 2. Mr. Md. Sahidullah, General Secretary , Raster Para VCG 3. Mr. Mansur Alam , Treasurer, Raster Para VCG 4. Mr. Azam Shah, Member, Raster Para VCG 5. Mr. Ahsan ullah, Member, Raster Para VCG 6. Mr. Ammanullah, Member, Raster Para VCG 7. Mr. Akther Kamrul, Member, Raster Para VCG 8. Mr. Nur Mohammad, Member, Raster Para VCG 9. Mr. Chenu Abdul, Member, Raster Para VCG 10. Ms. Altas Begum, Member, Raster Para VCG 11. Mr. Tahera begum, Member, Raster Para VCG

		12. Ms. Hosena Ara, Member, Raster Para VCG 13. Mr. Nurul Amin, President, Raster Para ECA Committee 14. Mr. Mohaimen alam, Member, Raster Para ECA committee. 15. Mr. Shofi Alam, Cashier, Sabrang VCG 16. Mr. Hasan Ali, Member, Sabrang VCG 17. Mr. Sohrab Ali, Member, Sabrang VCG 18. Mr. Abdullah, Member, Sabrang VCG 19. Mr. Hannan Mia, Member, Sabrang VCG
Site Number	Site Name	Members attended the FGD =19
Site 04: **Maheshkhali VCGs**	***Mamunerpara Site with representation from neighboring VCGs***	1. Mr. Kabir Ahmed, President, Mamun Para VCG 2. Mr. Kayseruddin, General Secretary, Mamun para VCG 3. Mr. Abdul Majid, Treasurer, Mamunpara VCG 4. 5. Mr. Md. Faruque Khan, Member, Mamun Para VCG 6. Mr. Md. Hamid Ullah,Member, Mamun Para VCG 7. Mr. Md. Alam, Member, Mamunpara VCG 8. Mr. Md. Sikander Alam,MemberMamunpara VCG 9. Mr. Shofi Alam, Member, Mamunpara VCG 10. Mr. Hasan Ali, Member, Mamunpara VCG 11. Mr. Md Nurul Amin, Member, Mamunpara VCG 12. Mr. Shanewaj Ahmed, Member, Mamunpara VCG 13. Ms. Hosna Ara, Member, Mamunpara VCG

		14. Ms. Asiya Begum, Member, Mamunpara VCG 15. Ms. Setara Begum, Member, Mamunpara VCG 16. Ms. Ansaru Akter, Member, Mamunpara VCG 17. Mr. Tahera begum, Member, Raster Para VCG 18. Ms. Hosena Ara, Member, Raster Para VCG 19. Mr. Nurul Amin, President, Raster Para ECA
Site Number	Site Name	Members attended the FGD =22
Site 05: **Pechardwip VCGs**	***Pechardwip Site with representation from neighboring VCGs***	1. Mr. Abdur Rahman, President, Pechardwip VCG 2. Mr. Abdus Sobhan, General Secretary, Pechardwip VCG 3. Mr. Khairul Amin, Cashier, Pechardwip VCG 4. Mr. Jaker Hossain, Member, Pechardwip VCG 5. Mr. Abul Kalam, Member, Pechardwip VCG 6. Mr. Abdul Sobhan, Member, Pechardwip VCG 7. Mr. Mijanur Rahman, Member, Pechardwip VCG 8. Mr. Sirajul Haque, Member, Pechardwip VCG 9. Mr. Md. Ahmed Hossain, Member, Pechardwip VCG 10. Mr. Abu Bakkar Siddiq, Member, Pechardwip VCG 11. Mr. Abdul Gafur, Member, Pechardwip VCG 12. Mr. Mokarram Hossain, Member, Pechardwip VCG 13. Mr. Ali Akkas , Member, Pechardwip VCG

		14. Mr. Aminul Haq, Member, Pechardwip VCG 15. Mr. Bellal Hossain, Member, Pechardwip VCG 16. Mr. Khaled khan, Member, Pechardwip VCG 17. Mr. Md. Bakul Ahmed, Member, Pechardwip VCG 18. Mr. Abul Khayer, Member, Pechardwip VCG 19. Mr. Tahera begum, Member, Raster Para VCG 20. Ms. Hosena Ara, Member, Raster Para VCG 21. Mr. Nurul Amin, President, Raster Para ECA 22. Mr. Arif Hossain, CF, CBAECA Project
Site Number	Site Name	Members attended the FGD=18
Site 06: **Ukhia, SonaichariVCGs**	***Sonaichari Site with representation from neighboring VCGs***	1. Mr. Mokbul Ahmed, President, Shonaichari VCG 2. Mr. Md. Hasem, Secretary, Shonaichari VCG 3. Mr. Nur Mohammad, Cashier, Shonaichari VCG 4. Mr. Iman Ali, Member, Shonaichari VCG 5. Mr. Hasan Ahmed, Member, ShonaichariVCG 6. Mr. Md. Kabirl Patowari , Member, ShonaichariVCG 7. Ms. Rozina, Member, Shonaichari VCG 8. Ms. Hasina, Member, Shonaichari VCG 9. Ms. Shahina, Member, Shonaichari VCG 10. Ms. Abeda, Member, Shonaichari VCG 11. Ms. Islama Khatun, Vice President, Tulatoli VCG 12. Ms. Sabekunnahar Sabu, Ex Secretary, Tulatoli VCG 13. Ms. Senuara, Secretary, Tulatoli VCG

		14. Ms. Hamida, Member, Tulatoli VCG 15. Ms. Morium Khatun, Member, Tulatoli VCG 16. Ms. Chemon Khatun, Member, Tulatoli VCG 17. Mr. Mahbub Alam, Member, West Shonarpara VCG 18. Mr. Abdul kader, Member, Deilpara VCG
Site Number	Site Name	Members attended the FGD = 20
Site 07: **Baharchora and Borodeil VCGs**	***Baharchara Site with representation from neighboring VCGs***	1. Mr. Hossain Ahmed, President, Baharchara VCG 2. Mr. Ehsanullah, General SecretaryBaharchara VCG 3. Mr. Ferdous Hossain, Cashirer, Baharchara VCG 4. Mr. Nurul Islam, Member, Baharchara VCG 5. Ms. Syeda Begum, Member, Baharchara VCG 6. Mr. Nurul Hosen, Memebr, Baharchara VCG 7. Ms. Rehana Parvin, Member, Baharchara VCG 8. Mr. Md. Kasem, Member, Baharchara VCG 9. Mr. Mawlana Abul Kasem, Member, Baharchara VCG 10. Mr. Nurul Mia, Memebr, Baharchara VCG 11. Mr. Abdul Khaleq, Member , Baharchara VCG 12. Mr. Aslam Mia, Memebr, Baharchara VCG 13. Mr. Abdul zabbar, Member , Baharchara VCG 14. Mr. Nurul Haq, Memebr, Baharchara VCG 15. Mr. Anwarrul Haq, Member , Baharchara VCG 16. Mr. Md. Faruk Hossain, NRMO, CBAECA project, DoE Cox's Bazar 17. Mr. Md. Nazrul Islam, FMO, CBAECA project, NACOM 18. Mr. KM Nadim Haidar, Program Officer, NACOM 19. Mr. Abu Ahmed, Ex- General Secretary, Shilkhali ECA Management Committee 20. Mr. Liakat Ali, Ex- Vice President, Shilkhali ECA Management Committee

Site Number	Site Name	Members attended the FGD=21
Site 08: **Sonadia VCGs**	***Deliparai Site with representation from neighboring VCGs***	1. Ms. Sagupta Paul, President, Deil Para VCG 2. Ms. Rifat Nigar Tarin, General Secretary, Deilpara VCG 3. Mr. Aabul Kashem, Treasurer, Deilpara VCG 4. Mr. Didarul Alam, Member, Deilpara VCG 5. Mr. Manirul Alam, Member, Deilpara VCG 6. Mr. Aadul Jabbar, Member, Deilpara VCG 7. Mr. Didarul Mia, Member, Deilpara VCG 8. Mr. Aminul Alam, Member, Deilpara VCG 9. Mr Kashem Fakir, Member, Deilpara VCG 10. Mr. Didarul Bhuiya, Member, Deilpara VCG 11. Mr. Khairul Alam, Member, Deilpara VCG 12. Ms Sanchita Rani Member, Deilpara VCG 13. Mr. Md. Abdul Kader, Member, Deilpara VCG 14. Mr. Md. Nazrul Islam, FMO, CBAECAproject, NACOM 15. Mr. Delowar Hossain, Member, Shilkhali VCG 16. Ms. Fatema Khanom, Member, Shilkhali VCG 17. Mr. Ali Hossain, Member, Shilkhali VCG 18. Mr. Makbul Haque, Member, Shilkhali VCG 19. Mr. Shah Alam, Member, Shilkhali VCG 20. Mr. Sohel Khan, Member, Shilkhali VCG 21. Mr. Alal Hossain, Member, Shilkhali VCG
Site Number	Site Name	Members attended the FGD=19
Site 09: **Kutubzom VCGs**	***Ghotibhanga Site with representation from neighboring***	1. Mr. Abdul Aziz, President, Ghotibhanga VCG 2. Mr. Md. Farid Uddin, General Secretary, Ghotibhanga VCG 3. Mr. Sarwar Kamal, Cashier, Ghotibhanga VCG

	VCGs	4. Mr. Ahsanullah, Office Assistant, NACOM 5. Mr. Omor Faruk Chowdhury, Member, Ghotibhanga VCG 6. Mr. Maksud Mia, Secretary, Ghotibhanga VCG 7. Mr. Riazul Haq , Member, Ghotibhanga VCG 8. Mr. Md. Abdul Haq , Member, Ghotibhanga VCG 9. Mr. Bellal Hossain, Member, Ghotibhanga VCG 10. Mr. Khaled khan, Member, Ghotibhanga VCG 11. Mr. Syed Alam, Member, Ghotibhanga VCG 12. Mr. Md. Ismail, Member, Ghotibhanga VCG 13. Mr.Forkan Ali , Member,Ghotibhanga VCG 14. Mr. Aminul Haq, Member, Ghotibhanga VCG 15. Mr. Sakib khan Member, Ghotibhanga VCG 16. Mr. Md. Jamal, Member, Ghotibhanga VCG 17. Mr. Mamun , Member, Ghotibhanga VCG 18. Mr. Kabir Hossain , Member, Ghotibhanga VCG 19. Mr. Jalal Ali , Member, Ghotibhanga VCG
Site Number	Site Name	Members attended the FGD = 28
Site 10 : **Md. Safirbeel VCGs**	***Md. Safir Beel Site with representation from neighboring VCGs***	1. Mr. Md. Alam, President, Safir Beel VCG 2. Mr. Nur Mohammad, Secretary,Safir Beel VCG 3. Mr. Md. Hosen, Treasurer, Safir Beel VCG 4. Mr. Abdur Rahman, President, Safir Beel VCG 5. Mr. Shah Alam, Member, Safir Beel VCG 6. Mr. Hamida Begum, Member, Safir Beel VCG 7. Mr. Md. Hanif Member, Md Safir Beel VCG 8. Mr. Md. Nurul Amin, Member,Safir Beel VCG 9. Meher Khatun, Member, Safir Beel VCG 10. Hamida Banu, Member, Safir Beel VCG 11. Khaleda Akhter, Member, Safir Beel VCG 12. Islam Khatun, Member, Safir Beel VCG 13. Rokeya Akhter, MemberSafir Beel VCG 14. Mr. Nasir Uddin, Secretary, Safir Beel VCG 15. Mr. Md. Nazrul Islam, FMO, CBAECA project,

		NACOM 16. Mr. Md. Ismail, Member, Ghotibhanga VCG 17. Mr. Likayat Ali , Member, Ghotibhanga VCG 18. Mr. Kalam , Member, Ghotibhanga VCG 19. Mr. Hasan Seikh, Member, Ghotibhanga VCG 20. Mr. Aziz Mollah, Member, Ghotibhanga VCG 21. Mr. Akbar, Member, Ghotibhanga VCG 22. Mr. jallauddin, Member, Ghotibhanga VCG 23. Mr. Akbar Mia, Member, Ghotibhanga VCG 24. Mr. Robiul Hossain, Member, Ghotibhanga VCG 25. Mr. Kamal Hossain, Member, Ghotibhanga VCG 26. Mr. Bellal , Member, Ghotibhanga VCG 27. Ms. Sahina Begom, Member, Ghotibhanga VCG 28. Ms. Amena Begum, Member, Ghotibhanga VCG

Source: Compiled by the field team, from the attendance list.

One to One interview (Attended List)

Site Number	Site Name	Members attended the One to One interview
Site 01: ***Kawarpara* VCGs**	***Kawarpara VCG***	1. Ms. Shamima Akhter, President, Kawarpara VCG 2. Ms. Rowsan Akhter, General Secreatry , Kawarpara VCG 3. Ms. Selima Sultana, Treasurer, Kawarpara VCG 4. Mr. Shahnewaz, Member, Kawarpara VCG 5. Mr. Nuruz Salam, Member, Kawarpara VCG 6. Mr. Md. Islam, Member, Kawarpara VCG

		7. Mr. Nurul Amir, Member, Kawarpara VCG 8. Mr. Nurul Karim, Member, Kawarpara VCG 9. Mr. Md. Rafik Ullah, Member, Kawarpara VCG 10. Mr. Md. Akbar, Member, Kawarpara VCG
Site Number	Site Name	Members attended the One to One interview
Site 02 **Ramu VCGs**	**Adarshagram VCG**	1. Ms. Samsun Nahar, President, Adarshagram VCG 2. Ms. Mobassara Begum, General Secretary, Adarshagram VCG 3. Mr. Rahim Abdul, Treasurer, Adarshagram VCG 4. Ms. Rina Akhter, Member, Adarshagram VCG 5. Ms. Bibi Amena, Member, Adarshagram VCG VCG 6. Ms. Nasrin Sultana, Member, Adarshagram VCG 7. Ms. Farida Begum, Member, Adarshagram VCG 8. Mr. Monowara begum, Member, Adarshagram VCG 9. Ms. Sahera khatun , Member, Adarshagram VCG 10. Mr. Md. Sahedul Islam, Member, Adarshagram VCG
Site Number	Site Name	Members attended the One to One interview
Site 03 **Teknaf Sadar, Silkhali and Sabrang VCGs**	***Raster Para VCG***	1. Mr. Najimuddin, President Raster para VCG 2. Mr. Md. Sahidullah, General Secretary , Raster Para VCG 3. Mr. Mansur Alam , Treasurer, Raster Para

		VCG 4. Mr. Azam Shah, Member, Raster Para VCG 5. Mr. Ahsan ullah, Member, Raster Para VCG 6. Mr. Ammanullah, Member, Raster Para VCG 7. Mr. Akther Kamrul, Member, Raster Para VCG 8. Mr. Nur Mohammad, Member, Raster Para VCG 9. Mr. Chenu Abdul, Member, Raster Para VCG 10. Ms. Altas Begum, Member, Raster Para VCG
Site Number	Site Name	Members attended the One to One interview
Site 04: **Maheshkhali VCGs**	***MamunerparaVCG***	1. Mr. Kabir Ahmed, President, Mamun Para VCG 2. Mr. Kayseruddin, General Secretary, Mamun para VCG 3. Mr. Abdul Majid, Treasurer, Mamunpara VCG 4. Mr. Md. Faruque Khan, Member, Mamun Para VCG 5. Mr. Md. Hamid Ullah,Member, Mamun Para VCG 6. Mr. Md. Alam, Member, Mamunpara VCG 7. Mr. Md. Sikander Alam,MemberMamunpara VCG 8. Mr. Shofi Alam, Member,Mamunpara VCG 9. Mr. Hasan Ali, Member, Mamunpara VCG 10. Mr. Md Nurul Amin, Member, Mamunpara VCG

Site Number	Site Name	Members attended the One to One interview
Site 05: **Pechardwip VCGs**	***Pechardwip VCG***	1. Mr. Abdur Rahman, President, Pechardwip VCG 2. Mr. Abdus Sobhan, General Secretary, Pechardwip VCG 3. Mr. Khairul Amin, Cashier, Pechardwip VCG 4. Mr. Jaker Hossain, Member, Pechardwip VCG 5. Mr. Abul Kalam, Member, Pechardwip VCG 6. Mr. Abdul Sobhan, Member, Pechardwip VCG 7. Mr. Mijanur Rahman, Member, Pechardwip VCG 8. Mr. Sirajul Haque, Member, Pechardwip VCG 9. Mr. Md. Ahmed Hossain, Member, Pechardwip VCG 10. Mr. Abu Bakkar Siddiq, Member, Pechardwip VCG
Site Number	Site Name	Members attended the One to One interview
Site 06: **Ukhia, SonaichariVCGs**	***Sonaichari VCG***	1. Mr. Mokbul Ahmed, President, Shonaichari VCG 2. Mr. Md. Hasem, Secretary, Shonaichari VCG 3. Mr. Nur Mohammad, Cashier, Shonaichari VCG 4. Mr. Iman Ali, Member, Shonaichari VCG 5. Mr. Hasan Ahmed, Member, ShonaichariVCG 6. Mr. Md. Kabirl Patowari , Member, ShonaichariVCG

		7. Ms. Rozina, Member, Shonaichari VCG 8. Ms. Hasina, Member, Shonaichari VCG 9. Ms. Shahina, Member, Shonaichari VCG 10. Ms. Abeda, Member, Shonaichari VCG (NB: Where there was no female available, we take 10 interview , by taking interview of male members)
Site Number	Site Name	Members attended the One to One interview
Site 07: **Baharchora and Borodeil VCGs**	***Baharchara VCG***	1. Mr. Hossain Ahmed, President, Baharchara VCG 2. Mr. Ehsanullah, General SecretaryBaharchara VCG 3. Mr. Ferdous Hossain, Cashirer, Baharchara VCG 4. Mr. Nurul Islam, Member, Baharchara VCG 5. Ms. Syeda Begum, Member, Baharchara VCG 6. Mr. Nurul Hosen, Memebr, Baharchara VCG 7. Ms. Rehana Parvin, Member, Baharchara VCG 8. Mr. Md. Kasem, Member, Baharchara VCG 9. Mr. Mawlana Abul Kasem, Member, Baharchara VCG 10. Mr. Nurul Mia, Memebr, Baharchara VCG
Site Number	Site Name	Members attended the One to One interview
Site 08: **Sonadia VCGs**	***DeliparaiVCG***	1. Ms. Sagupta Paul, President, Deil Para VCG 2. Ms. Rifat Nigar Tarin, General Secretary, Deilpara VCG 3. Mr. Aabul Kashem, Treasurer, Deilpara VCG

		4. Mr. Didarul Alam, Member, Deilpara VCG 5. Mr. Manirul Alam, Member, Deilpara VCG 6. Mr. Aadul Jabbar, Member, Deilpara VCG 7. Mr. Didarul Mia, Member, Deilpara VCG 8. Mr. Aminul Alam, Member, Deilpara VCG 9. Mr Kashem Fakir, Member, Deilpara VCG 10. Mr. Didarul Bhuiya, Member, Deilpara VCG
Site Number	Site Name	Members attended the One to One interview
Site 09 **Kutubzom VCGs**	***GhotibhangaVCG***	1. Mr. Abdul Aziz, President, Ghotibhanga VCG 2. Mr. Md. Farid Uddin, General Secretary , Ghotibhanga VCG 3. Mr. Sarwar Kamal, Cashier, Ghotibhanga VCG 4. Mr. Ahsanullah, Office Assistant, NACOM 5. Mr. Omor Faruk Chowdhury, Member, Ghotibhanga VCG 6. Mr. Maksud Mia, Secretary, Ghotibhanga VCG 7. Mr. Riazul Haq , Member, Ghotibhanga VCG 8. Mr. Md. Abdul Haq , Member, Ghotibhanga VCG 9. Mr. Bellal Hossain, Member, Ghotibhanga VCG 10. Mr. Khaled khan, Member, Ghotibhanga VCG
Site Number	Site Name	Members attended the One to One interview
Site 10 **Md. Safirbeel**	***Safir Beel VCG***	1. Mr. Md. Alam, President, Safir Beel VCG 2. Mr. Nur Mohammad, Secretary,Safir Beel

VCGs		VCG 3. Mr. Md. Hosen, Treasurer, Safir Beel VCG 4. Mr. Abdur Rahman, President, Safir Beel VCG 5. Mr. Shah Alam, Member, Safir Beel VCG 6. Mr. Hamida Begum, Member, Safir Beel VCG 7. Mr. Md. Hanif Member, Md Safir Beel VCG 8. Meher Khatun, Member, Safir Beel VCG 9. Hamida Banu, Member, Safir Beel VCG 10. Khaleda Akhter, Member, Safir Beel VCG
Total One to One Interview Conducted		100

Source: Compiled by the field team, from the attendance list.

(NB: Where there was no female available, we take 10 interview , by taking interview of male members)

List of Local Government Officials(Interviewed one to one basis)

Sl	**Name and Designation**
1.	Mr. Mohammad Anwarul Naser, UNO- Maheshkhali, Government of Bangladesh
2	Mr. Md Samsul Alam, Maheshkhali Upazila Cooperative Officer, Government of Bangladesh
3	Mr. Kazi Abdur Rahman, UNO- Cox's Bazar Sadar, Government of Bangladesh
4.	Mr. Dr. Moin Uddin, Senior Upazila Fisheries Officer, Cox's Bazar

Source: Compiled by the field team, from the field Diary..

List of Civil Society (including media) and& Environmental Organizations (Interviewed one to one basis)

Sl	Name and Designation
1	*Mr Dipok Shorma Dipu* President ,Cox's Bazar Forest and Environment Preservation Council (CFEP)
2	*Mr. Mohammad-ur- Rahman, Masud* Vice President, Cox's Bazar Forest and Environment Preservation Council (CFEP)
3	*Mr. Ibrahim Khalil Mamun* General Secretary, Cox's Bazar Forest and Environment Preservation Council (CFEP)
4	*Mr. Md. Shafiqur Rahman* Regional Cordinator,CREL, Cox Bazar Sadar
5	Mr. Md. Solaiman, Principal (In Charge), East West College, Cox's Bazar Sadar
6	Mr. Abu Morshed Chowdhury Chairman, Cox's Bazar Civil Society & President, Himchori Co-Management Committee.

Source: Compiled by the field team, from the field Diary.

Staff Briefing: NACOM and CBA-ECA

Sl	**Name and designation**
1	Mr. Saiful Tareq Fuad, CCAO, UNDP- DoE
2	Mr. Puspak Barua, CF, CBAECA
3	Mr. Nazrul Islam, Field Manager, CBAECA, NACOM
4	Mr. Abu Sahadat Md. Farid, field Assistant NACOM. (Member of Ghotibhanga VCG, Kutubzone, Moheshkhali)
5	Mr. Arup Barua, Dept of Development Studies, University of Dhaka

Source: Compiled by the field team, from the field Diary.

APPENDIX 5: The Project details and Staff Composition

Project Name:	**Community Based Adaptation in the Ecologically Critical Areas through Biodiversity Conservation and Social Protection (CBA-ECA) Project**
Objectives	The overall objective of the project is to strengthen the co-management model for the Ecologically Critical Areas (ECAs). The project are being implemented at three ECA sites: Teknaf Peninsula (Cox's Bazar-Teknaf sea beach) ECA, Sonadia Island ECA and Hakaluki Haor ECA. Specific objectives of the project are: a. Strengthen biodiversity conservation activities; b. Strengthen alternative livelihoods generation activities; c. Introduce climate change adaptation measures/activities; d. Strengthen the institutional mechanism established; e. Enhance DoE experience on the areas.
Activities	1. Update Conservation Management Plans (CMPs) for Cox's Bazar-Teknaf Peninsula, Sonadia Island and Hakaluki Hoar ECAs; 2. Facilitate functioning of 68 Village Conservation Groups (VCGs) in the 3 project ECAs; 3. Hold around 1000 awareness meetings for local communities on biodiversity conservation and climate change adaptation in the 3 project ECAs; 4. Stage 30 awareness raising folk show in the 3 project ECAs; 5. Develop 68 VCGs Annual Action Plans in the 3 project ECAs; 6. Organize agricultural demonstration in the 3 Project ECAs; 7. Impart 33 IPM trainings to local farmers within the project ECAs; 8. Distribute saline tolerant crop/variety seed to 500 local farmers coastal ECAs; 9. Carryout 360 ha. of mangrove plantation in Sonadia, Cox's Bazar-

	Teknaf ECAs; 10. Ensure protection of 500 ha. of natural mangrove in Cox's Bazar and Teknaf, Sonadia ECAs; 11. 7 ha. swamp plantation in Hakaluki Haor ECA; 12. Protect 775 ha. natural swamp and wildlife conservation area in Hakaluki Haor ECA; 13. Carryout 60 acres of sand dune plantation in Cox's Bazar and Sonadia; 14. Establish 12 bird conservation areas in the project ECAs; 15. Establish 8 fish sanctuaries/ conservation areas in HakalukiHaor, Cox's Bazar, Tekanf; 16. Establish 9 community conserved areas in Cox's Bazar; 17. Establish and maintain 2 mudflat and 2 rocky-intertidal conservation areas in Cox's Bazar; 18. Plantand distribute 2,00,000 saplings of indigenous species at homestead and institutional level Hakaluki Haor and Cox's Bazar area; 19. Distribute 1000 units of improved cooking stoves 40 solar panel among local people in 3 Project ECAs; 20. Establish and operate 5 sea turtle hatchery in Cox's Bazar and Sonadia ECAs; 21. Deploy community guards for protection of conservation guards in the 3 project ECAs; 22. Prevent environmentally harmful activities in the project ECAs; 23. Hold stakeholder workshops within the project areas; 24. Conduct 3 research on climate change adaptation in the coastal ECAs.
Achievements	1. The 3 CMPs are being updated; 2. 68 VCGs functioning, 2 of the VCGs are new and 9 of those have been registered with cooperative department (all the VCGs are now registered); 3. More than 1150 awareness meetings held;

	4. Organized 25 folk shows; 5. Action plans developed for 68 VCGs; 6. 620 demonstration plots established; 7. 40 trainings imparted; 8. Distributed seeds to 950 local farmers at Cox's Bazar District; 9. Planted 361 ha. of mangrove in the mentioned areas; 10. Protected 650 ha. of natural mangrove; 11. Planted 7.3 ha. of swamp; 12. Ensured protection of 1045 ha.swamp and wildlife conservation area; 13. Planted and protected 60 ha. sand dune vegetation; 14. Established 14 bird conservation areas in the project site; 15. Established 4 fish sanctuaries/ conservation areas; 16. Established 9 community conserved areas; 17. Establish and maintain 12 mudflat and rocky-intertidal conservation areas; 18. More than 1,90,000 saplings have been planted and distributed; 19. Distributed more than 1000 units of improved cooking stoves 40 solar panel among local people; 20. 5 sea turtle hatcheries have been established and operated; 21. 43 community people were engaged as guards; 22. Nearly 60 harmful events/activates have been prevented; 23. 2 District level workshops were held with stakeholders; 24. 3 research works accomplished.
Fund by:	Bangladesh Climate Change Trust Fund (BCCTF) and Embassy of the Kingdom of the Netherlands (EKN)
Implementation period:	July 2010 to June 2014

Contact Person:	Name:Md.Raisul Alam Mondal Designation:Project Director Phone:8181800 Email:dg@doe.gov.bd
Source:http://old.doe.gov.bd/project/project.php?cmd=details&type=Running%20Projects	

Project Staff Composition

May2011 – May-1013

Designation	*Number of staff*
Project Coordinator	1
Field Manager	1
Program Officer	2
Conservation Biologist	2
Training & Monitoring Officer	1
Climate Change Facilitator	1
Community Facilitator	2
Monitoring Assistant	1
Field Assistant	6
Support Staff	
Accountants Officer	1
Computer Operator	1
Account Assistant	1
Messenger	3
TOTAL	23

June 2013 – to date

Designation	*Number of staff*
Project Coordinator	1
Field Manager	1
Program Officer	2
Conservation Biologist	1
Community Facilitator	2
Field Assistant	6
Support Staff	
Accounts Officer	1
Messenger	3
TOTAL	*17*

Source: Compiled from NACOM Cox Bazar office records.

Appendix6: A List of Media Reports on the Project Activities

সমাজভিত্তিক জীববৈচিত্র্য সংরক্ষণ ও জলবায়ু পরিবর্তন অভিযোজন প্রকল্প

পরিবেশ অধিদপ্তর, ক্লাইমেট চেঞ্জ ট্রাস্ট ফান্ড, পরিবেশ ও বন মন্ত্রণালয়

কক্সবাজার - টেকনাফ পেনিনসুলা ও সোনাদিয়া দ্বীপ প্রতিবেশগত সংকটাপন্ন এলাকা

প্রকল্পের কার্যক্রম বিভিন্ন সংবাদপত্রে প্রকাশিত সংবাদ সমূহ
(সেপ্টেম্বর'২০১২ - জুন'২০১৩)

নেচার কনজারভেশন ম্যানেজমেন্ট (নেকম)
বাড়ি নং-৪১/১, এপার্টমেন্ট-এ-১, রোড নং-১, ব্লক-এ,
নিকেতন, গুলশান-১, ঢাকা-১২১২

বিভিন্ন পত্রিকায় প্রকাশিত সংবাদের শিরোনাম ও পত্রিকার নাম

ক্রম:	তারিখ	সংবাদ শিরোনাম	পত্রিকার নাম
০১.	০৬ জুন ২০১১	বিশ্ব পরিবেশ দিবস পালিত	দৈনিক কক্সবাজার
০২.	০৬ জুন ২০১১	বিশ্ব পরিবেশ দিবস অনুষ্ঠানে জেলা প্রশাসক্ষ উন্নয়নের নামে পরিবেশ ধ্বংস করা যাবেনা	দৈনিক আজকের দেশ বিদেশ
০৩.	০৭ জুন ২০১১	সেন্টমার্টিনের পরিবেশ রক্ষার উদ্যোগ	দৈনিক প্রথম আলো
০৪.	২৫ জুলাই ২০১১	ইসিএ কমিটির উদ্যোগে বৃক্ষরোপণ অভিযান	দৈনিক ইনানী
০৫.	২৫ জুলাই ২০১১	উখিয়ায় পরিবেশ অধিদপ্তরের উদ্যোগে চারা বিতরণ	দৈনিক সৈনন্দিন
০৬.	২৮ জুলাই ২০১১	স্কুলশকুল ও বাহারছড়ায় গাছের চারা বিতরণ করেছে নেকম	দৈনিক সৈনন্দিন
০৭.	০১ আগষ্ট ২০১১	জলবায়ু পরিবর্তনের ঝুঁকি থেকে রক্ষা করার প্রধান উপায় বৃক্ষ রোপণ	দৈনিক আজকের দেশ বিদেশ
০৮.	২ আগষ্ট ২০১১	টেকনাফের উপকূলে নেকমের ৪৬ হাজার চারা বিতরণ	দৈনিক আজকের দেশ বিদেশ
০৯.	৩ আগষ্ট ২০১১	জলবায়ু পরিবর্তন মোকাবেলায় পূর্বশর্ত বৃক্ষরোপণ ও সংরক্ষণ	দৈনিক আজকের দেশ বিদেশ
১০.	০৪ আগষ্ট ২০১১	পরিবেশ অধিদপ্তর ও নেকম আয়োজিত কর্মশালায় বক্তারাঃ জনপ্রশাসন ও জনগণের সমন্বিত প্রচেষ্টায় জীববৈচিত্র্য সংরক্ষণ জলবায়ু পরিবর্তন মোকাবেলা সম্ভব	দৈনিক আজকের দেশ বিদেশ
১১.	০৫ আগষ্ট ২০১১	জলবায়ু পরিবর্তন মোকাবেলায় কর্মশালা অনুষ্ঠিত	দৈনিক সৈনন্দিন
১২.	০৬ আগষ্ট ২০১১	কেন্দ্রীয় কবরস্থানে গাছের চারা রোপণ	দৈনিক কক্সবাজার
১৩.	০৮ আগষ্ট ২০১১	আমেনা খাতুন বালিকা উচ্চ বিদ্যালয়ে চারা বিতরণ	দৈনিক কক্সবাজার
১৪.	১০ আগষ্ট ২০১১	মহেশখালীতে জলবায়ু পরিবর্তন বিষয়ে সভা অনুষ্ঠিত	দৈনিক কক্সবাজার
১৫.	১১ আগষ্ট ২০১১	স্কুলশকুলে শিক্ষার্থীদের মাঝে চারা বিতরণ	দৈনিক কক্সবাজার
১৬.	১৬ আগষ্ট ২০১১	নেকম'র উদ্যোগে শহরের নুনিয়ার ছড়ার হাজী হাছন আলী রেজিঃ প্রাথমিক বিদ্যালয়ে গাছের চারা রোপণ ও বিতরণ	দৈনিক রুপসী গ্রাম
১৭.	১৬ আগষ্ট ২০১১	জলবায়ু পরিবর্তন মোকাবেলা(সিবিএইসিএ)এর চারা বিতরণ	দৈনিক কক্সবাজার বার্তা
১৮.	১৯ আগষ্ট ২০১১	টেকনাফে ৬ হাজার মিটার কারেন্ট জাল জব্দ	দৈনিক কক্সবাজার
১৯.	১৯ আগষ্ট ২০১১	কক্সবাজারের তিনটি বিদ্যালয়ে কালের কণ্ঠ- সুজ সংঘের অর্ধসহস্রাধিক বৃক্ষরোপণ ও চারা বিতরণ	দৈনিক সৈনন্দিন
২০.	১৯ আগষ্ট ২০১১	শাহপরীরদ্বীপে ৩ লাখ টাকা মূল্যের ৬ হাজার	আজকের দেশ বিদেশ

ক্রম:	তারিখ	সংবাদ শিরোনাম	পত্রিকার নাম
		মিটার কারেন্ট জাল দাহ	
২১.	১৯ আগষ্ট ২০১১	টেকনাফে ৬ হাজার মিটার কারেন্ট জাল পুড়িয়েছে	দৈনিক সৈকত
২২.	১৯ আগষ্ট ২০১১	জেলার ৩ বিদ্যালয়ে কালের কণ্ঠ- সুস্ত সংঘের অর্ধসহস্রাধিক বৃক্ষরোপণ ও চারা বিতরণ	দৈনিক কক্সবাজার
২৩.	১১ সেপ্টেম্বর ২০১১	সোনাদিয়া পরিদর্শন করলেন জেলা প্রশাসক	দৈনিক কক্সবাজার
২৪.	০১ ডিসেম্বর ২০১১	টেকনাফে জীববৈচিত্র্য সংরক্ষণ বিষয়ে কর্মশালা অনুষ্ঠিত	দৈনিক আজকের দেশ বিদেশ
২৫.	০৪ ফেব্রুয়ারী ২০১২	টেকনাফে বিশ্ব জলাভূমি দিবস পালিত	দৈনিক কক্সবাজার
২৬.	০৭ ফেব্রুয়ারী ২০১২	উখিয়া উপকূলে ঝিনুকভর্তি ট্রলার আটক	দৈনিক ইনানী
২৭.	১০ ফেব্রুয়ারী ২০১২	কক্সবাজারে বিশ্ব জলাভূমি দিবস পালিত	দৈনিক সৈনন্দিন
২৮.	১২ ফেব্রুয়ারী ২০১২	কক্সবাজার উপকূলে জীববৈচিত্র্য রক্ষার দাবি	দৈনিক কক্সবাজার
২৯.	১২ ফেব্রুয়ারী ২০১২	জাতীয় সমুদ্র গবেষণা ইনস্টিটিউট পরিদর্শনে যাচ্ছেন পরিবেশ অধিদপ্তরের উচ্চ পর্যায়ের প্রতিনিধি দল	দৈনিক সৈনন্দিন
৩০.	১২ ফেব্রুয়ারী ২০১২	পরিবেশ অধিদপ্তর ও নেকম আয়োজিত কর্মশালায় আলোচকগনঃ কক্সবাজারের প্রাকৃতিক বৈশিষ্ট্য নষ্ট হয়ে গেলে এখানে কেউ বেড়াতে আসবে না	দৈনিক আজকের দেশ বিদেশ
৩১.	১২ ফেব্রুয়ারী ২০১২	জলবায়ু পরিবর্তনের ক্ষতি কাটাতে প্রাকৃতিক সম্পদ ব্যবস্থাপনা আইন জরুরী- কর্মশালা বক্তারা	দৈনিক কক্সবাজার বার্তা
৩২.	১২ ফেব্রুয়ারী ২০১২	সাংবাদিক প্রশিক্ষণ কর্মশালায় বক্তারাঃ পরিবেশ রক্ষায় জনগণকে এগিয়ে আসতে হবে	দৈনিক সমুদ্র কণ্ঠ
৩৩.	১৩ ফেব্রুয়ারী ২০১২	সমুদ্র গবেষণা ইনস্টিটিউট অধিদপ্তরের প্রতিনিধি দলঃ পাহাড় কেটে পরিবেশ বিনষ্ট করে স্থাপনার ছাড়পত্র দেয়া যেতে পারে না	দৈনিক আজকের দেশ বিদেশ
৩৪.	১৩ ফেব্রুয়ারী ২০১২	সমুদ্র উপকূলই ইসিএ	দৈনিক সমুদ্র বার্তা
৩৫.	১৩ ফেব্রুয়ারী ২০১২	উখিয়ার উপকূল রক্ষা বেষ্টনি ও পাহাড় নিধন রোধে গুরুত্বারোপ	দৈনিক আজকের কক্সবাজার বার্তা
৩৬.	১৩ ফেব্রুয়ারী ২০১২	উখিয়ায় পরিবেশ অধিদপ্তরের কর্মশালায় বক্তারাঃ উখিয়ার উপকূল রক্ষা বেষ্টনি পাহাড় নিধন রোধে ব্যবস্থা নেওয়া প্রয়োজন	দৈনিক বাঁকখালী
৩৭.	১৩ ফেব্রুয়ারী ২০১২	জলবায়ু পরিবর্তনের ক্ষতি থেকে বাঁচতে প্রাকৃতিক সম্পদ ব্যবস্থাপনা আইন জরুরী	দৈনিক সৈনন্দিন
৩৮.	১৩ ফেব্রুয়ারী ২০১২	উখিয়া পরিদর্শনে পরিবেশ অধিদপ্তরের চট্টগ্রাম বিভাগীয় পরিচালক	দৈনিক সমুদ্র কণ্ঠ
৩৯.	১৯ ফেব্রুয়ারী ২০১২	টেকনাফে কারেন্ট জাল জব্দ	দৈনিক প্রথম আলো
৪০.	১৯ ফেব্রুয়ারী ২০১২	টেকনাফে অবৈধ কারেন্ট ও পোনা জাল জব্দ	দৈনিক কক্সবাজার
৪১.	১৯ ফেব্রুয়ারী ২০১২	কারেন্ট জাল- শামুক ঝিনুক জব্দ- টেকনাফের	দৈনিক আজকের দেশ

ক্রম:	তারিখ	সংবাদ শিরোনাম	পত্রিকার নাম
		বিশাল সৈকতে ভ্রাম্যমাণ আদালত	বিদেশ
৪২.	১৬ মার্চ ২০১২	সোনাদিয়া ৩৪ প্রজাতির ১০ হাজার পাখি গণনা	দৈনিক প্রথম আলো
৪৩.	২০ মার্চ ২০১২	কক্সবাজারসহ পাঁচ জেলার পাহাড় রক্ষার নির্দেশ	দৈনিক আজকের দেশ বিদেশ
৪৪.	২০ মার্চ ২০১২	সোনাদিয়ার নির্জন সৈকতে ডিম দিচ্ছে মা- কচ্ছপ	দৈনিক প্রথম আলো
৪৫.	২০ মার্চ ২০১২	বদলে যাচ্ছে সোনাদিয়া দ্বীপ	দৈনিক কক্সবাজার
৪৬.	২০ মার্চ ২০১২	সোনাদিয়ার জীববৈচিত্র রক্ষায় তৎপরতা শুরু	দৈনিক ইনানী
৪৭.	২০ মার্চ ২০১২	কক্সবাজারসহ ৫ জেলার পাহাড় রক্ষায় হাইকোর্টের নির্দেশ	দৈনিক সৈনন্দিন
৪৮.	২১ মার্চ ২০১২	সেন্টমার্টিনে শামুক-ঝিনুকসহ ট্রলার জব্দ	দৈনিক কক্সবাজার
৪৯.	২১ মার্চ ২০১২	নেকমদ– সোনাদিয়ার পরিবেশ ও জীববৈচিত্র্য সুরক্ষার কবচ	দৈনিক আজকের দেশ বিদেশ
৫০.	২১ মার্চ ২০১২	সেন্টমার্টিনে শামুক ঝিনুকসহ ট্রলার জব্দ	দৈনিক সৈনন্দিন
৫১.	২২ মার্চ ২০১২	দেশের দ্বিতীয় সুন্দরবন কক্সবাজার- সোনাদিয়া	দৈনিক আজকের দেশ বিদেশ
৫২.	২২ মার্চ ২০১২	১৫ হাজার কাছিম সমুদ্রে অবমুক্ত হচ্ছে	দৈনিক আজকের কক্সবাজার
৫৩.	২২ মার্চ ২০১২	টেকনাফে সেন্স ফেরোমন প্রযুক্তির ব্যাপক সফলতা	দৈনিক আজকের দেশ বিদেশ
৫৪.	২৪ মার্চ ২০১২	আগের চেহারা ফিরে পাচ্ছে সোনাদিয়া দ্বীপ	দৈনিক সুপ্রভাত
৫৫.	২৫ মার্চ ২০১২	টেকনাফে সাংবাদিকদের সাথে নেকমের মতবিনিময় সভা	দৈনিক আজকের দেশ বিদেশ
৫৬.	২৫ মার্চ ২০১২	টেকনাফে কৃষককুলে ব্যাপক সারাঃ পরিবেশবান্ধব সেন্স ফেরোমন প্রযুক্তি ব্যবহার	দৈনিক আপন কণ্ঠ
৫৭.	২৯ মার্চ ২০১২	সোনাদিয়ায় সবকিছু পিছিয়ে, নারীরা কর্মক্ষেত্রে এগিয়ে	দৈনিক আজকের দেশ বিদেশ
৫৮.	৩১ মার্চ ২০১২	বাঁক খালীর মোহনায় বিশাল সবুজ প্যারাবন নজর কাড়ে সকলের	দৈনিক পূর্বকোণ
৫৯.	০৩ এপ্রিল ২০১২	কক্সবাজার সৈকতে শতাধিক কচ্ছপের বাচ্চা অবমুক্ত	দৈনিক সমকাল
৬০.	০৩ এপ্রিল ২০১২	জীববৈচিত্র্য রক্ষায় সী-ইন পয়েন্টে ছাড়া হল কচ্ছপের ১০০০ বাচ্চা	দৈনিক ইনানী
৬১.	০৩ এপ্রিল ২০১২	সৈকতের বালি দিয়ে বেড়ীবাঁধ তৈরী, পরিবেশ কর্মকর্তাদের এলাকা পরিদর্শন	দৈনিক কক্সবাজার
৬২.	০৩ এপ্রিল ২০১২	দেশের দ্বিতীয় সুন্দরবন খ্যাত সোনাদিয়ার জীববৈচিত্র্য রক্ষায় তৎপরতা শুরু	দৈনিক আপন কণ্ঠ
৬৩.	০৩ এপ্রিল ২০১২	দারিদ্রতার অভিশাপ থেকে বাঁচতে চায় ওরা ২০ জন	দৈনিক সৈনন্দিন

ক্রম:	তারিখ	সংবাদ শিরোনাম	পত্রিকার নাম
৬৪.	০৩ এপ্রিল ২০১২	কক্সবাজার সমুদ্র সৈকতে বাচ্চা কাছিম অবমুক্ত	দৈনিক সমুদ্র কণ্ঠ
৬৫.	০৩ এপ্রিল ২০১২	বার বছরের জন্য সাগর পরিভ্রমণ	দৈনিক আজকের দেশ বিদেশ
৬৬.	০৩ এপ্রিল ২০১২	সাগরে নেমে গেল ১ হাজার কচ্ছপের বাচ্চা	দৈনিক প্রথম আলো
৬৭.	০৪ এপ্রিল ২০১২	সামুদ্রিক কচ্ছপের বাচ্চারা ফিরে গেল নিজ ভুবনে	দৈনিক কক্সবাজার
৬৮.	০৫ April ২০১২	**Thousand turtles swim down sea water**	**The Daily Sun**
৬৯	২৯ নভেম্বর ২০১২	মরছে উপকূলের বাইন -কেওড়াগাছ	দৈনিক প্রথম আলো
৭০	০৭ ডিসেম্বর ২০১২	টেকনাফ সৈকত থেকে ৮০ টন নিষিদ্ধ শামুক ঝিনুক জব্দ	দৈনিক প্রথম আলো
৭১	০৮ ডিসেম্বর ২০১২	জলবায়ু তহবিল পাওয়া ৬৩ এনজিওর অর্ধেক অনভিজ্ঞ	দৈনিক প্রথম আলো
৭২	১৪ ডিসেম্বর ২০১২	সাগরে ভেসে উঠছে মৃত কচ্ছপ	বনিকবার্তা
৭৩	১৪ ডিসেম্বর ২০১২	বঙ্গোপসাগরে মারা যাচ্ছে মা কাছিম	দৈনিক সমুদ্রকণ্ঠ
৭৪	১৪ ডিসেম্বর ২০১২	সোনাদিয়া চ্যানেল বিরল প্রজাতির কচ্ছপ হত্যা	দৈনিক দেশবিদেশ
৭৫	১৪ ডিসেম্বর ২০১২	সাগরে মা কাছিম নিধন চলছেই	দৈনিক দৈনন্দিন
৭৬	১৫ ডিসেম্বর ২০১২	বিষমুক্ত শুটকি উৎপাদনে সোনাদিয়ায় নেকমের ক্যাম্পেইন	দৈনিক দেশবিদেশ
৭৭	১৮ ডিসেম্বর ২০১২	পরিবেশ সংরক্ষণ পদকের জন্য আবেদনপত্র আহ্বান	দৈনিক কক্সবাজার
৭৮	১৮ ডিসেম্বর ২০১২	পরিবেশ সংরক্ষণ পদকের জন্য আবেদনপত্র আহ্বান (২য় বার)	দৈনিক আজকের দেশবিদেশ
৭৯	১৯ ডিসেম্বর ২০১২	Sea turtles in a shambles – Entyanglement key culprit	The Daily Sun
৮০	২১ ডিসেম্বর ২০১২	সোনাদিয়ার উপকূল রক্ষায় সৃজিত হচ্ছে 'নিশিন্দা' বাগান	দৈনিক দৈনন্দিন
৮১	২২ ডিসেম্বর ২০১২	কীটনাশকমুক্ত শুটকি উৎপাদন হচ্ছে সোনাদিয়ায়	বণিকবার্তা
৮২	২৩ ডিসেম্বর ২০১২	মহেশখালীতে অভিযান৪ ঝিনুক জব্দ	দৈনিক কক্সবাজার
৮৩	২৩ ডিসেম্বর ২০১২	টেকনাফ সৈকতে ভ্রাম্যমাণ আদালতের যৌথ অভিযান	দৈনিক পূর্বকোণ
৮৪	২৩ ডিসেম্বর ২০১২	টেকনাফে বিপুল পরিমান কারেন্ট জাল আগুনে পুড়ে নষ্ট	দৈনিক ইনানী
৮৫	২৩ ডিসেম্বর ২০১২	সোনাদিয়া উপকূল রক্ষায় প্রাকৃতিক বাঁধ 'নিশিন্দা'	দৈনিক সুপ্রভাত বাংলাদেশ
৮৬	২৩ ডিসেম্বর ২০১২	মহেশখালীতে অভিযান ৪ ঝিনুক জব্দ	দৈনিক কক্সবাজার
৮৭	২৩ ডিসেম্বর ২০১২	মহেশখালীতে পাঁচটি করাতকল জব্দ	দৈনিক প্রথমআলো
৮৮	২৩ ডিসেম্বর ২০১২	দেশের আরেক সুন্দরবন সোনাদিয়া প্যারাবন	দৈনিক আপনকণ্ঠ
৮৯	২৩ ডিসেম্বর ২০১২	মহেশখালী থেকে শামুক-ঝিনুক পাচার অব্যাহত ৪	দৈনিক আজকের দেশবিদেশ

ক্রম:	তারিখ	সংবাদ শিরোনাম	পত্রিকার নাম
		২০০ বস্তা জব্দ	
৯০	২৩ ডিসেম্বর ২০১২	মহেশখালীতে যৌথ অভিযান- ৫টি সমিল সিলগালা, ৪ প্রতিষ্ঠানকে জরিমানা, ঝিনুক জব্দ	দৈনিক সমুদ্রকণ্ঠ
৯১	২৩ ডিসেম্বর ২০১২	মহেশখালীতে ৬ অবৈধ স-মিল সিলগালা	দৈনিক ইনানী
৯২	২৩ ডিসেম্বর ২০১২	এহেশখালীতে ভ্রাম্যমান আদালতের অভিযান	দৈনিক সমুদ্রবার্তা
৯৩	২৬ ডিসেম্বর ২০১২	নিধন হচ্ছে শামুক-ঝিনুক	দৈনিক হিমছড়ি
৯৪	২৬ ডিসেম্বর ২০১২	কক্সবাজার উপকূলে মরছে ঝাঁহিম	দৈনিক সমুদ্রকণ্ঠ
৯৫	২৬ ডিসেম্বর ২০১২	সোনাদিয়ায় বিষমুক্ত ওটকি	দৈনিক প্রথমআলো
৯৬	২৭ ডিসেম্বর ২০১২	টেকনাফে লবণাক্ত সহিষ্ণু ধানের বাম্পার ফলন	দৈনিক আজকের দেশবিদেশ
৯৭	২৭ ডিসেম্বর ২০১২	টেকনাফে নেটওয়ার্ক ও লিংকেজ ডেভেলপমেন্ট ওয়ার্কশপ	দৈনিক আজকের দেশবিশেস
৯৮	২৮ ডিসেম্বর ২০১২	টেকনাফে লবণাক্ত সহিষ্ণু ধানের বাম্পার ফলন	দৈনিক আপনকণ্ঠ
৯৯	০৯ জানুয়ারী ২০১৩	টেকনাফ ধরা পড়ল বিশাল আকৃতিক শকুন ও বাজপাখি	দৈনিক কক্সবাজার
১০০	১০ জানুয়ারী ২০১৩	মহেশখালী ১০ পরিবারকে সৌর বিদ্যুৎ প্রদান	দৈনিক আজকের দেশ বিদেশ
১০১	১০ জানুয়ারী ২০১৩	মহেশখালীতে ৪ হাজার কেজি শামুক-ঝিনুক জব্দ	দৈনিক আজকের দেশ বিদেশ
১০২	১০ জানুয়ারী ২০১৩	মহেশখালীতে পাচারকালে ৪ হাজার কেজি শামুক-ঝিনুক জব্দ ঃ সাগরে ডাম্পিং	দৈনিক আজকের কক্সবাজার
১০৩	১০ জানুয়ারি ২০১৩	মহেশখালীতে পরিবেশ অধিদপ্তরের ইসিএ সমন্বয় সভাঃ সভায় ১০ পরিবারকে সৌর বিদ্যুত প্রদান	দৈনিক আজকের কক্সবাজার
১০৪	২৭ জানুয়ার ২০১৩	মহেশখালীতে ১ হাজার কেজি শামুক-ঝিনুক জব্দ	দৈনিক আজকের কক্সবাজার
১০৫	২৭ জানুয়ারি ২০১৩	মহেশখালীতে পাচারকালে ২ হাজার কেজি শামুক-ঝিনুক জব্দ	দৈনিক আজকের দেশবিদেশ
১০৬	৪ ফেব্রুয়ারি ২০১৩	টেকনাফ সাংবাদিকদের সাথে সিবিএ-ইসিএ'র মতবিনিময়	দৈনিক ইনানী
১০৭	৫ ফেব্রুয়ারি ২০১৩	-ইসিএ কমিটি কর্মকর্তাদের সোনাদিয়া পরিদর্শন	দৈনিক কক্সবাজার
১০৮	১০ ফেব্রুয়ারি ২০১৩	টেকনাফে উদ্ধার হওয়া ঈগল পাখি বঙ্গবন্ধু সাফারী পার্কে ৪শকুন পরিচর্যায়	দৈনিক সমুদ্রবার্তা
১০৯	১০ ফেব্রুয়ারি ২০১৩	টেকনাফে উদ্ধার ঈগল পাখি বঙ্গবন্ধু সাফারী পার্কে	দৈনিক সমুদ্রকণ্ঠ
১১০	১০ ফেব্রুয়ারি ২০১৩	টেকনাফে উদ্ধার ঈগল পাখি বঙ্গবন্ধু সাফারী পার্কে ৪শকুন পরিচর্যায়	দৈনিক ইনানী
১১১	১১ ফেব্রুয়ারি ২০১৩	সেন্টমার্টিনে পরিবেশ আইন লঙ্ঘনের দায়ে সিমেন্টসহ আটক -১	দৈনিক সমুদ্রকণ্ঠ
১১২	২৪ ফেব্রুয়ারি ২০১৩	রেজুর মোহনায় ঝাঁহিম অবমুক্ত	দৈনিক ইনানী

ক্রম:	তারিখ	সংবাদ শিরোনাম	পত্রিকার নাম
১১৩	২৮ ফ্রেব্রুয়ারি ২০১৩	টেকনাফে সৈকতে পরিবেশ অধিদপ্তরের অভিযান ৪৯২ বস্তা সামুদ্রিক পাথর জব্দ	দৈনিক আমাদের কক্সবাজার
১১৪	২৮ ফ্রেব্রুয়ারি ২০১৩	সেন্টমার্টিনে কর্মকর্তাদের উপর হামলার ঘটনায় মামলা দায়ের	দৈনিক আমাদের কক্সবাজার
১১৫	১৬ এপ্রিল ২০১৩	১২০০ ঝাঁছিমের বাচ্চা সাগরে অবমুক্ত	দৈনিক প্রথমআলো
১১৬	১৪ মে ২০১৩	প্রাকৃতিক দুর্যোগ মোকাবেলায় টেকসই বাড়িঘর নির্মাণ বিষয়ক কর্মশালা	দৈনিক আজকের দেশ বিদেশ
১১৭	১৪ মে ২০১৩	দুর্যোগ মোকাবেলায় চাই টেকসই বাড়ি	দৈনিক সমকাল
১১৮	১৪ মে ২০১৩	দুর্যোগ মোকাবেলায় চাই টেকসই বাড়ি	দৈনিক কক্সবাজার
১১৯	২৩ মে ২০১৩	টেকনাফ ও মহেশখালীতে জীববৈচিত্র্য দিবস পালিত	দৈনিক সাগর দেশ
১২০	২৩ মে ২০১৩	কক্সবাজারে 'ওয়াটার এন্ড বায়োডাইভারসিটি' প্রতিপাদ্য নিয়ে বিশ্ব জীববৈচিত্র্য দিবস পালিত	দৈনিক আমাদের কক্সবাজার
১২১	২৩ মে ২০১৩	এহেশখালীতে আন্তর্জাতিক জীববৈচিত্র্য দিবস পালিত	দৈনিক সমুদ্রকণ্ঠ
১২২	২৩ মে ২০১৩	জীববৈচিত্র্য রক্ষায় পানিদূষণ বন্ধে পদক্ষেপ নেয়া জরুরি	দৈনিক সুপ্রভাত বাংলাদেশ
১২৩	২৩ মে ২০১৩	কক্সবাজারে আন্তর্জাতিক জীববৈচিত্র্য দিবস পালন	দৈনিক সমুদ্রবার্তা
১২৪	২৩ মে ২০১৩	কক্সবাজারে আন্তর্জাতিক জীববৈচিত্র্য দিবস পালন	দৈনিক বাঁকখালী
১২৫	২৩ মে ২০১৩	কক্সবাজারে 'ওয়াটার এন্ড বায়োডাইভারসিটি' প্রতিপাদ্য নিয়ে বিশ্ব জীববৈচিত্র্য দিবস পালিত	দৈনিক আজকের কক্সবাজার
১২৬	২৩ মে ২০১৩	আন্তর্জাতিক জীববৈচিত্র্য দিবস পালন	দৈনিক কক্সবাজার
১২৭	২৩ মে ২০১৩	ওয়াটার এন্ড বায়োডাইভারসিটি' প্রতিপাদ্য নিয়ে কক্সবাজারে বিশ্ব জীববৈচিত্র্য দিবস পালিত	দৈনিক আজকের দেশবিদেশ
১২৮	২৩ মে ২০১৩	টেকনাফ আন্তর্জাতিক জীববৈচিত্র্য দিবস পালিত	দৈনিক বাঁকখালী
১২৯	২৩ মে ২০১৩	কক্সবাজারে আন্তর্জাতিক জীববৈচিত্র্য দিবস পালিত	দৈনিক কক্সবাজারবার্ণী
১৩০	২৩ মে ২০১৩	কক্সবাজারে বিশ্ব জীববৈচিত্র্য দিবস পালিত	দৈনিক সুপ্রভাত বাংলাদেশ
১৩১	৬ জুন ২০১৩	প্রথম আলোর কক্সবাজারের নিজস্ব প্রতিবেদক পেলেন পরিবেশ পদক	দৈনিক প্রথমআলো
১৩২	৬ জুন ২০১৩	বিশ্ব পরিবেশ দিবস পালিত	দৈনিক আজকের কক্সবাজার
১৩৩	৬ জুন ২০১৩	মহেশখালীতে বিশ্ব পরিবেশ দিবস পালিত	দৈনিক কক্সবাজার
১৩৪	৬ জুন ২০১৩	কক্সবাজারে বিশ্ব পরিবেশ দিবস পালিত	দৈনিক আপনকণ্ঠ
১৩৫	৬ জুন ২০১৩	জেলায় নানা আয়োজনে বিশ্ব পরিবেশ দিবস উদযাপন	দৈনিক দৈনিন্দিন

ক্রম:	তারিখ	সংবাদ শিরোনাম	পত্রিকার নাম
১৩৬	৬ জুন ২০১৩	টেকনাফে উপজেলা প্রশাসনের উদ্যোগে বিশ্ব পরিবেশ দিবস পালিত	দৈনিক বাঁকখালী
১৩৭	৬ জুন ২০১৩	নানা আয়োজনে পরিবেশ দিবস পালিত	দৈনিক হিমছড়ি
১৩৮	৬ জুন ২০১৩	জেলায় যথাযথ ভাবে পরিবেশ দিবস পালিত	দৈনিক সমুদ্রবার্তা
১৩৯	৬ জুন ২০১৩	জেলায় পরিবেশ দিবস পালিত	দৈনিক আলোকিত
১৪০	৬ জুন ২০১৩	টেকনাফে বিশ্ব পরিবেশ দিবস পালিত	দৈনিক আলোকিত
১৪১	৬ জুন ২০১৩	ভেবে চিন্তে খাই, অপচয় কমাই- সভা সমাবেশে বক্তাগণ	দৈনিক আজকের দেশবিদেশ
১৪২	৬ জুন ২০১৩	কক্সবাজারে বিশ্ব পরিবেশ দিবস পালিত	দৈনিক রূপসীগ্রাম
১৪৩	৭ জুন ২০১৩	পরিবেশ পদক পেলেন সাংবাদিক রানা ও শাহাবুদ্দিন	দৈনিক আজকের দেশ বিদেশ
১৪৪	৭ জুন ২০১৩	পরিবেশ পদক পেলেন সাংবাদিক রানা	দৈনিক সমুদ্রকণ্ঠ
১৪৫	৭ জুন ২০১৩	চকরিয়ায় বিশ্ব পরিবেশ দিবসের বর্ণাঢ্য র‍্যালি ও আলোচনা সভা	দৈনিক বাঁকখালী
১৪৬	৭ জুন ২০১৩	সাংবাদিক রানার পরিবেশ পদক লাভ	দৈনিক রূপসীগ্রাম
১৪৭	৭ জুন ২০১৩	পরিবেশ রক্ষায় সকলকে উদ্যোগ নেয়ার আহবান	দৈনিক পূর্বকোণ
১৪৮	৭ জুন ২০১৩	পরিবেশ পদক পেলেন সাংবাদিক আব্দুল কুদ্দুস রানা	দৈনিক কক্সবাজার
১৪৯	৭ জুন ২০১৩	পরিবেশ পদকের জন্য সাংবাদিক রানাকে অভিনন্দন	দৈনিক কক্সবাজার
১৫০	৭ জুন ২০১৩	পরিবেশ পদক পেলেন সাংবাদিক রানা	দৈনিক দৈনন্দিন
১৫১	৭ জুন ২০১৩	সাংবাদিক রানার পরিবেশ পদক লাভ	দৈনিক আপনকণ্ঠ
১৫২	৭ জুন ২০১৩	পরিবেশ পদকের জন্য সাংবাদিক রানাকে অভিনন্দন	দৈনিক দৈনন্দিন
১৫৩	৭ জুন ২০১৩	পরিবেশ পদক পেলেন সাংবাদিক শাহাব উদ্দীন	দৈনিক কক্সবাজার

Source: Compiled by the field team, from the NACOM Cox Bazar office team and from the help of field Diary

Appendix 7:SWOT Analysis done for the Project Analysis

FIGURE 1: SWOT Analysis Matrix for Informal Administrative Structure Of CBAECA

Strength	1. The Project has put a emphasis on programmatic monitoring and stringent feedback system. This has contributed to more transparency at the field operations. 2. The Project operations appear to have adopted a 'step by step' (gradual) approach development as opposed to sudden rapid expansion. 3. Good and friendly interaction and communication (through field visits, rapport building at the household level etc.) of the field staff with the targeted beneficiaries. 4. Respect to site-specific culture, norms and socio-religious practices during the Project operations (e.g. personal contact with socio-religious leaders, paying attention to religious/cultural etiquettes and norms). 5. The Project has established offices and ensured regular presence of staff at the sub-national and community levels, and encouraged access to these offices by the targeted beneficiaries and local community people.	Weakness	1. The beneficiaries still look on to the Project services as 'help or grant', rather than their 'rights and entitlements' (in the meetings, beneficiaries frequently referred to the Project interventions by using such words and expressions as *Upakar, Sohay; Daan, Sahajjo* etc.). This may somewhat undermine the basic premise and philosophy of the 'right based approach' to development. 2. Some of the services (e.g. livelihood/income generation training) are limited and confined to 'software' inputs (such as awareness raising, motivation, quick orientations), rather than more tangible and direct hardware support (e.g. provision of appropriate equipment and raw materials, market linkage for materializing the acquired knowhow to practical action and enterprises). Such services are presently nominal and too thinly spread. 3. Despite the great local demand and potential, there have been limited efforts as regard local demand-led income generating activities (especially in the non-farm sectors) and entrepreneurship development. Currently, such initiatives (especially handicrafts [mat weaving, handbag manufacturing]) are in an experimental and nascent stage. 4. In many cases, effective linkages have not been established between the beneficiaries who received training (from the Project) and the relevant markets. 5. In consideration of the difficult terrain conditions, inaccessibility and large territorial coverage, the level of effective supervision of field staff in some sites has been inadequate. 6. The logistics and equipment (e.g. transports, computers, office supplies), concerning the Project operations, are presently at a basic and scarce level.

Opportunity	1. Further scaling up and consolidation of the local credibility and support that the Project currently enjoys. In this regard, the current efforts for leveraging the experience and resources of relevant other projects may prove very effective in terms of producing synergistic results. 2. The groundwork has been done, and a reasonable platform exists to enable long term planning and strategizing for improved and extended natural resource governance in the localities. 3. Within the current working area, there is still plenty of scope to include local communities and groups that remain outside the Project intervention.	Threats	1) The Project has raised the expectation and demand of the local people. There is now a clear demand and need for follow-up and more concrete material support and services at the community level. If this is not forthcoming, the groundwork and hard- earned rapport, created by the Project in all these years, may be somewhat jeopardized. 2) There is some degree of uncertainty and discontent among the field staff, especially as regards the contractual/interim nature, discrepancy in their pay structure, and the prospect of career development through continuation of the Project. 3) During scaling up of the Project operations in the future, the ratio of field staff to number of beneficiary groups needs to be carefully considered especially in light of geographic coverage and terrain conditions, so that rapid expansion may not jeopardise the required close interaction and supervision of the groups. 4) Some senior management staff and other respondents (e.g. local government leaders) opined that the Project – given its community rights and governance emphasis - would eventually need to address more sensitive and 'political' issues ..Such experiences as the *Gher* eviction operations in Sonadia and encountering land encroachment and trafficking in seashells and molluscs in Md. Safir Beel are cases in point. 5) A number of factors, such as heavy workload, difficult terrain conditions, and wide territorial coverage, may constrain the maximization of the potential of the Project human resources.

Source: Compiled by the field team, from the field Diary

FIGURE 02: SWOT Analysis Matrix for Creating Group Norms and Awareness- For Community

Strength	At the community/beneficiary level, the strength includes: 1) The Project operations have a clear grassroots focus and appear to be well grounded in the targeted communities. It has attempted to develop and consolidate community level organisations. 2) A considerable degree of local acceptance and credibility is noticeable; the Project services have generally been well received by the communities. 3) Wherever possible, as a matter of policy, the Project has hired and employed the field staff (especially FAs) from the specific/targeted communities; they are also fully conversant of the local language/dialect and culture. 4) The Project has identified and addressed some vital local demands and (long outstanding) issues on a priority basis, most notably, better pest management in cropping fields, encountering land encroachment and various other forms of environmental degradation by elites and vested interest groups, greater	Weakness	At the community/beneficiary level, the weakness includes: 1) The field work team's observations suggest that many beneficiaries still look on to the Project services as 'help or grant', rather than their 'rights and entitlements' (in the meetings, beneficiaries frequently referred to the Project interventions by using such words and expressions as Upakar, Sohay; Daan, Sahajjo etc.). This may somewhat undermine the basic premise and philosophy of the 'right based approach' to development. 2) Some of the services (e.g. livelihood/income generation training) are limited and confined to 'software' inputs (such as awareness raising, motivation, quick orientations), rather than more tangible and direct hardware support (e.g. provision of appropriate equipment and raw materials, market linkage for materializing the acquired knowhow to practical action and enterprises). Such services are presently nominal and too thinly spread. 3) Despite the great local demand and potential, there have been limited efforts as regard local demand-led income generating activities (especially in the non-farm sectors) and entrepreneurship development. Currently, such initiatives (especially handicrafts [mat weaving, handbag manufacturing]) are in an experimental and nascent stage. 4) In many cases, effective linkages have not been established between the beneficiaries who received training (from the Project) and the

	community access to surrounding natural resources, opportunities of better livelihood and alternative income generation, effective negotiations with local government offices. 5) The Project has been able to secure reasonable support from local leadership and other influential persons through such institutional mechanisms as the Upazila and UP ECA Committees, and other activity-specific community level committees.The Project bases itself on other larger and wider interventions in the localities – most notably the Empowerment of Coastal Fishermen Communities (ECFC, Ministry of Fisheries and Livestock) and CWBMP (MoEF/DoE), and can draw on the strengths of these holistic, rather than compartmentalized, development initiatives.		relevant markets. 5) In consideration of the difficult terrain conditions, inaccessibility and large territorial coverage, the level of effective supervision of field staff in some sites has been inadequate. 6) The logistics and equipment's (e.g. transports, computers, office supplies), concerning the Project operations, are presently at a basic and scarce level.
Opportunity	1) Further scaling up and consolidation of the local credibility and support that the Project currently enjoys. In this regard, the current efforts for leveraging the experience and resources of relevant other projects may prove very effective in terms of producing synergistic results.	Threats	1) During the course of its operation and existence in the field, the Project has raised the expectation and demand of the local people. There is now a clear demand and need for follow-up and more concrete material support and services at the community level. If this is not forthcoming, the groundwork and hard- earned rapport, created by the Project in all these years, may be somewhat jeopardized.

	2) The groundwork has been done, and a reasonable platform exists to enable long term planning and strategizing for improved and extended natural resource governance in the localities. 3) Within the current working area, there is still plenty of scope to include local communities and groups that remain outside the Project intervention. 4) Further exploration and utilization of indigenous knowledge and local practices especially in relation to avenues of land and agro-based income generation and livelihood. 5) Forging wider partnership with relevant other development organisations and stakeholders (especially media professionals, civil society organisations), and existing networks especially in the more delicate areas of the Project operation – e.g. farmers' and fishers' right promotion, encountering elite domination and capture of local resources, etc.		2) Interference and manipulation of local elites and intermediaries. 3) Uncertainty over project continuation and the transition gap (discontinuity of work) during the period between end of one project and beginning of another may render it difficult to retain communities' interest and involvement, and also to ensure smooth operations of such community level activities as MCG. It may be recalled that the gap of about 11 months between the end of CWBMP and initiation of CBA-ECA led to several complications including defaults in MCG and unsettling effect on VCGs.

Source: Compiled by the field team, from the field Diary