



**IMPLEMENTATION OF BANGLADESH CLIMATE  
CHANGE STRATEGY AND ACTION PLAN (BCCSAP, 2009):  
GAPS BETWEEN POLICY AND PRACTICES**

**Shakila Yasmin<sup>i</sup>**

Assistant Director,  
Bangladesh Climate Change Trust,  
Ministry of Environment,  
Forest and Climate Change,  
Old Banabhaban (6<sup>th</sup> floor),  
101, Mohakhali, Dhaka-1212.  
Bangladesh

**Abstract:**

This study pursued to analyze the performance of Bangladesh Climate Change Strategy and Action Plan (BCCSAP, 2009) during its implementation period and find out the loopholes and bottleneck between policy and Practices. The study conducts impact study of some climate change related projects address the six theme of BCCSAP and financed by Climate Change Trust Fund, (CCTF) Bangladesh. The models of these projects are innovative and research oriented and belongs the different six themes of Bangladesh Climate Change Strategy and Action Plan (BCCSAP, 2009). The main objectives of the study are to conduct an independent and critical evaluation of the result achieved to date from the selected projects, to identify the gaps in existing acts, policies, and practices and finally develop a number of go-forward scenarios and options; in that connection select the best strategies and develop a roadmap towards that. The study used both secondary (from existing literature) and Primary data (collected under this study). Secondary data have been collected from the selected six projects documents, project completion report, Audit report etc. Primary data have been collected from a mixed method approach, combining quantitative and qualitative methodologies e.g household and community surveys, institutional analysis, participatory rapid appraisal, Key Informant Interviews, Focused Group Discussion. Appropriate methodology was utilized for analyzing information of selected 6 projects. The result of the study showed that such types of innovative and research projects should be given priority for implementation under Climate Change Trust Fund as a pilot basis. For scale up these projects at a large scale development partners should come forward. At the implementation period and furthermore these projects play an important role to address the climate change issues in Bangladesh but lack of proper

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<sup>i</sup> Correspondence: email [shakilayasmin144@gmail.com](mailto:shakilayasmin144@gmail.com)

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maintenance mechanism it could not sustain in the long run. In order to maintain sustainability, maintenance should be ensured both from the funding and implementing agency. Moreover, the study reveals a substantial gap in level of integration between different policies and cross referencing between national and sectoral policies and plans. For optimal level of performance, a balanced influence and integration between sectoral policies and climate change policy should be needed.

**Keywords:** Bangladesh Climate Change Trust Fund, Bangladesh Climate Change Trust, Bangladesh Climate Change Strategy and Action Plan, 2009, adaptation, mitigation, vulnerability, Strategic Environment Assessment

## 1. Introduction

Bangladesh is one of the countries, most vulnerable to climate change with high population density. Together with high level of poverty and vulnerability and depleted ecological system makes it more vulnerable to climate change, which threatens the development achievement over the last decades. The increasing risk from climate change, sea level rise, natural and manmade hazards, such as cyclone, flood, land erosion, water logging, salinity intrusion in soil and water have adversely been affected livelihood of the people living in environmentally fragile areas. A one meter rise in sea level is estimated to inundate 18% of the total land in Bangladesh, directly threatening 11% of Population (Agarwala, et al, 2003 & Aulakh, 2013)

On the whole of the situation may be described as a kind of more intensive phase of study and understanding of the environmental problems and climate change and associated vulnerability. There had also been cases of specific investments for making things better preparing the country to cope with the problems, what has not happened is the full-scale integration of environment and climate change issues in national development thinking, planning and practice. One can say that Asian LDCs and developing countries are only half way through that. In this regard, Bangladesh has advanced through its development of the Bangladesh Climate Change Strategy and Action Plan, 2009. To address the vulnerabilities induced by climate change, the Government of Bangladesh constituted Climate Change Trust Fund (CCTF) in the fiscal year 2009-10 with its revenue budget. From the national resources, Climate Change Trust Fund (CCTF) a total 512 projects has been approved with an estimated cost BDT 331602.00 in lac (up to June, 2018). Among all these projects, 221 projects have been completed. The study mainly conducted on selected completed projects comprises the nature of innovative and research. The main objectives of the study are to conduct an independent and critical evaluation of the result achieved to date, to identify the loopholes and bottlenecks in existing Acts, Policies, and practices and finally develop a number of go-forward scenarios and options; in that connection select the best strategies and develop a roadmap towards that.

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## 2. Literature Review

Bangladesh is one of the most climate vulnerable countries in the world and will become even more so as a result of climate change. Through the country has shown considerable success in achieving the targets of Millennium Development Goals (MDGs), now undertaking various programs to achieve the sustainable goals (SDGs), climate change induced risks like cyclone, tidal surge, coastal inundation and salinity intrusion due to sea level rise, erratic rainfall, river bank erosion, drought, land slide and negative impact on agricultural production have appeared as hindrances to achieving the targets vision 2021 and even jeopardize achievement of SDGs, if proper initiatives are not taken. The Bangladesh Climate Change Trust Fund (BCCTF) was created in fiscal year 2009-10 from Governments own revenue sources to combat climate change impacts as well as to implement Bangladesh Climate Change Strategy and Action Plan (BCCSAP, 2009). In this perspective, Climate Change Trust Act 2010 was introduced in acknowledgement of the need for a specific legislation for transparent handling of climate change Trust Fund, so that the benefits accruing from any project funded by CCTF could reach the affected people properly. Other objective of CCTF are enhancing the adaptability of the people within an area or region endangered by climate change, making and implementing plans to combat long term risks of climate change, and taking necessary steps to ensure adaptation, mitigation and technology transfer, finance and investment to combat the adverse effect of climate change. As per the provision of Climate Change Trust Act, 2010, Bangladesh Climate Change Trust was established in 2013 for overall management of BCCTF. In support of this law, there are rules, regulations and guidelines which provide operational procedures for submission, approval and amendment of project proposal as well as release and utilization of the fund ([www.bcct.gov.bd](http://www.bcct.gov.bd)).

The CCTF is a self-financing mechanism for the government of Bangladesh to address the adverse impact of climate change. It is an annual allocation from the revenue budget of the government and created fully from the domestic source. The projects undertaken so far from CCTF include construction of embankment and river bank protection work, building cyclone resilient houses, excavation/re-excavation of canals, construction of water control infrastructures including regulators/sluice gates, waste management and drainage infrastructure, introduction and dissemination of stress tolerant crop varieties and seeds, afforestation, installation of solar panels and so on. All projects taken up under CCTF based on thematic area mentioned in BCCSAP, 2009. From fiscal year 2009-10 up to 2018-19, BCCTF received a total allocation of BDT 3,500 in crore to implement the climate change impacts in public sectors. Up to June, 2018 a total of 512 government projects have been approved under BCCTF of which 212 projects have been completed successfully. Among these projects, maximum projects are infrastructure based and are the regular works of particular departments/institutions. This study highlights some innovative and research project

among the completed projects which got recognition during its implementation period and the impact of these projects are satisfactory also.

### **3. Methodology of the study**

To meet the objective of the study both quantitative and qualitative methods were applied. The study used both secondary (from existing literature) and Primary data (collected under this study). Secondary data have been collected from the selected 10 projects documents, project completion report, Audit report etc. After reviewing the existing data and literature, a research design was developed to test assumption about the process and impact of projects taken for adaptation and Mitigation in the country context. Primary data have been collected from a mixed method approach, combining quantitative and qualitative methodologies e.g household and community surveys, institutional analysis, participatory rapid appraisal, Key Informant Interviews, Focused Group Discussion. Appropriate methodology was utilized for analyzing information of selected ten projects.

To understand the process of project selection, KIIs were conducted for every project, mainly with respective project directors. Perceptions or evaluations of beneficiaries have been collected mainly through FGDs. Because of the nature of the project and absence of baseline data, FGDs appeared to be the best option to understand the impact of the project.

### **4. Existing Policy and Practices under Climate Change Trust Fund**

To properly utilize the fund of the Climate Change Trust for the implementation of various projects, a detailed guideline is prescribed in the guiding policies, laws, rules and regulation of BCCT. Following is a checklist of all such guidelines:

1. Bangladesh Climate Change Strategy and Action Plan, 2009.
2. Climate Change Trust Act, 2010 (Act No.57 of 2010, 12 October, 2010).
3. Climate Change Trust Fund Policy (15 February, 2010).
4. Guidelines for preparing project proposal, approval, amendment, implementation, fund release and fund use for government, semi-government and autonomous organization under the Climate Change Trust Fund (27 March, 2012).
5. Guidelines for selection of NGO (Non-Government Organizations) and project implementation under the Climate Change Trust Fund (9<sup>th</sup> March, 2010)
6. Bangladesh Climate Change Trust (BCCT) Regulations 2013 (24 January, 2013)
7. Bangladesh Climate Change Trust (BCCT) Employees Service Rules, 2013 (24 January, 2013)

The aforesaid guidelines, laws, policies, rules and regulations vividly describe the modus operandi of all the applications/proposals received from government, semi-government organizations and autonomous bodies starting from the submission of

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project proposal, selection, processing, approval, amendment, utilization, and release of fund and ultimately the usage of the fund. Apart from that, the financial management of CCTF projects strictly adheres to the existing government financial rules. For all procurements under CCTF projects, the compliance with Public Procure Act (PPA), 2006 and Public Procurement Rules (PPR), 2008 is mandatory.

Government, semi-government or autonomous agencies can submit their project proposals any time of the year in the prescribed Project Pro forma/format to concerned ministries/divisions of the government. Whatever the proposals may be, they must be commensurate with the six thematic areas mentioned in the BCCSAP, 2009. Special care, consideration and attention are provided to those project proposals that come under joint financing category. Whatsoever, if and when satisfied, the ministry/division forwards the proposal to Bangladesh Climate Change Trust (BCCT). Upon scrutiny, BCCT places the proposal to the Technical Committee for screening. The Technical Committee verifies the viability of the projects and recommends to the Trustee Board for their approval/disapproval or any revision, if required. There are two sub-committees to assist the Technical Committee. The final approval of the projects solely lies with the Trustee Board after having technical and recommendation from the Technical Committee.

The activities and performance of various projects derived from Climate Change Trust Fund are monitored and evaluated in line with the guiding policies mentioned in the usage manual, known as Rules and Regulation of Usage, 2012. In fact, approved projects of Trustee Board are monitored at three levels. These are:

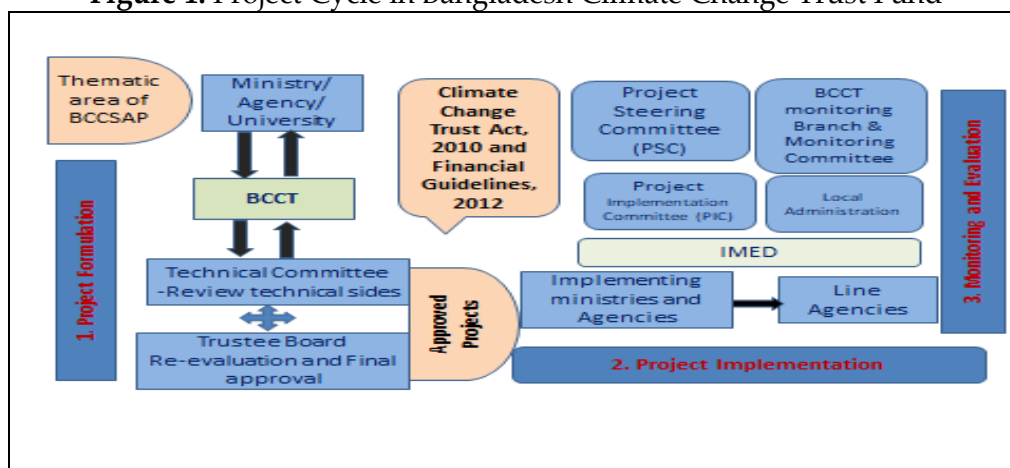
1. Implementing ministries or agencies monitor the project activities through Project Steering Committee (PSC) and Project Implementation Committee (PIC). The concerned implementing ministries are, however, mainly responsible for monitoring and evaluation of projects. They are required to conduct monitoring and evaluation of CCTF projects following the same procedure they maintain while dealing with the Projects under Annual Development Program (ADP).
2. BCCT has its own mechanism for monitoring and evaluation of CCTF projects. Headed by a Director, there is a Monitoring and Evaluation Branch that receives Monthly Progress Report from the Project Directors, sends inspection team for field visits, and convenes regular monitoring meetings with Project Director. Headed by the Deputy Managing Director of the Trust, there is also a Monitoring Committee that analyses the monitoring reports and puts forward its recommendation for proper implementation of the projects.
3. Local administration has been engaged in the monitoring process to ensure local oversight. The administrative officers and the elected representatives also discuss these projects in the District Coordination Meetings.

## **5. Projects Nature under Climate Change Trust Fund**

The BCCSAP sums up Bangladesh's current thinking on desirable activities to build climate resilience into the economy and society through adaptation to climate change as

well as mitigation for a low carbon development path. The implementation of the BCCSAP will be financed through governments own resources and external support that may be available from the development partners, as well as the specific international funds created for the purpose. From the national resources, Climate Change Trust Fund (CCTF) a total 512 projects has been approved with an estimated cost BDT 331602.00 in lac (up to June, 2018). Government, Semi-government or autonomous agencies submit their project proposals to concerned ministries/divisions of the government. If satisfied, the ministry/division forwards the proposal to Bangladesh Climate Change Trust. Upon, scrutiny, BCCT places the proposal to the technical committee for screening. The technical Committee verifies the viability of the projects and recommends to the Trustee boards for their approval/disapproval or any revision, if required. There are two sub-committees to assist the technical committee. The project cycle of CCTF projects are mentioned in Figure 1.

**Figure 1: Project Cycle in Bangladesh Climate Change Trust Fund**



The activities that are implemented through the approved projects are related to the six themes of BCCSAP. The scenarios of the nature of Projects are given below:

**Table 1: Thematic area wise project allocation with Number under CCTF (June, 2018)**

Thematic Area of BCCSAP	Number of Projects	Total Cost BDT (in Crore)
T1: Food Security, Social Protection and Health	74	342.25
T2: Comprehensive Disaster Management	6	31.17
T3: Infrastructure	340	2031.14
T4: Research & Knowledge Management	20	71.22
T5: Mitigation & Low Carbon Development	65	430.7
T6: Capacity Building and Institutional Strengthening	7	409.55
	512	3316.03

From the table it shows that, most of the projects are addresses the theme T3: Infrastructure. Themes T1: Food Security, Social Protection and Health and T5: Mitigation & Low Carbon Development are given second and third priority accordingly

for implementing the activities. The activities include river bank protection work, excavation/re-excavation of canals, installation of deep tube wells and water resources, waste management and drainage system, afforestation and solar system. The research highlights the Innovative and Research Based Project activities which are playing a great role to address the climate change impacts in the country context.

## 6. Result and Discussion

Bangladesh Climate Change Trust Fund has been funded 512 projects till June, 2018. Among these projects, 212 projects have already been completed. Under this study 6 projects were selected based on innovative and research activities. Moreover, projects in different thematic area, different nature and implemented by different agency got priority in selection process. The evaluation of selected projects is conducted by 3 steps:

- a) General evaluation on the basis of project completion report;
- b) Key Informant Interview;
- c) Focus Group Discussion.

The selected projects for the study are mentioned below:

S.I	Project Name	Implementing Ministry	Implementing Agency	BCCSAP Themes
1.	Selection of various heat and saline tolerant mutants/seeds of crops and piloting those for agricultural production purpose to fight against adverse impact of Climate Change	Ministry of Agriculture	Bangladesh Institute of Nuclear Agriculture (BINA)	<b>T1:</b> Food Security, Social Protection and Health
2.	Construction of Cyclone resistance houses and provides safe drinking for the poor people of Satkhira district to address the natural disaster and climate change issue.	Ministry of Local Government, Rural Development and Cooperatives	District Administration Satkhira	<b>T2:</b> Comprehensive Disaster Management
3.	Restore of river bank through protection works from the erosion of the Old Brahmaputra River in Islampur upazila, Jamalpur District under Mymensingh Division.	Ministry of Water Resources	Bangladesh Water Development Board	<b>T3:</b> Infrastructure
4.	Strategic Environment Assessment of Climate Change Adaptation options in Bangladesh	Ministry of Education	University of Dhaka	<b>T4:</b> Research and Knowledge Management

S.I	Project Name	Implementing Ministry	Implementing Agency	BCCSAP Themes
	(SEACCAOB)			
5.	Revegetation of Madhupur Forest Through Rehabilitation of Forest Dependent Local and Ethnic Communities	Ministry of Environment, Forest and Climate Change	Department of Forests	T5: Mitigation and Low Carbon Development
6.	Enhance the capacity of a laboratory in Chittagong division under Department of Environment to address the adverse impact of climate change through research programs and actions.	Ministry of Environment, Forest and Climate Change	Department of Environment	T6: Capacity Building and Institutional Strengthening

## 6.1 Case Study 1: Selection of various heat and saline tolerant mutants/seeds of crops and piloting those for agricultural production purpose to fight against adverse impact of Climate Change

### 6.1.1 General Information

The project was implemented by Bangladesh Institute of Nuclear Agriculture (BINA) under the Ministry of Agriculture. The estimated cost of the project was BDT 488 in lac. The project was taken to address the present need of the country for developing appropriate crop varieties and other crop production technologies for ensuring food security of the country. The project was implemented at Khulna, Rajshahi, Rangpur and Mymensingh, divisions in Bangladesh with duration of July, 2011 to June, 2014. In this perspective, the project is very much effective for the climate affected saline, submergence and drought prone areas incorporating research and piloting activities with more elongated time frame.

### 6.1.2 Field level observation

Focus group discussion was conducted while visiting the project in Khulna Division. It is a saline prone division in Bangladesh due its location. Through this project, farmers at different districts of Khulna division got saline tolerant seeds of rice; like Binadhan-8, Binadhan-10. Drought tolerant rice varieties were introduced through these projects at Natore, Fulbari and Dinajpur district of Rajshahi and Rangpur Division. Rice variety of Binadhan-7 and Binadhan-8 were cultivated as field experiment in those areas. Local farmers mentioned that, these varieties require less irrigation and the yield is high. The duration of harvest of this variety takes 115-125 days. The local farmers were happy with production cost and time of these variety introduced by BINA through this project. The field experiment was also carried out at Mymensingh sadar and in this area, Bina-11 and Bina-12 rice variety were introduced there as flood tolerant variety. The local



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farmers of Mymensingh sadar were so much satisfied for the rice variety Bina-11 and Bina-12 due to its short crop duration and satisfactory yield. Besides rice variety through this project several experiments on Bina sesame, wheat, mustard, soya bean was carried out at Mymensingh sadar. The project develops climate resilient crop varieties for sustaining crop production under changing the climatic pattern. Farmers of the project sites became aware about the impact of climate change and realized to adopt with the climate change situation.

### 6.1.3 Gaps between policy and Practice

(a) After completion of the project due to unavailability of these seeds at the local market farmers are adapt to hybrid varieties. Besides, the variety which was introduced in saline prone area was less productive. Local people motivation is necessary to adapt new technology which was absent in this project. Moreover, implanting Ministry did not take any initiative to continue the research activities. There was also a gap of coordination between Upazila agricultural officer and the research officer of BINA to follow up the project activities during and after the project period.

(b) So far, there are 74 projects are being implemented from CCTF under the theme Food Security, Social Protection and Health. There are 9 programs under this theme mentioned in BCCSAP. From CCTF, no projects have been funded yet to the program 4 and 5, the adaptation strategy in fisheries and livestock sector regarding to climate change.

## 6.2 Case Study 2: Construction of Cyclone resistance houses and providing safe drinking water for the poor people of Satkhira district to address the natural disaster and climate change issue

### 6.2.1 General Information

Climate changes have triggered an increase in the incidences of natural disasters (like cyclones) over the coastal region of Bangladesh. The coastal part of the country is the most vulnerable and the southwestern part of the coastal area is identified as environmentally handicapped by climate change. Climate change is openly threatening the very existence of people's lives and livelihoods in Bangladesh. In recent decades, Bangladesh was hit by two consecutive cyclones SIDR in 2007 and AILA in 2009 (Kabir, et al. 2014). During that time, people lost their lives, houses, lands and properties. To address the adverse situation, this project was taken from CCTF as a pilot basis. The project was implemented by District Administration, Satkhira under Local Government Division, Ministry of Local Government, Rural development and Co-operatives. The estimated cost of the project was BDT 1707.00 in lac and the project was implemented from July, 2012 to December, 2016.

### 6.2.2 Field level observation

The project was implemented at 6 upazilas; Shaymnagar, Ashasuni, Debhata, Kaligonj, Satkhira Sadar and Tala of Satkhira district. A total 353 cyclone resistant houses were constructed under this project. The houses were distributed among the homeless people of 6 upzilas according to the level of vulnerability. The unit cost of each house is BDT 4.60 in lac and 10 ponds were excavated at Ashasuni and Shyamnagar upazila with an estimated cost BDT 10 in lac. The size of the houses was 15' length and 18' width. The houses were provided those people who had his own land and lost everything during cyclone Aila and Sidar. The table mentioned the number of house constructed and distributed in 6 upazilas.

**Table1:** Number of house constructed at different upazila

Division/District	Upazila	Estimated Cost (in BDT)	Number of houses	Number of Ponds
Khulna/Satkhira	Ashasuni,	875.300	182	5
	Shaymnagar	536.30	117	5
	Tala	128.80	28	
	Kaligonj	78.200	17	
	Satkhira Sadar	32.200	7	
	Debhata	9.20	2	

Through implementing these projects, the homeless peoples of this area got a shelter. They lost their all properties during the cyclone SIDR. These projects came to them as a part of blessings.

### 6.2.3 Gaps between policy and Practice:

- (a) The above project addresses the theme “Comprehensive Disaster Management” of BCCSAP. The project activities related to the fourth program of this theme “Risk management against loss on income and property”. The program mentioned the activities of insurance scheme for loss of property or income for lowering the risk of adverse impact of climate change. But under this project only infrastructural support was provided among the victims. It will help them at the certain period but not ensure the sustainability. Not only this program but also the other three programs of this theme didn't follow properly other projects of CCTF.
- (b) Beneficiary selection process sometimes biased with political issues. During field visit, a few people mentioned that actual beneficiary of the project did not select in a proper way. On the other hand, for land accusation problem, 15 houses did not construct under this project.

### 6.3 Case Study 3: Restore of river bank through protection works from the erosion of the Old Brahmaputra River in Islampur upazila, Jamalpur District under Mymensingh Division

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### 6.3.1 General Information

The project was implemented by Bangladesh Water Development Board under the Ministry of Water Resources. The total estimated cost of the project was BDT 723 in crore. The project was implemented within March, 2013 to December, 2014. The main objective of the project is to protect both the erodible banks of old Brahmaputra river at different locations to save nearby agricultural land, institutions, graveyard, market, homestead etc. Another objective of the project is to uplift the socio-economic conditions of the locality by developing bamboo bundling structure. Under this project 8.5 km bamboo bundling structure was developed.

### 6.3.2 Field level observation

The analysis of the project is based on a Focus group discussion conducted in Jamalpur district. During the discussion period, the community people mentioned that river bank erosion is a common natural disaster in Jamalpur district. During last 5 years, (before the project started) 70% houses, 1.5 km road, 2 local education institution, local market and mosque were inundated by river bank erosion. Moreover, local farmers did not get proper crops before construction of the embankment. But after the construction of embankment under this project, scenario has been changed. Crops like paddy, Jute, wheat, sugarcane, nut, pulse and various vegetables are growing full swing. About 10-15% village people were involved with fish collection before construction of the embankment and their income was BDT 3000-4000 per month. But after construction of the embankment, about 30-40% village people are engaged with fish culture and their income rose up to BDT 7000-8000. In addition through this project, livestock rearing facilities, health care facilities of the local community and communication system was developed. Huge land was accreted by providing bamboo bundling at the eroded bank of Brahmaputra river. The village people are very much satisfied about the project works.

### 6.3.3 Gaps between policy and Practice:

- a) This was one of the most innovative and cost effective project of thematic area Infrastructure under CCTF. Maximum infrastructure project of CCTF includes construction of embankments, polders or drainage improvement. These projects introduce bamboo bundling protection activities which reclaim land as well as required less amount of budget. But this technology is appropriate only low tide rivers.
- b) There are 8 programs under theme "infrastructure" mentioned in BCCSAP. The programs include repair and maintenance of existing polders, embankments, shelters and adaptation activities against cyclone, floods and so on. The above project addresses the program properly and it is a great example of hydrological modeling. It was the least cost method that restores the eroded river bank within shortest time.

- c) There were a notable number of projects under CCTF which includes new construction of polders, embankments and shelters which are quite deviated from the strategy.

## 6.4 Case Study 4: Strategic Environment Assessment of Climate Change Adaptation options in Bangladesh (SEACCAOB)

### 6.4.1 General Information

This project is completely a research project implemented by Department of Anthropology, Dhaka University, Bangladesh. The study was conducted Assasuni upazila of Satkhira district, Chakaria Upazila of Coxsbazar district, Tarash upazila of Sirajgonj district and Porsha upazila of Naogaon districts in Bangladesh which are highly vulnerable due to cyclone, salinity, flood, riverbank erosion, drought and other climatic variabilities. The main objective of the study is to identify different adaptation options in Bangladesh through Strategic Environmental Assessment (SEA) according to the vulnerability. The options that were suggested from the study are mentioned below:

### 6.4.2 Research Findings

#### a. Adaptation to Cyclone

From the study for cyclone prone area 5 adaptation options are identified. Those are mentioned in the following table:

**Table 2: Adaptation options against Cyclone**

Intervention Option	Intervention Types	Project Types
Option 1	Coastal Afforestation	Mangrove plantation
		Non-mangrove plantation
		Coastal embankment plantations
Option 2	Coastal Embankment	Construction of embankment
		Coastal embankment improvement
Option 3	Cyclone Shelter	Construction of Cyclone Shelter
Option 4	Cyclone resilient Housing	Construction of resilient House
Option 5	Land Use Zoning	Planning and Changing land use pattern.

#### b. Adaptation to flood and riverbank erosion

From the study for flood prone and riverbank erosion areas, 5 packages of adaptation intervention options have been proposed. These are already in varying degrees, but proposal is to upscale them, based on past learning. The proposed options and sub options are as follows:

**Table 3: Adaptation options against flood and riverbank erosion**

Intervention Option	Intervention Types	Project Types
Option 1	Adaptive Agriculture Practices	Agricultural Intensification
		Crop Diversification

		Local Adaptive practice
		Crop Cycle Management
Option 2	Flood proofing	Raising of Mounds and Plinths
		Raising the platform of water and sanitation facilities
		Construction of Embankment
		Raising level of Communication Infrastructure
		Construction of Flood Shelter
Option 3	Water Course Management	Excavation or Restoration of Dead channel and Rivers
		Meander Cutoff
		Hydro modification and Channelization
Option 4	River Bank Stabilization	Bank protection
		Articulated Concrete Block revetment Mattress
		Fascine Mattress Placement
		Tree Plantation
Option 5	Land Use Zoning	Planning and Changing Land Use Pattern

### c. Adaptation to Salinity Intrusion

From the research study, 5 intervention options have been identified for saline and brackish water ecosystem and these are:

**Table 4:** Adaptation options against Salinity Intrusion

Intervention Option	Intervention Types	Project Types
Option 1	Adaptive Agricultural Practice	Agricultural Intensification
		Saline tolerant crop diversification
		Local Adaptation Practices
		Integrated Farming
		Goalpata, Mele and Reed Cultivation
Option 2	Water Course and Siltation Management	Construction of Embankment
		Tidal River Siltation Management
		Restoration of dead channel and rivers
		Hydro modification and Channelization
Option 3	Water treatment and Desalination	Rain water Harvesting
		Pond Sand Filter
		Conservation of Ponds for drinking water
Option 4	Aquaculture and Commercial Farming	Crab/Shrimp Cultivation
Option 5	Land Use Zoning	Planning and Changing Land use pattern

### d. Adaptation to Drought or Aridity

For drought and aridity in our country perspective 5 adaptation intervention options have been suggested from the study. The options are mentioned below:

**Table 5:** Adaptation options against Drought or Aridity

Intervention Option	Intervention Types	Project Types
Option 1	Adaptive Agricultural Practice	Agricultural Intensification
		Drought tolerant Crop Selection and Diversification
		Diversification of Livestock and Fisheries
		Crop Cycle Management
		Large scale plantation to reduce evaporation
Option 2	Water Storage and Irrigation	Excavation of water reservoir
		Impounded Reservoirs
		Barrage and Sluice Construction
		Extraction of ground or Surface water for Irrigation
Option 3	Water Course Management	Excavation or Restoration of Dead channel and Rivers
		Hydro modification and Channelization
Option 4	Horticulture Practices	Mango /Apelcul Cultivation
Option 5	Land Use Zoning	Planning and Changing land use Pattern

This is an empirical study. From the study, it is find that the SEA approach to address adaptation concerns in decision making is of relatively recent origin both globally and nationally. The SEA approach has gained wide acceptance across nations, regions and sectors. The study on SEA of selected adaptation options has been a real learning experience. The SEA methodology can be adopted and institutionalized by the government to screen out public and private interventions for environmental issues. Moreover, capacity building of local government institutions, technical coordination and institutional mechanism between government and non-government organization may work inclusively which can reduce the climate vulnerability. Finally, the study concluded with a recommendation to promote climate risk insurance for exposure significant financial losses for the poor households in climate sensitive regions.

#### **6.4.3 Gaps between Policy and Practices:**

The main gaps of the research projects are that, the findings of the project did not integrate into national policy or strategy for implementation.

### **6.5 Case Study 5: Revegetation of Madhupur Forest through Rehabilitation of Forest Dependent Local and Ethnic Communities**

#### **6.5.1 General Information**

The project was implemented by Forest Department under the Ministry of Environment, Forest and Climate Change. The estimated cost of the project was BDT 1545 in lac. The main objectives of the projects were reducing the dependency of local people on forests and creating alternative income generating activities. The total areas of Madhupur forest are 45,565.18 acres. Before implementation, the project area encroachment of forest land, illegal feelings of trees and conversion of forest land into

agricultural land, above all, gradually degradation of natural forests was common scenario in the Madhupur Forest area.

### **6.5.2 Field level observation**

Under this project, 700 forest dependent people as well as forest offenders received training both on alternative income generating courses and motivational issues. After getting training, the trainees were treated as Community Forest Workers (CFW). The CFWs got BDT 200 as weekly allowances and in total BDT 1200 as monthly allowances during the project period. After getting the allowance the forest offenders were also turned into CFWs and regained social status and economically become solvent and sound.

Under this project, 200 seedlings of different species given to each family of CFWs as well as the ethnic communities. A total of 5000 families received the seedlings and about 100 hectare land came under tree plantation. The CFWs were responsible for taking care of their own planted seedlings. As a result, forest floor was rejuvenated with numerous species which was a good sign of regaining biodiversity. Through this project 60% of local and 40% ethnic community were rehabilitated via development of environment friendly homestead, grant for cattle purchase, vegetables cultivation, training for cattle rearing, bio-fertilizer plant construction etc. These initiatives reduced dependency on Forest and improved life standard of 5000 forest dependent families of Madhupur zone.

### **6.5.3 Gaps between policy and Practice**

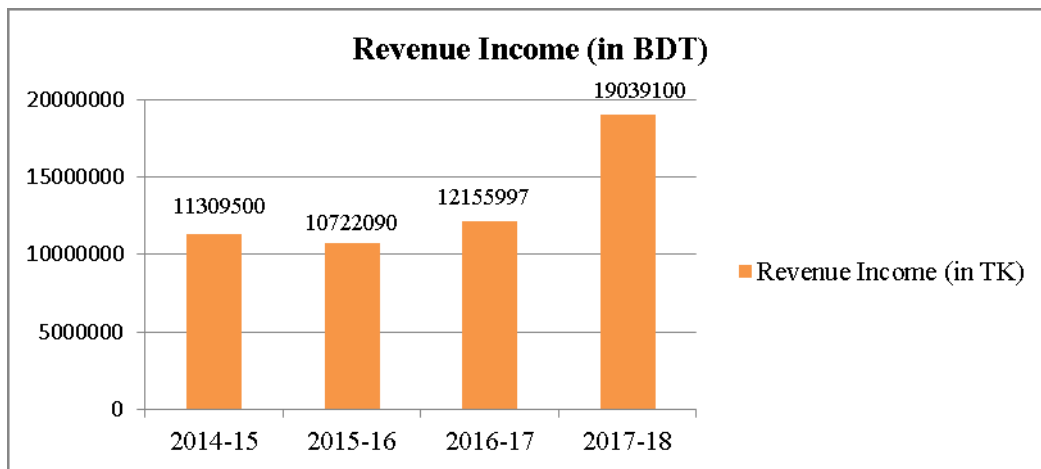
- a) Through this motivational project, some Local people and ethnic communities of the Madhupur Forest were turned into Community Forest Workers (CFWS). But they were unhappy with some offenders as court cases against them were still unsettled. No major problems encountered during implementation but in some cases assistance from political and local elites were not up to the expected level. During the project period, illegal tree felling was totally stopped.
- b) There are 10 programmes under the theme "Mitigation and low carbon development". Projects under CCTF addresses only 3 programs of this theme; such as Renewable energy development, afforestation and reforestation program and management of urban wastes. Another programs need to be addressed with equal attention.

## **6.6 Case Study 6: Enhance the capacity of a laboratory in Chittagong division under Department of Environment to address the adverse impact of climate change through research programs and actions**

### **6.6.1 General Information**

The project was implemented by Department of Environment with an estimated cost of BDT 1160.90 in lac. To address the adverse impact of Climate Change and aggravate the

climate change related activities, the laboratory was established under the finance of Climate Change Trust Fund. The main objectives of the project were to strengthen the activities of Climate Change effect, prevent marine pollution, measure the water quality coming from Upstream from other countries, to observe air quality, soil quality and observe food contamination. Through this project the existing laboratory extended with two floors. Different types of modern equipment including high volume sampler, micro balance, dehumidifier, atomic absorption spectrophotometer, multi-sensor based air quality monitors, Nano pure water plant, lab sensors were purchased under this project to enhance the research capacity. Before taking the project, there was no significant lab for testing and measuring the pollution of water, air, and others. Before setting up modern laboratory, the parameter tested in Chittagong Lab was very few. In water and waste water, only 17 parameter tested, but after setting up a modern laboratory it increased up to 51. Most of the people/institution was dependent on Dhaka, the capital city of Bangladesh for their various testing facility. After setting this modern laboratory, total testing parameter on air, water & soil increased about to 70. In previous there is no capacity to test soil, pesticides, antibiotics but now few of them are developed. In this perspective, revenue Income also increased. The figure 1 represents the comparison before and after setting the laboratory:



Besides, more application submitted from person/institution/industries for getting laboratory services.

### 6.6.2 Gaps between Policy and Practices

This project strengthens both the human and institutional capacity in a particular region. Out of 6 programs of theme 6, only these two programs were addresses the other projects of CCTF. To meet up the challenges of climate change, capacity need to be strengthen government, non-government and private sector agency.



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## 7. Recommendations

Climate Change Trust Fund was established to address the challenges of climate in Bangladesh through funding different projects. The fund mainly utilized to implement the BCCSAP, 2009 which is a guideline. Through this study, impact assessment was conducted of some completed projects under Climate Change Trust Fund. The projects were selected for this study based on their unique concepts including innovation and research portfolio. Moreover, Projects of different agency and themes were taken into consideration in selection process.

1. The concepts of the selected projects are fully innovative and Cost effective. From national Climate budget of Bangladesh such type of projects should be given priority for implementation to address the Climate change issues in future.
2. Although the projects play an important role to address the climate change issues in Bangladesh but maximum projects don't have long term sustainability mechanism. In order to maintain sustainability, maintenance should be ensured both from the funding and implementing agency.
3. Local People motivation should be increased for long term effectiveness for such type of projects.
4. The study reveals a substantial gap in level of integration between different policies and cross referencing between national and sectoral policies and plans. Coordination between BCCSAP and other national and sectoral policies and plans appear to have weakened the implementation of the BCCSAP.
5. For optimal level of performance, a balanced influence and integration between sectoral policies and climate change policy should be needed.

## 8. Conclusion

It is globally recognized that the negative effect of climate change is a big threat for almost every country of the world. Realizing the importance of this issue, the People's Republic of Bangladesh adopted Bangladesh Climate Change Strategic Action Plan (BCCSAP in 2009 and created a fund from its revenue budget called Climate Change Trust Fund (CCTF). Being a vulnerable developing country, Bangladesh did not wait for assistance and donation from the developed countries, primarily responsible for such adverse effect of climate change. Rather Bangladesh formed a robust fund from its scarce resources to combat such vulnerability through self-financing. CCTF started its journey in the year 2010 and under operational to its fullest capacity. From the base year up to the present time, so far 3,500 crore taka (around 435 million USD) has been allocated from the revenue budget for the Climate Change Trust Fund (CCTF). Out of the total 512 projects so far approved, 221 projects have already been successfully accomplished. CCTF has given topmost priority in financing those projects that pertain to Adaptation. Though Bangladesh has negligible role in terms of Carbon Emission,

however, Mitigation has also been taken into active consideration and a good number of mitigation projects have been approved.

The aim of BCCTF is to support the country towards better adaptation to impacts of climate change, it is important to understand and assess the effectiveness of completed projects to that end. The aim of the study is to identify the strengths and weakness of the selected six projects according to existing policy and guidelines.

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