2016

Building Resilience to Climate Change

Adapting to Flood

An experience of

Gana Unnayan Kendra (GUK)




Community Climate Change Project, PKSF

Building Resilience to Climate Change
2016

Sub-Project:
Climate Adaptation for Char Island People (CACP)
Working Area : Rajibpur & Rowmari, Kurigram.

Sub-project implemented by
Gana Unnayan Kendra (GUK)

Under the management of
Community Climate Change Project(CCCP)
Palli Karma-Sahayak Foundation(PKSF)

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Abbreviations

BARI	Bangladesh Agricultural Research Institute
BBS	Bangladesh Bureau of Statistics
BCCRF	Bangladesh Climate Change Resilience Fund
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BINA	Bangladesh Institute of Nuclear Agriculture
BRRI	Bangladesh Rice Research Institute
CBA	Community Based Approach
CBO	Community Based Organization
CCAG	Climate Change Adaptation Group
CCCP	Community Climate Change Project
CDDF	Cancer Drug Development Forum
CHM	Complaint Handling Mechanism
CLP	Chars Livelihood Program
CMDRR	Comprehensive Management of Disaster Risk Reduction
DAE	Department of Agriculture Extension
DPHE	Department of Public Health Engineering
DRR	Disaster Risk Reduction
EAR	Environmental Assessment Report
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EPF	Emergency Program Flood
ER	Enhancing Resilience
ESDO	Economic and Social Development Organization
FCDRR	Family & community level Disaster Risk Reduction
FDMC	Federation Disaster Management Committee
FFWC	Flood Forecasting and Warning Centre
FSHG	From School to Homestead Gardening
GoB	Government of Bangladesh
GRM	Grievance Redress Mechanism
HH	Household
HIES	Household Integrated Economic Survey
IAPP	Integrated Agricultural Productivity Project
ICS	Improved Cooking Stove
IDE	International Development Enterprise
KDAB	Korean Development Agency of Bangladesh
LEB	Local Elected Body
LED	Light-Emitting Diode
LGED	Local Govt. Engineering Department
LGSP	Local Govt. Sustainable Project
MDG	Millennium Development goals
MJSKS	Mohideb Joubo Samaj Kallyan Songsta
MMS	Manob Mukti Sangstha
MOEF	Ministry of Environment and Forest
MoU	Memorandum of Understanding
NGO	Non Govt. Organization
Nos	Numbers
ODA	Overseas Development Assistance
OECD	Organization for Economic Co-operation and Development
OM	Operational Manual

PAD	Project Appraisal Document
PIO	Project Implementation Officer
PIP	Project Implementing Partner
PKSF	Palli Karma-Sahayak Foundation
PMU	Project Management Unit
PPA	Public Procurement Act
PPR	Public Procurement Rules
PRA	Participatory Rural Appraisal
RMP	Rural Maintenance Program
RSDA	Rural Self-Help Development Association
SED	Sustainable Economic Development
SGP	Sub Grant Proposal
SHOUHARDO	Strengthening Household Abilities to Respond to Development Opportunities
SKS	Somaj Kallyan Songstha
SMF	Social Management Framework
TDHF	Terre Des Home Foundation
TER	Test and Emergency Relief
UP	Union Parishad
USWD	Upazila Social Welfare Department
UWAO	Upazila Women Affairs Office
UzP	Upazila Parishad
VGD	Vulnerable Group Development
WB	World Bank
WDB	Water Development Board

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Chapter 1: Introduction

1.1 Brief Overview of Climate Change in Bangladesh

Bangladesh is widely recognized as one of the most vulnerable countries to climate change in the world. Geographically, the country is characterized by low-laying delta formed by the three major rivers i.e. the Brahmaputra, Ganges and Meghna. More than 90% of the land is low-lying flood plain. In addition, the country lies between the Bay of Bengal in the south and an active Himalayan tectonic belt in the north. Thus the country is inherently at high degree of risk to a range of natural disaster. The whole central part of the country is highly prone to flood and erosion, the southern part is prone to salinity intrusion and cyclone, the north western part is prone to drought and north-eastern part is prone to flash flood. In addition, the whole country has been experiencing some emerging hazards for last few decades which include densely fog, heat wave, cold wave, seasonal variation of temperature, precipitation and so on. The major elements of climate change including temperature and precipitation has been gradually changing over the period. Observed data indicates that the temperature is generally increasing in the monsoon season (June, July and August). Average maximum and minimum temperatures in monsoon period show an increasing trend annually at the rate of 0.05OC and 0.03OC respectively (MOEF, 2005). On the other hand, average maximum temperature in winter season (December, January and February) shows an increasing trend annually at the rate of 0.041°C while minimum `temperature shows an increasing trend annually at the rate of 0.026°C which reflects winter is also becoming warmer (Atiq et al., 2007). Various models also show an increasing trend of temperature and the seasonal variation. There is also significant variation in temporal distribution of rainfall. Observed data shows that both number of days without rainfall and annual total rainfall is increasing, which means more rain is occurring in short duration. It also reflects erratic behavior of rainfall. Overall impacts of climate change on Bangladesh would be significant. It is estimated that climate change could affect more that 70 million people of Bangladesh due to its geographic location, low elevation, high population density, and poor infrastructure, high levels of poverty and high dependency on natural resources . It was found that the population living in the coastal area is more vulnerable than the population in other areas (Alam and Laurel, 2005). Coastal resources upon which the most people depend are likely to be affected severally due to climate variability and change. It is predicted that for 45 cm rise of sea level may inundate 10-15% of the land by the year 2050 resulting over 35 million climate refuges from the coastal districts . Ultimately adverse impacts have the potential to undermine poverty reduction efforts and could compromise to achieve the national target on development. The OECD and World Bank also estimated that 40% of the Overseas Development Assistance (ODA) to Bangladesh may be climate sensitive or at risk.

1.2 Overview of Community Climate Change Project (CCCP)

Climate Change is the biggest global threat to humanity in the 21st century. And Bangladesh is one of the most vulnerable countries in the world facing the potential impacts of Climate Change. With an understanding of the nature and Magnitude of the adverse impacts of climate change and the efforts required to enhance resilience, the government of Bangladesh (GoB) adopted Bangladesh Climate Change Strategy and Action Plan (BCCSAP) in 2009, A multi donor trust fund, known as "Bangladesh Climate Change Resilience Fund (BCCRF) ", was established to implement the strategy and Action Plan. As of today, BCCRF has attracted around US$1.90 million (initially it was US$ 125 million) from the bilateral development partners (United Kingdom, European Union, Sweden, UAS, Australia, Switzerland and Denmark). Ninety percent of the available fund will be allocated to public sector projects, while ten percent will be channeled through NGOs for Community level Climate Actions through a different project titled" Community Climate Change Project (CCCP)". The Governing council of BCCRF entrusted Palli Karma Shahayak Foundation (PKSF) to implement the community level climate change adaptation activities through CCCP. On behalf of the contributing Development Partners and in consultation with the government of Bangladesh (GoB), the World Bank (WB) ensures the fiduciary management of the project. CCCP has its own operational manual (OM), Environmental Management Framework (EMF), Social Management Framework (SMF), procurement guideline, Grievance Redress Mechanism, Complain Handling Mechanism and Monitoring and Evaluation Manual. Throughout the project, every NGO has to work as per the guidelines of these Manuals. PKSF has established a Project Management Unit (PMU) in its own premises to manage the activities of CCCP and project Implementation supervision in PIP level. A total of 14 officers are currently working in this unit.

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1 UN Human Development Report 2007/'08
2 OECD, 2003
3 Climate Change Cell, DoE, Bangladesh

1.3 Brief of the Sub-project

GUK has been implementing the sub project titled "Climate Adaptation for Char island People (CACP)" in Rajibpur & Roumari upazila of Kurigram district since August, 2013 to ensure Livelihood of climate vulnerable poor people improved by enhancing income generating capacity and resilience to risks of natural disasters through adaptation to climate change. As a part of CCCP, Gana Unnayan Kendra (GUK) has been working for Flood vulnerable people. The main climate change challenges in the project area is flood which mostly affects char dwellers living on unstable land and push them to frequent shifting to another places. Livelihood and income of a large population depends on the natural resource based and most of the poor people often live in marginalized lands and areas more prone to natural disasters. With the support of the sub project CACP the community is also working to establish mechanism to address future vulnerabilities to climate change in their locality. The sub-project is mainly working to increase resilience of the community to adapt with flood by enhancing knowledge and understanding about climate change and initiating various adaptation activities.

1.3.1 Goal and Objective

Goal: To contribute to achieve the national program of poverty reduction and climate adaptation of Bangladesh.

Specific objective

Livelihood of climate vulnerable poor people improved through enhancing income generating capacity and resilience to risks of natural disasters.

Expected Outcomes

1. Income of minimum 80% targeted households increased by 150% compare to baseline and sustained by the end of the project;
2. No loss of movable assets among 100% target HH and minimum 70% raised plinth saved in floods not more devastating than the one of 2004.
3. 100% HHs involved in climate resilient vegetable/ agricultural productions and have strengthened knowledge on nutrition.
4. 100% HHs received more than one services of government NGOs during each year of the project.

1.3.2 Working Area

The sub-project is being implemented in Rajibpur and Rowmari Upazilas of Kurigram district. The district is situated on the bank of Brahmaputra and Teesta rivers. The area has been selected on the basis of vulnerability and poverty concentration. Thus, 04 unions have been selected for adaptation interventions among which 02 from Rajibpur and 02 from Rowmari upazilas. These unions have been selected in consultation with local governments and community representatives. Working locations are shown in the following table:

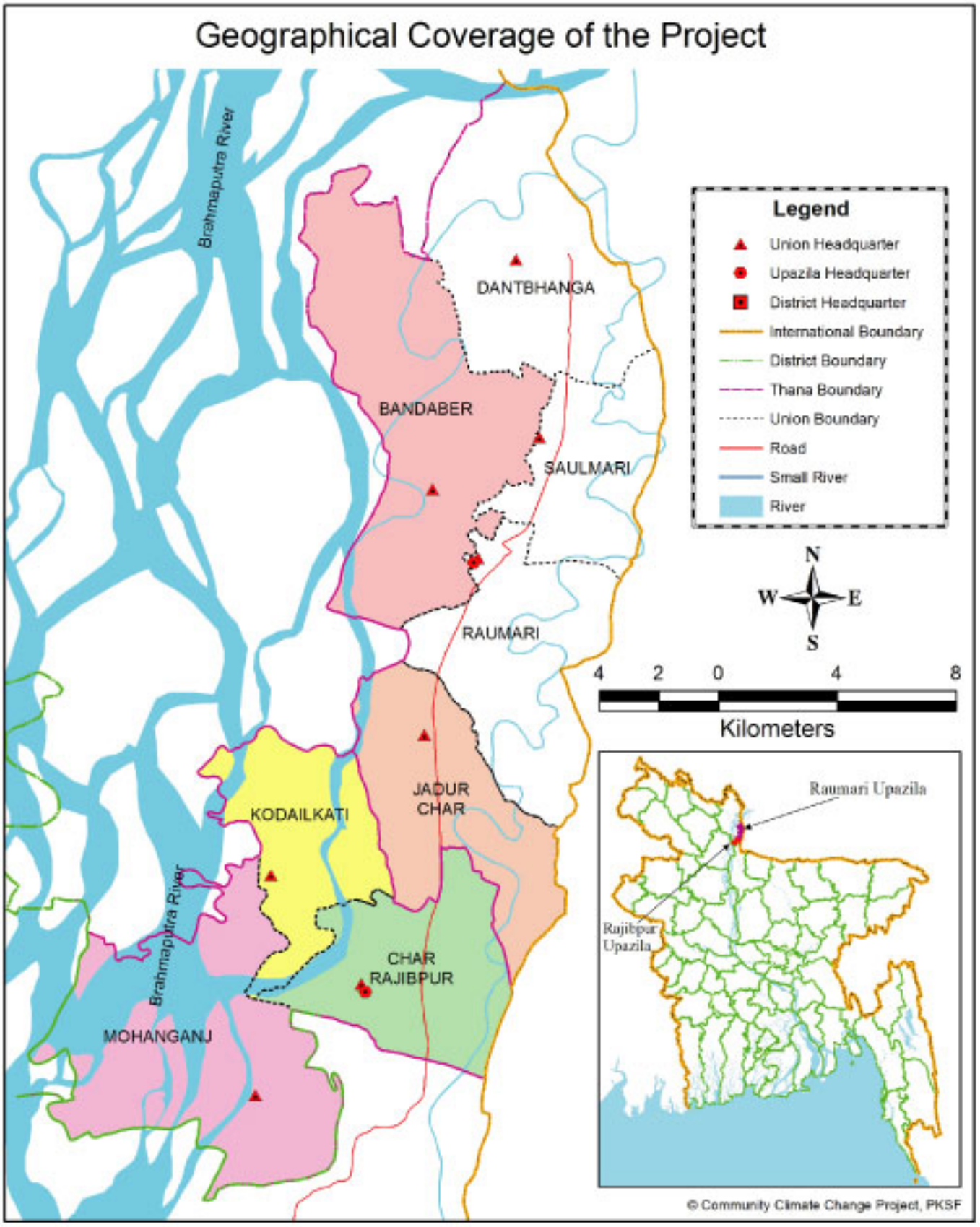


Figure 1: Map of Working Area

District	Upazila	Union
Kurigram	Rajibpur	1. Kodalkati 2. Mohonganj
	Rowmari	1. Bondober 2. Jadur Char

Table-1: of working area

1.3.3 Targeted Beneficiaries

Community Consultation

Gana Unnayan Kendra GUK initiated its work by consulting the villagers in large groups in order to select the most vulnerable people. More intense discussions were held with the People to select the targeted beneficiaries of the project. The Sub-Project CACP of CCCP has targeted the most remote areas which are victims the worst effect of climate change induced hazards. Based on the project proposal priority based beneficiaries were selected which are women headed household without regular income and/or totally dependent to others e.g. casual / day labor, beggar, house wife, maidservant, chronic food insecure, i.e. members of the households who often skip meals due to insufficient food, not receiving any support from any NGO, households having no lands or sheltered on embankment or other place, household with at least one family member suffering from malnutrition, household having family member (s) with disability and/or illness, housing conditions (material and water and sanitation facilities) of household are very poor, Small farmers (<33 decimal land), ultra poor, poor, marginal and women headed HHs.

The project has been implemented in15 villages of 04 unions in 02 upazillas of Kurigram district. A total of 872 HHs are selected to implement the sub-project where 692 HHs from Char Rajibpur upazilla and 180 HHs from Rowmari upazilla of Kurigram district. In the total number of direct beneficiaries are 872 households. A total of 3865 family members and the number of secondary beneficiaries 3052 people. Other side, the number of community beneficiaries are 1730 that related to flood shelter/community place raising and installation tube well with platform and construct tube well plat form. 38 groups have been formed with an average of 25 members in each group. The groups are known as "Climate Change Adaptation Group (CCAG)".

1.3.4 Project Budget

The total budget of the Sub-project is BTD: 2,53,90,319/=, where the beneficiaries/community contribution is BDT 14,16,500/=, CCCP contribution is BDT: 2,33,25000/= and Gana Unnayan Kendra (GUK) contribution is BDT: 3,55,017/=.

1.3.5 Major Activities

1. Baseline Survey & Family Development plan/ Profile/RBM.
2. Project Launching workshop.
3. Organize staff development training courses.
4. Provide training to develop local service provider (LSPs).
5. Home stead rising including 06 cements pillars.
6. Flood shelter repairing /community place rising.
7. Slatted houses for goat-sheep rearing and capacity building training.
8. Tube well installation with platform.
9. Building Tube well Plat form.
10. Distribution Improved Cooking Stove (Bondhu Chula).
11. Animal health Camp.

The sub-project also provides necessary training to build capacity of the community on climate change and it's relation with their livelihoods. The community prepare adaptation action plan for their locality to address the adverse impacts of climate change in the long run.

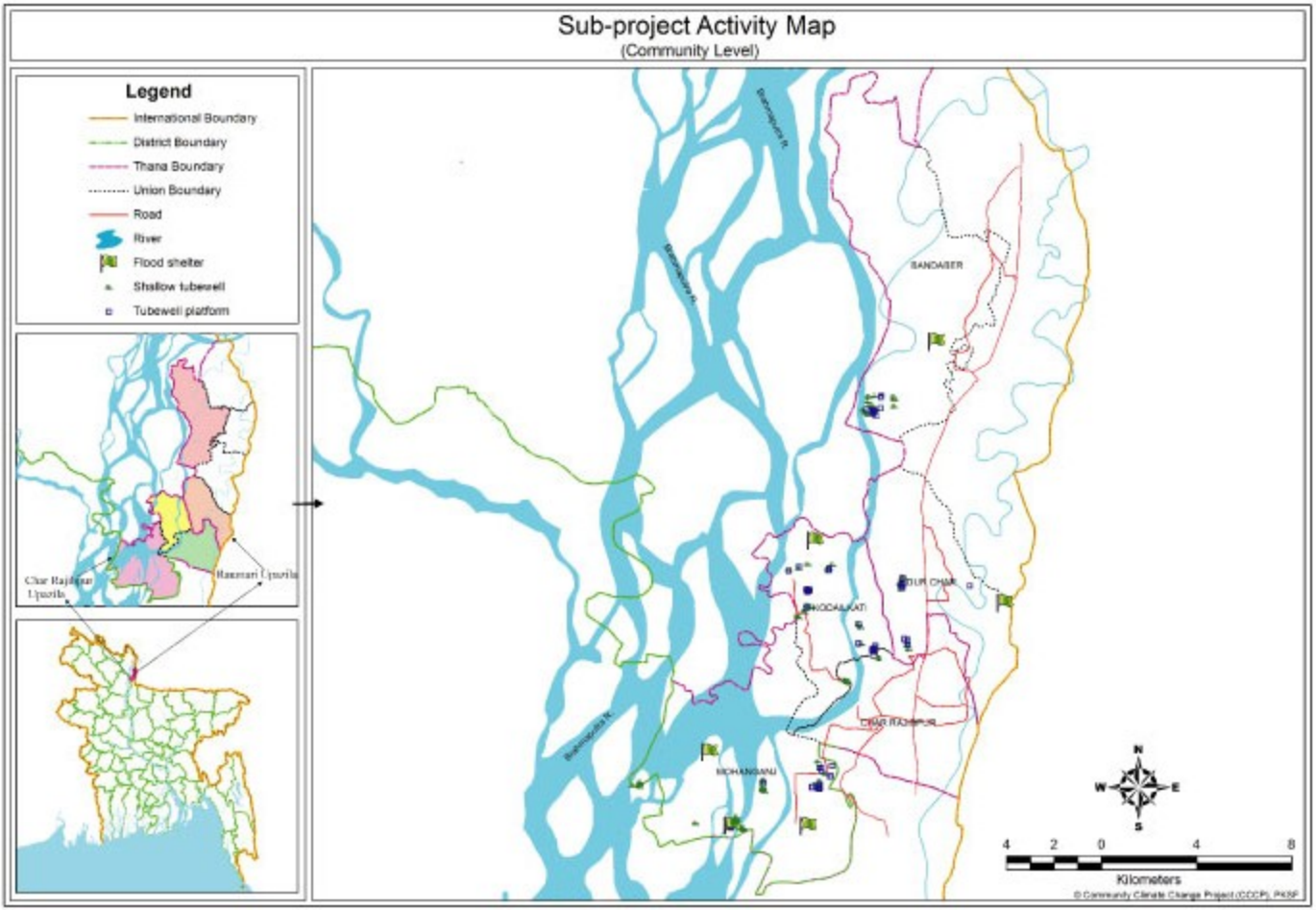


Figure 2: Map of Sub-Project Activity

Chapter 2: Vulnerability of the Sub-project Area

2.1 Context of Climate Change

2.1.1 Temperature

The northwest region is characterized by high temperature and low rainfall compare to average condition of Bangladesh. Average temperature ranges from 25°C to 35°C in the hottest season and 9°C to 15°C in the coolest season. However, the region sometimes experiences extremes in summer; some of the hottest days experience a temperature of about 45°C or even more and in winter temperature falls to about 5°C in some places.

2.1.2 Rainfall

Observed data shows that both number of days without rainfall and annual total rainfall in Kurigram distrct experienced changes in rainfall patterns. The most important changes noted by the people living in the north-west of Bangladesh are excessive rains, both in terms of the absolute amount throughout the monsoon and single very intensive heavy-rainfall occurs. Also, an increase in the variability of rainfall, in terms of "too much" and "too little" rain and its timing, as rain is either absent or comes at unexpected times. However, the overall total monsoon rainfall seems to be declining at a rate of about 0.55 mm per year, as shown in figure, on the basis of the daily rainfall time series for Kurigram during 1979 and 2010. While the total amount of monsoon rainfall in Kurigram and thus the change in the absolute amount of rainfall is only negligibly declining or even increasing, figure shows that the variability of rainfall is increasing. In the year 1998, for instance, throughout the whole rainy season, quantity of rainfall was more than 80 mm, above the average of the entire monsoon between 1980 and 2007. More recently, excessive rains also with impressive peaks in terms of single heavy rainfall recorded for the monsoon in 2004 and 2005. In contrast, 1994, 2000 and 2006 were particularly dry years.

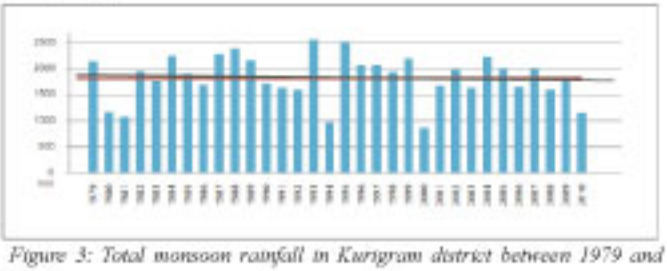


Figure 3: Total monsoon rainfall in Kurigram district between 1979 and 2010.
Source: Daily rainfall, time series, Kurigram Station, Bangladesh Water Development Board (BWDB).
With courtesy of Flood Forecasting and Warning Centre (FFWC), a body within the BWDB, serving under the Ministry of Water Resources (MOWR).
Note: June to September is monsoon period;
Red line = total average monsoon rain (time series 1979-2010); grey line = linear trend of average monsoon rain (Time series 1979-2010).

2.1.3 Climate Change-induced Hazards

People have noted visible anomalies or changes in the seasonal pattern. Three seasons namely, summer, monsoon and winter have become dominant. Other three seasons namely autumn, late autumn and spring seem to merge with them due to climate change. Summer has become prolonged and very hot. Rain starts very late;

and the season manifests in few bouts excessively heavy rains and dry spells in-between. Winter has become delayed, short and severe. It also includes several spells of cold-wave. These variability and seasonality of climate elements have significant impacts on climate change induced hazards. Frequency, timing and nature of the hazards have also changed. Earlier, in 1980's and 1990's, floods were usually a single incidence of deep inundation in a year but, nowadays, flood has become recurring events with low inundation in a given year. In the past, riverbank erosions were in specific areas and always associated with accretions at some distance. Riverbank erosions currently occur in several locations simultaneously and accretions rarely create new chars; instead, it raises the riverbed. However, major hazards are described below:

Flood

Floods are normal phenomenon in Bangladesh. It usually occurs during the monsoon season. Monsoon flood in June, 2015 was one of the devastating catastrophes over the last couple of years in terms of frequency and intensity in the sub-project area. It continued from 13th June to first week of July, in 2015. Main cause of monsoon flood was heavy rainfall in the locality. The flood situation in Kurigram district has worsened due to incessant rains and onrush of water from the upstream. Flood marooned at least one lac people in low-lying areas of around 40 unions in Rowmari, Char Rajibpur, Ulipur, Chilmari and Sadar Upazilas of Kurigram district. Sources of the Bangladesh Water Development Board (BWDB) represents that the water level of the Brahmaputra River raised by 2 cm, while that of the Dudhkumar and Teesta River by 5 cm. The flood-affected people were required emergency supports including dry food as they cannot run their home burners. Besides, crops and vegetables in the area have been submerged by flood water. (New Age Online June 14, 2015). Approximately 8,000 households of 9 unions were marooned by overflowing Brahmaputra, Dudhkumar, Dharala, Teesta and Gangadhar rivers (The Daily Star, June 15). Hundreds of houses, roads, educational institution and agricultural land of 12 villages inundated and many ponds washed away due to heavy rainfall and upstream water flow at Rajibpur and Roumari upazila. Several thousands of people of Kurigram district were stuck by flood as water level of Brahmaputra; Dhorala and Teesta rivers have been increased beyond the danger point. Houses and communication system have broken down and the residents along with their domestic animals took shelter in higher places. Sources of the Kurigram Water Development Board (WDB) said water level of river Dhorola in the bridge point flowing 33-cm above the danger line and in Rajibpur, Roumari & Chilmari point water of river Brahmaputra and Teesta flowing 4-cm above danger line in 2015 flooding. Victims had to face shortage of pure water and food during flood. Department of Agricultural Extension (DAE) of Kurigram informed that Aman crops of some 45,840 hectors land went under water during this flood. But, if the water removes quickly the damage would be minimized. (Banglanews24.com August 23, 2015).

According to the Department of Agriculture Extension (DAE) sources, the floods have damaged crops on 44,863 hectors of land worth Taka 410 core affecting 3.27 lac farmers in Kurigram (BSS, 21 September 2015).In 2014 floods gripped vast areas of Rajibpur, Rowmari, Kurigram Sadar, Chilmari and Ulipur Upazilas. Approximately 400 villages across 27 Unions are reeling under water with 37,450 families affected. 48,500 hectors of cultivated crops have been destroyed, 4,506 houses fully and 17,645 houses partially destroyed due to this flood. In addition, 8 educational/religious institutions fully and 69 partially destroyed by this devastating flood. (CARE BD EMERGENCY UPDATE September 7, 2014). In 2013, the country experienced normal flooding incidents in July and September. On the onset of monsoon in July, a wider part of north Bengal and part of central region along the river Brahmaputra were affected. Furthermore, the north-western part of the country was flooded; although the area affected by flood was high, the duration was relatively low. In the north-eastern part, the water flow was above the danger level for consecutive 120 days (Annual Flood Report 2013, FFWC Page VI); 9 people were killed and about 28,000 families were affected. (GoB Disaster Report 2013)

River Erosion

Rates of riverbank erosion have accelerated in June, 2015 and it occurred in many places during the month. It continued from 5th June to first week of July, 2015 in Kurigram districts. Around 305 houses, 03 commercial institutes along with around 317 acres of agricultural lands were devoured by the rivers due to their bank erosion (NIRAPAD, Monthly Disaster Incidence June 2015). In the monsoon, river erosion in Kurigram's Rajibpur, Roumari & Jatrapur and Chilmari has taken a destructive turn due to the incessant rain and gushing water from the nearby hills. Ballov Para,Velamari, Modonerchar, Kittontary, Boroberchar Munshipara, Goal para Sankar madobpur, Sankarpurpara & Baparipara, Kutirchar, Palerchar areas of Kodalkati,

Table 2: Major floods in Kurigram district

Flood Year	Affected Areas (Sq. Km.)	Population Affected	Agricultural Land Affected (acres)	Households destroyed (Nos.)	Road destroyed (km)	School Affected (Nos.)
2015	245	56,000	113225	8000	24	7
2014	178	45,092	6660	8047	37.60	50
2013	219.50	75,000	8478	9863	32	9
2010	156	35,000	5837	9000	40	3
2007	988	2,63,575	46673	6600	130	93

Mohonganj, Bondober and Rajibpur unions were the worst affected as villagers are fast losing their homesteads and farmlands due to the erosion. The erosion was caused by the Brahmaputra, Sonavori & Teesta rivers that run through the Oshtomirchar, Shaowlmari, Dathvanga & Kapasia unions. The rivers have been swelling for the few weeks of June causing strong and swirling waves. Kodalkati, Mohonganj of Rajibpur and Bondober, Jadurchar of Rowmari & Jatrapur, Chilmari and Begumganj unions were witnessing a massive destruction as the river is engulfing about 200 meter of land per hour, according to the locals (Dhaka Tribune June 12, 2015). More than 250 houses devoured due to river bank erosion of Brahmaputra River in last seven days in June 2015. Approximately 870 houses have been devoured due to Brahmaputra & Teesta river bank erosion in last 4 days (The Ittefaq, June29). 270 dwelling houses and 190 acres of crops land have been devoured by Brahmaputra & Teesta, Sonavory, Dudhkumar and Gangadhar River in last four days (The Daily Star, June 25, 2015). River erosion in 2015 was occurred by heavy current of Brahmaputra, Teesta & Sonavori River destroyed newly emerged chars name Nawshala Brober located in the river, erosion returned and rendered more people homeless. Erosion by the Teesta River demolished 60 more houses, a flood shelter, several hectares of crop lands and a 50 meter stretch of the number 6 cross dam near the Noya Char Bazar area in Rajibpur upazila in Kurigram in October, 2014. Many educational institutions, several mosques, Koratipara village, Northern and western charneaji village and Charneaji govt primary school and west char Rajibpur were under the imminent threat of erosion in October-2014. Apart from Diara govt. Primary School, which is also a community policing centre along with Noyachar govt.Primary School, Dhakhil & Fazil Madrasha, Mohonganj Union Parishad bulding, Noyachar Bazar, Mosques, Agriculture extension sub-office, federation building and many other roads, houses, tress including govt & non-govt institutions have been erosion by Brahmaputra & Tessta and Sonavori River during flood-2015.

Cold Wave

Bangladesh as a tropical country that enjoys a moderate winter. However, in recent years the country has experienced numerous cold waves during the winter. These natural events are termed as disaster when adversely affects the whole environment, including human beings, their shelters, or the resources essential for their livelihoods. For last few years the country experienced some severe cold waves that caused serious damage, distress and disruption for the affected people. In January 2010, northern parts of the country experienced a rapid fall in temperature with cold winds and dense fog resulting significant rise in respiratory illnesses and in some cases deaths, while in January 2011, the Meteorological Department recorded the temperature as 2 to 5 degree Celsius lower than the normal average temperature (about 10°C) during that time of the year. The impact of cold waves is as notorious as other regular natural calamities of Bangladesh as far as the damage, distress and disruption as well as death toll was concerned. The cold wave of January, 2011 claimed 39 lives with most victims being children and the elderly. Hospitals in the affected districts have reported higher numbers of admissions with cold weather related illnesses. The weather has also caused crop and other natural resource loss, which will have a longer-term negative impact on the economic situation for the already poor communities in the worst affected areas. In 2013, cold wave coupled the country during the first week of January, affecting more than 20 districts including Panchagarh, Thakurgaon, Dinajpur, Nilphamari, Lalmonirhat, Rangpur, Kurigram, Gaibandha, Bogra, Joypurhat, Naogaon, Chapainawabganj, Rajshahi, Natore, Sirajganj, Pabna and Mymensingh in the north, Moulvibazar in the east and few districts in the south namely Kushtia, Jessore, Faridpur and Madaripur. More than 50% of population living in those districts was affected and 80 people were died, where many of them were children. During the cold wave of 2013, the temperature of Syedpur dropped down to 3 degree Celsius, the lowest records in Bangladesh since 1968.

2.1.4 Physical Context

Kurigram district lies on the foot of the Himalayan. The land form is fully characterized by one of the major rivers of the country Brahmaputra and its tributaries. The other rivers that shape the land form of the sub-project areas are Teesta and Dharala. All the three rivers are very active in fluvial process causing severe erosion and flooding. All the selected unions are remote char areas which are subject to annual flooding and erosion. There is no reserve or natural forest in the catchment area. Temperature variation due to climate change affects the timing and rate of snow melt in the upper Himalayan reaches. The current trends of glacial melts suggest that the Ganga, Brahmaputra and other rivers that crisscross the northern plain land could likely become seasonal rivers in the near future as a consequence of climate change. Teesta, Brahmaputra and Dharala river system would begin to swell early, which increased precipitation in monsoon, would generate additional volumes of runoff.

2.1.5 Socio-economic Context

Kurigram is one of the poorest districts in the country. A poverty map of Bangladesh shows that the highest numbers of poor people live in Kurigram district while the rate is lowest in Kushtia district (HIES 2010, Population Census 2011, BBS and World Bank). According to the Poverty Map, 30.7 percent people are poor in the country. But Kurigram is top in the district level poverty rate where 63.7 percent people are poor while the poverty rate in Kushtia district is only 3.6 percent. There are many occupations in Kurigram district like agriculture, agricultural laborer, wage laborer, fishing service, transport job, commerce etc. But agriculture is the main occupation in this area. Major occupation is subsistence agriculture which is highly sensitive to flood and river erosion. Main sources of income Agriculture 70.41%, non-agricultural laborers 4.74%, industry 0.51%, commerce 9.45%, transport and communication 2.02%, service 4.98%, construction 0.77%, religious service 0.15%, rent and remittance 0.21% and others 6.76%. Climate change aggravated impacts of these consequences affecting livelihoods, agriculture, health and other resources. It also affects employment of rural people particularly those of daily wage labor.

Chapter 3: Existing Practices of Adaptation and Risk Reduction

Household clusters with raised plinths stay above flood water.

3.1 Government Initiatives

As Kurigram is one of the most vulnerable districts of Bangladesh, there are a lot of government interventions in the project area such as: Integrated Agricultural Productivity Project (IAPP), Akti Bari Akti Khamar, Kabikha, Test and Emergency Relief (TER), Local Govt. Sustainable Project (LGSP), Ultra poor program, Food for Work, LGD Program, and Rural Maintenance Program (RMP).Kurigram is one of the most vulnerable districts of Bangladesh in terms of climate change variability and extreme events including flood, river erosion, drought and cold wave. A lot of climate change and disaster related projects have been implemented in this project area. Mainly projects like: PWSH Implement by-MJSKS, Enhancing resilient program (ER) by- Poddokhep Manobik Unnayan Songstha, Family & community level Disaster Risk Reduction (FCDRR) Implemented by-Caritas, DRR Implemented by-TDHF, From School to Homestead Gardening (FSHG) Implemented by-TDHF, CMDRR Implemented by- Friendship, Sustainable Economic Development (SED) Implemented by- Friendship, SWAPNO Implemented by- ESDO.

Table 3: Government Initiatives

Sl No	Project title	Goal and objectives	Major Activities	Duration	Budget (in BDT)	Implemented by	Funded by
1.	Integrated Agricultural Productivity Project (IAPP)	To generate and release to farmers new varieties that give a higher yield and provide technological solutions to production problems under specific agro-ecological conditions To improve productivity through production and supply of quality seed and breeding materials To increase the availability of surface water for crop and livestock	Technology generation. 1. Technology adoption; 2.Water management and 3. Technical Assistance and Capacity Building.	July 2011-June 2016	1,98,75,790 (For 2 Upazilas)	Department of Agriculture Extension (DAE)	GoB

Sl No	Project title	Goal and objectives	Major Activities	Duration	Budget (in BDT)	Implemented by	Funded by
		production, reduction in conveyance and distribution loses, and energy saving from more efficient irrigation systems Test project objective					
2.	Ektee Bari Ektee Khamar	Poverty alleviation and sustainable development through fund mobilization & farming	a. Formation of 81,000 cooperatives involving all the small & marginal farm families by 2016 b. Ensure optimum use of local human and natural resources sustainably by 2018 c. Provide possible assistance to all smallholders in fund mobilization by 2017 d. Provide assistance to all small farmers in investment in family farming by 2018 e. Skill development and Empowerment of the poor farmers in particular the women by 2016 f. All activities through e-financial management and	January 2010 - June 2016	1,49,08,576	Bangladesh Rural Development Board (BRDB)	GoB

Sl No	Project title	Goal and objectives	Major Activities	Duration	Budget (in BDT)	Implemented by	Funded by
			cooperatives by 2016 g. Develop marketing centers at Sub-district & union level ensuring online or Remarketing Facilities for the farmers by 2018. h. Develop food process-ing and cold storage facilities at sub-district level for the getting avail-able food				GoB
3.	Kabikha	a. Food for work b. Available food	Earth works, Solar, Road Repairing	June 2016	244 ton rice'	Project Implementa-tion Office (PIO)	GoB
4.	Test and Emergency Relief	a. Available food b. Reduce Monga	Earth works, Solar, Road Repairing	June 2016	213 ton rich	Project Implementa-tion Office (PIO)	GoB
5.	Food for Work	Employment generation	1.Earth work 2.Saving accumulation	6 month	213 ton rich	LGED	GoB
6.	Enhancing resilient program	Enhance resilient to disaster and the effect climate change, food security, live hood	1.Road repairing 2. Earth work 3. IGA training	January 2015 December 2016	2,75,68,500	Padokhep Manobik Unnayan Songstha	WFP and GoB
7.	Improving community Based management of Acute Malnutrition in Flood affected areas of Northwest Bangladesh	Enhance the disaster risk reduction capacity of the rural poor communities and local Authorities in order to alleviate poverty in project area	1. Plinth rising. 2. Flood Shelter 3. Tree planta-tion. 4. Rice Bank 5. Sweet pumpkin	December 2014 – March 2015	1,12,00,786	Tere Des Home Foundation (TDHF)	WFP-GoB

Sl No	Project title	Goal and objectives	Major Activities	Duration	Budget (in BDT)	Implemented by	Funded by
	in the Government Health System						
8.	Strengthening Women's Ability for Productive New Opportunities (SWAPNO)	The overall objective of this project is Strengthening Women's Ability for Productive New Opportunities (SWAPNO) is "Economic growth is achieved in a more inclusive manner, with economic opportunities reaching rural poor women, and vulnerable groups are protected against shocks"	1. Public works/ Employment Services 2. Basic Service delivery through Block grants 3 Climate Change Adaptation Program Through Block grant	20 Sep-2014- Sep 2016	20,16,61,890	ESDO	LGED & UNDP

3.2 Active NGOs and CBOs in the project area

Islamic Relief, Gana Unnayan Kendra (GUK) RDRS Bangladesh, MJKS, Poddokhep Manobik Unnayan Songstha, Manob Mukti Sangsta (MMS) Light House, KDAB, Grameen Bank, RICHDA-Bangladesh, TDHF, TDSI Shishu Polli Plass, RSDA, IDE, Caritas, Care-Bangladesh BRAC, Rupaly Health Care, Gono Shasto Kendro, CDDF, Union Federation, Friendship, and ESDO are working in different development sectors in the district.

3.2.1 Completed Projects

Recently some projects of different NGOs have completed in the project area. The completed projects including implementing NGOs are; SHOUHARDO-1 & 2 by MJSKS, PRIME by ESDO, DRR by TDHF, VGD, & DRR CLP by RDRS Bangladesh.

Table 4: Completed Projects

Sl No	Project title	Goal and objectives	Major Activities	Duration	Total budget	Implemented by	Funded by
1.	Strengthening Households and Active Response to Develop Opportunities. (SHOUHARDO- I & 2	**Goal:** Sustainable Reduce Chronic and Transitory Food Insecurity of 6171 Vulnerable Households in Dimla upazila under the Nilphamari District of Bangladesh by 2009. **Objectives:** 1. Improved availability/ economic access to food through strengthening livelihoods, securing entitlements and 2 enhancing accountability of service providers.	1. Home stead vegetables fruit gardening 2. Agriculture & Fisheries 3. IGA Support 4. Commodity support 5. Mother Child Health and Nutrition 6. Early Child Care Development 7. Humanitarian Assistance	March 2005 – December 2015	-	MJSKS	USAID – GoB and CARE

Sl No	Project title	Goal and objectives	Major Activities	Duration	Total budget	Implemented by	Funded by
		2. Sustainable improvement in the health and nutrition of program participants. 3. Enhanced empowerment of 400,000 women and girls targeted vulnerable Households. 4. Targeted communities and institutions are better able to prepare for mitigate and respond to natural disasters.					
2.	Strengthening Households and Active Response to Develop Opportunities. (SHOUHARDO-II)	Goal Transform the lives of 370,000 Poor and Extreme Poor (PEP) households in 11 of the poorest and most marginalized districts in Bangladesh by reducing their vulnerability to food insecurity 1. Availability of and access to" nutritious foods enhanced and protected for 370,000 PEP households. 2. Improved health, hygiene and nutrition status of 281,000 children under 2 years of age 3. PEP women and adolescent girls empowered in their families, communities, and Union Parishad 4. Local elected bodies and government service providers responsiveness and accountability to the PEP increased 5. Targeted community members and government institutions are better prepared for, mitigate, and respond to disasters and adapt to climate change	1. Home stead vegetables and fruit gardening 2. Agriculture & Fisheries 3. IGA Support 4. Commodity support 5. Mother Child Health and Nutrition 6. Early Child Care Development 7. Humanitarian Assistance	1st March 2011 to 28th February 15	317,024,752	SKS Foundation	USAID – GoB and CARE

Sl No	Project title	Goal and objectives	Major Activities	Duration	Total budget	Implemented by	Funded by
3.	Improving community Based management of Acute Malnutrition in Flood affected areas of Northwest Bangladesh in the Government Health System	Enhance the disaster risk reduction capacity of the rural poor communities and local Authorities in order to alleviate poverty in project area	1. Plinth raising. 2. Flood Shelter 3. Tree plantation. 4. Rice Bank 5. Sweet pumpkin	December 2014 – March 2015	1,1200786	Tere Des Home Foundation (TDHF)	WFP - GoB
4.	DRR	Enhance the disaster risk reduction capacity of the rural poor communities and local Authorities in order to alleviate poverty in project arc	1. Plinth raising. 2. Flood Shelter 3. Tree plantation. 4. Rice Bank Sweet pumpkin	31 December 2013	12,82,50,000	RDRS Bangladesh	EU, DCA
5.	VGD	To reduce the vulnerability ,improving the livelihood and to make the sustainable developments	1. IGA Training 2. Saving & Lon	31/12/14	19,45,945	RDRS Bangladesh	WFP, GOB
6.	From School and Homestead a child based acuaculture and gardening project	To increase protein intake of pregnant women and <2 years child by producing vegetables and fish and also increase knowledge about nutrition and hygiene.	1. Fish cultivating in ponds 2. Gardening 3. Water and Sanitation 4. Capacity building	December 2014– March 2015	1,12,00776	TdhF	SHIRE E/DFID
7.	Char Livelihood Programme - CLP	The Goal of CLP is to Reduce Poverty Level in the char Area Of Jamuna and Brahmaputra river by Improving the quality of Life thought prove riding livelihoods security for the poorest man Woman And Children of the program me Area	1. Social Development 2. Primary health care & Family planning Unit (PHC-FP 3. Direct Nutrition Intervention Project Unit (DNIP)	July'2005- March' 2016	47,81,65,493	RDRS	UKaid and AusAID

Sl No	Project title	Goal and objectives	Major Activities	Duration	Total budget	Implemented by	Funded by
			4. Village Savings & Loan Unit (VSLP) 5. Market & Livelihoods Project (MLU). 6. Infrastructural activities e.i Plinth raise Tube well latrine installation etc.				

3.2.2 Existing Projects

The CCCP sub-project has been implementing in Rajibpur and Roumari Upazila of Kurigram district which are situated on the bank of Brahmaputra, Sonavori & Teesta River. A good number of projects are being implemented by different NGOs in the project area. Projects implementing by government and different NGOs in this area are: Resilience through Economic Empowerment, Climate adaptation Leadership and Learning (Rec-Call), the demand for impacts of solar lamps in Bangladesh, Ultra Poverty Reduction (Chars Research Project) by Gana Unnayan Kendra (GUK). Community Climate Change Project (CCCP), MF, SFP, IMCN, SHIKHON, TB & Laparoscopy, Health and SCOPE by RDRS Bangladesh; Agriculture & Food Security Programme, TUP, Health and MF by BRAC; MF by Grameen Bank, Health, MF, Education by Gono Shasto Kendra and RSDA, Sustainable Economic Development (SED), CMDRR and Education program by Friendship, Solar Home System by Rahim Afroz, Solar Home System by Grameen Shokti; Agriculture & Nursery Programme by-KDAB, Family & community level Disaster Risk Reduction (FCDRR) Implementing by Caritas, SWAPNO Implementing by ESDO. Besides these, Kurigram district has some safety net programs. Such as safety net programs are; Ektee Bari Ektee Khamar, VGD, VGF, Old age allowance, Disable allowance, pregnant mother allowance, Widow allowance.

Table-5: Projects profiles in the working area

Serial No	Project title	Goal and objectives	Major Activities	Duration	Total budget	Implemented by	Funded by
1.	Climate Adaptation for Char island People (CACP)	**Goal:** To contribute to achieve the national program of poverty reduction and climate adaptation of Bangladesh. **Objectives:** Livelihood of climate vulnerable poor people improved through enhancing income generating capacity and resilience to risks of climate induced disasters.	1. Homestead rising including 06 cements pillars. 2. Flood shelter repairing/ community places rising. 3. Slatted housing for goat/sheep rearing.	01st August 2013 to 31 December, 2016.	BDT. 2,51,98,178	Gana Unnayan Kendra (GUK)	Palli Karma-Sahayak Foundation (PKSF)

Serial No	Project title	Goal and objectives	Major Activities	Duration	Total budget	Implemented by	Funded by
			4. Tube well installation with platform. 5. Build tube well platform. 6. Improved oven (Bondhu Chula) distribution.				
2.	Resilience through Economic Empowerment, Climate Adaptation, Leadership and Learning (REE-CALL)	**Goal:** Women and men most at risk of disaster and climate change induce are able to thrive in spite of socks and change. **Objectives:** (1) To develop replicable model of resilience community in three agro Ecological zones and linking with urban setting. (2) To enhance and strengthen the livelihoods of targeted communities in changing climate. (3) Develop community leadership-specially of women ensuring access to and control over resources services and opportunities.	1. Cattle Support / Distribution. 2. Fodder Enterprise. 3. Model farm rearing. 4. Milk collecting centre. 5. Build tube well platform. 6. Improved oven (Bondhu Chula) distribution.	April, 2015 to March, 2016.	BDT. 1,4600000	Gana Unnayan Kendra (GUK)	Oxfam--GB
3.	Vulnerable group Development programme (VGD)	**Goal:** To develop socio economic condition of VGD's supported women. **Objective:** 1. To empower the VGD women by socially & economically. 2. Reduce the vulnerability, improving the livelihood and to make the sustainable developments.	1.Group formation 2. Training on social awareness 3. Training on income generating activities	01 march2015 to 31 December, 2016.	BDT. 25,65000	OCAB Society	GoB

Serial No	Project title	Goal and objectives	Major Activities	Duration	Total budget	Implemented by	Funded by
4.	Improving Maternal , Neonatal& child survival project (IMNCSP)	**Goal:** To reduce mortality rate of mother, neonatal and child specially poor and deprived people of the society. **Objective:** 1. To develop the health-sanitation habits, cares knowledge skill of mother, neonatal and child. 2. To arrange standard free health services of mother, neonatal and child in the society. 3. To ensure the participation of the communities in the health caring activities (MNCH).	1.Pregnant identify 2.ANC & PNC 3.0-05 years child care 4. MNCH Committee 5. Referral Hals.	June, 2013 to May, 2018.	BDT. 15,90,618	BRAC	DFID & Netherland Aid
5.	Integrated Agricultural Productivity Project (IAPP)	1. To generate and release to farmers new varieties that gives a higher yield and/or provides technological solutions to production problems under specific agro-ecological conditions. 1. To improve productivity through production and supply of quality seed and breeding materials 2. To increase the availability of surface water for crop and livestock production, reduction in conveyance and distribution loses, and energy saving from more efficient irrigation systems	1. Technology generation; 2. Technology adoption; 3. Water management and 4. Technical Assistance and Capacity Building.	July, 2011-June. 2016.	30,00,000	Department of Agriculture Extension (DAE)	GoB
6.	Ektee Bari Ektee Khamar	Poverty alleviation and sustainable development through fund mobilization & farming	a. Formation of 81,000 cooperatives involving all the small & marginal farm families by 2016	January 2010 June 2016	2,35,82,207	Bangladesh Rural Development Board (BRDB)	GoB

Serial No	Project title	Goal and objectives	Major Activities	Duration	Total budget	Implemented by	Funded by
			b. Ensure optimum use of local human and natural resources sustainably by 2018 e. Provide possible assistance to all smallholders in fund mobiliza-tion by 2017 d. Provide assistance to all small farmers in investment in family farming by 2018 e. Skill develop-ment and Empowerment of the poor farmers in particular the women by 2016 f. All activities through e-financial management and cooperatives by 2016 g. Develop marketing centers at Sub-district & union level ensuring online or Remarketing Facilities for the farmers by 2018. h. Develop food processing and cold storage facilities at sub-district level for the Producers/ farmers by 2020.				

Serial No	Project title	Goal and objectives	Major Activities	Duration	Total budget	Implemented by	Funded by
7.	Challenge TB & Laparoscopy, Health	Improve patient centered quality care and services for TB Sustain and enhance systems. Transmission and disease prevention.	Early referral of suspected cases of leprosy. Screaming of suspected cases of leprosy by skin camp. Community based rehabilitation Hospital based rehabilitation Folk song and popular theatre Capacity \ building	July 2015-June 2016	-	RDRS Bangladesh	USAID (MSH)
8.	Integrated community based primary health care model project (ICBHC)	**Goal:** To provide free primary treatment to the people of Chars area.	1. To identify the cervical cancer (see & treat) of poor women in the chars area. 2. To give primary free treatment the women with cervical cancer (see & treat) of Chars area. 3. To arrange improved treatment attacked with cervical cancer (see & treat)	January to december, 2016	63,08,566	Friendship	Lux-em-bourg
9.	EPI Support programme	**Goal:** To increase the disease protective power of mother and child. **Objective:** To ensure consciousness about EPI and vaccination.	1. To ensure vaccination at the age of 0-18 years old of child. 2. To partici-pate the targeted people to the relevance programs of M Health.	July,15 to June, 2016	31,15,310	Friendship	Eriks

Serial No	Project title	Goal and objectives	Major Activities	Duration	Total budget	Implemented by	Funded by
10.	M Health Project	**Goal:** To serve improved treatment through mobile software.	1. To serve improved treatment through mobile. 2. To provide treatment through mobile software. 3. To get information easily.	Dec 15 to Novem-ber, 2016.	94,22,639	Friendship	GSK Glaxo Smith Kline
11.	Friendship Community Medics Aide (FCM-Aid)	**Goal:** To adopt the health awareness & family planning method of char dwellers. To provide primary health care and treatment of mother & child.	1. To increase health aware-ness of char dwellers. 2. To provide primary health care and treatment of mother & child. 3.To serve primary treatment to the poor char dwellers.	January to December, 2016	73,60,380	Friendship	Eriks

Chapter 4: Outcome of the Sub-project Activities

Installation Tubwell with Platform

Activity 1: Plinth raising

Considering the last 15 years highest flood level, cluster basis 646 plinths have been raised by 2 feet above from last occurred flood. The sub-project has raised plinths of 646 HHs in the selected unions. As per Activity Implementation Guideline of CCCP, households were selected on the basis of cluster through series of consultation made at community/group level. All the households are raised by avoiding top soil of land and the beneficiaries have raised their houses and also planted trees on the raised plinths. No disturbing of agricultural land for plinth rising, it was collected from fallow land, canals and ponds. This earth work created employment opportunity of the poor people for daily work during lean period where deliberate effort made to engage more women. This plinth raising intervention created employment opportunity and contributed in food availability of poor family within the villages for about 02 months and protected them from selling advance labour, distress sale of assets and migration during lean period. Raised plinth contributed to save life, household assets, cattle, poultry and shelter for others people during flooding and also enabled to produce vegetable for family nutrition support and earning from sale of surplus production. Some beneficiaries prepared seedlings on the plinth during flood. Inhabitants of the cluster said that rising of their homestead can protect them from flood even if it is devastated than the flood in 2014. They can get support some of their neighbors during emergency period especially flood offering to take shelter with them. They will take good care of their houses, so that it last for long". The beneficiary also said, to create opportunities for cultivating vegetables on the raised plinths.

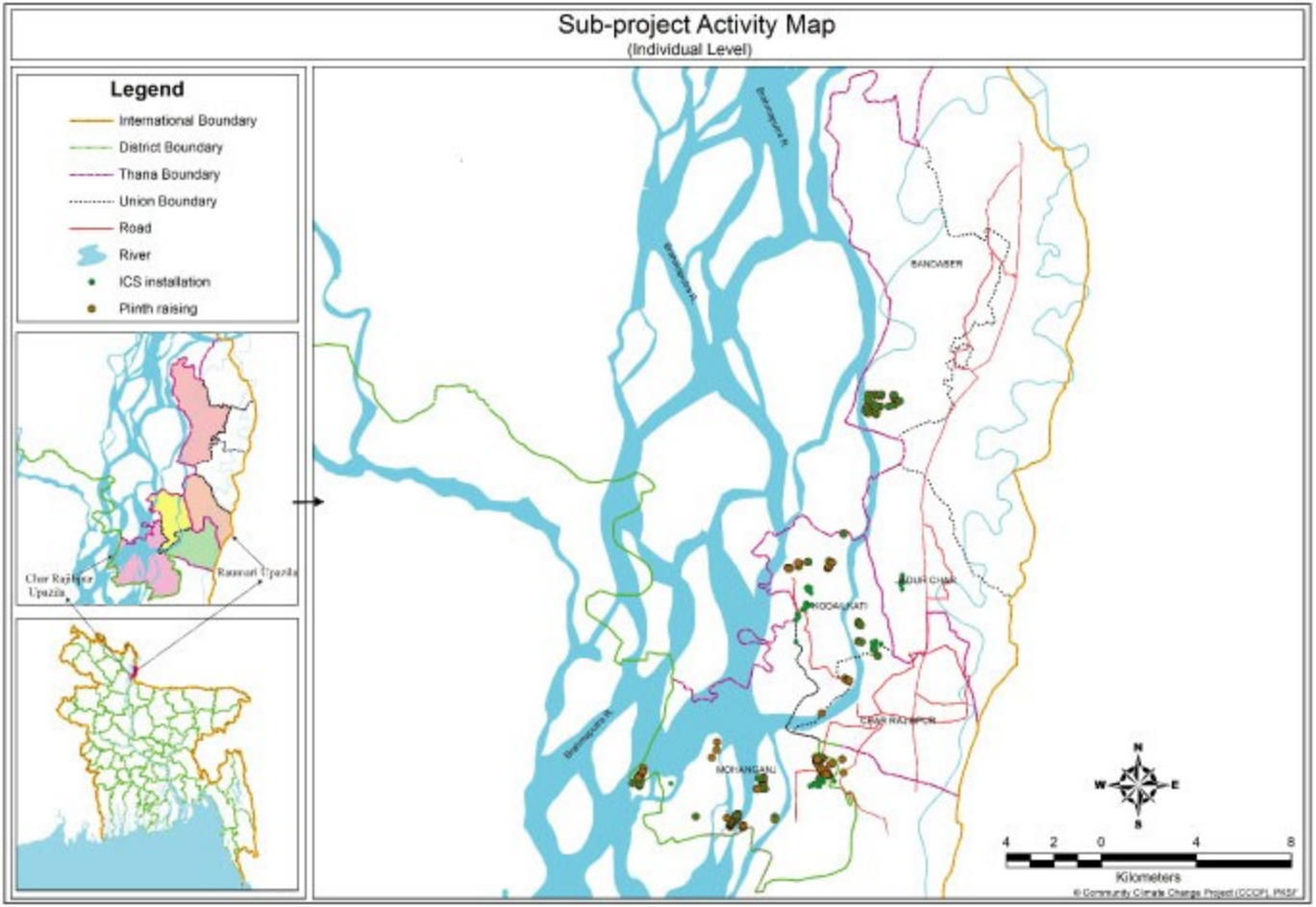
Activity 2: Goat/Sheep rearing in slatted sheds

Photograph 01: Goat/sheep rearing

Goat/sheep rearing is a very traditional practice in throughout the country. Mainly the poor and marginal people rear goats to support their livelihood during lean period. But they face challenges to reduce diseases and mortality of the livelihood resources. The major problem of traditional process of goat rearing is that people keep goats on soil at night. It allows goat to inhale methane from their urine which causes bronchitis, cold and other respiratory diseases. The sub-project has introduced slatted houses for goat rearing which is a proven technology of reducing these diseases. To overcome veterinary problems, 605 slatted houses have been distributed for goat/sheep rearing.

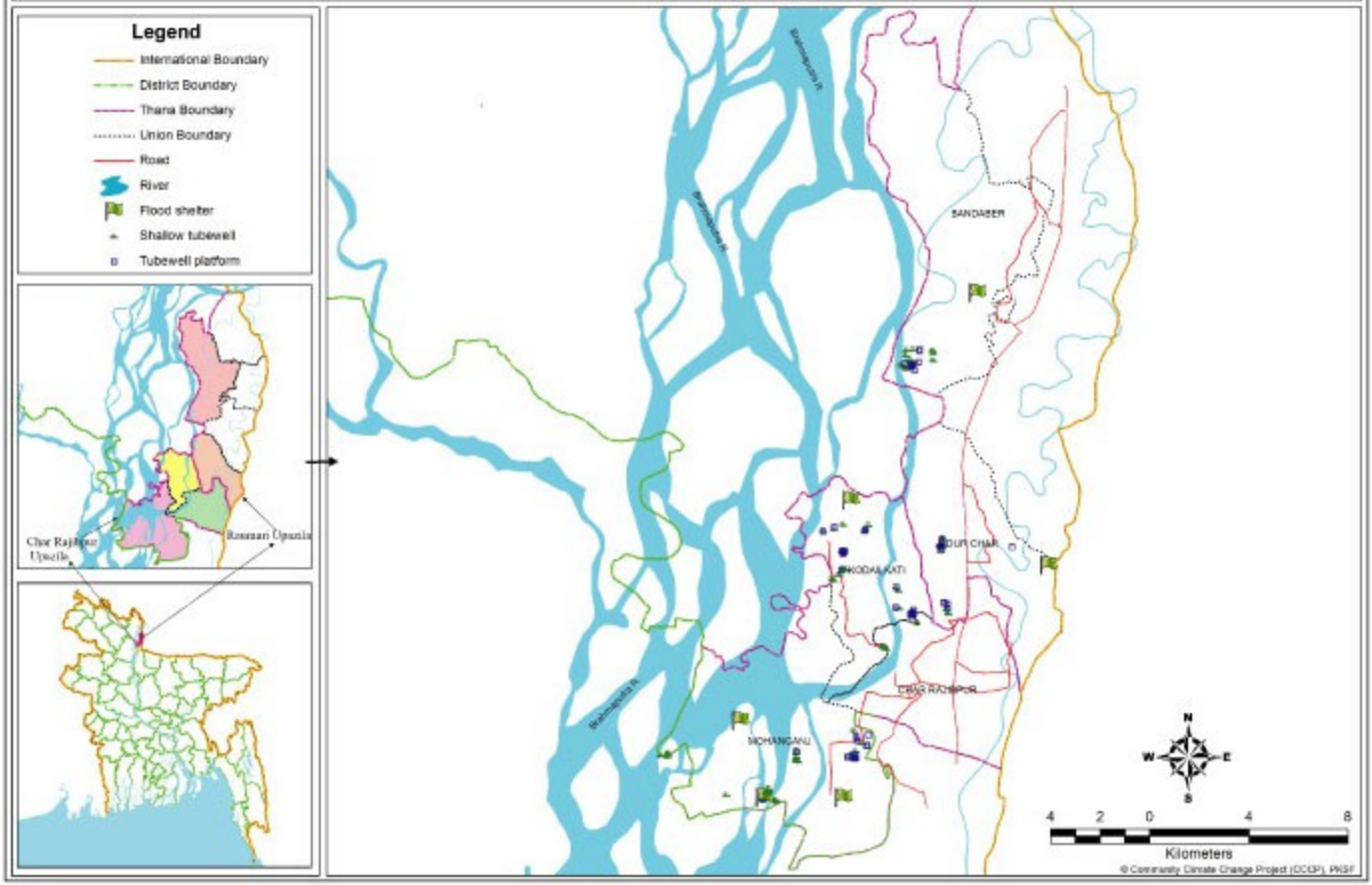
Sub-project Activity Map

(Individual Level)



Sub-project Activity Map

(Community Level)



Apart from, rural poor people rarely get information about vaccination and treatment of goat. The sub-project supports to make slatted house for goat, training on improved management of goat rearing, vaccine and other veterinary services. It is observed from the field that disease of goat has been reduced, goats become healthy and consequently productivity increased.

Activity 3: Distribution of Improved Cooking Stove (Bondhu Chula)

CCCP sub-project have distributed 550 improved oven (Bondhu Chula) among the beneficiaries. Traditional cooking stoves are called "slayer in the kitchen". Normally, women who cook food for their family,

Photograph 02: Improved Oven (Bondhu Chula).

directly inhale carbon-di-oxide with smoke when they cook. As a result, they get affected by various respiratory diseases. Not only that but also their babies inhale smoke and grows up with respiratory diseases. In addition, traditional stoves require more fuel and time meaning higher carbon-di-oxide emission in the atmosphere. By using low carbon emitting improved cooking stove, they are improving their health and keeping their baby healthy. Field observation shows that visible problems of traditional stove like smoke, eye irritation etc. are totally removed. As the stove requires less fuel, it is certain that emission has been reduced. ICS users also informed that they did not feel respiratory problem which they felt with traditional stoves.

Activity 04: Installation of tube wells with platform

Photograph 03: Tube well Installation with platform.

The main objective of this activity is to ensure safe drinking water for the flood affected people. During flood, most of tube wells submerge and thus scarcity of drinking water occurs. It affects human health particularly of children. They get affected various water borne diseases including diarrhea, dysentery etc. Though installation of tube well is a traditional solution of scarcity of safe drinking water but the process of intervention is innovative. On raised plinths 88 tube wells with platform have been installed and 65 Tube wells platform have been constructed on the community basis. A committee was formed for each tube well. The committee members were trained on maintenance and management of tube well. This committee will look after the tube well in the long run. Cluster community based committee has been made to bear maintenance cost of tube wells. Besides, all the tube well users are agreeing to repair if it becomes out of order. It is noted that beneficiaries have contributed 12.5% of total cost in cash. This cash contribution strengthens the ownership of tube wells. Apart from this, Department of Public Health Engineering (DPHE) of Rajibpur upazila provided technical supports in installing the tube wells.

Activity 05: Flood shelter repairing/ community place raising

Raising community places is an effective community-based adaptation practice in flood vulnerable areas of Bangladesh. Gana Unnayan Kendra (GUK) has raised three school ground cum flood shelters in the selected area of the sub-project. These raised places the community to buy and sell daily commodities in their own localities and also access to the flood shelter and to reduce loss of life and domestic assets of poor people during flood. It was not only acted for the purpose of saving the life of people but also to save their cattle, poultries and other belongings.

During in recent past flood a number of river erosion households that means displaced people take shelter on

Photograph 04: Flood shelter repairing/ community place raising

Noyachar Girls High School and Uttar Kodalkati Junior High School, Mohonganj Junior High School, Dokhhin Sannashikandi Non Govt.Primary School, Bakbandha Govt.Primary School & Khonjonmara Govt.Primary School's ground have been raised as flood shelter/community place by CACP project in Mohonganj, Kodalkati, Jadurchar and Bondober union separately in Rajibpur & Rowmari upazilla of Kurigram district. Besides, people with their portable assets take shelter on these. Thus, the community has become able to reduce their vulnerability to flood and associated consequences.

Activity 06: Project launching workshop

Photograph 05: Project launching workshop.

Gana Unnayan Kendra (GUK) organized a Project Launching workshop on 30-03-2014 at Rajibpur Upazila auditorium. Md. Abdul Latif Khan, Upazila Nirbahi Officer of Rajibpur chaired the programme while Md. Shafiul Alam, chairman of Rajibpur upazila parishad was present as chief guest. Besides, other government officials, Local Elites, Journalists and GUK staff members were present in the workshop. Participants from the locality discussed about various issues of this area and possible future adaptive opportunities, sustainability & support from local people regarding project implementation. Local elites, influential peoplend upazila administrative & technical officials have appreciated the CCCP sub-project interventions and Representatives of local government have also assured to provide all supports needed to the sub-project They provided valuable inputs and comments for successful implementation of the project.

Activity 07: Capacity building training for goat/sheep rearing

Photograph 06: Capacity building training

Black Bengal goat a productive goat species that is highly resilient to the fluctuation of different environmental parameters besides available species of goat / sheep in the flood-prone areas. It is also a productive IGA for the poor men and women. Raw materials for

sheep/goat rearing in slatted housing system are available in the project area. Although goat/sheep rearing is very profitable IGA but all effort may go unwaged in the beneficiaries do not have the proper knowledge on sheep/goat rearing in proper way. For this reason, the project CACP conducted for two days training program 598 beneficiaries and 605 slatted houses for goat/sheep have been provided among the beneficiaries.

Beneficiaries are using slatted houses to keep goat/s are using slatted houses to keep goat/sheep. The beneficiaries are rearing goats/sheep through this system to increase their income. After getting training beneficiaries have gathered knowledge & information to select suitable species manage feed and protect diseases. Moreover, diseases like pneumonia, PPR and bronchitis have been reduced due to rearing and keeping on hygienic houses.

Activity 08: Animal vaccination camps

The activities include training on climate change issues for Local Service Provider (LSPs) from group members & working area's people. Due to climate change, diseases of livestock and poultry increased and mortality rate becomes higher than previous. The livestock and poultry is the main source of income for the char dwellers. When people lose their livestock with any undesirable disease could not re-cover the shocks and face food insecurity. To address the situation project organized three days (21-01-2014 to 23-01-2014) a long practical training course to 15 participants for Local Service Provider (LSPs). Getting this training LSPs have become sustained, effective and providing prompt services to small producers. Also some new LSPs

Photograph 07: Animal health camp.

created. By providing livestock treatment now an LSP earns BDT 8,500 per month on an average. Animal health camps arranged with the assistance of Local Service Providers (LSPs) in the working area where Upazila Livestock Officer was also present. Through these camps more than 500 livestock such as goat, sheep, and cow were vaccinated. Diseases of livestock have been decreased and mortality rate also reduced.

Chapter 5: Need Assessment and Future Adaptation Option

Gana Unnayan Kendra (GUK) has been working with Community Based Disaster Management Committee (CBDSMC) in this area for pro-poor interest since 2010. Community Based Disaster Management Committee (CBDSMC) is working to address the disaster issues in time. By the help of them, it is expected that some members of Climate Change Adaptation Group (CCAG) will be engaged with Community Based Disaster Management Committee (CBDSMC) and be able to develop strong linkage with Union Parishad as well as Upazila Parishad. In this way, CCAG will take shape of community institution for all sorts of disaster management and reduce the effect of climate change.

For future action, community people developed an adaptation action plan.

Table - 6: Matrix of future adaptation action plan

Risk	Impacts	Existing Practices	Future Needs	Resources	Institution/ stakeholders	Time/ Duration
Flood	• Loses and damages of agricultural crops • Infrastructures (house, road and school college) submerged • Increase water borne diseases. • Social food security become at extreme risk. • Lose of agricultural land and cattle. • During and after the flood different diseases vectors disseminate for human, livestock. and plant • Communications systems, safe water and sanitation become obsolete. • Damage agricultural field by soil sediment. • Disrupt education activities and transport system. • Decrease work opportunity and change occupation. • Increase distress to old, disable and pregnant woman	• Sales their valuable assets and advance labor. • Take temporary shelter at house loft, house shed, others raised plinth and embankment. • Plinth raising • Store dry food • Stay on boat or banana raft. • Tree plantation around houses. • Prepare movable cooking stove • Make new boat and repair old boat.	• Innovation the flood tolerant crop varieties and introduction the cultivation of floating vegetables. • Construction of the Infrastructures (Raise plinth and school ground, road and embankment, installation tube well and latrine) considering the highest flood level. • Formation of Groups volunteers and security team for social security. • Savings for food security and stock dry food, cooking stove, emergency medicine and oral saline. • Arrange vaccination program for livestock after flood.	•Laboriou s/ hard worker •Adequate earth and land • Boat or banana tree • Volunteer group. • Confident and brave • Skill man power	• UP • CBOs • NGOs • Upazila administration and line agencies (DAE, Livestock, Fisheries, LGED, DPHE, USWD, UWA, PIO etc).	Short term

Risk	Impacts	Existing Practices	Future Needs	Resources	Institution/ stakeholders	Time/ Duration
River erosion	•Infrastructures (house, roads, institution and Shelters) grabbed by the river • Increased unemployment and family strife. • Change the river way. • Arable land is melted and food production decreases. • Lose of agricultural land cattle and households assets •Create health hazards due to absence of water and sanitation. •Loses and damages agricultural crops •Increasing poverty and the deterioration of the social well being. •People have migrate for employment	• Population density grows up to the river coast. • Increase migration • Bamboo struts to Erosion River. • Temporary shelter grows up to the embankment and Khash land. • High interest loan taken to overcome risks • Increase child labor	• Construction embankment, goring and blocked dam. • Introduce IGA to economic development. • Prepare easily transferable housing. • Tree plantation • Distribution of low or without interest loan to overcome risks.	•Have local and temporary knowledge to protect river erosion •Confident and brave •Boat or banana tree. •Bamboo, Straw and wood tree. •Skill manpower for identifying river way	•CBO's •NGOs •Upazila administration and line agencies (DAE, Livestock, Fisheries, LGED, DPHE, USWD, UWAO, PIO etc). • UP	Short term
Cold wave	•Reduce the crop production and growth •Decreases the workplace and employment. •Communications systems are obstacles on the way to the river. •Increase mortality rate of old people and child. •Increase the incidence of diseases to human and livestock	•Straw burning to be warm or protect cold. •Uses warm cloth •Putting gunny sheet on cattle to protect from cold. •Spending the whole day idle inside the house.	•More Adequate worm cloth. •Vaccination program. •Technical training for IGA. •Winter based crop cultivation. •Training and cultivation on winter based homestead vegetable gardening to food security and nutrition. •Forestation.	•Mental Stamina. •Torn quilt, thin cloth. •Straw •Leaving house.	•CBO's •NGOs •Upazila administration and line agencies (DAE, Livestock, Fisheries, LGED, DPHE, USWD, UWAO, PIO etc). •UP	Short term

Risk	Impacts	Existing Practices	Future Needs	Resources	Institution/ stakeholders	Time/ Duration
Storm	•Destroy houses and trees. •Crops damage. •The sudden death of people and animals by thunder and tree fallen. •Capsized the boat. •Forestation widespread damage.	•Replaces the old by new bamboo poles with home. •The stake pulled with a rope from the shed. Tempo-rary fix by bamboo. •During the storm stay under cot. •Call God by Azan/ Adhan •Planted trees and banana around the houses •Keep low height of houses •Understanding the forecast of storm by looking at the sky	•Housing by RCC pillar. •Established semi-puccka housing at permanent char •Forest wall around the houses •Forecasting the storm by radio and electric media. •Trained rescue team buildup. •Develop Early warning system •Develop Disaster Volunteers •First aid team buildup.	•Laboriou s/ hard worker •Confiden t and brave • Skill man power •Social cohesion/ bonding	•CBO's •UP •NGOs •Upazila administra-tion and line agencies (DAE, Livestock, Fisheries, LGED, DPHE, USWD, UWAO, PIO etc).	Short term
Droug ht	•Increase disease. •Increase sun heat. •Water level down. •Change occupa-tion. •Damage agricul-ture field. •Soil crack and fertility lost. •Dry ponds, fields, rivers and canals.	•Tree plantation around houses. •Block wise tree plantation. •Installation deep tube well. • Digging deep pond.	•More environment friendly forestation. •Drought tolerance crops cultivation. •Irrigation system implement as small scale. •Organic manner use to increase soil fertility.	•Skilled man-power. •Adequate lands •River water •Adequate lands for tree plantation.	•CBO's •UP •NGOs •Upazila administra-tion and line agencies (DAE, Livestock, Fisheries, LGED, DPHE, USWD, UWAO, PIO etc).	Short term

Raised plinths enhancing resilience capacity

Sannashikandi Char is a village of Mohonganj union in Rajibpur Upazila under Kurigram district. Most people here are disadvantaged and vulnerable to flood & river erosion. Suffering from natural hazards is a common phenomenon in this area. This village is particularly vulnerable as the river belt created by the rivers Brahmaputra, Sonavori and Teesta, which causes extensive flooding and river erosion every year.

The Poorest households of this village are involved with Climate Adaptation for Char Island People (CACP) project. The goal of the sub-project is to contribute to achieving the national program of poverty reduction and climate adaptation of Bangladesh.

In this case, 52 households have been involved in the sub-project to strengthening capacity for identifying different problems through consulting community by doing regular group meeting and discussing about Climate Change Adaptation and mitigation measures to rebuild resilient community. They have got support from the sub-project with the technical and financial assistance by PKSF. The support includes household plinth raising, rearing goat/sheep, improved cooking stove, ensuring safe drinking water through tube well installation with platform and construction of tube well platform, etc.

As a result, the experience with the raise plinth and flood was really exciting to them in 2015 flood. Interestingly the community people, who have been provided supports, could save them themselves from suffering of the flood in 2015. They could stay in their homes and offer shelter to their neighbors. Some people those were in their house also kept their essential households assets on these raised plinths.

The flood has made them confident that they are capable of adaptation and mitigation measures. "Flood can no longer cause any big damage," says Monowara. "Thanks to the CCCP intervention, we are safe from that for now."

Ratna's dream coming true

Ratna Begum of the village of Shilpory Char of Mohonganj union in Rajibpur Upazila under Kurigram district is a beneficiary of Climate Adaptation for chars Island people (CACP) project. Her family is consisted of 06 members. Her husband Sada Mia is a day laborer and the only earning member of the family while Ratna Begum is a housewife. They have no cultivable land. During crisis period, her husband has to go other places for selling labor. Sometimes they have to borrow money from others.

While their poverty was getting only worse, Ratna was introduced with the Field Facilitator (FF) of the sub-project. She was enlisted as project beneficiary as per criteria. She has been inspired by the discussion of regular group meeting organized by the project showed her interest to involve in any activity by which she can remove the poverty of her family. Based on her interest and scope of work, Ratna Begum was selected as a beneficiary of Plinth raising by discussing with group members of that village. During implementation period, the sub-project raised her plinth for strengthening adaptation capacity and provided slatted house for goat/sheep rearing. In last year frequent and severe flood could not damage her household assets specially livestock. She was very pleased to get raised plinth and 02 days capacity building training support for rearing goats/sheep. She had 3 goats before receiving the training. She hoped that number of goat will be increased within a year and she will establish a mini goat farm. She has a strong belief that the goat farm would eradicate poverty of her family. About one year has passed since Ratna Begum is rearing goat. Over the time, number of goat increased. Now she has a total of 10 goats.

Ratna says that at present, total market price of her goats is about TK. 32,000/=. She likes to spend most of her time to take care of her livestock. She is now very hopeful that once upon poverty will be erased from her family. Now, her 04 children go to school. She expects that her husband will not go to other places for selling labor during lean period. Ratna is grateful to Gana Unnayan Kendra (GUK) and Community Climate Change Project of PKSF.

Her fight against poverty

Morzina Beowa (50) is a hardworking woman of the village of Dakhhin charsajai in Kodalkati union of Rajibpur upazilla under Kurigram district. She becomes affected by flood almost every year. During flood they have to face a lot of sufferings. She had to shift her house several times due to river erosion. Begging is her main occupation. Sometimes she works in others houses as a housekeeper. She lives from hand to mouth.

Once Morzina Beowa was introduced with the Field Facilatator of CACP project and following the criteria she became a member of "Krishnochura Climate Change Adaptation Group (CCAG). Then she was selected for goat/sheep rearing in slatted housing system & plinth rising support. She got a slatted house & 02 days capacity building training on goat/sheep rearing in slatted housing system. Her homestead has also been raised by the project. She bought a goat with begging money. After 09 months it gave born two kids. She keeps her goats in slatted house and takes care with proper treatment as precaution. Always she keeps her slatted house neat & clean.

Now she has 03 goats, the market price of which is nearly BTD 5,000. Her goats are in good health as being free from disease and taking care of properly. Morzina expects that she will be able to overcome poverty through goat rearing and she would not have to go other places for begging or sale labor in future. She is grateful to Gana Unnayan Kendra (GUK) and Community Climate Change Project of PKSF.

Sopna has a new friend in the kitchen

Sopna Begum, 19, lives in the village of Diarar char (Fakir para) in Mohonganj union, of Rajibpur Upazila in Kurigram district. Sopna is a housewife and her husband is a rickshaw puller. She with her husband a child lives in a small house in the east side of the Brahmaputra-Sonavory river that is only 03 kilometers away from.

They had to fight with poverty for living. They have no agricultural land except homestead. They have to live from hand to mouth; on the other hand, they become victim of adverse effect of climate change by natural calamities like river erosion, heavy rainfall, bitter cold, cold wave, foggy weather for every year. Their houses have been shifted for 02 times because of river erosion in the same union & upazila. They suffer lots with their livelihood & livestock by any climate change induced disaster. At the end of the day, though her husband brings rice or food items but she has to face fire materials problem for cooking.

However, Sopna Begum came to know about GUK-CACP project and showed interest to become a member. As per selection criterion she had been selected as a member of Shabuj Climate Change Adaptation Group in March-2014. She understood through group session that the traditional cooking stove creates huge smokes those smoke pollutes the air & natural environment. Besides, any kinds of smoke causes for aspiratory diseases like bronchitis, pneumonia of human beings and any livestock. Then she becomes interested for using improved oven (Bondhu chula).

Now that she attends regular group meetings/sessions, she has attained capacity & knowledge on climate change adaptation, environment pollution & protection and disaster management such as disaster risk reduction and also on some social issues like domestic violence, early marriage, dowry, and tree plantation. An improved oven (Bondhu chula) has been set up on Sopna's house. Now, she does not use the traditional cooking stove. She says that it takes less biomass, straws & fire met arils and produces less Carbon dioxide Gas / smoke which emits outside of the kitchen. She also says that it's using means saving fuels and minimizes the cost. She always keeps her cooking place neat and clean. Attacks of respiratory diseases have decreased for using improved oven. Her family member's health condition is better now. She is living happily with her family.

They finally have access to safe drinking water

Kadomala Begum (30) lives in the village of Dakhhin Char Sajai union of Kodalkati, Upazila of Rajibpur and Kurigram district. Her husband is a day labor and his income is irregular & also they become affected by flood minimum for two times almost every year. During flood the sufferings of her family would have knows no bound & limitation, she has not anything without shelter and cannot take meals thrice in a day. With her children and family members she passed her days struggling against poverty and various kinds of water bearing disease such as diarrhea, scene disease, typhoid, cholera & dysentery.

She came to know about CACP project and got involved with the "Krishnochura Climate Change Adaptation Group" in 2014. Since then, she has been joining in the regular group meetings and become aware by discussing in the group session about disaster management such as changing pattern of flood and also on Social issues like domestic violence, early marriage, dowry, tree plantation etc. For providing safe drinking water, a tube-well with platform was provided for use by 10 households, including Kadomala's.

Now Kadomala's family members are getting safe and pure drinking water. She utilizes tube-well water for her daily necessity and water borne diseases reduced. Besides, she has also been provided with slatted house for goat/sheep rearing and capacity building training.

Chapter 7: Guidelines and Manuals

Procurement Guideline

Gana Unnayan Kendra (GUK) is implementing the sub-project named "Climate Adaptation for char Island People (CACP) in the North East Part of Bangladesh", following the procurement guideline which was developed by PKSF – CCCP. CCCP has to follow World Bank's Procurement Guidelines as well as Public Procurement Act, 2006 (PPA 2006) and Public Procurement Rules, 2008 (PPR 2008) in its procurement activities. But Gana Unnayan Kendra (GUK) has the capability and experience to perform procurement under the PPA 2006/PPR 2008. This guideline has focused on the issue and formulates simplified procedures to carry out a standard procurement practice at root level by the Gana Unnayan Kendra (GUK) as per PPA or/ PPR. Effective and sound procurement process ensures value for money, economy, efficiency, equity, fairness, transparency, accountability and reliability as well. In public procurement it was legal obligation to meet the above mentioned citeria. Procurement is an indispensable part of the activities under the CCCP both at Project Management Unit (PMU) level and PIP (Gana Unnayan Kendra (GUK)) level. Both the Project Appraisal Document (PAD) and the Operational Manual (OM) of the CCCP provide the overall procurement responsibilities on PMU of PKSF and Gana Unnayan Kendra (GUK). As per PAD and OM, Procurement for the CCCP consistent practice of the procurement processes. It also helped procuring entities and would be carried out in accordance with the World Bank's Guidelines: Procurement of Goods, Works and Non-Consulting Services through providing a suitable tools regarding selecting procurement methods will be applied to all procurement carried out under the sub-projects carried out by the Gana Unnayan Kendra (GUK) to ensure an efficient and who were involved this to better and faster grasp procurement procedures in the day-to-day course of their activities.

Monitoring and Evaluation Manual

PKSF – CCCP has formulated a Monitoring and Evaluation Manual for assessing progress on planned activities and results and also it was a tool to monitor the implementation of CCCP in view of PKSF's emergence as financing entity in the climate change adaptation initiatives, it guides the project management to monitor the progress of implementation at Gana Unnayan Kendra (GUK) implemented working areas and results at community level. The Manual served as the basis for Gana Unnayan Kendra (GUK) implementing sub project monitoring practices in consistent with CCCP practices. It helped document information and knowledge in a way beneficial for knowledge management. The purpose of the monitoring and Evaluation manual is to support implementation and management decisions of PKSF - PMU CCCP and Gana Unnayan Kendra (GUK) provided useful and timely information to internal management at all levels, address the reporting requirements of PKSF - CCCP and provide for dissemination of useful information and learning to communities and other stakeholders. Appropriate information flow channels and procedures for synthesis and analysis, and quality control mechanisms have been established in order to effectively meet these information requirements. Information would be appropriately archived for future reference.

For successes and failure cases have been documented and would have to be reported accordingly. PKSF - CCCP and Gana Unnayan Kendra (GUK) management provided guide and support to ensure the quality of works and generation of accurate data.

Social Management Framework

The Social Management Framework (SMF) was intended to ensure that the selected NGOs prepare and implement the adaptation proposals taking into account the social safeguard requirements. The Social Management Framework (SMF is further supposed to provide guidance about integrating social and gender dimensions of climate change vulnerability into project screening, preparation, and implementation processes. Gana Unnayan Kendra (GUK) has identified adaptation activities according to the SMF (land use, negative social attributes, and integrated social issues). Gana Unnayan Kendra (GUK) submitted necessary documents to CCCP-PMU before and after implementing of its activities as per CCCP provided Social Management Framework (SMF) guideline. Moreover, Gana Unnayan Kendra (GUK) has ensured that the target communities, including women, children and aged people (depending on sub-project locations), have been consulted about the sub-project as well as selection of the proposed climate change adaptation measures. SMF is monitored quarterly through social monitoring format which has already been developed by the PMU of CCCP.

Environmental Safeguard and Management

In order to ensure environment sustainability, a set of principles is being followed since the beginning of the sub-project implementation process under CCCP. An Environment Management Framework (EMF) was developed in conformity with national environment policy and acts. The EMF includes Environmental Assessment Report (EAR) Environmental Management Plan (EMP), and Quarterly Environmental Monitoring Format to monitor and reporting environmental issues at field level. Environmental Assessment Report is being developed after any site selection to implement the activities. Gana Unnayan Kendra (GUK) sending quarterly EMF report with the inclusion of the physical, biological and socio-economic environment of the selected area to the PMU. Gana Unnayan Kendra (GUK) implementing CCCP sub-project considering the environmental impacts and possible mitigation measures regarding physical interventions implemented.

Grievance Redress Mechanism

Grievance Redress Mechanism (GRM) has been established at Central (PKSF) and sub project level to deal with any complaints/grievance about environmental and social issues. At the sub project level, the Union Parishad (UP) (Name of respective UP Chairman: Md. Anowar Hossen, MD. Nazrul Islam, Md. Mozibar Rahaman, Md. Abdul Kader Mia) Chairman or his/her nominated representative from the UP is the local Grievance Redress (GR) focal person for addressing the grievances. The concerned Project Officer (PO) or any other official nominated by the PM is the concerned Upazilla Manager (UM) plays his role from the sub-project to have a proper solution for grievance redress as per CCCP-PKSF GRM guideline.

Complaints Handling Mechanism

The Complaint Handling Mechanism (CHM) is intended for the CCCP-PKSF for handling complaints related to procurement under the sub-projects. The key elements of the complaints handling procedure are prepared to ensure accountability and good governance. In order to comply with the national laws and regulations, CHM shall refer to Sections 29 & 30 of Public Procurement Act (PPA) 2006 and Rules 56, 57, 58, 59 and 60 of the Public Procurement Rules (PPR) 2008.

Chapter 8: Lessons Learnt and Way Forward

Lessons Learnt

• Community contribution can ensure the community ownership.
• Living in a cluster village, increase mutual understanding among community people / beneficiaries.
• New model of slatted house for goat/sheep rearing reduced the mortality.
• If community mechanism is developed/ established, project activities will sustain.
• Only disaster preparedness activities are not enough for resilience livelihoods.
• Community mechanism for each activity is encouraging and helpful to make the activity sustainable.
• Avoiding top soil of agricultural land to raise plinths.
• To use improved oven means saving fuels and minimize the cost.
• Improved oven takes less biomass, straws & fire met arils and produces less Carbon dioxide Gas/smoke which emits outside of the kitchen.
• Getting
• Tools, the community now can identify the problems and able to plan for their safe drinking water.
• Community based Adaptation project requires a combination of local and scientific knowledge.
• Through PRA future strategy in program and communication with service providers.
• The frequent visit of both donor and partner representatives have increased the quality of works.

Way Forward

• Community (group) based climate change adaptation and mitigation.
• Climate resilience crops/vegetables cultivation and tree plantation.
• Skills and capacity building of community on climate adaptation.
• Saving accumulation, awareness rising through bill board, poster, rally etc.
• Publish flip chart, flash card, and issue wise module, leaflet and bill board installation for visibility.
• Road construction and repairing.
• Arrange to support beneficiary wise.
• There is still huge demand of plinth raise in the char areas.
• Cash for work to be provided to the poor and extreme poor people during the lean season
• Disseminate technical knowledge of different earning sources to adapt with climate change.
• Ensure use of abandoned and unused land in the region.
• Capacity of CCCP beneficiaries to be built up to adopt climate change.
• Develop specialized institutions at grass roots level to address climate change.

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