

ANNUAL REPORT 2012-13

Building Community Resilience to Climate Change



BANGLADESH CENTRE FOR ADVANCED STUDIES

Annual Report 2012-13

Building Community Resilience to Climate Change

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Abbreviations

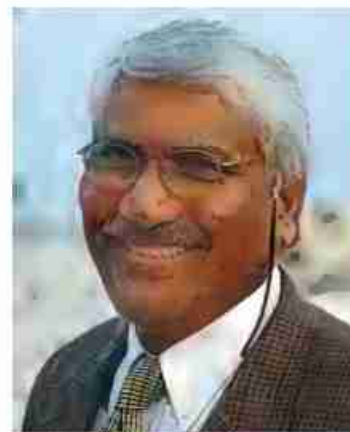
ADB	: Asian Development Bank
ADAB	: Association for Development Agencies in Bangladesh
AIGA	: Alternate Income Generating Activities
APN	: Asia and the Pacific Network
ARCAB	: Action Research for Community Adaptation in Bangladesh
BCAS	: Bangladesh Centre for Advanced Studies
BDRC	: Building Disaster Resistant Community
BEN	: Bangladesh Environmental Newsletter
BETS	: Bangladesh Engineering and Technological Services
BFRF	: Bangladesh Fisheries Resource Forum
BIDS	: Bangladesh Institute of Development Studies
BREN	: Bangladesh Renewable Energy Newsletter
BUET	: Bangladesh University of Engineering & Technology
BUP	: Bangladesh Unnayan Parishad
CANSA	: Climate Action Network in South Asia
CAPNET	: Capacity Building Network for Sustainable Water Resource Management
CARE	: Cooperative American Relief Everywhere
CCC	: Climate Change Cell
CCDF	: Climate Change Development Forum
CDMP	: Comprehensive Disaster Management Project
CDM	: Clean Development Mechanism
CEE	: Centre for Environment Education
CEGIS	: Centre for Environmental and Geographic Information System
CIPROCO	: Ciproco Computers Ltd.
CLACC	: Capacity Strengthening in the LDCs for Adaptation to Climate Change
COP3	: Third Conference of the Parties
CNRS	: Centre for Natural Resources Studies
COP13	: Thirteenth Conference of the Parties
COPPE	: Coordenacao dos Programas de Pos-Graduacao de Engenharia (Brazil)
CRA	: Community Risk Assessment
CSER	: Cooperate Social and Environmental Responsibilities
CSIS	: Centre for Strategic and International Studies
CSRL	: Campaign for Sustainable Rural Livelihoods
CTI	: Climate Technology Initiatives
CIDA	: Canadian International Development Agencies
CORIN	: Coastal Resources Institute, Prince of Songkla University, Thailand
CEMARE	: Centre for the Economic and Management of Aquatic Resources, University of Portsmouth, UK
CSR	: Corporate Social Responsibility
CEDEM	: Centre for the Law and Economics of the Sea (CEDEM)
DA	: Development Alternatives
DANIDA	: Danish International Development Agency
DCC	: Dhaka City Corporation
DFID	: Department For International Development, UK
DGPS	: Digital Global Positioning System

DLRS	: Department of Land Record and Survey
DMC	: Disaster Management Committee
DOE	: Department of Environment
DPHE	: Department of Public Health and Engineering
DUCHP	: Dhaka Urban Community Health Program
EIA	: Environment Impact Assessment
EMAP	: Environmental Management Action Plan
ENDA	: Environment and Development Action, Senegal
ERM	: Environmental Resources Management Co., USA
ETP	: Effluent Treatment Plant
EU	: European Union
FAO	: Food and Agriculture Organization
FAP	: Flood Action Plan
FCDI	: Flood Control Drainage and Irrigation
FGD	: Focus Group Discussion
FMSP	: Fisheries Management Science Programme
GFEP	: Global Forum on Environment and Poverty
GEF	: Global Environment Facilities
GEO	: Global Environment Outlook
GHG	: Green House Gas
GOB	: Government of Bangladesh
GIS	: Geographic Information System
GPS	: Global Positioning System
GTZ	: German Technological Development Agency (Deutsche Gesellschaft für Technische Zusammenarbeit)
ICZM	: Integrated Coastal Zone Management
ICCO	: Interchurch Organisation for Development Co-operation
ICMOD	: International Centre for Integrated Mountain Development
IDCOL	: Infrastructure Development Company Ltd.
IDRC	: International Development Research Centre, Canada
IFAD	: International Fund for Agriculture Development
IFS	: International Foundation of Science
ITDG	: Intermediate Technology Development Group, UK
IISD	: International Institute for Sustainable Development
IPCC	: Intergovernmental Panel on Climate Change
ISMP	: Investment Support to MACH Project
IIED	: International Institute for Environment and Development
IFC	: International Finance Cooperation
IUCN	: International Union for Conservation of Nature
IWRM	: Integrated Water Resources Management
JL	: Jurisdiction List
JMBA	: Jamuna Multipurpose Bridge Authority
KAP	: Knowledge Attitude and Practices
LDCs	: Least Developed Countries
LGED	: Local Government and Engineering Department
LULUCF	: Land Use, Land Use Change and Forestry
MACH	: Management of Aquatic Ecosystem through Community Husbandry
MADECOR	: Mandala Agricultural Development Corporation
MDG	: Millennium Development Goals
MEA	: Multilateral Environmental Agreement
MRAG	: Marine Resource Assessment Group, UK
NCCSAP	: Netherlands Climate Change Studies Assistance Programme
NAPA	: National Adaptation Programme of Action

NCA	: Norwegian Church Aid
NDBMP	: National Domestic Biogas and Manure Programme
NEMAP	: National Environment Management Action Plan
NEP	: New Economic Policy
NET	: National Environment Trust
NGO	: Non-Government Organization
NIPSOM	: National Institute of Preventive and Social Medicine
NORAD	: Norwegian Agency for Development Cooperation
NRM	: Natural Resources Management
NSD	: North-South Dialogue
ODA	: Overseas Development Agency, UK
OECD	: Organization of Economic Cooperation and Development
3 Ps	: Profit, Peoples and Planet, Germany
PRA	: Participatory Rural Appraisal
PREMA	: Profitable Environmental Management
PAP	: Project Affected People
PREGA	: Promotion of Renewable Energy, Energy Efficiency & GHG Abatement
PRSP	: Poverty Reduction Strategy Paper
RIA	: Research Institute for Aquaculture, Vietnam
RRAP	: Risk Reduction Action Plan
REB	: Rural Electrification Board
RING	: Regional and International Networking Group
SARIE	: South Asian Regional Initiatives for Energy
SDPI	: Sustainable Development Policy Institute
SASLPP	: South Asia Sustainable Livelihood Policy Forum
SD	: Sustainable Development
SEI	: Stockholm Environment Institute
SEMP	: Sustainable Environment Management Programme
SHS	: Solar Home System
SIDA	: Swedish International Development Agency
SSN	: South-South North
START	: System for Analysis Research and Training
SMEC	: Snowy Mountains Engineering Corporation
SOE	: State of Environment
TERI	: The Energy Research Institute, India
UAS	: University of Agricultural Science, India
UIG	: United Industrial Group, UK
UNEP	: United Nations Environment Programme
UNDP	: United Nations Development Programme
UNCTAD	: United Nations Commission on Trade & Development
UMP	: Urban Management Programme
USAID	: United States Agency for International Development
UZ	: Upazila (Sub-District)
UNFCCC	: UN Framework Conservation on Climate Change
UNOCOL	: Union Oil Company Ltd.
UP	: Union Parishad
WB	: World Bank
WEF	: World Environment Fund
WRTC	: Wetland Research and Training Centre, Gopalganj
WWF	: World Wildlife Fund

Message from the Executive Director

Bangladesh Centre for Advanced Studies (BCAS) started its journey in the middle of the 1980s by a multidisciplinary group of scientists. Their efforts began by addressing poverty reduction, environment degradation and enhancing socio-economic development leading to good governance. In the beginning, a major source of knowledge for these scientists was from vulnerable groups and communities, many of whom were non-literate. As the process was gradually contributing to sustainable development and environment transformation, climate change emerged as a major threat to many of these poor vulnerable communities in Bangladesh. BCAS rose to that challenge and channeled efforts towards solution based research on climate vulnerabilities, adaptation and mitigation. It soon became apparent that the communities were not only vulnerable to negative impacts of climate change but their efforts to reduce poverty and achieve better standards of living were being threatened also. Consequently, BCAS led a movement to bring Community Based Adaptation (CBA) as a core concept and has established this in the global discourse. BCAS along with its partner-IIED, London, initiated the process of an international conference on CBA, a major event that is being organized every year. For years, CBA has been hosted by BCAS to bring together development practitioners, climate scientists, policy makers and analysts across borders of geography and disciplines. This event aims to explore local solutions of the global climate change problem.



In 2012-2013, BCAS implemented over 50 projects of various sizes in environment-impact assessment, energy efficiency, water supply and sanitation, climate change adaptation, disaster risk reduction and livelihood promotions. This annual report puts a special focus on the impact of climate change on communities and the research activities and contributions by BCAS in this field. Policy advocacy, knowledge generation and public awareness under the overall theme of sustainable development and climate change are also highlighted.

Over the years, BCAS has shaped its policy, contributed to research based knowledge and reached out to national, regional and international audiences. BCAS has provided support and services in policy analysis, international climate negotiations, integration of science and policy and inclusion of people's knowledge into planning and scientific discourse. As a result, BCAS has been widely acknowledged by policy makers, programme managers, civil society, private sector and the academic community at the national and international level.

I extend my heartfelt gratitude to my colleagues and team of experts for making this report possible. I hope this annual report would be of much use to researchers, policy makers and academics as well as a diverse set of audience. The report is not only a documentation of the major activities of 2012-2013 but a stepping stone in the area of sustainable development practice and scientific research despite all the development challenges with which we intend to achieve the mission and vision of BCAS. Once again, I would like to extend my heartfelt thanks to all my colleagues and the development partners for their praiseworthy efforts.

Dr. Atiq Rahman
Executive Director

Foreword

This Annual Report highlights the achievements and contributions of Bangladesh Centre for Advanced Studies (BCAS) in 2012-2013 for knowledge generation and sustainable development at national, regional and international levels. The report provides introduction to BCAS as an organization and illustrates research, studies, seminars, workshops and training programmes conducted during the time. Major activities related to climate change and resilience performed during this period have been described in this report. The report also includes sections on impacts of BCAS projects in environment-development linkages, policy advocacy, knowledge generation and public awareness towards building resilience of communities vulnerable to climate change.

BCAS has implemented over 50 projects in 2012-2013. The projects are varied in terms of magnitude, focus, duration and resources. The categories of projects are from basic scientific research to participatory action research and capacity building of actors and stakeholders. Projects also included EIA, ETP, energy efficiency, water supply and sanitation and livelihood promotions which are described in the second chapter of this report. A number of projects were initiated on policy analysis, awareness raising, knowledge management, network building, capacity and skill development.

BCAS envisions promotion of people-centred sustainable development by advancing scientific, technical and local knowledge through research, developing models, knowledge dissemination and project implementation. Enhancing community resilience through participatory research and effective policy advocacy can promote people-centred sustainable development for local and international communities. BCAS has a key focus on climate change research, capacity building, planning and implementation of adaptation and mitigation projects with a multi-stakeholder approach. BCAS along with the support of several development partners supports Community Based Adaptation (CBA) to climate change in Bangladesh and developing world. This annual report highlights the efforts of BCAS to promote CBA approach towards exploring the local solutions of the global problem. And thus building resilience in community and ecosystems.

In the recent years, BCAS has conducted research, policy analysis and advocacy initiatives in collaboration with Climate Action Network South Asia (CANSAs), North South Dialogue (NSD) on climate change, Regional and International Networking Group (RING) and Global Forum on Environment and Poverty (GFEP). BCAS also participated in producing a series of Global Environment Outlook (GEO) reports of UNEP as its regional partner organization from Asia.

Through various research, dissemination, advocacy, publication and capacity building, BCAS has significantly contributed to policy formulation, implementation and management of projects and programmes at the local, national, regional and global levels. On a global level, BCAS has provided supports and services in policy analysis, negotiations, and advocacy on multidimensional global issues such as climate change, climate justice, biodiversity and global governance. BCAS has played a significant role in the capacity building of different actors, providing analytical input, methodology development, integration of science and policy and inclusion of people's knowledge. As a result, BCAS has been widely acknowledged by policy makers, programme managers, civil society, private sector and the academic community at the national, regional and international levels.

We hope this annual report would be of much use to researchers, development professionals, policy makers and a wide range of audiences.

Editorial Board

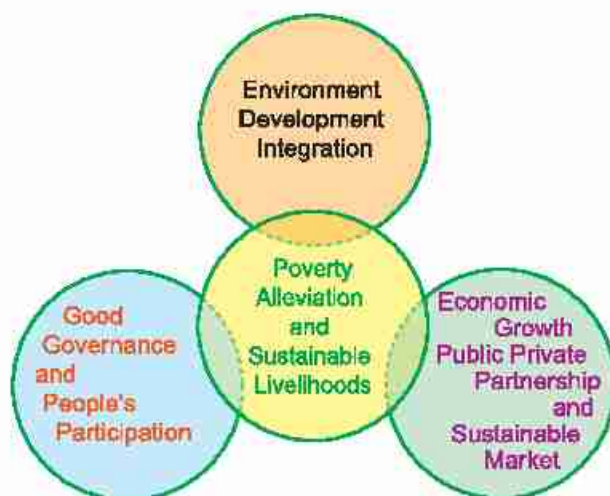
Chapter 1: Introduction

Bangladesh Centre for Advanced Studies (BCAS) is a leading research and policy institute in the nongovernment sector in Bangladesh and South Asia. It specializes in knowledge generation and dissemination, policy advocacy, research and implementation of development projects at local, national, regional and global levels. BCAS promotes sustainable development through four interactive themes. They are:

- Environment-development integration,
- Good governance and people's participation,
- Poverty alleviation and sustainable livelihoods; and
- Economic growth through public-private partnership and sustainable market.

Over the last two and a half decades, BCAS has established itself as a multi-disciplinary research and policy institute that tests dynamic ideas, develops models and provides practical solutions to problems in all areas that fall under these broad themes. These ideas have been replicated by NGOs, government departments, private sector, development partners and UN agencies.

Figure 1: Four Interactive Thematic Areas



Vision and Mission:

BCAS envisions to promote people-centred sustainable development by applying and advancing scientific, technical and local knowledge. The missions are:

- to develop ideas and models aiming towards resource management, environment and development as an approach towards sustainable development
- to undertake interdisciplinary and multidisciplinary research activities by using a set of methodologies
- to ensure community participation in planning, implementation and management of resources to enhance resilience of natural and human system
- to direct and formulate policy and programmes by updating information and knowledge through empirical research and actions
- to undertake collaborative research with scientists in both national and international organizations to share knowledge, innovation and experience
- to motivate and facilitate private sector towards cleaner production and pollution management for sustainable trade for improving environmental conditions

- to strengthen and build capacity of civil society, private and public sectors in the areas of natural resource management, environment, trade, human resource development and sustainable development
- to provide advisory services to government agencies, development partners on natural resource management (NRM), sustainable development, energy, Multilateral Environmental Agreements (MEAs) and poverty alleviation
- to enhance public awareness and shape policy decisions by information dissemination, policy dialogue, advocacy, networking, training, workshop, seminar and symposium and other events; and
- to bring out publications such as books, scientific papers, newsletters and monographs to disseminate results and findings of research initiatives.

Fields of Specialization	
<ul style="list-style-type: none"> • Natural resource management • Enhance resilience of natural and human systems • Livelihood analysis, poverty reduction and food security • People's participation, consensus building and conflict resolution • Social mobilization and local capacity building • Social justice, equity and fairness 	<ul style="list-style-type: none"> • Participatory Rural Appraisal (PRA), Participatory Learning and Action (PLA) • Environment & social impact assessment • Clean technology and pollution management • Integrated Water Resources Management (IWRM) • Renewable energy efficiency and Sustainable Energy
<ul style="list-style-type: none"> • Environmental education • Global climate change and human dimension of global change • Multilateral Environmental Agreements (MEAs) • Human settlement and urbanization • Heritage and cultural studies 	<ul style="list-style-type: none"> • Trade, environment and sustainable development • Institutional analysis and public-private partnership • Environmental governance and policy advocacy • Global governance and human dimension • Corporate Social Responsibility (CSR) • Climate change adaptation and mitigation • Disaster Risk Reduction (DRR)

Key Approaches

The five core approaches of BCAS are interdependent and reinforcing. These are systematically used and integrated into projects and programmes.

1.	Knowledge Integration for Sustainable Development: Documentation, communication of knowledge and experience for sustainable development
2.	Science-Policy-People Nexus: Establishing relationship between science-policy-people for sustainable development
3.	Valuing Local and experiential Knowledge: Integration of people's knowledge and experience of local communities with scientific knowledge for sustainable development efforts
4.	Integrating Knowledge at different Levels of Decision Making: Integration of knowledge and information at different levels (Individual-community to national-regional-global) into policy and programme to make knowledge useful and effective
5.	Eco-Specific Participatory Management: Emphasis on poverty alleviation and social development through eco-specific development approach by involving communities in identifying problems and root causes, suggesting solutions, identifying actors to solve the problems and also to encourage them to volunteer action.

Management and Support Services

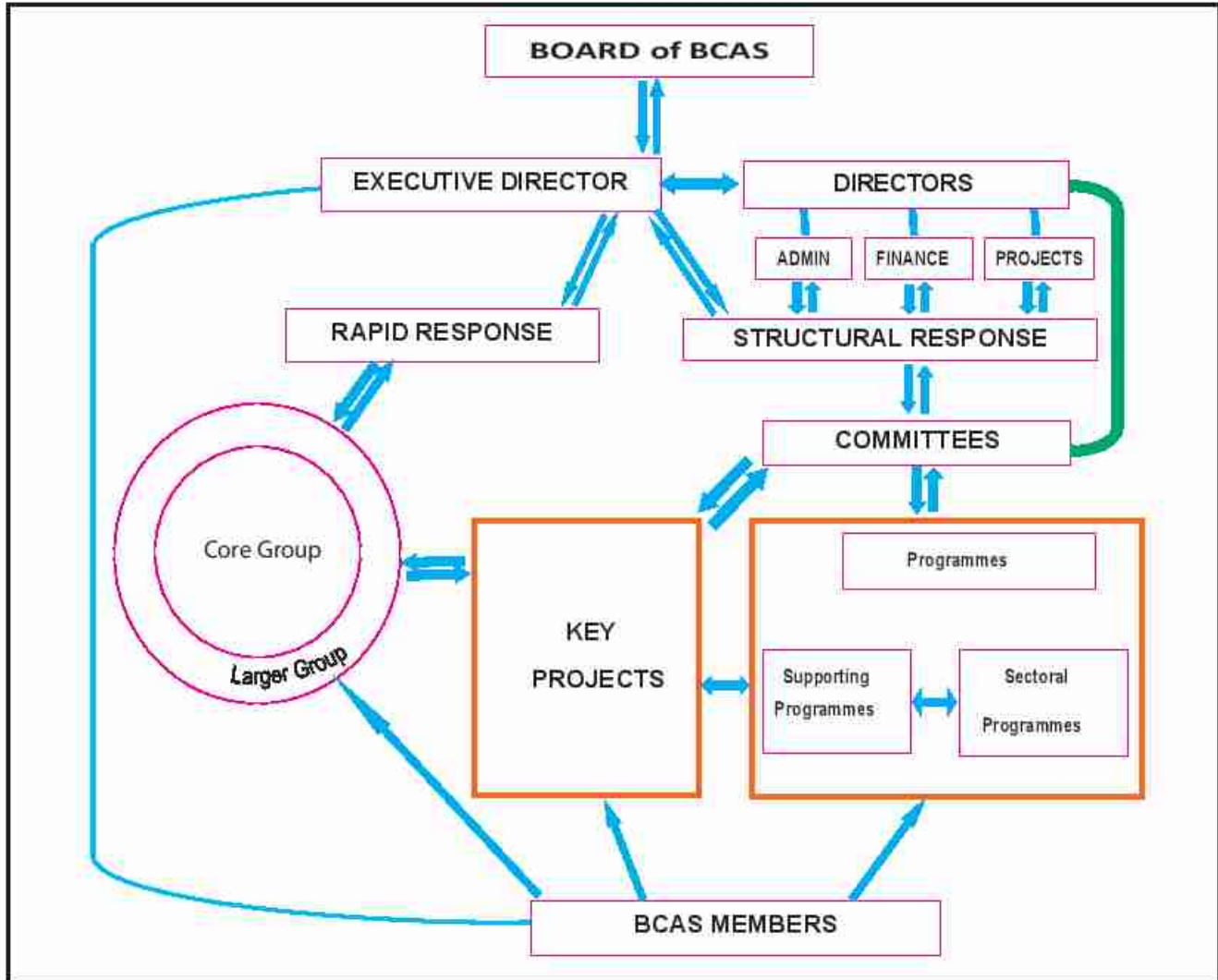
BCAS has a coordinated and structured management system. The Executive Director is the administrative head of the organization and manages the organization on behalf of the BCAS Board with close support from the Directors of administration, finance and projects as well as a number of committees and rapid response core groups.

BCAS has a Board of Directors with eight members including the Chairperson and Executive Director (ED). The Board gives overall policy directives and guidance for the management of staff, projects and resources. The mandates of the Board are to:

- Provide strategic vision
- Provide technical advice; and
- Evaluate performance and ensure sustainability.

The following schematic diagram demonstrates the overall management procedure of BCAS and the linkages.

Figure 2: Schematic Diagram of BCAS Management



Chapter-2: Brief Description of Key Projects

Bangladesh Centre for Advanced Studies has implemented over 50 projects in 2012-2013. The categories of projects included scientific research, participatory action research and capacity building of actors and stakeholders. The themes and focus of the projects were: EIA, ETP, energy efficiency, implementation initiatives in the areas of water supply and sanitation as well as DRR and livelihood promotions. In addition, a number of projects were initiated on policy analysis, awareness raising, knowledge management, networking, capacity and skill developments also. The following table-1 gives a glimpse of the types projects and their key focuses.

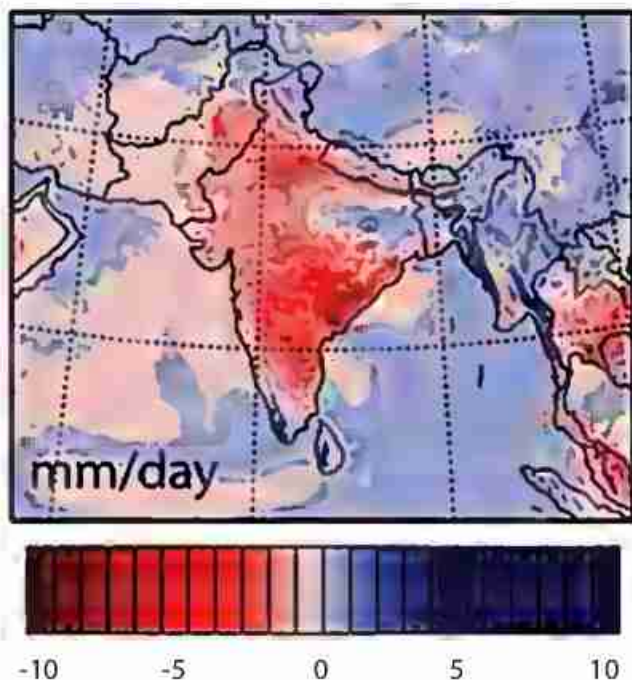
Table-1: Categories of projects implemented by BCAS in 2012-13

Types of Projects	Key Focus of the Projects
Modeling, Projections and Scientific Capacity Building	<ul style="list-style-type: none"> • Oceanography • Modeling of climate change impacts on SLR, marine and coastal ecosystems, agriculture and food security, fisheries • Remote sensing and Geographic Information System (GIS) • Decision Support Systems (DSS) and Decision Support Tools (DST) for sustainable management of natural resources and adaptation to climate change
Quantitative and Qualitative Research	<ul style="list-style-type: none"> • Perception survey • Early warning • Disaster Risk Reduction • Food security and outcome survey of agricultural inputs supply to the marginal farmers • Assessment of climate change impacts and vulnerability in different agro-ecosystems in Bangladesh
EIA and Feasibility Studies	<ul style="list-style-type: none"> • Assessments of environmental and socio-economic impacts of power plants • Mitigation measures and development of environment management plans (EMP). Building capacity of the industries and private sectors to implement EMPs for pollution abatement and conservation of environment
Policy Analysis and Advocacy	<ul style="list-style-type: none"> • Policy analysis and guidance to Planning Commission and development agencies on how to integrate climate change adaptation and mitigation in agriculture and food systems • Access to international funding for development of climate resilient agriculture to enhance food security • Review of environmental and sectoral policies to integrate climate change adaptation and mitigation • Gender equity and rights of women and poor
Participatory Action Research	<ul style="list-style-type: none"> • Action research projects on local capacity building for adaptation, mitigation, DRR and livelihood promotion • ARCAB and LCB project have initiated participatory vulnerability assessment, local adaptation planning, baseline studies and participatory monitoring
Implementation Projects	<ul style="list-style-type: none"> • Drinking water supply and sanitation • Disaster preparedness, climate change adaptation and mitigation, livelihood promotion of the poor, energy efficiency • Renewable energy and Effluent Treatment Plants

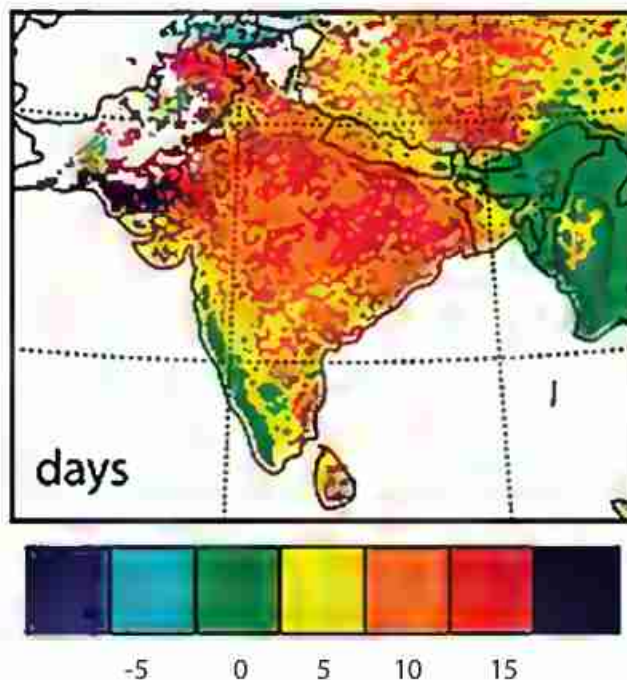
Types of Projects	Key Focus of the Projects
Training, Skill Development and Capacity Building	<ul style="list-style-type: none"> Local and institutional capacity building and skill development for actors and stakeholders have been undertaken by partners and projects like START, ARCAD and NICHE projects
Networking, Campaign and Advocacy	<ul style="list-style-type: none"> BCAS is supporting CANSA, RING and CCDF on climate justice, climate negotiations and sustainable development, people's participation and environmental governance issues
Knowledge Management, Awareness, Publication and Outreach	<ul style="list-style-type: none"> Research findings are shared with policy makers at national to regional level, development agencies, private sectors, NGOs and common people in different forms including scientific papers, book, journal article, newsletters and through audio and visuals Workshops and seminars are being organized regularly to build awareness, disseminate research findings and influencing policy decisions for poor, women, marginal communities and ecosystems BCAS is helping government and development agencies on climate change knowledge management and dissemination

The following sections briefly describe a number of key projects of BCAS, those were implemented in 2012 -13. The main focus of the projects with objectives, activities and results are presented.

Future Change in Sumer Convective Precipitation



Future Change in Monsoon Onset Date



Maps projecting changes in rainfall and onset of monsoon dates in South Asia

Source: BCAS

Advancing Climate Compatible Development (CCD) for Food Security through the Implementation of National Climate Change Strategies

Partners: Germanwatch; BCAS; African Centre for Technological Studies (ACTS) and Fundacion Vida (FV), Climate & Development Knowledge Network (CDKN)

Duration: 24 Months (started in August 2012)

Objective: This research project explored how far agriculture and development communities have incorporated climate compatible development (CCD), climate resilient and low carbon development focusing in three low income and food deficit countries - Bangladesh, Kenya and Honduras.



The audience of the dissemination workshop held at the Spectra Convention Centre, Dhaka

The overall aim of the research was to provide conceptual support to policymakers and stakeholders in developing countries about CCD in agriculture and food security as well as how integrated climate policy, food security-related strategies can harness international climate finance in an effective manner. The sub objectives of this project are to:

- Advance the understanding of what climate compatible development means for agricultural policies that aim at ensuring the food security of vulnerable populations;
- Advance the understanding of how national climate change strategies can promote climate compatible development in the area of food security, involving both adaptation and mitigation;
- Develop recommendations for a National Climate Strategy for a host country who will be the “gatekeeper” to integrate climate funding streams for the agriculture sector so that mitigation and adaptation benefits of given funding opportunities are maximized.

Activities and Progress: The project has designed the following 4 Work Programmes (WPs):

- WP-1 examined the level of an integrated approach to adaptation and mitigation in the areas of agriculture and food security by conducting literature review, expert views, meetings and consultations
- WP 2: Advanced understanding of how national climate change strategies can promote CCD in the agricultural sector to promote food security by conducting country case studies
- WP 3: Assessment of how food security related elements of national climate change strategies can be harnessed towards international climate finance in an effective manner This was done by review and consultations with policy makers and stakeholders
- WP-4 dissemination of research results for policymakers and stakeholders through workshops seminars and publication of policy briefs.

Results and Outcomes: BCAS has completed consultations and prepared country case study and a gatekeeper document for seeking international funding for promoting climate resilient agriculture and food security in Bangladesh.

The Gatekeeper has further illustrated the following requirements:

- ability to receive external funds
- ability to coordinate funding proposals/decisions among a variety of stakeholders
- ability to manage the disbursement of funds to a variety of recipients, which includes high fiduciary standards from the donors and domestic perspective, monitoring capacities and reporting to the funders
- knowledge on agricultural settings, climate change mitigation & adaptation
- ability to identify effective and efficient project types.

As a part of the project a dissemination workshop was organized in Dhaka. It has been strongly felt that CCD in agriculture brings opportunities and many challenges in Bangladesh. The BCCSAP has included a low carbon development path as a key thematic area of intervention and has suggested mitigation action, where possible without undermining development potentials and food security.

Since national funding potentials are limited, we have build capacity of the following institutions. As a part of the project it has been identified that the following institutions will need capacity building for integration of CCD in agriculture, harnessing and management of climate funds:

- Government's Ministries: MoA, MoEF, MoWR, MoDMR and MoF
- Government's Departments and Organizations
- Local Government Institutions
- Development Partners
- Banks and financial institutes
- National and International NGOs
- National Academic and Research Organizations.



Adaptation measure in agriculture in drought prone area

Research Gaps in Policies, Institutions and Market Opportunities for Climate Resilient Farming System Intensification in Bangladesh

Duration: 2012 - 2013

Partners: International Food Policy Research Institute (IFPRI), Delhi, India and implemented by BCAS

Objectives & Strategies: The objective of the study was to establish baseline information of policy and institutional frameworks related to climate resilient farming system intensification and to identify the research gaps in this regard. The specific objectives of the study were:

- Understand local geophysical conditions and farming practices;
- Identify local adaptation strategies for climate resilient farming system intensification;
- Identify farmers benefit and outcomes of the existing initiatives to intensification of farming system;
- Identify the limitations and barriers of climate resilient farming system intensification; and
- Make recommendations and opportunities for climate resilient farming system in Bangladesh.

Activities/Progress: To identify the gaps in research, policy, institution and market opportunities, the study designed three specific tasks, which were:

- a) Review of Agricultural and sectoral policies and strategies;
- b) FGDs with farmers and local stakeholders; and
- c) National consultation to identify research gaps in policy, institution and market.

The study was conducted in two upazilas: Kalapara, a coastal upazila in Patuakhali district and Shapahar in Naogaon district, situated in the north-western drought prone area. Field consultations and FGDs were carried out to assess the knowledge of the farmers, women, local level planners and local government officials about national policies and strategies on climate change. Information was collected on views and perceptions of farmers and agricultural officials on climate change impacts, local farming systems, fisheries, livestock, poultry, agro-forestry, intensification in agriculture, adaptation and mitigation practices, identification of knowledge, technology, market and resource barriers towards promoting climate resilient farming system intensification.



Maize cultivation. This can be grown in comparatively high temperature with less irrigation

Results/Outcomes:

It was found that local government institutions and community people are not conversant with important national policy matters which specifically address climate change issues. They were not consulted adequately during policy formulation.

There is considerable shortage of skilled human resources, who can effectively highlight the issues of climate change while planning climate change adaptation and mitigation projects at grass root level.

The results of the field survey was shared in a consultation workshop in Dhaka. The survey revealed that the north-western upland area in Shapahar is facing severe drought, temperature rise and cold wave, which have severe negative impacts on agriculture and farming practices. The farmers, women, UP representatives, Sub-Assistant Agricultural Officers (SAAOs), and agricultural officials of this area are practicing various coping strategies in farming but they possess limited knowledge about national policies and strategies on climate change adaptation and mitigation. It was found that there had been climate related projects in the areas of study but the local actors and stakeholders do not know about the links of those projects with climate adaptation and mitigation. The farmers, women and local actors would need information on climate change impacts on land, soil, agricultural productivity and loss due to climate variability and extremes in two areas. They would also need information about adaptation, mitigation and DRR in crops and sub-sectors for making farming system resilient to climate change.

Small farmers, women and marginal group would need both knowledge, technology and resources support to increase productivity and intensification of crop, integrated farming in both coastal and upland ecosystems. Conservation technologies in agriculture must be demonstrated to farmers to enable them to practice better management of water and land as well as farm management in maintaining productivity in climate stressed conditions.



Salinity tolerant rice cultivation in coastal Bangladesh

Whole Decision - Network Analysis for Coastal Ecosystem (WD -NACE) in Bangladesh and Kenya

Duration: 2011 - 2012

Partners: University of York, UK; BCAS, Coastal Oceans Research and Development in the Indian Ocean, East Africa (CORDIO), Centre for Environmental and Geographic Information Services, Bangladesh (CEGIS) and Stockholm Environment Institute (SEI), Oxford, UK

Objectives: The project looked into the relationship between governance, power and knowledge structures and how these influence behavior, actions and decision taking for sustainable social-ecological ecosystems. This project comprehensively map relevant social and ecological knowledge flows regarding ecosystems management in areas where there is pressure on coastal ecosystem.

The research objectives were set on the following:

- Investigate multiple drivers across a range of disciplines (biophysical, social, political and economic);
- Map the horizontal and vertical networks and knowledge diffusion patterns;
- Use socio-ecological models to analyze and model interactions among drivers; and
- Reflectively link the impact of the WD-NACE project.

Activities/Progress: As a part of the project, studies were conducted in three districts- Satkhira, Khulna and Bagerhat to ascertain how physical processes influence social activity and the dependency on ecosystem especially in the Sundarbans area.

Through the research initiative three important aspects were addressed: 1) what are the controlling factors in decision making, 2) what are the drivers in changing the state (i.e. the mangrove ecosystem in the south western part of Bangladesh) and 3) what are making changes in productivity, the services related to the ecosystem and how they are effecting overall ecosystem. The purpose is to generate more generic data across comparative studies about how decisions for policy and action are taken at local levels.

The projects' UK partners worked with partners in Bangladesh and in Kenya, in close collaboration with policy makers and practitioners to develop an understanding of sustainable norms for decision making that can be used in coastal ecosystem services for poverty reduction.

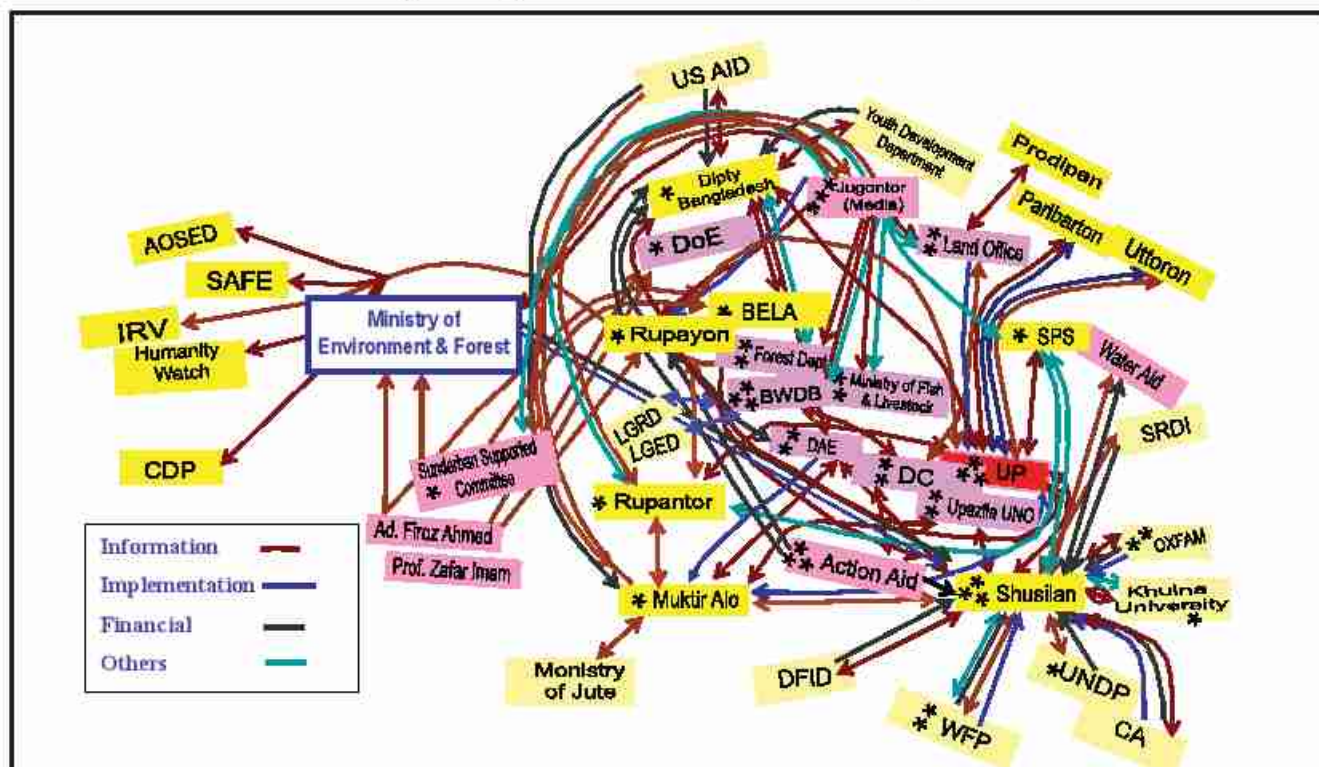
Results/Outcomes: The project has established the linkage of knowledge and network for sustainable management of coastal ecosystems, in terms of:

- Poverty reduction
- Understand how livelihoods can be maintained
- Ecosystem services valued and preserved.

The research process looked at the networks that individuals use to help them make decisions regarding their livelihoods. These were needed to be understood within the context of the global economy and other decision networks impacting upon the social-ecological interrelationships at the local level. The understanding was then framed within the literature around social-ecological complexity and complex adaptive management. The understanding was also used in developing a model, which could be applied to a range of settings such as by policy-making institutions and international development organizations as well as by more local users. The findings of the study were presented in a day long workshop in Dhaka on 3 October 2013 that was attended by researchers, academics, scientists, government official and representatives from project partners.

The following figure on Knowledge Network shows the regional level actors and stakeholder as well as their complex linkages.

Figure 3: Regional level actors and stakeholder linkages



Group work on Knowledge and Network Analysis in Khulna

Determinants and Effectiveness of Adaptation to Climate Change in Bangladesh

Duration: December 2012 to November 2013

Partners: Adaptation Knowledge Platform (AKP) at AIT-UNEP, Bangkok, BCAS, Department of Agricultural Extension of the Ministry of Agriculture and Caritas Bangladesh

Objectives: The overall objective of the study was to investigate and improve understanding of factors such as local conditions, geophysical characteristics and local determinants as well as the external factors that determine the effectiveness of local adaptation.

Activities: The study team conducted the following activities: Desk based review; field data collection on community perceptions and evidences of local adaptation actions in agriculture, water, health, social forestry and conservation of natural resources, livelihood promotion, disaster risk reduction.

Focus Group Discussions (FGD) and Key Informant Interviews (KIIs) and Case Studies were conducted to learn local contexts and characteristics as well as adaptation strategies, effectiveness and impacts of the project interventions, building local adaptive capacity and resilience in various systems towards reducing their climate related risks and vulnerability.

Results/Outcomes: The two adaptation projects aimed to enhance adaptive capacity of the vulnerable communities and ecosystems to tackle climate impacts, risks and vulnerability and protect the lives and livelihoods of the common people. The effective local adaptation actions of the coastal project were:

- Awareness and communicating climate risks
- Environment school
- Rainwater harvesting
- Re-excavation of ponds and water conservation for drinking and domestic uses
- Canal re-excavation and conservation of rain water for irrigation
- Community led-mangrove afforestation
- Integrated agriculture and aquaculture; and
- Crab fattening in saline water.

Adaptation strategies and local actions for Barind Tract were developed after participatory research and consultations with, the farmers as key stakeholders. The experiences of farmers throughout the generations were taken into account to understand how farming cycles are influenced by seasonal impacts and weather patterns. The key interventions included:

- Farmers field school and farmers clubs
- Water Conservation and irrigation management
- Mini-pond for water conservation and drought management
- Crop diversification and intensification
- Drought tolerant crops varieties
- Integrated Homestead Gardening
- Organic inputs and pest management
- Knowledge dissemination; and
- Linking Farmers with local government and development agencies.



A number of local and external factors and determinants were instrumental in implementing of the two projects. The local factors included: participatory planning and engagement of community and targeted beneficiaries; interest of the vulnerable community and actors about project approaches and interventions; awareness, training and capacity building; integration of local knowledge, needs and priorities into local adaptation strategies; local innovation and supports from the local government bodies (Union Council, LGED, DHPE etc.) and community organizations. High level climate vulnerability, wide spread poverty, food and livelihood insecurity of the majority were also critical local conditions and factors that necessitated adaptation interventions. The key external factors were: enabling national policy environment and institutional supports (Bangladesh NAPA guideline and research partnership of DAE with FAO as well as IIED and BCAS support to Caritas); resources from government and donor partners; R&D, technology and knowledge transfer.

Collective Action to Reduce Climate Disaster Risks and Enhance Resilience of Vulnerable Coastal Communities in Bangladesh and India

Duration: Four years (October 2011-September 2015)

Partners: European Commission, BCAS, Development Research Communication and Services Centre (DRCSC), West Bengal, India; and Obricon AS, Denmark.

Objectives: To enhance resilience of the coastal communities around the Sundarbans by building capacity of vulnerable communities, local actors and stakeholders through sustainable natural resource management, disaster risk reduction, livelihood promotion and advancing community adaptation to climate change.

The specific objectives are:

- to assess present and future climate change impacts in the local contexts from increased salinity, tidal inundation, flood, erosion, water logging, sea level rise and cyclone and reduce their risks
- promotion of livelihoods and food security of poor and marginalized people
- to identify community needs and prioritize them, to address the climate change impacts as well as to reduce the associated risks and vulnerability;
- to raise understanding and awareness of the coastal communities, local actors and stakeholders about the present and future climate change impacts, risks and vulnerability of the coastal Sundarbans ecosystems;
- to build the capacity of the local partners, actors and stakeholders to integrate climate change issues and adaptation into local and regional development process, livelihood protection and disaster risk reduction;
- to strengthen current coping mechanisms of disaster risk reduction (DRR), enhancement of adaptive capacity of the vulnerable communities, particularly the poor farmers, fishers, and women and address issues through natural resource management as well as improve coastal biodiversity and ecosystem by linking climatic risks on their lives and livelihoods;
- implement local adaptation action plans by involving communities and relevant actors to reduce risks and vulnerability;
- build partnership and network among the relevant actors and stakeholders for effective exchange and capacity strengthening to address climate change and raise voice against climate injustice in national, regional and international levels;
- share, good practices, experiences and advocacy to influence policy and decision making processes at regional, national and international levels.

Activities and outcomes:

Training manuals on climate change and alternative livelihoods have been prepared as a part of this project. A census and baseline survey have been completed also. Participatory Vulnerability Assessment (PVA); community mobilization as well as organizing meetings and workshops on adaptation in different district, upazlia and union levels have been done. The project activities have initiated a positive change among the stakeholders by increasing their awareness about issues concerning climate change impacts and disaster risks. The activities have bridged the gaps between development actors and community members. The community people feel confident to address climate change impacts at local level with new knowledge and skills.

Table 2: This table shows the areas in which the projects are being implemented

Country	District	Upazilla/PS	Cluster	Villages	Target Household
Bangladesh	Khulna	Paikgacha	1	15-20	500
	Bagerhat	Morrelganj	1	15-20	500
	Satkira	Shyamnagar	1	15-20	500
India	South 24 Parganas	Patharpratima	1	10	600
	South 24 Parganas	Basanti	1	12	300
	North 24 Parganas	Sandeshkhali	1	17	300
	North 24 Parganas	Hingaljanj	1	7	300

Progress and Outcomes: The number of direct beneficiaries are about 3000 vulnerable families from small and marginal communities such as farmers/fishermen, /crab collectors, honey/fuel wood collectors and the landless people living around Sundarbans. Approximately 15,000 households will be indirectly benefitted from this project.

Table 3: Matrix of the targeted groups

Target groups	Needs and constraints
Small and marginal farmers	Saline water intrusion reduced the scope of the agricultural activities within the vicinity. They are not aware about the climate change risks, vulnerabilities. They need to grow crops for their food security. Saline tolerant crops are required to demonstrate.
Fishermen, fish fry and crab collectors	The cyclone and tidal surge frequently damage their resources and reduce the scope of their livelihood.
Honey/fuel wood collectors	They are exploiting the resource of the Sundarban for their livelihood. They need to rehabilitate to reduce the natural forest.
Landless Community	They have poor access to livelihood and migrate to urban slums in search of their livelihoods.

- Building capacity of community and local actors including LGIs, strengthening capacity and resilience of the vulnerable community for protection of their lives and livelihoods, demonstration of sustainable drinking water systems and agriculture practices, promotion of low-cost renewable energy options,
- Promotion of agro-forestry and social forestry, proper monitoring and evaluation,
- Facilitating partnership and networking with actors and stakeholders as well as sharing the knowledge and dissemination of information with government, development agencies and EU partners.



BCAS team was collecting Data in a Disaster prone Area

Source: BCAS

Local Capacity Building for Advancing Community Adaptation to Climate Change in Bangladesh

Duration- 2008- March 2012

Partners: The Christian Aid, UK supported the implementation of the project with the local partners GKT, CCDB and Rupantar. BCAS coordinated the project.

Objectives: To reduce climate risks and vulnerability of local people by enhancing resilience of the communities through building local capacity and promoting collective actions at community level. The project has the following specific objectives:

- to improve understanding and awareness of the selected vulnerable communities, local actors and stakeholders about the present and future climate change impacts, risks and vulnerability
- to assess present and future climatic impacts in the local contexts from increased salinity, tidal inundation, flood, erosion, water logging, sea level rise and cyclone
- to improve current coping mechanisms of disaster risk reduction and enhancement of adaptive capacity of the vulnerable communities, particularly of the poor farmers, fishermen women and other marginal groups
- to build the capacity of the local partners, actors and stakeholders to integrate climate change issues and adaptation into local and regional development process, disaster risk reduction
- building partnership and network among the relevant actors and stakeholders, and
- to share learning, good practices, experiences among the actors and stakeholders.

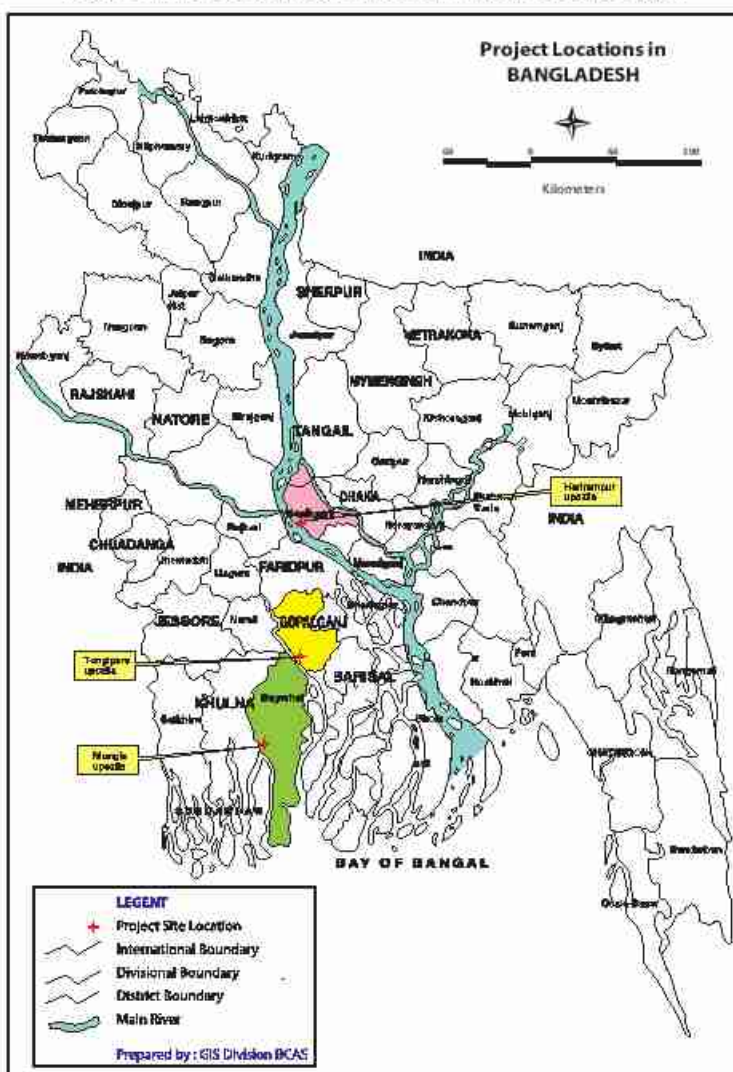
Implementation Area:

- Four villages in Mongla upazila under Bagerhat district in the coastal area prone to cyclone, tidal surge, salinity and sea level rise;
- Two villages in Tungipara upazila under Gopalganj district in the south central region prone to flood and water logging mainly; and
- Three villages in Harirampur upazila of Manikganj in the central region prone to flood and river bank erosion.

Approaches and Activities: The project was being implemented in a participatory manner to improve the understanding climate risks and vulnerabilities of local communities by involving climate change scientists and development practitioners:

- Development of adaptation strategy by community and various actors;
- Capacity and partnership building of the community and the local actors; advancing community actions to reduce climate risks and vulnerability;
- Information sharing, advocacy and building networking.

Figure 4: The Bangladesh map shows the project location





Floating Nursery Beds in a project site

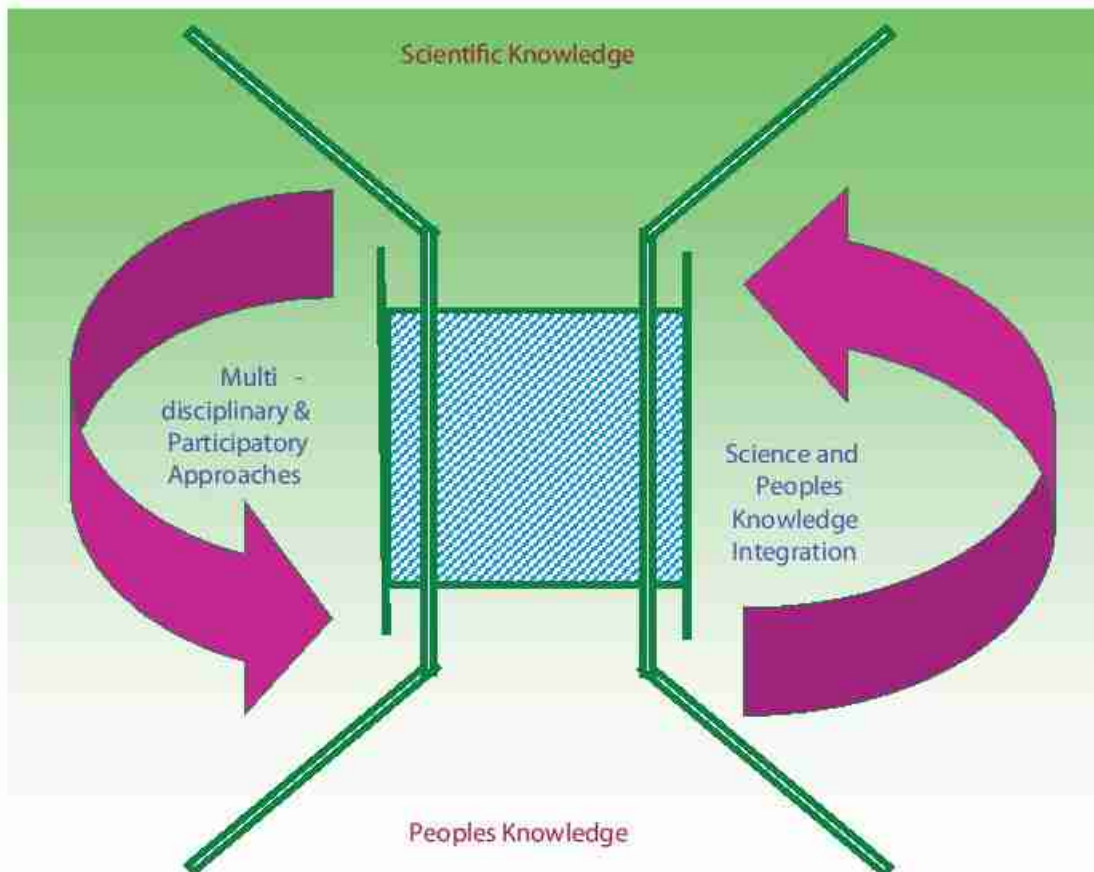
- Implementation of local adaptation actions with supports from project and local government and development partners
- Capacity building of the other CA partners for mainstreaming climate change issues into their policy and programmes
- Capacity building training to CCAG, LGIs, PNGOs, UDMCs and other actors of project areas for advancing community adaptation.
- Enhancing linkages of the poor and vulnerable communities with LGIs and actors
- Demonstrated suitable adaptation practices in agricultures, water and health, livelihood and income generation activities considering local contexts, climate change impacts and disaster risks
- Exchanges and lessons learned from actors and stakeholders, and
- Collection and documentation of good practices and publishing case studies.

The project has completed PVA at village level, social mobilization and developed local adaptation action plans to be implemented by the community, local government institutes (LGIs) and development actors. The local adaptation options included awareness, capacity building, setting up village based community adaptation groups and enhancing their linkages with LGIs and actors. The project has demonstrated rainwater harvesting flood proof drinking water options; sweet water conservation, flood proof and cyclone resistant houses, flood and salinity tolerant crops varieties, homestead gardening and floating bed vegetable growing for income generation. The project further focused on capacity and partnership building of the vulnerable community and local actors by linking them with local government and development partners for greater access to supports and services and implement local adaptation actions towards reducing risk and vulnerability to climate change.



Home gardening under a CBA Project

Figure 5: Diagram shows the Interface between Scientific Knowledge & People's Knowledge



Climate Resilient Ecosystems and Livelihoods (CREL)

Duration: Five years (2012-2017)

Partners: Supported by the USAID, the project is being coordinated by Winrock International. Bangladesh Center for Advanced Studies (BCAS) is a technical partner of the project. The implementing partners are: Community Development Centre (CODEC), Center for Natural Resource Studies (CNRS), Nature Conservation Management (NACOM), Worldfish Center, Bangladesh (WF) and Tetra Tech (ARD). The following government ministries are involved in this project: Ministry of Environment and Forests (MOEF), Ministry of Fisheries and Livestock (MOFL)-department of Fisheries (DOF) and Ministry of Land (MOL).

Objectives: To scale up and adapt successful co-management models and conserve ecosystems and protected areas (PAs), improve governance of natural resources and biodiversity, and increase resilience to climate change through improved planning and livelihoods diversification.

Strategies and Activities: To achieve the goal, the Winrock-led CREL team aims to increase the knowledge base, strengthen capacity for policy analysis and legal reform, catalyze public support, and reinforce tenure and use rights. The CREL has put forward four components level activities. These are:

Component 1: Improved governance of natural resources and biodiversity

Component 2: Enhanced knowledge and capacity of stakeholders

Component 3: **Strengthened planning and implementation of climate resilient NRM and adaptation**

Component 4: Improved and diversified livelihoods.



Rain forest in the Cox's Bazar

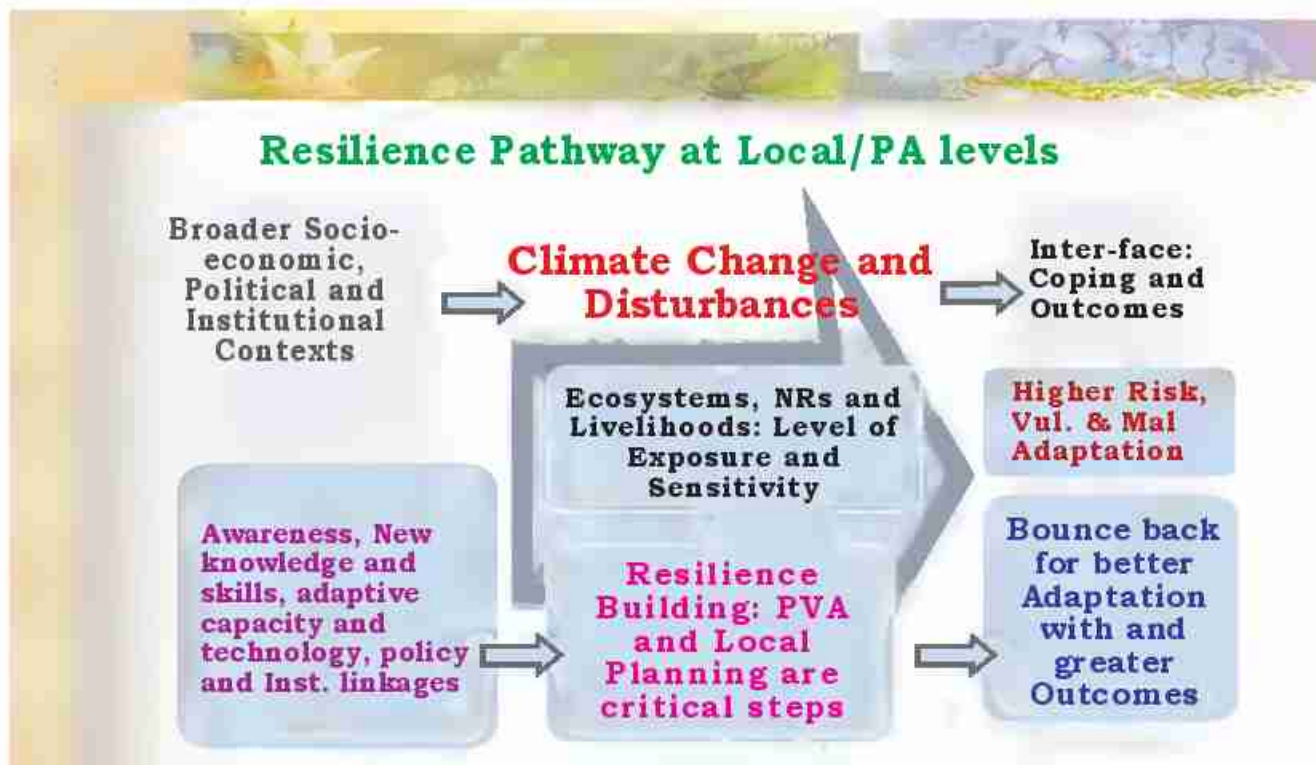
Implementation Areas: The project is working in the haors and forests in the Northeast Sylhet region the southwest region focused on the Sundarbans (based in Khulna), and the southeast region's forests and coastal wetlands (based in Chittagong and Cox's Bazar).

Results/Outcomes: The BCAS team has completed a number of activities for component-1, component-2 and component-3. The team has already conducted Training Needs Assessment, developed the curricula for training and capacity building of the officials and staff of the government and NGO partners at the national, regional and local levels. Training manuals and models have been developed on climate change science, adaptation, mitigation and climate resilient NRM.

The Component-3 of CREL is dedicated to advance landscape level local planning (LLP) at forest PAs and wetland catchment levels with active participation of resources users and local stakeholders including Village Conservation Forum (VCF), Resource Users Group (RUG) and Co-Management Committee (CMC) members. Participatory Climate Vulnerability Assessment (PCVA) and local planning for adaptation, DRR and mitigation was undertaken as the key activities in the first year of the project. BCAS team was responsible for developing tools and methodologies as well as conducting PCVA training for partner organizations at regional level.

The project has identified a number of policies and strategies for review, to integrate climate change adaptation, co-management and conservation issues. The Protected Area (PA) and wetland management plans would be revised with GIS and RS inputs.

Figure 6: Climate Change Vulnerability Analysis & Resilience Pathway



Quantifying Projected Impacts under 2°C Warming (IMPACT2C)



Duration: April 2011 – March 2015 (4 Years)

Partners: Helmholtz-Zentrum Geesthacht Zentrum für Material- und Küstenforschung GmbH, Germany

Potsdam Institut fuer Klimafolgenforschung, Germany

UniResearch, Bjerknes Centre for Climate Research, Norway

Meteorologisk Institutt, Norway and BCAS, Dhaka

Institute of Water Modelling, Bangladesh

African Centre of Meteorological Application for Development, Niger

European Climate Forum EV, Germany

Objectives: The overall objectives of IMPACT2C are:

- Determination of the climate in Europe and most vulnerable regions for a 1.5°C and 2°C global warming compared to pre-industrial level
- Consideration of impacts from a cross-sectoral perspective, e.g. for particularly vulnerable areas that are subject to multiple impacts where cumulative effects may arise (e.g. in the Mediterranean region) and in relation to cross-cutting themes (e.g. cities and the built environment).

Strategy and Activities: Political discussions on the European goal to limit global warming to 2°C demands that discussions are informed by the best available science on projected impacts and possible benefits. IMPACT2C enhances knowledge, quantifies climate change impacts, and adopts a clear and logical structure, with climate and impacts modelling, vulnerabilities, risks and economic costs, as well as potential responses, within a pan-European sector based analysis.

IMPACT2C utilises a range of models within a multi-disciplinary international expert team and assesses effects on water, energy, infrastructure, coasts, tourism, forestry, agriculture, ecosystems services, and health and air quality-climate interactions.

This project introduces key innovations, which include: harmonised socio-economic assumptions/scenarios will be used, to ensure that both individual and cross-sector assessments are aligned to the 2°C (1.5°C) scenario for both impacts and adaptation, e.g. in relation to land-use pressures between agriculture and forestry. It has a core theme of uncertainty, and will develop a methodological framework integrating the uncertainties within and across the different sectors, in a consistent way. In so doing, analysis of adaptation responses under uncertainty will be enhanced. Finally, a cross-sectoral perspective is adopted to complement the sector analysis. A number of case studies will be developed for particularly vulnerable areas, subject to multiple impacts (e.g. the Mediterranean), with the focus being on cross-sectoral interactions (e.g. land use competition) and cross-cutting themes (e.g. cities). The project also assesses climate change impacts in some of the world's most vulnerable regions: Bangladesh, Africa (Nile and Niger basins), and the Maldives.

Bangladesh Centre for Advanced Studies (BCAS) is undertaking the Work Package 13: Impact, vulnerability and adaptation in most vulnerable regions - Bangladesh case study. This WP focuses on climate change impact, vulnerability and adaptation due to a global averaged surface temperature change of 2°C (and if appropriate of 1.5°C) from pre-industrial level for the Coastal regions of Bangladesh.

Bangladesh is particularly vulnerable to climate change due to the combined impacts of sea level rise, increased rainfall variability, changes in runoff pattern of the major river systems and possible change in extreme events such as cyclones. This work package will develop a modelling framework which integrates the impacts of sea level rise, changes in climate and hydrology on different climate sensitive

sector in Bangladesh. Sectors included in our analyses are agriculture, fisheries, water resources, infrastructure, transportation and energy. The modelling framework will be used for an integrated climate change impact assessment. Finally we will assess different adaptation options and the linkage with sustainable development strategies. The main cross cutting issues will be water and increased salinity.

BCAS is also responsible for the activities related to WP15: Outreach, training and dissemination in South Asia Region. The Key activities are:

- Data cataloging for review of CC data availability;
- Survey of climate modeling/data needs; and
- Stockholders consultation workshop to identify climate related pressures in Bangladesh

Results/Outcomes: BCAS has already identified the main climate related pressures in Bangladesh and communicated with local partners and experts through consultation workshop and institutional consultations; and designed and set up modelling framework for Bangladesh. BCAS updated Sea level rise scenarios for Bangladesh in support with Southampton University, UK and Wageningen University (WU), Netherlands.



Impact 2: Project orientation workshop In Dhaka

Source: BCAS



Institutional Support and Capacity Building for studies of and adapting to climate change in Bangladesh

Duration: April 2010 to Sep. 2012

Partner: Bjerknes Centre for Climate Research (BCCR), Bergen, Norway and BCAS, Dhaka

Objective: To build and improve the institutional capacity in the areas of understanding and modelling future changes in mass balance of glaciers, monsoon variability, and the impacts of these changes for Bangladesh. The specific objectives are:

- Evaluation of the Norwegian Earth System Model (NorESM) and the regional Weather Research and Forecasting (WRF) model for South Asia and Bangladesh,
- Assessment of monsoon response to future greenhouse gas forcing in a multi-model IPCC AR5 ensemble, including precipitation and glacier mass balance estimates,
- Investigate extreme precipitation and drought events from downscaling of a subset of IPCC models (NorESM plus a few other state-of-the-art climate models) with the WRF model system,
- Support relevant elements of the Bangladesh Climate Change Strategy and Action Plan,
- Quantification of sector impacts (including confidence estimates) of future precipitation changes,
- Testing of knowledge, output and methodologies for real field applications, and
- Capacity building through joint seminars and students and staff exchange.

Strategies and Activities: This cooperation between the Bangladesh Centre for Advanced Studies and the Bjerknes Centre for Climate Research in Bergen is a response to the challenges facing Bangladesh, as well as the Norwegian policy to promote close cooperation between local research centres and Norwegian centres with relevant expertise. The key activities are:

- Analyse climate model performance over South Asia with focus on the monsoon system. Data from a range of IPCC climate models will be downloaded and compared with observations,
- Perform regional climate downscaling experiments with WRF and quantify changes in mean and extreme statistics with focus on precipitation,



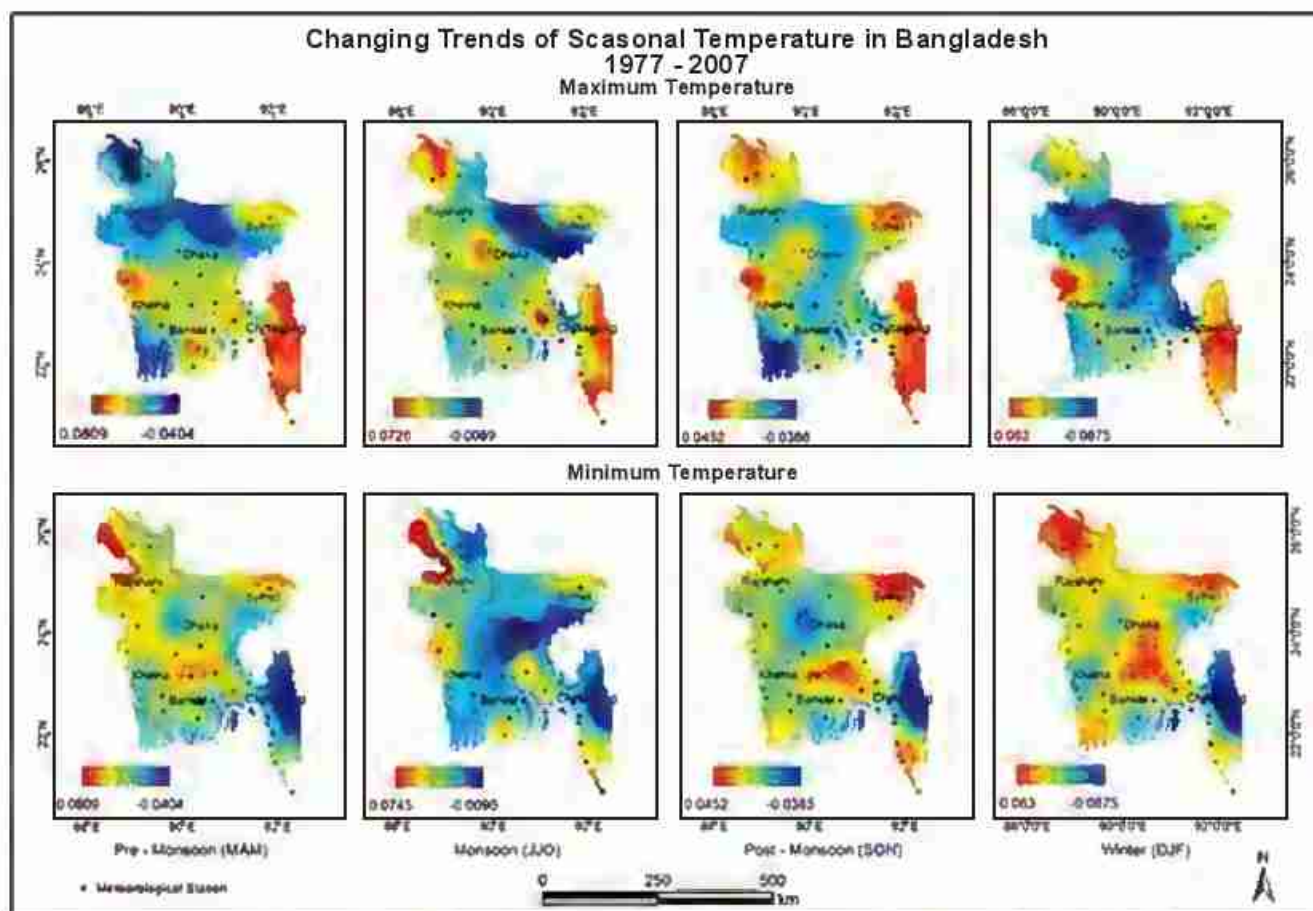
Initiation workshop of the project Institutional Support and Capacity

- Quantification on sector impacts of future changes in three affected ecosystems in rural Bangladesh (in coastal area threatened by sea level rise, on central flood plains, and in drought prone areas of North West Bangladesh), and
- Capacity building, training and workshops in Bangladesh, India and Thailand.

Results and Outcomes: Geospatial and temporal change in monsoon, variability of rainfall and temperature over Bangladesh and their impacts in different ecosystem investigated and explained. Probable mechanisms for variability on inter-seasonal and inter-annual time scales were explored. Modeling and pertaining analyses revealed a significant linkage between temperature and rainfall in pre-monsoon and winter seasons of Bangladesh. These findings were validated through a structured questionnaire survey executed in 6 different agro-ecological regions of Bangladesh.

It was found that the onset and withdrawal are happening earlier and with reduction in number of rainy days in the South Eastern and Eastern part of the country. Consequently the ecosystems biodiversity, watersheds, agricultural productivity of land thus and food security in the regions are affected by these observed climatic changes.

In addition to those 3 researchers from BCAS got trained TERI-BCCR Climate Research School, 01 October - 08 October 2011, New Delhi, India and 4 researchers in ADPC-Bjerknes Workshop on WRF Model, 10–20 October 2011, Bangkok, Thailand as capacity building programme in climate modeling.



Maps show the changes of temperature by seasons from 1977 to 2007

Knowledge Assessments on Climate Change and Peri-urban/Urban Agriculture in Sub-Saharan Africa and South Asia

Duration: July 2011 to June 2012

Partners: World Meteorological Organization (WMO), Intergovernmental Panel on Climate Change (IPCC), United Nations Environment Programme (UNEP), START International, Inc., University of Dares Salaam, University of Ghana, Bangladesh Centre for Advanced Studies (BCAS), ISET-Nepal and Swaminathan Research Foundation, India.

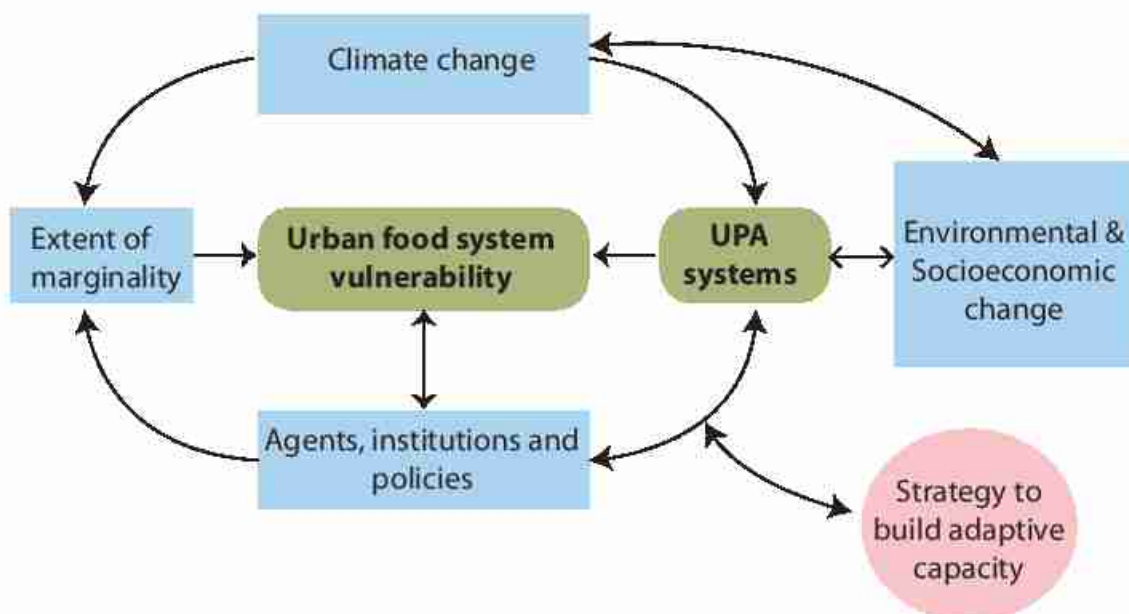
Objectives:

- Assemble and synthesize knowledge on the state of peri-urban agriculture in 9 cities with particular emphasis on its climate and environmental change aspects;
- Identify where insufficient knowledge exists and highlight where additional research and assessments efforts are needed;
- Provide scientifically credible information that supports policy planning and decision-making at the city level, and that informs climate-aware development planning more broadly;
- Build capacity of scientists within the target regions to undertake assessments, and foster networks of regional technical expertise, and to encourage stronger “communities of practice” engaged in the topic of urban food production and climate change;
- Lay the groundwork for more extensive and insightful treatment of regional scale issues in the IPCC 5th Assessment Report; and
- Help to inform research, policy analysis, and outreach activities conducted under the CGIAR Climate Change, Agriculture, and Food Security (CCAFS) initiative.

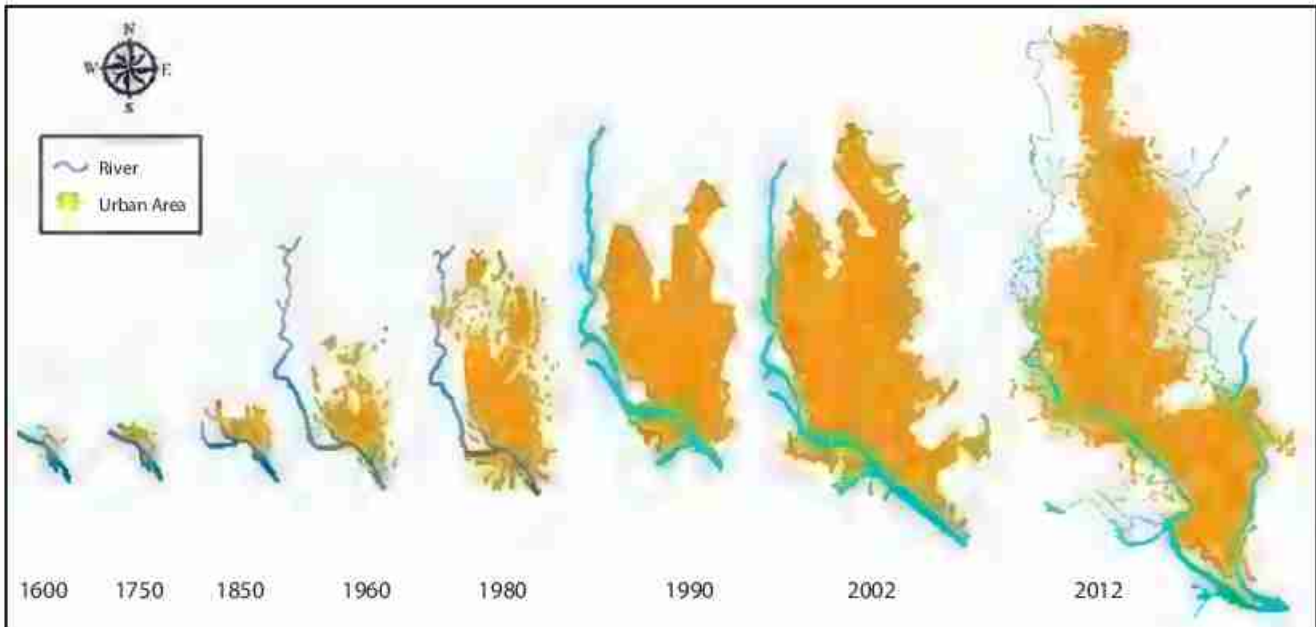
Implementation Area: The study involves nine cities. Three of South Asian cities are: a) Katmandu in Nepal b) Dhaka in Bangladesh and c) Chennai in India.

Strategy and Activities: The assessments draw upon recent peer reviewed literature pertaining to relevant regional issues, grey literature, surveys, focus group discussions, and other interactive activities.

Figure 7: Framework for the Assessment



Results and Outcome: This project has undertaken a 3-city assessment on urban and peri-urban agriculture. The assessment focuses on how rapid urbanization and global environmental change, including climate change, is affecting food production systems. Such systems can generate a significant portion of the fresh fruits and vegetables, poultry, eggs, fish, dairy and other non-staple foods in cities that contribute significantly to dietary diversity for urban dwellers and are a key livelihood resource of the urban poor.



Growth pattern of Dhaka City



Crowded Dhaka City

Nansen Bangladesh International Centre for Coastal, Ocean and Climate Studies (NABIC)



Duration: 2011 – 2016

Partners:

Bangladesh Centre for Advanced Studies (BCAS), Bangladesh
Nansen Environmental and Remote Sensing Center (NERSC), Bergen, University of Chittagong, Bangladesh,
Institute of Forestry and Environmental Sciences, University of Bergen, Norway.

Despite a rapid economic growth and steady reduction in poverty, there is an urgent need for Bangladesh to develop network to international top-level oceanographic institution, and to strengthen national capabilities to take advantage of new knowledge, new model tools, for better understanding and new model simulations to develop operational forecasting system for the Bay of Bengal and Bangladesh coast.

The vision of the initiative is to serve Bangladesh through advancing knowledge and sustainable development practices of the coastal, ocean and climate system and its impact on society by integration of knowledge generated by national and international partner institutions in the spirit of the Nobel Laureate and humanist Fridtjof Nansen. Nansen Bangladesh International Centre for Coastal, Ocean and Climate Studies has been formally launched in Bergen, Norway during 25 years Anniversary Colloquium of NERSC on November 18, 2011.

The principal areas of cooperation towards capacity building in Bangladesh:

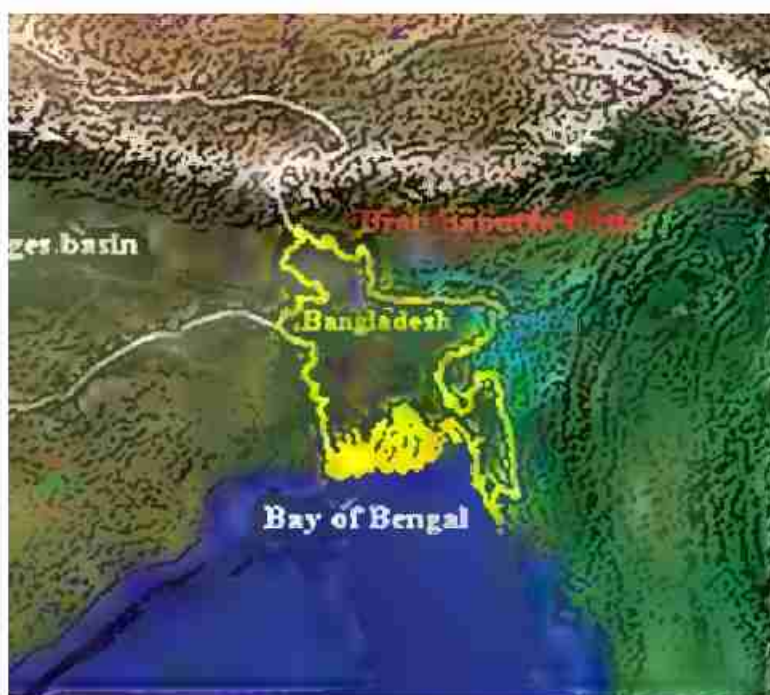
- Sea level variation, natural and anthropogenic (global warming)
- Monsoon and ocean variability-Climate change
- Marine Ecosystem studies with focus on forcing mechanisms and algae blooms
- Developing appropriate co-management agreement, policies, strategies and action plans for the Sundarbans mangrove forests.
- Developing appropriate climate change adaptations measures for coastal human communities and ecosystems, and
- Coastal Zone management and Social issues.



Inception meeting in Dhaka

Objectives: Overall goal of the initiative would be to strengthen the newly established Nansen-Bangladesh International Centre for Coastal, Ocean and Climate Studies (NABIC) by undertake following collaborative efforts:

- Improving the capacity to observe, understand and predict the sea level, ocean circulation and marine ecosystem and climate variability in the coastal regions of Bangladesh and Bay of Bengal on timescales from days to decades in support of scientific and societal needs including coastal and ocean resource management for fisheries, maritime security, recreation, tourism, biodiversity and livelihoods of communities and develop appropriate climate change adaptation measures.
- Focus on education and exchange of researchers and students from different cultures and countries through the Nansen-Bangladesh Fellowship Program; and
- Collaborate with national and international associate partners which will be institutions in Bangladesh, Norway, the South Asian region, the Nansen Group Network and elsewhere suitable. Develop joint programs where needed to meet the overall goal.



Bangladesh with the Bay of Bengal having Vast marine resources



Investment Planning for Sustainable Forest Resource Development in Selected Ecologically Important Landscapes: In support of Remote Sensing and GIS

Duration: 2011 - 2012

Partners: Weidemann Associates Inc. Arlington, Washington, USA, and Bangladesh Centre for Advanced Studies (BCAS), Bangladesh

Objectives: The main objective of the project was to provide short-term technical assistance for landscape level planning in select ecologically important landscapes to the Government of Bangladesh (GOB), particularly the Ministry of Environment and Forest (MOEF), in planning a large-scale, pro-poor, community-based, co-managed and participatory forest resource development initiative as a means to address chronic poverty, social inequality and disaster risk issues in order to achieve sustainable, responsible and equitable development. Purpose of the study were:

- to prepare Digital Elevation Models (DEM) and detailed maps of select ecological landscapes and assess the forestry development potentials
- to prepare various site-specific modules for sustainable forest and agro-forest resource development for the target landscapes; and
- to provide detailed estimates of the investment requirement for developing the resources 8 (4 Forest) and 4 (wetland) different protected areas.

Strategy and Activities: A large-scale, pro-poor, community-based, co-managed and participatory forest and aquatic resource development initiative as a means to address chronic poverty, social inequality and disaster risk issues in order to achieve sustainable, responsible and equitable development. The initiative also addressed global climate change adaptation and mitigation issues. Under this investment plan, four areas were considered for landscape level planning within Bangladesh:

- Lawachara National Park Landscape
- Hakaluki Haor Landscape
- Hail Haor Landscape
- Teknaf Game Reserve Landscape.

The Key activities were:

- A substantial mapping effort that included satellite imagery purchase, image processing, ground truthing and analysis, utilizing recent and high resolution (60 cm) Quick Bird (QB) satellite imagery; and
- A review of available material and the completion of meetings in Dhaka with USAID, IPAC and other stakeholders. Site visits to all project sites were also completed to review the results of recent project undertakings and to examine existing social, economic and environmental conditions.

Results/Outputs: First product of the study was high resolution DEMs of the target landscapes to represent a modern digital topographic map as well as to orthorectify the QB images for the landscapes which would facilitate developing forest resources management, conservation and intervention plan.

Figure 8: Suitability Map of Teknaf, Cox's Bazar



Moreover, site specific modules for sustainable landscape management in terms of agro-forestry, plantation forestry and ecological restoration: afforestation and reforestation as well as resource development for the target landscapes was also prepared which would address the infrastructure/capacity building requirements, expected benefits, benefit sharing, market linkages and the role of gender which are powerful key to development. Furthermore, the investment plan has incorporated available financial mechanisms for REDD project at landscape scenario.

The study produced investment plan with recommended programmes. One of the programmes got support from USAID. The new project is called CREL. It has included activities like, GIS database with information on distribution and pattern of forest resources which would provide Bangladesh Forest Department and other stakeholders with examples of large scale integrated planning of forest resources management, intervention and conservation.



Mangrove forest in coastal Bangladesh

Source: BCAS

Labour Market Analysis for NICHE-BGD-081

Duration: July 2012 - to June 2013

Partners: UNESCO-IHE and Wageningen University

Objectives: The objective of the study was to assess the needs of the labour market of the Bangladeshi water sector. The specific objectives were:

- Capacity Development of Higher Education on Integrated Water Resources Management at Chittagong University of Engineering & Technology (CUET), Bangladesh, and
- Capacity Development on Adaptation and Disaster Management of the Water Sector Related to Climate Change at Dhaka University of Engineering & Technology (DUET), Bangladesh.

The Dutch organisation Nuffic in the framework of its NICHE programme contributed towards the capacity development of CUET and DUET. Both CUET and DUET bring two new MSc programmes to ensure the availability of skilled manpower in the Bangladeshi water sector.

Strategy and Activities: Similar to the situation in many universities in the developing countries, CUET and DUET have got limited connectivity with the industries and as a result the academic programme is not aligned with the demands of the labour market. This certainly reduces the employability of their graduates and calls for designing the curriculum in line with the labour market requirements. Currently, at both universities the required competence as demanded by the sector may not be taught. It is therefore of paramount importance to develop a strategy document that provides a collation of the labour market needs and a reflection on the needed re-alignment of the curriculum that enables to achieve the required competences.



FGD with professionals of IWM and CEGIS at BCAS conference, Dhaka room.

BCAS carried out this study in consultation with CUET and DUET, UNESCO-IHE and close consultation with public and private sector employers in the Bangladesh water sector and perception of individual water professional.

The key activities included:

- Analysis of secondary information
- Expert Assessment
- Quantitative data collection to get an overview of the water sector
- Focus Group Discussions (FGD) with the most important public sector employers in the Bangladesh water sector
- Survey among the same employers, and
- Tracer study among the alumni of CUET and DUET.

Output:

- A report on Competence needs of water professionals in Bangladesh
- Communication with public and private sector employers in the Bangladesh water sector about the Nuffic funded capacity development programme in of CUET and DUET
- Recommendations for curriculum development
- Strategies to re-alignment of the curriculum that enables to achieve the required competences

Modelling Impacts of Climate Change Induced Sea Level Rise and Salinity on the Biological Diversity of the Sundarbans Ecosystems

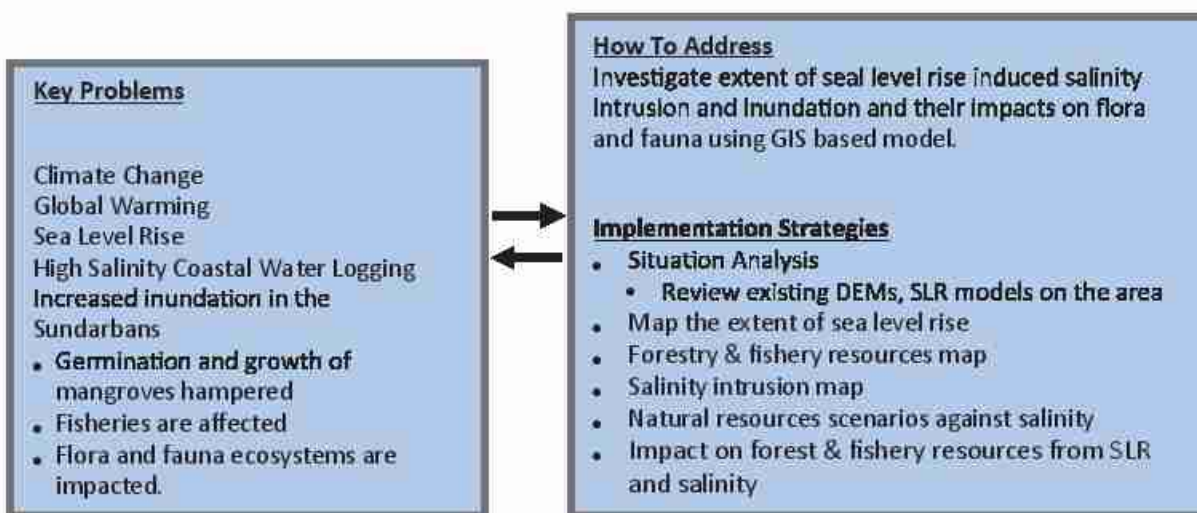
Duration: November 2012 to October 2014

Partners: Palli Karma-Sahayak Foundation (PKSF) and Bangladesh Climate Change Trust Fund

Objectives: Sundarbans has important positive role to the environment of Bangladesh. The river systems of Bangladesh are connected to the Sundarbans, so hydrologically it serves significant role in the forest environment. But the forest has been experiencing adverse impacts of climate change and in -return sea water intrusion, huge sedimentation from up streams, cyclones, tidal surges, extreme daily variation of temperature, salinity, direction, strength of water flow and so on are very common circumstance. Thus, the ecosystem particularly forest and fish should be negatively endured which will effect to the whole environment with regional and national economy of Bangladesh. Hydrodynamic study and modeling of salinity will be used in this project. The study of upward and downward frequency of salinity is viable, particularly, for forest and fishery since the high frequency of salinity shows lack of respiration. On the other hand, upward and downward frequency, which is not optimal, would be unsuitable for fish living environment. Therefore, the core effort of this project will create an impact model of climate change for 2030 and 2050 towards sustain ecosystem of Sundarbans as well as resilient environment of Bangladesh.

Strategies and Activities: Field survey and measurements on river cross-section, tide, current speed, water flow, sediment concentration, air and water temperature, river bed sample and salinity in the coastal water of Bhaleshwar, Bahirab, Pashur, Hariabanga and Tetulia mouths and respective estuaries of main river systems will be used for hydrological investigations and modeling. Besides, up to date high resolution of satellite data and digital elevation model (DEM) would have crucial role develop scenarios of adverse impacts of climate change on flora and fauna of South West region particularly Sundabans.

To accomplish project objective, the research team would follow the conceptual framework presented herewith:



The Key activities are:

- Reconnaissance visit to project area
- Review of literature
- Collection of secondary data, maps
- Review of existing models

Output:

- Conceptual Model
- Survey tools for primary data collection
- Reports.



Embankment in the Coastal Area to protect from tidal Surge

Source: BCAS



Coastal Communities are adapting to high tide & sea level rise with raised House

Source: BCAS

Design, test and demonstrate DMIN down to Household Level

Duration: 2012 – 2013 (2 years)

Partners: Asian Disaster Preparedness Center (ADPC) and Bangladesh Centre for Advanced Studies (BCAS)

Objectives: The Comprehensive Disaster Management Programme (CDMP) Disaster Management Bureau (DMB) Ministry of Food and Disaster Management (MoFDM) of the Government of Bangladesh adopted a strategic institutional and programming approach to mitigate long-term risks and to strengthen the operational capacities of relevant institutions for responding to emergencies and disaster situations including actions to improve recovery from these events. Under the component 5b of CDMP, BCAS in collaboration with the Asian Disaster Preparedness Center (ADPC) has provided support to CDMP in establishing a Disaster Management Information Network (DMIN).

The overall objective of this support project was to “Design, test and demonstrate DMIN down to household level”. Specific objectives of the project were to:

- a) establish status of existing links for information dissemination between source and community level
- b) review options for strengthening existing links and filling gaps where appropriate
- c) participatory assessments of the appropriate target communities predominant hazard types
- d) carry out mock “drills” for rapid onset “emergency” hazards
- e) assess information flow between warning sources, through intermediate levels to upazila and then onward transmission to union, community and household; and
- f) design and test appropriate hazard information network(s).

Strategy and Activities: The effectiveness of the support provided under this TA for the establishment of an efficient Disaster Management Information Network (DMIN) under CDMP would depend on the effective institutional arrangements, legal framework and policy environment for operationalizing the DMIN and exit strategy through subsequent handing over of the system to GoB. The implementation strategies were:

- Connectedness the previous and on-going work carried out by different stakeholder agencies
- Maximum national participation
- Community-based focus as an important ingredient
- Ownership by the Executing Agency (CDMP)
- Possibility for Replication

Flexibility in operations to allow changes and modifications.

The following step - wise activities were undertaken for the completion of the project:

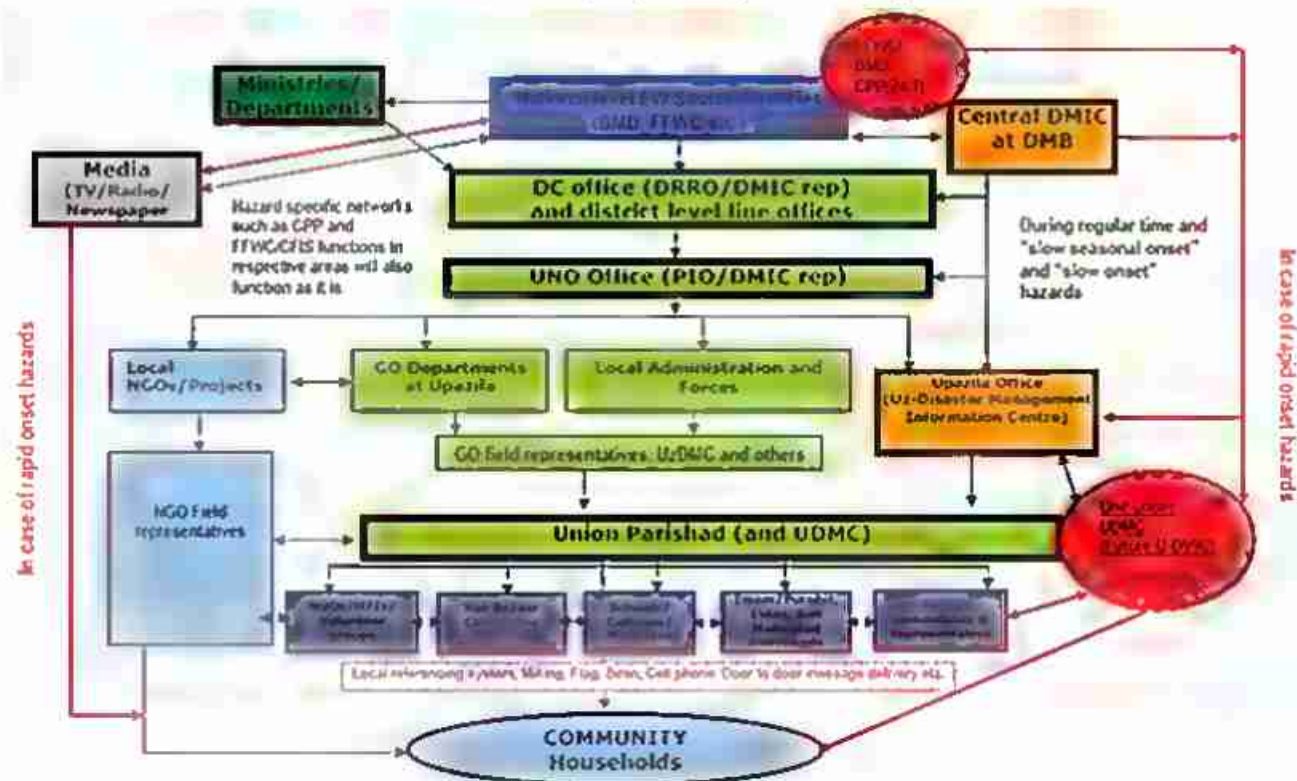
- Review of the existing status of the Community based Early Warning Systems for the major hazards from the source to destination in the country was analyzed in the project
- Adopting a unique methodology blending household surveys and participatory stakeholder interaction, an empirical field assessment called “Community Level Information Flow Mapping Assessment (CLIFMA)” was carried out under the project
- On the basis of the existing reviews and CLIFMA findings, various set of recommendations were compiled for developing DMIN design



Some reflection of the flood warning mock drill where communities demonstrated their roles and responsibilities in warning and dissemination from upazila to household level.

- DMIN designs along with the recommendations for developing the community based early warning were then taken into the field pilot testing through three different piloting hazards including riverine flood, cyclone/storm surge and riverbank erosion, and
- On the basis of these reviews, studies, designing, pilot field testing (in stepwise phases of the project) and other accumulated lessons learned from the existing projects/initiatives, a concrete set of recommendations for future replications and sustainable linkage of EW from upazila down to household level are outlined and reported.

Figure 9: DMIN generic design-1: for emergency time Rapid Onset & Rapid Seasonal Onset hazard



Results/Outputs: Earlier precedence showed that there has been sporadic works carried out on local level early warning system in the country. The project has come up with a set of harmonized and sustainable recommendations for operationalizing EW down from upazila to household level. One of the major results of the project was to tested design of Disaster Management Information Network (DMIN) an EW information network was taken and operationalized by CDMP through DMIC (Disaster management Information Centre) from national down to household level through upazila (sub-district).

The project further focused on geographically-location specific and timelier dissemination of EW at ground level. In this respect, the project has introduced "local referencing systems" (particularly for the riverine flood) and this allowed the remote and differentially located geographical areas to identify EW information for their own areas and localities. This has been a very useful result for the local communities and households in particular.

Climate Change Capacity Building and Knowledge Management in Bangladesh

Duration: December 2012 to January 2014

Partners: Asian Development Bank (ADB).

Objectives: The main aim of this Technical Assistance (TA) was to institutionalize climate change adaptation information and knowledge management (IKM) network and raise capacity of the Bangladesh government in this field. This network will be set up at Climate Change Trust (CCT) of Department of Environment (DoE) under the MoEF. MoEF is the focal Ministry to address the issues of climate change along with other environmental aspects.

The overall strategy of the TA was to set up a web based climate change adaptation information and knowledge management network for mainstreaming climate change adaptation into development planning and management. The specific objectives of the TA were to:

- establish climate change adaptation information and knowledge management (IKM) network at CCT of MoEF with satellite node at LGED;
- enhance capacity of relevant government institutions on climate change adaptation; and
- generate, disseminate and apply information and knowledge products as the means to influence policies and address the potential impact of climate change.

Activities: For the set-up of a web based IKM network expert consultation and 'Hackathon' were organized with the key IT experts, web developers, potential IT firms and companies, relevant ministries and line agencies, NGOs and academics and research organizations. A Capacity Need Assessment (CNA) and a rapid Knowledge Gap Assessment (KGA) were conducted to achieve the outcome of the TA.

The TA team received good support from all the government organizations, agencies, development partners, research institution and other stakeholders. During the course of the TA, it has been put forward in a joint meeting between the TA team and a2i programme in Prime Minister's office to have a close collaboration with the National Portal. This is a positive step to have a sustainable web portal as envisaged by this TA.



National workshop of the TA project for Capacity Building & Knowledge Management

Strategic Research on Coastal Agriculture and Livestock Development for Policy Advocacy with Honorable Members of Parliament

Duration: April 2012 - Jan. 2013

Partner: The Asia Foundation (TAF) and BCAS

People living in different coastal areas of Bangladesh have been suffering from lack of food security. There are many reasons behind that such as lower crop productivity, less cropping intensity, unemployment, large fallow lands/water bodies and land degradation due to various soil-related constraints, climate risks and socio-economic problems. Since people do not have ample employment opportunities round the year, their food security situation is vulnerable and is a matter of great concern for the policy makers. Majority of the people in coastal areas are involved in crop cultivation, fishing, livestock rearing and they remain frequently unemployed due to tidal flooding and other natural disasters resulting food insecurity in the areas. As a part of policy support to the National Food Policy Capacity Strengthening Programme (NFPCSP) of the Ministry of Food and Disaster Management supported by FAO/USAID/EC and Asia Foundation/PRODIP, the study "Strategic research on coastal agriculture and livestock development for policy advocacy with Hon'ble Members of Parliament" has been undertaken. The aim of project was to develop understanding of the Hon'ble members of the Parliaments (MPs), scientists, policy planners, CBOs and Civil Society Organizations (CSOs) including local bodies and vulnerable farming community on Agriculture and Livestock Development for ecologically disadvantaged Coastal Area in the context of climate change.

Strategies and Activities: The project promoted democratic governance in Bangladesh by strengthening public advocacy with Members of Parliament (MPs) through research-based information on agriculture and livestock development in vulnerable coastal areas, and enabling MPs to use the information for effective policy making. The key strategies were:

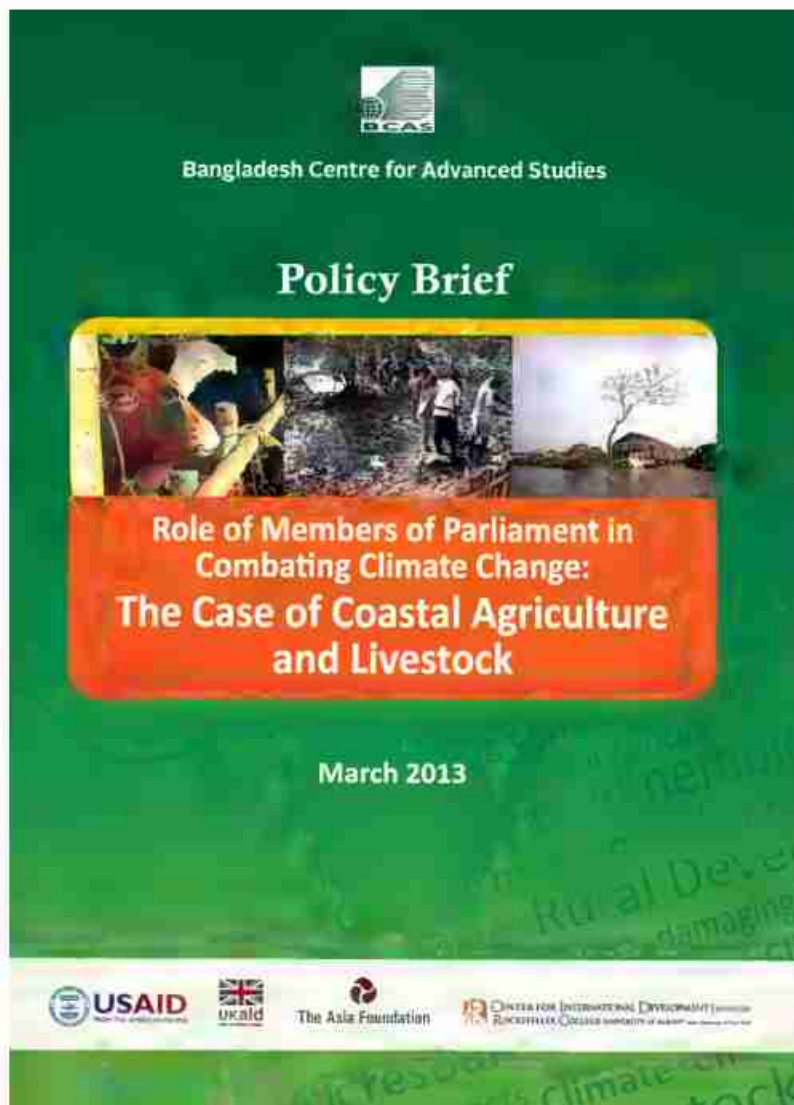
- Develop understanding of the Hon'ble members of the Parliaments (MPs), scientists, policy planners, CBOs and Civil Society Organizations (CSOs) including local bodies and vulnerable farming community on Agriculture and Livestock Development for ecologically disadvantaged Coastal Area in the context of climate change;
- Engage Hon'ble MP's, scientists, policy planners, CSOs, and stakeholders to exploring opportunities for promoting Agriculture and Livestock Development in Coastal Area in the context of climate change.
- Share the outcome of the research study with the Hon'ble members of parliament at local level and apprise them about the need, scopes and constraints for agriculture and livestock development in the context of climate change and increased salinity;
- Share the outcome of the research study with the members of the Parliamentary Standing Committee on agriculture and members of other related Standing Committee members of the Parliament in order to apprise them about the need, constraints and opportunities for negotiating a better policy and budget for agriculture and livestock development for Coastal Area.
- Build awareness of the stakeholders, Members of Parliament, Members of Parliamentary Standing Committees on climate change impact on agriculture and livestock production system in coastal area which is threatening the livelihood /food security of the large portion of the population of coastal zone; and
- Promote key objectives of the PRODIP to make Bangladesh Parliament more effective in terms of promulgation of laws and achieve transparency in its activities.

The project worked in the following districts: (1) Barguna, (2) Barisal, (3) Bhola, (4) Jhalokati, (5) Patuakhali, (6) Pirojpur, (7) Bagerhat, (8) Khulna, (9) Satkhira, (10) Chandpur, (11) Chittagong, (12) Cox' Bazar, (13) Feni, (14) Laksmipur and (15) Noakhali.

The main activities were:

- systematic review of secondary literatures, (relevant policies, research report, published materials in journals and newspapers)
- Key informant interview with leading scientists (climate scientists, agriculture and livestock scientists, policy planners, representative of civil society, climate change as well as agricultural and livestock professionals and researchers) at national level
- Focus Group Discussions (FGDs) in 35 most vulnerable clusters to assess the problems of agricultural and livestock production systems and to identify probable opportunities in the context of climate change
- A number of community consultation workshops; and
- Two high level national consultation workshops.

Results/Output: In order to increase the capacity of local MPs in policy advocacy and recommendations, “policy briefs” were prepared both in English and Bangla. These “policy briefs” would enhance the bargaining/negotiating capacity of local MPs. The main argumentative points were elaborated in the “policy briefs”. The research findings were disseminated to bilateral and multilateral donors forums to apprise them on the vulnerability issues of the climate change in coastal area which is vulnerable to chronic poverty and raise voice for accelerating financial assistance for development programs which will help the poor coastal community to cope with the adverse impact of the climate change on Agriculture and Livestock.



Cover of the Policy Brief in the Role of MPs in Combating Climate Change

PRA for Small Scale Water Resource Sector Project of LGED in Subproject Areas

Duration: May 2011 to May 2014

Based on the experience and success of Small Scale Water Resource Development Sector Project (SSW-1 & SSW-2) of LGED implemented since 1998, the Participatory Small Scale Water Resources Sector Project (PSSWRSP) in Bangladesh has been undertaken by LGED with the financial assistance of ADB, IFAD and GOB. As part of the process of determining the feasibility of the proposed Subprojects, PRA has been introduced in the project for assessing the technical, social and environmental viability of a sub projects.

Objectives: The main objective was to enhance the effectiveness and sustainability in agriculture and fisheries production along with poverty reduction through development and management of small scale water resources.

Implementation Area and Beneficiaries: The project was designed to be implemented in 270 small target areas (Subprojects) having water related problems in agriculture and fishery production such as drainage congestion, paucity of surface water for irrigation, flood, saline water intrusion etc. The project targeted the poor landless sharecropper, marginal and small scale farmers.

Strategy and Activities: The project is participatory in nature at all stages of development. PRA approach has been introduced under the project for assessing the technical, social and environmental viability of a sub project. The project targeted the poor landless sharecropper, marginal and small scale farmers. BCAS has been contracted by LGED to undertake PRAs in 28 Subprojects during 2012-2013. In line with the objectives, the PRA team met the various stakeholders in Subproject area, acquired their views and opinions about the existing water resources, prevailing problems they encounter and their recommendations to find remedy to the identified problem. The PRA activities in subproject areas which included Transect walk, SSI, KII, FGD and large meeting with the stakeholders.



PRA Team conducted Transect Walk in the Project Area in Barisal.

Source: BCAS

Evaluation and Impact Assessment of Fish Sanctuary in Riverine and Floodplain Ecosystem in Bangladesh

Duration: June 2012 to December 2013

Partners: Bangladesh Centre for Advanced Studies (BCAS) and Department of Fisheries & Genetics, Bangladesh Agricultural University.

Objectives: The significant decline of inland capture of fisheries due to over fishing and degradation of fish habitat. Fish sanctuaries as a tool for conservation of fish stock, have been established under different development projects of the Government to enhance fish stock and biodiversity during the last two decades. In spite of the positive impact of the sanctuaries during their implementation period, most of the sanctuaries did not function after the projects were over due to lack of proper planning, monitoring and evaluation. In order to assess the impact and evaluate sustainability issue of the sanctuaries, the study "Evaluation and Impact Assessment of Fish Sanctuary in Riverine and Floodplain Ecosystem in Bangladesh" has been undertaken.

The objectives of the study were:

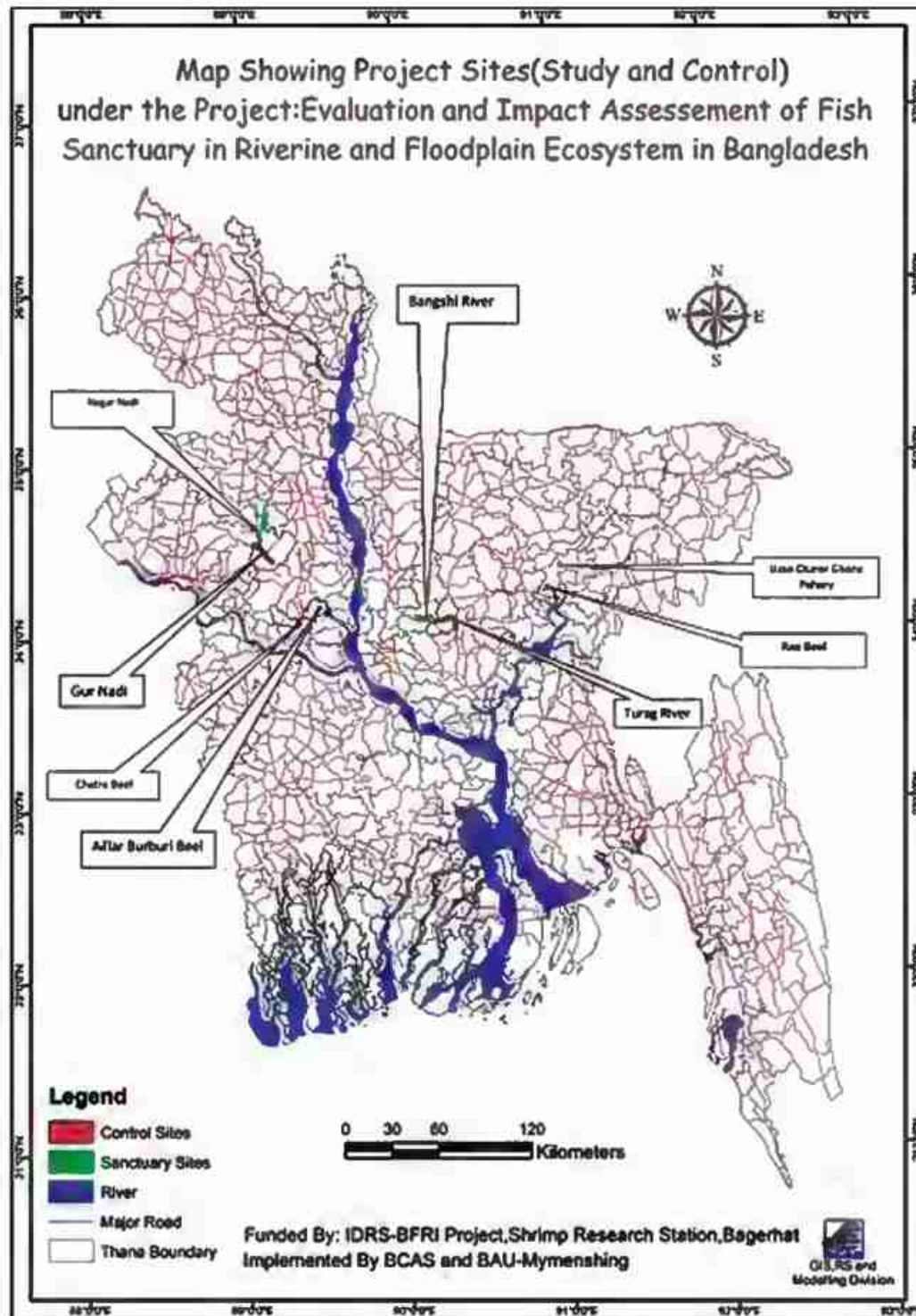
- ✓ to identify the causes of failure and success of fish sanctuaries
- ✓ to assess the impact of fish sanctuaries on fish production/productivity, biodiversity and environment/ecology and socioeconomic condition of the local fishing community, and
- ✓ to develop policy guideline/ protocol for sustainable management of fish sanctuaries.

Strategies and Activities: The study had two major components. (i) evaluation of sanctuary performance (planning, implementation and management) to identify the reasons of failure and success and (ii) assessment of the impact of the sanctuaries which are functioning sustainably on production, biodiversity, environment and socio-economic condition of the fishing community based on field study.

The activities were:

- Conduct case Study for an evaluation of the existing fish sanctuaries on performance, problems, constraints and lessons learnt
- Conduct catch assessment, water and soil quality study, socioeconomic survey, stakeholder discussion (FGD-KII & Workshop) for impact assessment of the fish sanctuaries on fish production, biodiversity, environment and socioeconomic condition of the fishing community.
- Questionnaire and format for socio-economic survey, case study and catch assessment have been developed and field tested
- Study (Sanctuary) sites and control sites have been selected and field offices have been set up at 3 locations at Nikli, Kishoreganj, Kaliakoir, Gazipur, and Singra, Natore (Atghoria is covered from Singra Station)
- Catch assessment and collection of water and soil sample tested and the data so far is being collected and analyzed
- Sanctuaries established during last decade have been inventoried and 25 sanctuaries have been tentatively selected for case study
- One or two villages from each of 4 study sites and 4 control sites have been selected for household socio-economic survey, and
- Data of catch assessment, physiochemical parameters, aquatic vegetation etc. are being analyzed.

Figure 10: Map showing the Sites of the Project



Assessing the Long-term Impacts of Climatic Vulnerabilities on Crop Production and Evaluation of Adaptation Practices in the Vulnerable Areas of Bangladesh

Duration: May 2011 to April 2012

Partners: Food and Agriculture Organization (FAO) and BCAS

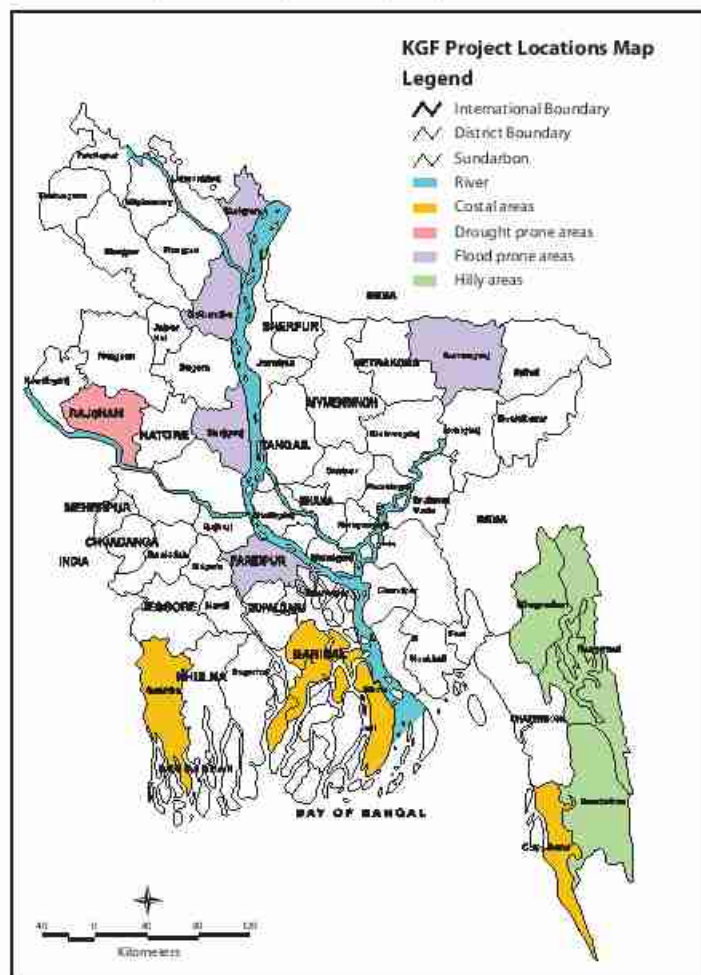
Objectives: The objectives of the study were:

- To assess the impacts of climate change on crop production in the vulnerable areas (viz. droughts, floods, salinity/tidal surges and erosive areas -hills) of Bangladesh
- To evaluate the severity and extent of extreme conditions affecting crop production systems in the vulnerable areas
- Screening of innovative farming practices of different vulnerable areas
- Field testing of selected innovative farming practices through field trials in the vulnerable areas, and
- Finally, to identify best practices of sustainable crop production for vulnerable areas of drought, floods, hills and salinity/tidal surges.

Activities:

- The secondary data collected and reviewed on land use, climate change and land degradation
- Information on land use systems, major crops/cropping patterns, conversion of agricultural land, climatic parameter (rainfall, temperature etc.), land/soil data on different parts of the country etc. were collected from pertinent institutions
- Field visits and discussion with farmers about the problems and prospects of coastal agriculture and documentation of farmers' experiences on innovative practices
- Focus Group Discussion (FGD) conducted of different districts for collection of information from upazila level
- Household Survey conducted for collecting farmers' response on adaptation practices.
- Case Study on Health and Nutritional Aspects; and
- Stakeholders' Workshops at Regional/ District and National Level on Draft Project Completion Report.

Figure 11: Map showing Project Locations



Results: Study showed that a vast area of cultivable lands in the drought prone area, flood prone area, salinity/coastal region and hills remain fallow (30%-50% of NCA of concerned districts) in rabi and Kharif-I seasons. This is mainly due to erratic rain/drought, short winter, flash flood, salinity, tidal surges, soil wetness, late harvest of T-Aman and incidences of new weeds, pests and diseases. But the local farmers through their location specific indigenous knowledge with error and trials have developed some innovative practices over

the years. These innovative practices and adaptation options have been documented under this project and some selected innovative practices have been field tested in different vulnerable areas. Field trials on some selected innovative farming practices were conducted. Field trials showed that the production packages of innovative practices with science based knowledge and production strategies have increased crop yield remarkably with increase of average cropping intensity over traditional practice and farmers' practice in vulnerable situations. Benefits obtained from improved practices are:

- Higher crop yields and quality produces were obtained with increased cropping intensity
- Timely sowing/planting and land preparation cost is reduced
- Less loss of added fertilizers and efficient utilization of nutrients obtained
- Overall fertilizer/nutrient efficiency is increased due to combined use of chemical fertilizers and organic manures based on IPNS concept
- Soil moisture is conserved and less irrigation is required
- Status of soil organic matter (SOM) is increased with increased microbial activities that help availability of nutrients from soil reserve
- Uniform crop establishment and crop maturity/harvesting time is reduced
- Climate risks are reduced
- Technologies tested are sustainable and environment friendly, and
- Tested technologies may be extrapolated/transferred to other locations of similar conditions.



High Value Crops are grown in the Drought Prone Area

Source: BCAS

Promotion of Water Supply, Sanitation and Hygiene in Hard-to-Reach Areas of Rural Bangladesh

Duration: 1st December 2011- 30th November 2014

Partners: NGO Forum for Public Health, BCAS and Swiss Agency for Development and Cooperation (SDC)

Promotion of Water Supply, Sanitation and Hygiene in Hard-to-Reach Areas of Rural Bangladesh (PWaSH) is a project jointly initiated and implemented by NGO Forum for Public Health and Bangladesh Centre for Advance Studies (BCAS) with the financial support of SDC. The project commenced on December 2011 and is expected to be completed by November 2014. The geographical coverage of the project includes 13 Districts under 5 different ecological zones of Bangladesh. There are 15 local partner NGOs (PNGOs) working with the project, each with a designated area under its coverage. The goal of the project is to “Contribute to the achievement of national goal on WaSH through context-specific & scalable water supply, sanitation & hygiene services in hard-to-reach areas”. To achieve its goal, the project aims to increase the access to safe Water, Sanitation and Hygiene (WaSH) services, of the poor and excluded community, by promoting good governance and sustainable context-specific water supply and sanitation facilities through raising awareness, sensitivity and capacity of the stakeholders. Approximately 0.7 million poor and disadvantaged people are expected to be benefited from the project.

Expected Outcomes of the Project:

- Poor and excluded population are able to demand context-specific water supply & sanitation services with special focus on climate vulnerabilities in rural hard-to-reach areas
- Poor, disadvantaged and vulnerable population in selected hard-to-reach areas have established their access to sustainable water supply, sanitation and hygiene facilities, and
- Policy-makers, local governments and service agencies are sensitized and respond effectively in promotion of sustainable water supply, sanitation & hygiene services.



Water Supply for the Poor and marginalized Groups

Strategies and Activities: In order to attain the goal, the project promotes WatSan & Hygiene under the leadership of the LGIs with special focus on the country's hard-to-reach agro-ecological zones. It intervenes by facilitating the Community-managed Approach, creating technical & financial provisions for the poorest & excluded groups of the population and increasing their voice demanding WatSan-related government services and facilities. The three outcomes of the Project concentrate on creating sustainable water supply, sanitation & hygiene facilities for the respective hard-to-reach areas based on a comprehensive and inclusive scenario & understanding of these areas; capacity building of the poor & excluded groups for raising WatSan-related demands and concerns to the authorities; and will develop congenial policy environment and linkage with service providers and involve their proactive response through sensitization and capacity-building efforts.

The project is being implemented following community-managed approach at all levels. Participatory and

bottom-up approach is followed for the adaptation of multifaceted vulnerabilities including climate impacts during service delivery for the target beneficiaries. Apart from direct service delivery through local partners, the project puts due emphasis on advocacy issues for tapping resources from the LGIs and other service delivery departments relating to WatSan & hygiene, putting Union Parishad, in particular, as the lead role player. Therefore, the Project gives adequate emphasis for balancing between service delivery and better management of services.

BCAS is leading the research, monitoring and evaluation components of the Project. The following activities have been planned:

- **Baseline Study**, for establishing a pre-project benchmark scenario of the project location
- **Participatory Vulnerability Assessment (PVA)**, for identifying WaSH vulnerabilities of the target beneficiaries
- **Need Assessment on Water and Sanitation Technology**, for identifying local Wat-San Technology needs and service gaps
- **GIS Survey**, for mapping Wat-San relevant vulnerabilities of the target communities
- **Action Research on Water supply, Sanitation and Hygiene Practices**, in hard to reach areas of Bangladesh, for developing a learning framework that will help identifying context-specific water supply and sanitation options and enhancing local capacity through participation of all relevant stakeholders at the community level, and
- **Monitoring and Evaluation**, for providing a systematic and regular assessment of project implementation over the life of the project to keep the management informed so that timely decisions can be made for achieving the project targets.



Water collection from a Hand Tubewell

Reducing Vulnerability of Women Affected by Climate Change through Viable Livelihood Options

Duration: July 2012- July 2015

Partners: UN Women Bangladesh, BCAS and BRAC

Bangladesh, with its nearly 150 million population and its geographical location and topography, is one of the most vulnerable countries to the impacts of climate change. The Global Climate Risk Index (2009) ranks Bangladesh as one of the three countries most affected by extreme weather events between 1990 and 2008. While natural disasters remain a regular, annual occurrence in Bangladesh, the intensity of these natural disasters has increased in recent years and the forecast is even worse for the coming years.

The 5 coastal districts in the south are: Satkhira, Bagerhat, Patuakhali, Khulna and Cox's Bazaar. The 3 flood prone districts are: Sirajganj (North West), Sunamganj (North East) and Shariatpur (central). The drought prone districts are 1 North Western districts of Nawabganj and Natore.

Strategies Activities and Outcomes: The Programme is developed within the framework of principles of human rights, gender equality, participation and access to information, access and control over development resources. In line with UN Women's mandate, the programme is being implemented so as to ensure strong national ownership; greater and strengthened dialogue between grassroots women impacted by climate change and policy makers; and as UN Women's programme presence evolves into a country office, leveraging the UN's work on gender and climate change under the UNDAF.

The goal of the programme was to ensure that "women in communities vulnerable to the impact of climate change access sustainable livelihoods and are agents of change in climate change risk mitigation policy".

The anticipated outcomes of the Programme are:

- Gender sensitive policy measures adopted to mitigate women's vulnerability to the effects of climate change; and
- Enhanced economic opportunities for women living in areas vulnerable to the effects of climate change contribute to women's livelihoods.

The following strategies are being employed in the implementation of the programme to achieve the desired results:

- Supporting Evidence-based policy advocacy through researches, policy briefs and documentation of best practices
- Institutional strengthening and improved national ownership on integrating gender into climate change and sustainable livelihood development:
- Focusing on livelihood options of women
- Focusing implementation on geographical targeting of areas/districts based on UNDAF and beyond, and
- Ensuring Sustainability of the Programme outcomes

The key activities were:

- Baseline Study on Climate Change and Gender, in proposed vulnerable location, to assess the trends and impacts of climate change and climate variability on women in selected vulnerable areas.
- Comprehensive Need Assessment, which is a situation analysis to further identify extremely vulnerable sites among the project areas and needs of the women of those areas to adapt viable livelihood options that can help reducing social and climatic vulnerabilities.
- Development of Case Study, on Climate Change and Migration from Gender Perspective of the 5 different areas/communities to be selected from the project coverage.
- Sharing experience and findings of the research on climate change and gender in international events (IDRC, World Water Week and COP)

- Documentation of best practices and lessons learnt on indigenous knowledge/local practices of the community, particularly those of women to adapt and face climate change induced hazards
- Disseminating findings and recommendations through publications and workshops for influencing policy dialogues, and
- Developing policy briefs and toolkits for mainstreaming gender dimensions in climate change policy dialogues and advocacy.

Results: BCAS has conducted a Baseline Study involving target Beneficiary HH Survey, FGD & In-Depth-Interview with relevant stakeholders and Physical & Hazard Mapping. BCAS has also carried out a Case Study of Best Practices and a Comprehensive Need Assessment for viable livelihood options. The results of these activities are as follows:

- A framework on Gender and Climate Change
- Baseline Report
- **Physical & Hazard maps of selected vulnerable communities**
- Comprehensive Need Assessment Report, and
- **Case Stories on identified best livelihood practices that are viable for the women of the target communities.**



Project Participants are involved in Livelihood Activities. Goat rearing is considered as a good adaptation for poor women.

Loss and Damage on Rice Production and Drinking Water due to Salinity Intrusion in Selected Coastal Districts

Duration: June 2012- January 2013

Partner: The *Climate and Development Knowledge Network (CDKN)* and BCAS

Loss and Damage have been new areas for research and policy advocacy under the UN conference on Climate Change. BCAS with support from CDKN has undertaken the study in coastal Bangladesh.

This activity has to deliver up to 8 case studies looking at various issues on loss and damage to help inform LDC decision making in the UNFCCC process as well as to serve national decision making and planning processes. CDKN-funded case studies are taking place in Bangladesh, Kenya, Gambia and Bhutan. ... The case studies are based on people's perspective on loss and damage, while acknowledging that losses and damages are also incurred at higher levels of scale. Similarly, coping strategies and adaptation measures are also adopted by state agencies and NGOs. The emphasis is on collecting 'compelling stories' of loss and damage, based on people's real-life experiences.

The scope of case studies were as follows:

- To generate original empirical work that fills specific knowledge gaps on loss and damage in different ecosystems in vulnerable countries (LDCs)
- To inform LDC decisions with illustrative examples of patterns of loss and damage in least developed countries in the context of broad ecosystems, and
- To support research capacity building in LDCs.

The case studies on loss and damage have three research goals:

- To understand how the interactions of climatic variability and climate change with livelihoods (and other aspects of human well being, like health) and physical assets create particular patterns of loss and damage in the context of broad ecosystems in least developed countries
- To start understanding how these factors might interact in the coming decades as the impacts of climatic variability and climate change are expected to manifest themselves more prominently.
- Better understanding of what combinations of policies can decrease loss and damage, and increase resilience to the adverse impacts of climate change in least developed countries.

Strategies and Activities: In order to better understand patterns of loss and damage in a Least Developed Country context in different ecosystems, the CDKN case studies are to gather data in four research domains:

- Climate variability- including both extreme weather-related events and more gradual changes
- Societal impacts- of the physical climatic drivers, which are of particular importance in that particular ecosystem
- Responses of the communities to cope with and adapt to the societal impacts of extreme weather-related events and more gradual changes in the climate
- (Residual) Loss & Damage - that includes (1) inability to cope or adapt and (2) the consequences/costs associated with the inability of existing coping and adaptive strategies to fully avoid or reduce loss and damage.

The main activities included:

- **Desk study:** The desk study consists of a literature review and an analysis of existing data about the climate variables (e.g. rainfall data) and the impact of variables (e.g. crop yields). It also included literature review focused on relevant existing knowledge about impact of climate change, coping mechanisms and adaptation
- **Household Survey:** A household survey with a relatively high sample size (360 farming HHs from 4 villages of Shatkhira district) and a relatively short questionnaire has been conducted. The objective of the survey was to gather primary data on general, socio-economic and demographic characteristics of the HHs, as well as on the research questions looking at the impact of climate stressors on the household, their strategies to cope with the impact of extreme weather-related events, adaptation to longer-term

changes, costs associated with inadequate coping and adaptation, expectations of future losses and damages, and their ideas about policy options to reduce loss and damage.

- **Participatory Rural Appraisal Sessions/ Focus group discussions:** A diverse set of PRA methods were applied (e.g. vulnerability mapping, wealth ranking, seasonal calendar, timeline of weather-related extreme events, etc.) to gain detailed and in-depth information on how climate variability and climate change can lead to losses and damages among local populations.
- **Individual and expert interviews:** A limited number of key informants were interviewed to obtain information that could not be obtained from PRA sessions and the HH survey. Also, a select number of households were interviewed in more depth to extract compelling stories of loss and damage.



Interview with Household Head in Satkhira.

Source: BCAS

Results: The above mentioned activities performed by BCAS resulted in a comprehensive case study on Loss and Damage from climate change impacts in Satkhira. It also generated primary data set (both quantitative and qualitative) on Loss and Damage that can be used for future research works. The findings were shared on several platforms with researchers and government climate negotiators.



Cap-Net: Capacity Building for Integrated Water Resources Management

Duration: 2008 - 2015

Partner: UNDP and BCAS

Cap-Net is an international network for capacity building in IWRM concepts and principles. The Cap-Net network spans across many regions and is made up of a partnership of international and regional institutions and networks committed to capacity building in the water sector. Over the years Cap-Net has expanded to include 3 global, 7 regional and 17 country networks. CapNet-Bangladesh started in March 2004 with BCAS as the Country Secretariat and since then it has been very active in building network among the major water sector players, conducting workshops, technical sessions, research in IWRM with special focus on gender equity, knowledge dissemination, strengthening capacity and recruiting new members for both the country and the South Asia region. The capacity building networking institutions & resource persons provide a common platform to converge everyone's expertise, share success stories and lessons learned and contribute to ever expanding knowledge on water and its management.

CapNet-Bangladesh aims to:

- Create networks within the country among government agencies and the private institutions that deal with capacity building in water management and water supply and sanitation
- Create networks at the community level for capacity building in IWRM
- Strengthen existing networks at the international, regional and local level
- Build capacity in the water sector
- Bring together professionals from various fields and raise their awareness
- Train high and mid-level officials of the Government, NGOs and CBOs; and
- Educate the media about the importance of IWRM.

Strategies and Activities:

- Recognizes the value and contribution of networks
- Builds on their strengths and skills
- Allows full expression of local needs and priorities; and
- Provides support to these networks to contribute to the MDGs.



Workshop and Knowledge sharing Session in Dhaka.

The expected Outcomes are:

- **Eleven National Level Workshops on Integrated Water Resource Management (IWRM)** have been held to improve understanding on Integrated Water Resources Management

- **Training of Trainers** course introduced on conflict resolution and negotiation skills needed for proper implementation of IWRM
- **Workshops at the Division Level** for capacity strengthening of the water professionals, to strengthen capacity of the project managers and other key government officials on IWRM related issues
- **Total four Research and Case Study on IWRM**, for determination of capacity building needs, identifying gender vulnerability due to lack of water supply and sanitation at the community level; and
- **Community flood management training**, to increase adaptive capacity and learning to cope with the effects of climate variability of directly affected communities, with specific reference to floods.



Rain - Water Harvesting in Coastal Bangladesh would need technological improvement for capacity enhancement
Source: BCAS

Chapter-3: CBA – Exploring Local Solutions of Global Environmental Problem

This chapter of the annual report focuses on the key learning from CBA conferences. Climate change has emerged as the greatest threat mankind facing today. Climate change poses a serious threat on fundamental human rights and basic securities including right to life, food, water, health, land, property and livelihoods. It also undermines the development potentials of the poor. Hence, climate change has taken precedence over all other environmental problems and development concerns worldwide. The severities of climate change impacts are faster than the projections and prediction by IPCC scientists. We have not seen much progress in mitigation action to address climate change, but people in different parts of the world, particularly in the developing world are trying to adapt with the changes with their experience and knowledge and limited resources to reduce their risks and vulnerabilities. Sometimes these local practices work, but in many cases, these fail because of the climatic variability, extreme events, impacts and uncertainties. The local practices have immense value and these should be customized and upgraded to be made effective with new scientific knowledge and technologies.

3.1 The Concept of Community Based Adaptation (CBA) to Climate Change

Bangladesh Centre for Advanced Studies (BCAS) attaches highest value to people's knowledge, practices and priorities and attempts to build capacity of the vulnerable communities, actors and stakeholders to enhance their adaptive capacity to climate change. The newly emerged approach that can help the vulnerable and marginalized communities to deal with climate change impacts and improve resilience is called Community Based Adaptation (CBA) to climate change. CBA promotes innovative and participatory methods to help communities analyze the causes and effects of climate change at local contexts, identify the level of risks and vulnerability, integrate scientific and community knowledge in planning appropriate local adaptation strategies and measures. Through effective CBA, the community and development actors explore local solutions of the impacts of global climate change to reduce the risks and vulnerabilities of individuals, households and communities.



Small adaptation toward flood risk reduction.

Source: BCAS

3.2 The CBA Conferences

Considering the community needs for effective CBA practices and growing interests of the actors, stakeholders and policy makers, BCAS, IIED and RING Alliance have organized six international CBA conferences in Bangladesh, Tanzania and Vietnam. The aim of the conferences were to:

- share new knowledge and experiences about CBA from various parts of the world
- promote collaborative action research by involving scientists and community people
- explore and demonstrate innovative and effective approaches of CBA

- widen partnership among actors for mainstreaming CBA into development, poverty alleviation, livelihood promotion and disaster risk reduction; and
- contribute to sustainable development at local, national and regional scales.

Supported by a host of national and international development agencies and research institutes the conferences have been successful in bringing together community development practitioners, disaster preparedness groups, climate scientists and researchers as well as policy makers from different parts of the world.

As a part of the conference, participants visited different climate affected zones in host countries. The participants were from all over the world to discuss possible impacts of climate change on local communities and engaged them in capacity building and adaptation activities. It opened up new avenues to share ideas, experiences, conceptual reflections, knowledge and methodological innovations.

The First CBA Conference (CBA-1) was held in 2005 in Dhaka, which focused mainly on conceptualization, defining position of CBA in addressing climate change and its scientific basis. It facilitated interaction between IPCC authors and the community practitioners. The key themes discussed included: a) understanding adaptation to climate change, b) partnership in adaptation, c) adaptation in practice, d) community responses, e) confronting vulnerabilities, f) mainstreaming adaptation, g) knowledge management, and h) responding to climate change.

The CBA Conference-2 was held in Bangladesh in 2007, which was structured around three major themes: climate change science, CBA approaches, mainstreaming adaptation into development and building partnership. Issues discussed included: (a) adaptation in agriculture, drought and food security; (b) extreme events; (c) health and climate change; (d) tools and methods for CBA; (e) communication and knowledge. During CBA-2 over 70 participants from 30 countries visited salinity affected southwest coastal areas, drought prone northwest region and flood affected central Bangladesh.



Participants in a CBA Conference in Dhaka,

Source: BCAS

The CBA Conference-3 was held in 2009 in Dhaka which emphasized on latest knowledge and practices of community adaptation, sectoral approaches and potentials of up-scaling CBA across the world. It also focused on fund mobilization. Over 150 international participants from 50 countries participated in technical

sessions and field visits. Over 60 papers were presented under different themes, which covered CBA practices in various ecosystems of Asia, Africa, Latin America, Australia, Europe and North America.



Field visit by a group of participants during CBA-4 in Tanzania

The CBA Conference-4 was held in Dar Es Salaam, Tanzania, in 2010, which focused on CBA practices across the world; research and policy guidance. The fifth CBA conference was held in Bangladesh again in 2011 that emphasized on Scaling up CBA: Beyond Piloting.

The sixth conference was held in Hanoi, Vietnam in 2012, which focused on communicating CBA. This was done with support from the Government of Vietnam and the NGOs of Vietnam. BCAS and IIED with other partners were co-organizers of CBA-6. The main theme was "Communicating CBA" at all levels from policy to practice.



Salinity and drought affected areas in coastal Bangladesh

3.3 CBA Process, Elements and Outcomes

Climate Change undermines Development Goals and threatens Basic Securities

Climate change impact tends to undermine many of the development goals and threatens most of the basic securities and enhances disaster risks. These include human securities such as food and nutrition, water, health, sanitation, hygiene, energy, livelihoods and social security. Further it undermines poverty alleviation efforts of communities, governments and non-government organizations.

Urgent and coordinated actions should be incorporated into development processes. All actors including central and local governments, development partners, local and international NGOs, civil society and other concerned actors need to work together in a coordinated way. Three broad and interactive areas that require attention are:

- Food, Water, Health and Energy, Security
- Disaster Risk Reduction, Livelihood and Social Protection,
- Climate resilient development (incorporating present and future risks of climate change).

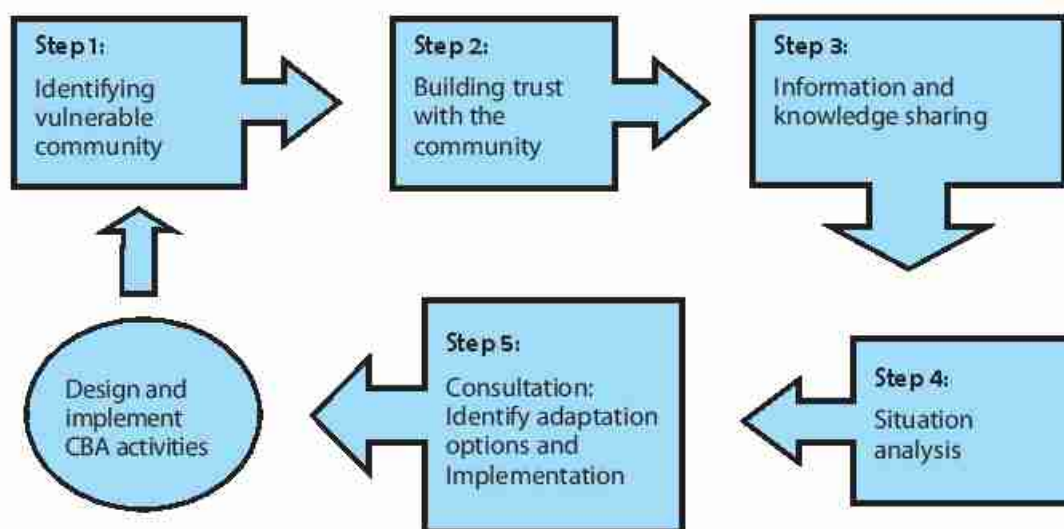
Harmonizing Traditional Knowledge and Scientific Knowledge

Millions of communities across the world are trying to adapt to climate change. The communities are adapting to the climate change impacts with their limited resources and traditional knowledge which are being supported by scientific knowledge and practices available to them. There is a need to harmonize scientific and experimental knowledge for community based adaptation (CBA) strategies and it is important to make the efforts and outcomes sustainable. The journey of CBA and the series of international conference are aimed to maximize interaction amongst scientists and practitioners across continents and disciplines to develop a scientific basis of CBA which can be used to reduce the risks and vulnerabilities of the communities to the impacts of climate change.

Research, Design and Practice

CBA practice and research is still considered to be in its infancy but already progress has been made in increased capacity building, dissemination of knowledge and accessibility of funds for projects. There have been a considerable number of community based adaptation projects in various ecosystems and regions and more are being designed based on the lessons learned from the previous ones. The following figure shows key steps and components of planning and implementation of CBA projects.

Figure 12: Components of Successful CBA



Policy Regulatory and Funding Support

Research into CBA practices and activities in various countries has brought to light the fact that CBA activities are more in the hands of the NGOs, CBOs and communities. Even though many governments are supporting the adaptation activities being carried out at the community level, there is a lack of support at the policy level. CBA activities can be linked up with activities of the central government in the form of policy and regulations. Already there are global actors involved in funding activities and providing technical advice. These are mainly the UN agencies, the World Bank and government funding agencies such as UK’s Department for International Development (DFID) and many others.

Key Actors and Activities

The key actors in the CBA process include international, multinational and bilateral development partners such as the World Bank, UNDP, DFID, national and international NGOs, CBOs, stakeholders and the communities themselves. The large donor organizations provide funding and technical assistance to government departments, international and national NGOs, research and academic institutions to design and implement CBA at the local level. These organizations then coordinate with their local level partners and sister organizations to carry out the entire consultation, development and implementation of the CBA activity in communities.

Since CBA activities have gained a foothold as crucial adaptation and development activities, the number of CBA projects being implemented has increased exponentially all around the world. Most of the developing countries are implementing some form of CBA activity to reduce vulnerability in awareness raising, disaster preparedness, or local level infrastructure or resilience building.

Initiating the Series of International Conferences on CBA

BCAS and IIED with their partners have initiated a series of International Conferences on CBA from 2005. These conferences have drawn attention and interest amongst all key players in adaptation.

The objectives of International CBA Conferences were:

- Stakeholder participation
- Learning and Experiences
- Enhance capacity (scientific understanding, planning and implementation of CBA)
- Sharing approaches
- Develop appropriate tools and methods
- Dissemination: Influencing policies and practices
- Building partnership among actors.

Table 4: International CBA Conferences (2005-2012) by Year, Places and Themes

Sl. No	Year	Place	Major Themes
CBA Conf.-1	2005	Dhaka, Bangladesh	Conceptualization of CBA and finding Linkages with Development and Disaster Risk Reduction
CBA Conf.-2	2007	Dhaka, Bangladesh	Climate Change Science, CBA Approaches and Partnership
CBA Conf.-3	2009	Dhaka, Bangladesh	Knowledge and Practices of CBA, Sectoral Approaches and Up-scaling CBA
CBA Conf.-4	2010	Dar es Salaam, Tanzania	CBA Practices across the world, Research and Policy Guidance
CBA Conf.-5	2011	Dhaka, Bangladesh	Scaling Up CBA: Beyond Piloting
CBA Conf.-6	2012	Hanoi, Vietnam	Communicating CBA at different levels

3.4 Learning by Doing and Early Lessons Learnt

Community based adaptation activities are still at the stage of ‘learning by doing’. Hence the lessons learnt from previously implemented projects are crucial for researchers and practitioners. Some of early lessons

learnt from designing or implementing CBA projects are reported below.

- The CBA researchers and practitioners must first gain the trust of the community they want to interact with. This means spending a long time with the community and getting to know them well. But if there are intermediaries like local NGOs or government agencies present, it is best to start a dialogue with them before communicating with the community themselves,
- Assessment of climate knowledge and awareness among the community is essential. Studies have shown that traditional knowledge and natural indicators play a strong role in the communities but due to climate change, these indicators are becoming more unreliable. Assessing the existing knowledge allows the CBA practitioners to design appropriate tools for capacity building and skills development,
- While assessing vulnerability using a questionnaire survey, it is important to realize that different groups within the same community may need more specific or tailored questions to address similar issues,
- It is important to have a proper understanding of the social networks within the community as they are vital to the success of CBA implementation, and
- The CBA projects must be linked to local development activities and projects in order to encourage active stakeholder participation. Adopting consultative and participatory approaches significantly increases the success of CBA projects.



Cropping Pattern changed with new variety of chickpeas in drought prone area in Bangladesh

Source: BCAS

3.5 Way Forward

Early learnings from the six consecutive CBA conferences point towards the following approaches for way forward. Community based adaptation must consider a comprehensive approach involving many sectors such as food, water, energy, infrastructure, poverty reduction, increasing livelihood opportunities, social mobilization and education. For all CBA projects to develop its design, mobilization, demonstration and implementation in an organized and systematic way will need coordination, mobilization and utilization of funds. Based on the innovation and learning, enterprise and flexibility of the community decision making process, when it comes to multi-household or multi-stakeholder decision making, it needs the involvement and initiative of the local government and regulatory processes.

Scaling Up of CBA

'Scaling-up' of CBA activities is needed to involve larger numbers of communities to build capacity and reduce climate change induced risks. This 'scaling-up' involves restructuring and modifying some successful adaptation projects so that they can be implemented in similar ecosystems within the country and other

vulnerable communities all over the world. A key aspect of scaling-up is to share information and experience from local level to national level networks and also through regional CBA networks.

Good Governance Practices

The new paradigm of sustainable development of the developing countries, particularly poor countries, will require reduction of poverty, preparing for a climate change world with risk reduction, appropriate adaptation and climate change governance. The economic market will have to create jobs as well as ensure the key human securities including food, water, energy, livelihood, health and social security of every citizen. One of the other key elements is the governance issues. For observing good governance practices, transparency and accountability, proper monitoring and evaluation of the projects are needed. These are necessary elements to ensure that the CBA/local adaptation plan of action (LAPA) adaptation projects meet their requisite standards of good governance.

Supporting Innovation, Initiative and Enterprise

One has to be cautious that the structured LAPA and CBA projects do not undermine the innovation, initiatives and enterprises of the local communities and that it is a free atmosphere for encouraging local indigenous knowledge and practices, which very often may need external knowledge and technologies, resources and institutional support.

Gender Dimension

Women, particularly the poor women are innocent victims of climate change. They are not responsible for the problem, but are taking unequal risks & addition burden of adaptation.

Women take major responsibility of adapting at the household level to minimize risk and maximize resilience. For slow onset climate change events such as drought, sea level rise, increase in salinity, women tend to take many adaptive actions and create adaptive capacity by interacting with the community. Hence it is important to make women central to the design and implementation of adaptation actions, adaptive strategies, risk reduction, resilience and capacity building efforts.

Greater Scientific Understanding Needed

There needs to be greater scientific understanding of the causes, on the nature and intensity of the variability against which they are trying to respond to reduce the risks and build resilience and adaptive capacity. Hence there is a need to develop and structure the existing knowledge of CBA into a scientific approach. This is going to be a major challenge, as the science of adaptation is at its earliest stages or infancy.

Increased Resilience of Communities

The resilience of the communities needs to be protected and enhanced. People can adapt better if they have greater resilience. If resilience goes down to tipping point, people and eco-system fail to adapt. These need enormous efforts, integration, multidisciplinary approaches, more robust community of actors to address these issues. The financial mechanisms envisaged under UNFCCC will only be forthcoming if we can show the clearer pathways that CBA approach will offer.

Horizontal and Vertical Integration: Increased Role of Local Government

The local government agencies should enter into intensive interactions with the communities and learn from the community adaptation initiatives and integrate and intensify these CBA initiatives as approaches to reduction of climate change risks and enhance resilience. Similarly the local government agencies must integrate this horizontally amongst all their agencies. Further this integration must also be stimulated vertically amongst the different tiers of the government to national decision making and fund allocation systems.

Climate Justice must prevail

Climate change undermines developmental achievements and environmental protection. Climate change impacts undermines poverty alleviation efforts and increase sufferings of the poorest most. CBA is an early effort by the communities themselves to express their vulnerability and resilience, build adaptive capacity and minimize risks to their survival. Adaptation has limits. Rapid mitigation actions and reduction of

Greenhouse Gas (GHG) led by industrialized countries and followed by newly industrializing countries – is a must. Climate change related efforts must be for a fairer world, where climate justice must prevail meaning developed countries take greater responsibilities of mitigation and funding adaptation in poor countries.

Guidelines for Incorporating CBA into Sustainable Development Strategy

In order to take CBA activities forward and incorporate them into sustainable development strategies, there is need to develop a set of guidelines for CBA practitioners and stakeholders. Even before developing a CBA project, it is crucial to recognize the linkages between climate change, natural resources and the human component. Understanding the linkages would give a clearer picture of potential impacts the CBA project would have on ecosystems and the human population. CBA practitioners should strive to attain a ‘win-win’ situation when designing projects, support poverty reduction and increase livelihood options. CBA should be an integral part of community development approach.



Drip Irrigation



Source: BCAS



Pumpkin cultivation on sandy soil in riverine Charland in Bangladesh

Chapter 4: Way Forward

The core value of BCAS is to promote and contribute to building a knowledge based society, where research, advocacy and scientific innovation play a key role. The key approaches are enhancing the science-policy and people's linkages; knowledge generation and dissemination across all levels; integration of environmental issues with sustainable development process; integration of local knowledge with modern and scientific knowledge; engagement of actors and stakeholders; innovation, demonstration and up scaling of good practices for greater impacts. Our institutional growth and sustainability will largely depend on the quality of research and knowledge input to all actors; analytical capacity and communication skill and use of our research findings for development impacts. We will continue our journey of research and development taking the challenge of the time.

Now, climate change is considered as a major development problem challenging local, national and global sustainability instead of being only an environmental problem. This is because climate change impacts are considered to impose some of the greatest barriers to achieving sustainable development especially for the poorer nations. Climate change is making it more difficult for poorer countries to implement plans and strategies that will work towards achieving their Millennium Development Goals. The two main strategies in dealing with climate change are mitigation and adaptation. Therefore much focus has been given by BCAS to build up the adaptive capacity of vulnerable communities and ecosystems. Lessons are drawn from CBA to help government and development agencies to advance adaptation.

The threats and impacts of climate change are multifaceted and multi-sectoral that have severe impacts on human, economic and ecological systems. What lies as a challenge are the existing gaps in knowledge, policy and practices. Such as the gap in data of temperature, salinity, sea level rise and precipitation. There are also gaps and inconsistencies in recording frequencies of extreme events such as floods, cyclones, water surges, erratic rainfall and droughts. The losses due to climate change lead to major risks and costs to the society, economy and development. Assessing Loss and Damage from climate change impacts will be future areas of research and advocacy at local, national and global levels.

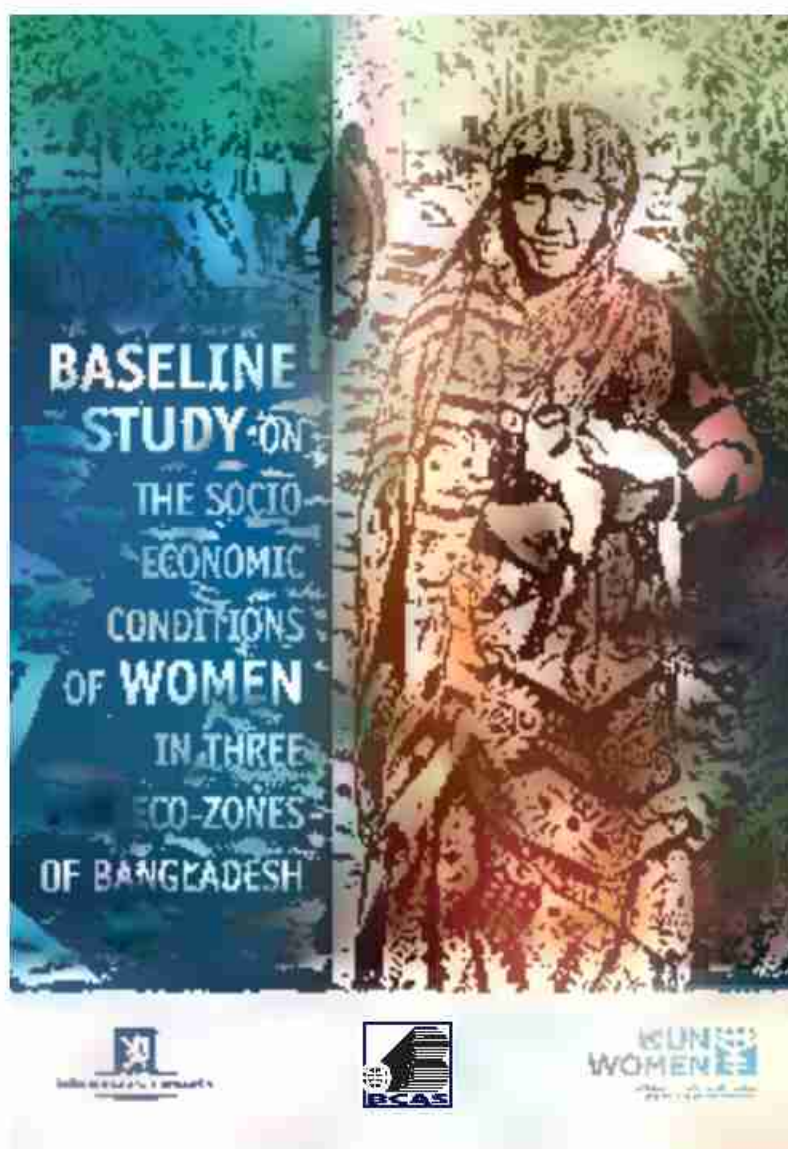
During last two and half decade BCAS has conducted a myriad of research, studies and projects under the overall theme of sustainable development. These research results have contributed significantly in policy formulation, planning on a national level, and international level. BCAS has established itself as a leading institution in the field of global governance on environment, climate change and human dimension issues and has proved to be a centre of excellence. BCAS has developed expertise in different fields with a core team of experts to uphold its excellence. Continued support and cooperation from national, regional and global actors will advance its contribution in sustainable development. Multidisciplinary science and physical sciences have undergone progress in terms of research, knowledge and skill building. The challenge is to remain up-to-date with advanced research tools and software as well as transfer these according to the needs of societies in the developing countries. We are also building wider partnership with government, NGOs research organizations, civil society and development partners to upscale our research findings and innovation to make greater impacts on policy, programme and practices. Wider and effective partnership will be pursued for sustainable development at all levels.

Chapter 5: FINANCIAL STATEMENT OF BCAS FOR THE YEAR 2012-2013

For financial accounts, BCAS follows the fiscal year from July to June. Financial account of BCAS is audited every year by an independent Auditing Firm. In 2012-2013 the financial accounts of BCAS has been audited by ATA KHAN & CO., Chartered Accountants, 67, Motijheel Commercial Area, Dhaka-100.

Annual turn over/income of BCAS for the year from July 2011 to June 2012 was Taka 140,215,951 received from different donors for conducting research as studies and the expenditure during the same period was Taka 146,906,792 adjusted by a balance of Taka 1,709,284 carried over from the previous year.

Annual turn over/income of BCAS for the year from July 2012 to June 2013 was Taka 142,357,168 received from different donors for conducting research as studies and the expenditure during the same period was Taka 105,066,028 adjusted by a balance of Taka 1,420,085 carried over from the previous year.



Chapter 6: Appendices

Appendix-I: Descriptions of Studies and Research Projects Implemented by BCAS in 2012 - 2013

Name of the Project with period & location	Project in charge & other personnel	Partners and Associates	Goals & Objectives	Major activities interventions
<p>1 Environmental Impact Assessment of Bibiyana Power Plant Period: Feb.2011-Dec. 2011 Location:Parkul, Nabigonj, Habigonj, Bangladesh</p>	<p>Dr M. Eusuf/ Dr. M.I. Sharif/ Osman Goni, Iqbal</p>	<p>Summit Group</p>	<p>To obtain Site Clearance and Environmental clearance</p> <p>The broad objectives are:</p> <ul style="list-style-type: none"> - to assess the environmental and socio-economic impacts of the proposed project - to identify and engage with stakeholders to understand their views about the project and understand their expectations and concerns, and to incorporate it appropriately in the management plans - to suggest mitigation measures for minimizing adverse impacts and enhancement measures of beneficial impacts - to formulate environmental and social management and monitoring plans and plans for addressing occupational and community health and safety issues. <p>Specific Objective:</p> <p>Specific objectives of the study include: obtaining Environmental Clearance from the Department of Environment obtaining clearances of the financing institutions, viz., the World Bank, the International Finance Corporation (IFC), the Asian Development Bank (ADB), the Standard Chartered Bank (SCB) of the Equator Principle Financing Institutions (EPIs) Group and concerned other financing Institutions.</p>	<p>Site survey Sound Modeling Air Modeling Socio Economic Survey</p> <p>conducting a baseline environmental study for the proposed plant site, performing an initial environmental examination (IEE) of the site for BPCU and BPCUII having a generation capacity of 341 MW each using gas fired CCGT power plants</p> <ul style="list-style-type: none"> - undertaking identification and analyses of socio-economic and environmental impacts during pre-construction, construction and post-construction as well as operation stages of the power plants at and around the proposed site through, inter alia, conducting at least a couple of public consultations, reference to national environmental standards - sorting out the significant differences (if any) in regulations on land acquisition and involuntary resettlement between GOB and ADB and finding out means to resolve such differences - suggesting mitigation measures vis-à-vis anticipated each impact along with formulating requisite Environment Management Plan (EMP) and estimation financial implications for EMP through a detailed Environmental Impact Assessment process. - to carry out a comprehensive Resettlement Action Plan (RAP) to suggest an adequate compensation packages for the different types of PAPs. - Obtaining approval of the lending financial institutions, viz., the World Bank, the International Finance Corporation (IFC), the Asian Development Bank, IDCOL, the EPIs (viz., the Standard Chartered Bank) - Obtaining Environmental Clearance Certificate by the project proponent (SB I PCL & SB II PCL) - Formulation of an environmental management plan emphasizing mitigation plan for adverse impacts, enhancement plan for beneficial impacts, compensation plan, contingency plan and monitoring plan.

Appendix-I: Descriptions of Studies and Research Projects Implemented by BCAS in 2012 - 2013 (Contd.)

Name of the Project with period & location	Project in charge & other personnel	Partners and Associates	Goals & Objectives	Major activities interventions
<p>2 Outcome Survey of Agricultural Input supply Period: 14 June 2011 – 14 August 2011 Location:</p>	<p>Md. Liaquat Ali</p>	<p>FAO</p>	<p>The overall objective of the study is to assess the result of the interventions of the project that would be focusing on output, outcome and overall objective level. The specific objectives of the study The specific objectives of the study were to;</p> <ul style="list-style-type: none"> - find out whether the beneficiaries are using inputs provided under the project; - find out whether the beneficiaries are using the technical know-how learnt from the training; - find out whether the income of beneficiaries increased by the project intervention; - assess the output of different agricultural interventions of crop, fishery and livestock components; - prepare an outcome report depicting the overall agricultural livelihoods of the vulnerable communities of the project area. 	<ul style="list-style-type: none"> - Plan and design baseline survey - Develop survey tools - Conduct household socio-economic survey - Conduct FGD with beneficiaries - Conduct KII with different stakeholders - Data analysis and develop database - Preparation of report and presentation of findings in a workshop and finalization of the report.
<p>3 Participatory Rural Appraisal (PRA) of Participatory Small Scale Water Resources Sector Project (PSSWRSP) Period: 15 May 2011 – February 2012 Location:</p>	<p>Md. Liaquat Ali</p>	<p>LGED</p>	<p>To assess the feasibility of individual PSSWRSP in respect of technical, economical, social and environmental perspectives. Whether aims at enhancement sustainability of agriculture & fisheries production.</p>	<ol style="list-style-type: none"> 1. An assessment of land ownership pattern as percentage of land owned by different groups such as (1) functionally landless (2) marginal (3) small (4) medium (5) large household through searching the land ownership record in the local Union Parishad office and consultation with local people and mouza maps. If more than 40% land is owned by the functionally landless, marginal and small households than full PRA's were to be conducted to find the technical, social and environmental feasibility of the subproject 2. Conduct full PRA by a team of 5 members (sociologist, water resource engineer, environment and fisheries specialist, agriculture specialist and gender specialist) by using different PRA tools such as transect walk, FGD and SSL with different stakeholder groups (farmers, fishers women etc.) and consultation with relevant local government officials 3. Analysis of information data, preparation of PRA report and submission of report to LGED.

Appendix-I: Descriptions of Studies and Research Projects Implemented by BCAS in 2012 - 2013 (Contd.)

Name of the Project with period & location	Project in charge & other personnel	Partners and Associates	Goals & Objectives	Major activities interventions
<p>4 ETP Solution for Washing & Dyeing Industries (RMG Sector) Period: November 2010 – 31 December 2011. Location:</p>	<p>Dr. M.I. Sharif/ M.A. Mahmood.</p>	<p>IFC-SEDF NORAD, UD/ AID</p>	<p>Capacity Development for monitoring & Advisory service</p>	<p>i) Video documentary ii) Toolkit development iii) Booklet writing in English & Bengali iv) Training.</p>
<p>5 Local Capacity Building (LCB) for Advancing Community Adaptation to Climate Change in the Coastal, Central and South-central Bangladesh. Period: 2008 to 2012</p>	<p>Dr. Dwijen Malick, Golam Jillani, Zahirul Islam, for 6 field staff for field level implementation</p>	<p>Christian Aid UK</p>	<p>The overall goal of the project is to reduce climate disaster risks and enhance resilience of the communities and society through building capacity of the vulnerable communities, local actors and stakeholders as well as by advancing community adaptation to climate change. The specific objectives are the following: 1. to improve understanding and awareness of the communities, local actors and stakeholders on climate change impact....</p>	<p>Participatory review of the risk and vulnerabilities - Review workshop on the local adaptation action plan and update the planning considering the CSDRM approach. <i>Awareness raising activities among the community and actors through Court yard and Village wise meeting cultural programs, school campaign, Union level campaign, media campaign, information and knowledge sharing for the community on climate change risk and vulnerabilities and adaptation needs and practices.</i></p>
<p>6 Institutional Capacity Building of BCAS under Core Program support by NCA in 2011 Period: April 2011 – 31 December 2011</p>	<p>Sarder Shafiqul Alam</p>	<p>MCA</p>		<p><i>C. Capacity building of community, Local Adaptation groups, PNGOs and Actors</i> - Training for</p>

Appendix-I: Descriptions of Studies and Research Projects Implemented by BCAS In 2012- 2013 (Contd.)

	Name of the Project with period & location	Project in charge & other personnel	Partners and Associates	Goals & Objectives	Major activities interventions
7	CLACC Period: 2010 - 2012	Golam Rabbani	IIED (Continuing)		
8	START Science-Policy Dialogue Period: 1 March 2009- 31 August, 2011	S.M. Ashraful Amin	START, USA		
9	TV Episodes on Biodiversity called Prokriti o Jibon with Channel –I Period: 2010 to 2011	Dr. Atiq Rahman			
10	Capacity Development for Policy Makers to Address Climate Change Period: April 2010 to 2011	Dr. Atiq Rahman	UNOPS		
11	Sunderbans Climate Change Adaptation, Biodiversity Conservation and Sustainable Development Period: 2011	Khandaker Mainuddin	The World Bank		
12	Village Baseline Survey Study CCAFS- Phase-II Period: 2011. to 2012	Aminur Rahman	CGIAR		
13	CANSA-BD Period: March 2011	Golam Rabbani	Christian Aid		
14	Climate Development Knowledge Network (CDKN) Period: 2011	Golam Rabbani	CDKN		
15	IPCC- Regional Meeting Period: 2010 to 2011	Golam Rabbani	WMO/IDRC		
16	BCAS- IGES- Adaptation Measuring Tools Period: 2011 to 2013	Golam Rabbani	IGES, Japan		

Appendix-i: Descriptions of Studies and Research Projects Implemented by BCAS in 2012 - 2013 (Contd.)

Name of the Project with period & location	Project in charge & other personnel	Partners and Associates	Goals & Objectives	Major activities Interventions
17 Institutional Support and Capacity Building for Studies and adapting to climate change in Bangladesh (Climate modeling and CBA) Period: June 2010 to 2012	Md. Abu Syed	Norwegian Ministry of Foreign Affairs		
18 Global Change System for Analysis, Research and Training (START) Phase II Period: August 2010 to 2012	Md. Abu Syed	START Secretariat		
19 Hydrological survey of Halda River, Chittagong Collaborative project with IWM Period: January 2010 to 2011	Md. Abu Syed	Department of Fisheries.		
20 Training Manual Development and conduction of training (Upazila), Community based Adaptation to CC through Coastal Afforestation Period: December 2010 to 2011	Dr. Moinul Sharif/ Md. Abu Syed	UNDP	<ul style="list-style-type: none"> ▶ Reduce Forest Degradation ▶ Enhance Capacity Building 	
21 Training Manual Development and conduction of training (district), Community Based Adaptation (CBACC -CF) Period: October 2010 to 2011	Dr. Moinul Sharif/ Md. Abu Syed	UNDP		

Appendix-I: Descriptions of Studies and Research Projects Implemented by BCAS in 2012 - 2013 (Contd.)

	Name of the Project with period & location	Project in charge & other personnel	Partners and Associates	Goals & Objectives	Major activities Interventions
22	'NANSEN' Centre for Environment and Remote Sensing Bangladesh- (Oceanography, Sea Level Modeling Marine Ecosystem Studies) Period: 2011 to 2015	Md. Abu Syed	'NANSEN' Scientific Society, Norway & Norwegian Foreign Ministry		
23	Developing RS & GIS Based DST for Sustainable Management and Conservation of Protected Areas in HKH. Period: 2010 to 2013	Md. Abu Syed	ICIMOD, NASA		
24	WD-NACE (Whole Decision Network Analysis Coastal Ecosystem), ESPA (Ecosystem Services for Poverty Alleviation) Period: 2010 to 2012	Md. Abu Syed	ESPA & SEI Oxford York University		
25	Promoting Household Level Adaptation Practices to deal with Flood and Water- Logging in the South Central Region of Bangladesh. Period: 2011	Sarder Shafiq Alam	Norwegian Church Aid (NCA)		
26	Quantifying Projected Impact Assessment & projection and Modeling Bangladesh Case Studies Period: October 2011 to October 2015	A. Atiq Rahman & A. Syed	EU	<ol style="list-style-type: none"> 1. Report on evaluation the targeted climate pressure information needed for impact modeling and assessment 2. Report future sea level rise scenarios for Bangladesh 3. Report on impacts of climate change on the different sectors in Bangladesh, 4. Report on selection and evaluation of adaptation options for different sectors in Bangladesh 	<ol style="list-style-type: none"> 1. Continuous technical contribution to Southampton University modeling team for development of Sea Level Rise Scenarios of Bangladesh

Appendix-I: Descriptions of Studies and Research Projects Implemented by BCAS in 2012 - 2013 (Contd.)

Name of the Project with period & location	Project in charge & other personnel	Partners and Associates	Goals & Objectives	Major activities interventions
27 Knowledge assessments on climate change and peri-urban/urban agriculture in Sub-Saharan Africa and South Asia Period: June 2011 to June 2015	A. Atiq Rahman & A. Syed	START	Report on Knowledge assessments on climate change and peri-urban/urban agriculture in South Asia Synthesis reports on policy analysis for regional Synthesis reports on policy analysis for global level Final report on UPA Publication of Book on UPA, Dhaka	Draft report on Knowledge assessments on climate change and peri-urban/urban agriculture in South Asia Draft report on Knowledge assessments on climate change and peri-urban/urban agriculture in Dhaka city Workshop in Ethiopia, 1st Ground truth survey Field survey
28 Nansen-Bangladesh International Center Ocean, Coastal and Climate Studies (NABIC) Period: July 2012 to June 2017	A. Atiq Rahman & A. Syed	NERSEC, Bergen, Norway	1. Infrastructural Establishment 2. Organizing and conducting Research Activities in ocean and climate modeling 3. Arrangement of fund for the fellowship under Master and Ph.D 4. Capacity building of partner institution (IFES, CU and IMSF, CU). 5. Organizing and conducting summer schools	1. Infrastructural Establishment 2. Seed activities on ocean and climate modeling
29 ESPA-WD-NACE Period: Oct. 2010 to Sept. 2012	D. Mallick	SEI, York & DFID	Literature Review; Knowledge and Net work Analysis; PRA and Local workshop; Advocacy and publication	Papers writing and policy briefs; & National Workshop
30 LCB-CAid(2 nd Phase) Period: April 2011 to March 2013	D. Mallick & G. Jinali	Christian Aid, UK	Social mobilization; Capacity building; Linkages, implementation of local adaptation; monitoring and supervision and reporting	Work plan for second year; Exchange visit; Implementation of local adaptation
31 Collective Action to Reduce Climate Disaster Risks and Enhancing Resilience for the Vulnerable Coastal Communities around Sundarbans in Bangladesh and India (CCDRER) Period: 01 Oct, 11 to Feb, 15	ASM Shahidul Haque & Md. Aminur Rahman	EU	Year End report (Sept,12)	1.Recon report 2. Census report 3.Baseline 4. PVA 5. M&E plan

Appendix-I: Descriptions of Studies and Research Projects Implemented by BCAS in 2012 - 2013 (Contd.)

Name of the Project with period & location	Project in charge & other personnel	Partners and Associates	Goals & Objectives	Major activities interventions
<p>32 Action Research for Community Adaptation in Bangladesh (ARCAB) Period: 29-09-2011 to 31-08-2014</p>	<p>Syed Iqbal Ali (Programme Director)</p>	<p>Donor: DFID; Action Partners are Oxfam, CARE, Caritas, Action Aid, Practical Action, Islamic Relief, Plan International, Water Aid, Concern Worldwide; Capacity Building Partner: PRIIP Trust; Research Partners: National Research organizations, Universities, International Research Organizations are ICCCAD, IDS, IIED, IRRI, SEL, UNU and UNEP</p>	<p>Research Findings, Reporting and dissemination</p>	<p><u>No information found</u></p>
<p>33 Reducing vulnerability of women affected by climate change through viable livelihood options Period: June, 2012 to July, 2014</p>	<p>Golam Rabbani</p>	<p>Implementing partners: UN Women, BRAC; Counterpart Funds: Royal Norwegian Embassy</p>	<ol style="list-style-type: none"> 1. Baseline information and case studies, Review of research papers and publication, 2. Baseline survey & Need assessment, 3. Research on effects of climate change on gender, 4. Identification of coping strategies, 5. Dissemination of research results and findings 	<p>Baseline survey, Case studies, review research paper and publications</p>

Appendix-I: Descriptions of Studies and Research Projects Implemented by BCAS in 2012 - 2013 (Contd.)

	Name of the Project with period & location	Project in charge & other personnel	Partners and Associates	Goals & Objectives	Major activities interventions
34	Promotion of Water Supply, Sanitation and Hygiene in Hard-to-Reach Areas of Rural Bangladesh Period: Dec, 2011 to Nov, 2014	Golam Rabbani & Polin Kumar Saha	SDC	Baseline study, Vulnerability assessment, Need assessment on technological options, GIS mapping on vulnerabilities, Action research on WASH practices, and Monitoring and Evaluation of all the outputs of the project	Baseline report, need assessment report and vulnerability assessment report
35	Institutional Support and Capacity Building for Studies of, and Adapting to, Climate Change in Bangladesh Period: April 2010 to September 2012	A. Rahman & A. Syed	Bjerknes Centre for Climate Research (BCCR)	1. Capacity building 2. implementation of atmospheric modeling 3. people perception survey	1. Impact study report
36	Model the impacts of CC induced sea level rise and salinity on the biological diversity of the Sundarban ecosystems both the fishery and forestry Period: August 2012-July 2014	A. Rahman & A. Syed	PPCCF, Govt. of Bangladesh	1. progress reports 2. completion report	1. Revised work plan and implementation strategy
37	Promoting Municipal Solid Waste Management through Composting in Asia Period: Nove-2011 to Oct-2012	Dr. M. Eusuf & Md. Osman Gani Shawkat	IGES ADB	Inception Report Interim Report Final Report	Workshop Report
38	PRA of Participatory Small Scale Water Resource Sector Project of LGED in 14 subproject areas (1 st Phase – 2011-2012) Period: May 2011 to May 2012	Md. Liaquat Ali	LGED	PRA (FGD, SSI, Transect Walk, Discussion/ meeting with relevant stakeholders (Local LGED, BWDB, DOF, DAE officials) and community for technical (engineering, agriculture and fisheries), social and environmental feasibility of the project) Land Ownership Report Final PRA Report (For each sub project)	Work plan, Rapport building, Land ownership survey report of the subproject area (For each sub project)

Appendix-I: Descriptions of Studies and Research Projects Implemented by BCAS in 2012 - 2013 (Contd.)

Name of the Project with period & location	Project in charge & other personnel	Partners and Associates	Goals & Objectives	Major activities interventions
39 PRA of Participatory Small Scale Water Resource Sector Project of LGED in 14 subproject areas (2 nd phase – 2012-2013) Period: July 2012 to June 2013	Md. Liaquat Ali	LGED	PRA (FGD, SSI, Transect Walk, Discussion/meeting with relevant stakeholders (Local LGED, BWDB, DOF, DAE officials) and community for technical (engineering, agriculture and fisheries), social and environmental feasibility of the project) Land Ownership report Final PRA Report (For each sub project)	Work plan, Rapport building, Land ownership survey report of the subproject area (For each sub project)
40 Water and Food Security Partnership Period: April 2010-March 2012	D. Mallick	ICCO, The Netherlands	Participatory Research; Demonstration WATSAN Technology; advocacy and publication	News letter and booklets to be published
41 CCD in Agriculture and Food Security in Bangladesh Period: Dec.2011 to Dec 2012	D. Mallick & A. Rahim	German— Watch & CDKN	Four Work Programmes: Examining level of Integration and Policy Review; Case Study; Financial Analysis and Dissemination	Financial Analysis for CCD in Agriculture; Policy Brief
42 Participatory Monitoring and Evaluation for Community Based Adaptation (PM+E4CBA) Period: 06-06-2011 to 05-06-2012	Syed Iqbal Ali (Programme Director)	Donor: CDKN; Action Partners are Oxfam, CARE, Caritas, Action Aid, Practical Action, Islamic Relief, Plan International, Water Aid, Concern Worldwide; Capacity Building Partner: PRIP Trust	Reports (Submitted)	No information found
43 ETP Solution SEDF Period: Sept 2010 to 31 July 2012	Dr MI Sharif & M.A Mahmood	IFC-SEDF UK AID & Norad	Video, Toolkit, 3 Booklets both Eng & Beng Training. Follow up of trg.	Draft Follow up report submitted

Appendix-I: Descriptions of Studies and Research Projects Implemented by BCAS in 2012 - 2013 (Contd.)

	Name of the Project with period & location	Project in charge & other personnel	Partners and Associates	Goals & Objectives	Major activities interventions
44	Chemical Management in the Textile, Leather and Apparel Industry in Bangladesh Period: 16 June 2012 to June 2014	Dr MI Sharif & M.A Mahmood	DEG, gsm	Chemical Management in RMG sector	Selection of Factory
45	Social & Environmental Audit in Textile & RMG sector Period: 2008 to On going	Dr Sharif & Shamsunnahar Lucky	3p- gsm	In 2012, till July we have completed 6 factories audit. 4, more audit in pipe line. In 2012 the average number is at least one audit a month. Frequency requests increasing every year.	Online Audit report
46	Bibiyaana 1 & 2 power plant project Period: February 2011 to February 2012	Dr. M. Eusuf & Dr. M. I. Sharif	Summit Group	IEE report ESIA report Air Dispersion & noise Modeling Final ESIA Report	Final Report already submitted and waiting for Final payment
47	Activities & Inputs for Union-wise Flood Mapping for Flood-Prone Areas of Bangladesh, Impact of Climate change of salinity intrusion and development of zoning map of salinity level for assessment of community risk in the Coastal Area, Impact of climate change on Storm surge inundation and assessment of vulnerability of coastal area for Community risk assessment Period: October 2010 to October 2012	A. Syed	IWM	Inception report submitted Final report	Final report to be submitted

Appendix-I: Descriptions of Studies and Research Projects Implemented by BCAS in 2012 - 2013 (Contd.)

	Name of the Project with period & location	Project in charge & other personnel	Partners and Associates	Goals & Objectives	Major activities interventions
48	50MW HFO Based Power Plant Project in Bhairab, Kishoregonj Period: June 2012 to September 2012	Dr. M. Eusuf & Dr. M. I. Sharif	ACC Power Generation Horana (Pvt) Ltd.	Inception Report Interim Report Air Dispersion & noise Modeling Final Report	Inception Report
49	IPP 150 MW Dual Fuel (IC Engine) Power Plant Project in Kaliakoir Period: June 2012 to September 2012	Dr. M. Eusuf & Dr. M. I. Sharif	Alliance Holdings Limited Ltd.	Inception Report Interim Report Air Dispersion & noise Modeling Final Report	Inception Report
50	BD Study on Adaptation Effectiveness Period: April 2012 to June 2012	D. Mallick	AKP-UNEP	Literature Review Case Study on two Adaptation projects; Synthesized and National Consultation	Finalization of synthesized report
51	Implementation of Retaining Wall and Community Awareness Activities and provide training Period: 4 th Feb 2012 to December 2012	Khandaker Mainuddin & B.M. Faruque Ahmed	CDMP-UNDP	Implementation of Retaining Wall Community Awareness Activities Committee formation Provide Training to the Community Capacity building Inception Report Midterm Report and Final report	Community awareness activities Provide midterm training
52	Partner Mapping Study for Water, Sanitation and Hygiene (WASH) P Period: Nov. 2011 to 31, August, 2012	Khandaker Mainuddin & Shamima Ishrat Rita	ICCO	- Identification of relevant categories of potential partners in the context of WASH in Bangladesh. - Establishment of contact with the identified potential partners to obtain basic information. - Prepare list of the potential partners. - Development of a rapid questionnaire/checklist (qualitative) to obtain basic information about the potential partners. - Conduct questionnaire survey with potential partners. - Analysis of information (qualitative). - Prepare draft mapping study report. - Presentation of the revised and final mapping report acceptable to ICCO & KIA.	- Conduct questionnaire survey for the potential partners. - Analysis of information (qualitative) obtained from the potential partners. - Prepare draft mapping study report. - Presentation of the revised and final mapping report acceptable to ICCO & KIA

Appendix-I: Descriptions of Studies and Research Projects Implemented by BCAS in 2012 - 2013 (Contd.)

	Name of the Project with period & location	Project in charge & other personnel	Partners and Associates	Goals & Objectives	Major activities interventions
53	Promoting Democratic Practices (BCAS-PRODIP) Period: May 12 to 09-10-2012	Dr. Atiq Rahman (Principal Investigator) & Dr. Moslem Uddin Miah	Donor: USAID Fund received from TheAsia Foundation	Policy Brief on CC impact on Agriculture and Livestock in coastal area to MPs	1. FGDs 2. KII 3. Workshops
54	Identification of win-win adaptation options through adaptation metrics and integrated adaptation decision making frameworks Period: June 2012 to Feb. 2013	Golam Rabbani & Natasha Haider	IGES, Japan	Field survey, Feedback session, present project findings in 4 th international conference on climate change in Washington, Reporting	Feedback session and reporting
55	Loss and Damage on rice production and drinking water due to salinity intrusion in the selected coastal district of Bangladesh Period: May, 2012 - Jan, 2013	Golam Rabbani	United Nations University (UNU-EHS)	Desk study, Baseline survey (July-August, 2012), Policy brief, Reporting	Baseline survey and Need assessment
56	Capacity Development of Higher Education on Integrated Water Resources Management at CUET (NICHE) Period: April 2012 to August 2012	A. Syed & G. Maainuddin	UNESCO-IHE	1. Labour Market Survey Report 2. Development of curriculum of hydrographic courses for DUET and CUET	1. Labour Market Survey Report 2. Development of curriculum of hydrographic courses for DUET and CUET
57	A Mapping Study for the Assessment of Urban and Peri-urban Agriculture (UPA) in Dhaka City Period: December 2011 to March 2012	A. Syed	British High Commission, Dhaka	1. Land use map (industrial use, commercial use, agricultural use, wetlands etc.) 2. Land cover map (vegetation, structures or other features that cover the land, water body etc) 3. Infrastructure map (Road, building, settlement, drainage system etc.) 4. Population density map 5. Identified potential agriculture production area for UPA of Dhaka city and 6. Assessment report on food security for policy implication.	Final Assessment Report

Appendix II: List of Development Partners

- **United Nations Development Programme (UNDP)**
- **United Nations Environment Programme (UNEP)**
- **USAID**
- **DGIS, The Netherlands**
- **Asian Development Bank (ADB)**
- **World Bank**
- **United Nations Food and Agricultural Organization (FAO)**
- **United Nations Conference on Trade and Development**
- **World Food Programme (WFP)**
- **European Commission (EC)**
- **CARE- International**
- **Organization of Economic Cooperation and Development (OECD)**
- **Department for International Development (DFID), UK**
- **Darwin Initiative, UK**
- **Winrock International, USA**
- **International Institute for Environment and Development (IIED), UK**
- **International Institute for Sustainable Development (IISD), Canada**
- **Stockholm Environment Institute (SEI–Boston, York), USA**
- **Centre for the Economics and Management of Aquatic Resources (CEMARE), University of Portsmouth, UK**
- **The Jane Goodall Institute, London, UK**
- **Centre for Transatlantic Relations, New York**
- **RIVM, The Netherlands**
- **Fletcher School of Law and Diplomacy, Tufts University, Boston, USA**
- **IUCN International**
- **Centre for Environmental Education (CEE), India**
- **Development Alternatives (DA), India**
- **Environmental Law Foundation, Sri Lanka**
- **Sustainable Development Policy Institute (SDPI), Pakistan**
- **International Centre for Integrated Mountain Development (ICIMOD), Nepal**
- **PELANGI, Indonesia**
- **WWF International**
- **Centre for the Law and Economics of the Sea (CEDEM), France**
- **Coastal Resources Institute (CORIN), Thailand**
- **Research Institute for Aquaculture (RIA), Vietnam**
- **Profit, Peoples Planet (3Ps), Germany**
- **Interchurch Organization for Development and Cooperation (ICCO), The Netherlands.**

Appendix-III: Themes and Approaches in Posters

Bangladesh Centre for Advanced Studies (BCAS)

An independent research, implementation and policy institute for Sustainable Development

Inter-active Themes of BCAS

Environment Development Integration

Good Governance and People's Participation

Poverty Alleviation and Sustainable Livelihoods

Economic Growth Public Private Partnership and Sustainable Market



25 ADVANCING SUSTAINABLE DEVELOPMENT YEARS OF BCAS



Bangladesh Centre for Advanced Studies (BCAS)

An independent research, implementation and policy institute for Sustainable Development

5 Approaches of BCAS

- ◆ Knowledge Integration for Sustainable Development
- ◆ Science-Policy-People
- ◆ Importance of Local Knowledge
- ◆ Integrating Knowledge at Different Levels of Decision Making
- ◆ Eco-specific Participatory Management



25 ADVANCING SUSTAINABLE DEVELOPMENT YEARS OF BCAS



Bangladesh Centre for Advanced Studies (BCAS)

An independent research,
implementation
and policy institute for

Sustainable Development

An approach of BCAS:

◆ Knowledge Integration for Sustainable Development

- Effective implementation of sustainable development policies, plans, program and projects
- Awareness, advocacy and campaign for rights
- Scientific knowledge generation and dissemination
- Sound methodologies
- Scientific publications



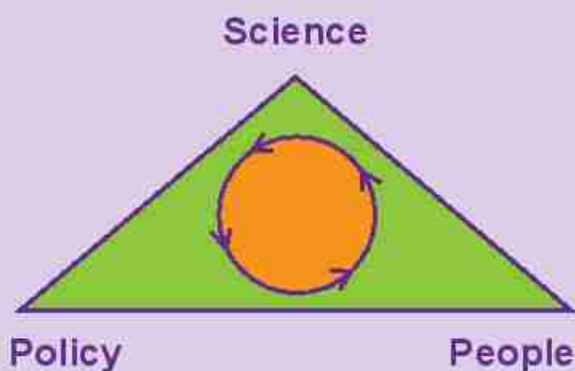
Bangladesh Centre for Advanced Studies (BCAS)

An independent research,
implementation
and policy institute for

Sustainable Development

An approach of BCAS:

◆ Science-Policy-People

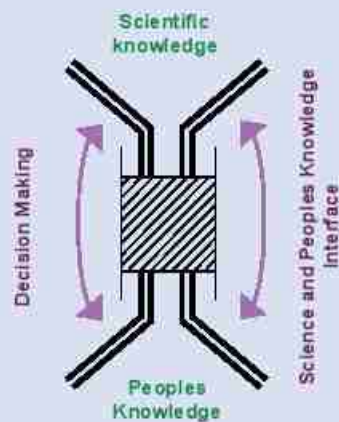


Bangladesh Centre for Advanced Studies (BCAS)

An independent research,
implementation
and policy institute for
Sustainable Development

Approach of BCAS:

- ◆ Importance of Local Knowledge - Harmonizing Scientific Knowledge and People's Knowledge



25 ADVANCING
SUSTAINABLE
DEVELOPMENT
YEARS OF BCAS

Bangladesh Centre for Advanced Studies (BCAS)

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implementation
and policy institute for
Sustainable Development

Approach of BCAS:

- ◆ Integrating Knowledge at Different Levels of Decision Making



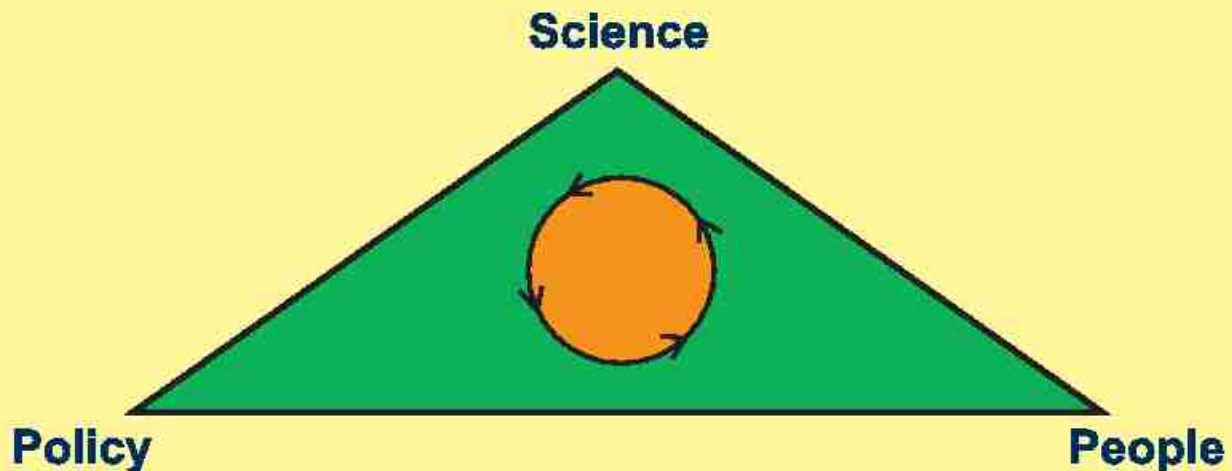
25 ADVANCING
SUSTAINABLE
DEVELOPMENT
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Bangladesh Centre for Advanced Studies (BCAS)

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Sustainable Development**

An approach of BCAS:

◆ Science-Policy-People



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