

2016

Building Resilience to Climate Change

Adapting to Drought

An experience of

National Development Programme - NDP



Community Climate Change Project, PKSF

Building Resilience to Climate Change

2016

Sub-project

Development of Climate Resilient Community (DCRC)

Working Area: Natore Sadar, Natore.

Sub-Project implemented by

National Development Programme-NDP

Under the management of

Community Climate Change Project (CCCP)

Palli Karma-Sahayak Foundation (PKSF)

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Abbreviation

ASA	Association for Social Advancement
ALOW	Access toward Livelihood and Welfare Organization
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
BRRRI	Bangladesh Rice Research Institute
BRAC	Bangladesh Rural Advancement Committee
CBA	Community-Based Approach
CBO	Community-Based Organisation
CCAG	Climate Change Adaptation Group
CCCP	Community Climate Change Project
CDDF	Cancer Drug Development Forum
CDS	Center of Development Services
CHM	Complaint Handling Mechanism
CLP	Chars Livelihood Program
CO ₂	Carbon di Oxide
CMDRR	Comprehensive Management of Disaster Risk Reduction
DAE	Department of Agricultural Extension
DCRC	Development of Climet Resilient Community
DPHE	Department of Public Health Engineering
DRR	Disaster Risk Reduction
EAR	Environmental Assessment Report
EC	Europian Commission
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EPF	Emergency Programme Flood
ER	Enhancing Resilience
ESDO	Eco Social Development Organisation
FCDRR	Family & Community-level Disaster Risk Reduction
FDMC	Federation Disaster Management Committee
FF	Field Facilitator
FFWC	Flood Forecasting and Warning Centre
FSHG	From School to Homestead Gardening
GBM	The Ganges, The Brahmaputra & The Meghna
GoB	Government of Bangladesh
GRM	Grievance Redress Mechanism
HH	Household
HIES	Household Income & Expenditure Survey
HySaWa	Hygiene Sanitation and Water Supply Project
IAPP	Integrated Agricultural Productivity Project
IDCOL	Infrastructure Development Company Limited
ICS	Improved Cooking Stove
IDE	International Development Enterprise
IGA	Income Generating Activity

KDAB	Korean Development Agency of Bangladesh
LEB	Local Elected Body
LED	Light-Emitting Diode
LGED	Local Govt Engineering Department
LUSTRE	Landless Upbringing Social-work Therapeutic Rural Establishment
MDGs	Millennium Development Goals
MJSKS	Mohideb Jubo Samaj Kallyan Sangstha
MMS	Manob Mukti Sangstha
MOEF	Ministry of Environment and Forest
MoU	Memorandum of Understanding
NDP	National Development Programme
NGO	Non Govt Organisation
Nos	Numbers
ODA	Overseas Development Assistance
OECD	Organisation 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
RDRS	Rangpur-Dinajpur Rural Services
RIC	Resource Integration Center
PRA	Participatory Rural Appraisal
RMP	Rural Maintenance Programme
RRF	Rural Reconstruction Foundation
RSDA	Rural Self-help Development Association
SDC	Swiss Agency for Development and Cooperation
SED	Sustainable Economic Development
SEEDS	Socio Ecommic and Educatinal Development Program
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
TIB	Transparency International Bangladesh
TMSS	Thengamara Mohila Sabuj Sangha
UDPS	Uttara Development Program Society
UP	Union Parishad
UPP	Ultra Poor Program
UWAO	Upazila Women Affairs Office
UzP	Upazila Parishad
VGD	Vulnerable Group Development
VGF	Vulnerable Group Feeding
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 experiencing significant negative consequences of the global climate change. The country is widely recognised as one of the countries most vulnerable to the global climate change. Geographically, the country is a low-lying delta formed by the three major rivers i.e. the Ganges, the Brahmaputra and the Meghna, widely known as GBM system. More than 90% of the land is low-lying floodplain. In addition, the country lies between the Bay of Bengal on the south and an active Himalayan tectonic belt on the north. Thus the country is inherently at high degree of risk to a range of natural disaster. The entire central part of the country is highly prone to flood and erosion, the southern part is prone to salinity intrusion and cyclones, the north-western part is prone to drought and the north-eastern region is prone to flash floods. Moreover, the whole country for the last few decades has been experiencing some emerging hazards which include dense fog, heat wave, cold wave, unusual seasonal variation of temperature, precipitation and so on. The major elements of climate change including temperature and precipitation have been gradually changing over the period. Observed data indicates that the temperature is generally increasing in the monsoon season (June, July and August). The average maximum and minimum temperatures during the monsoon show an increasing trend annually at the rate of 0.05°C and 0.03°C respectively (MOEF, 2005). The average maximum temperature during the winter (December, January and February) too shows an increasing trend annually at the rate of 0.041°C while the minimum temperature is increasing at the rate of 0.026°C annually. This reflects winter is becoming warmer as well (Atiq et al., 2007). Various models too show an increasing trend of temperature and the seasonal variation. There is also a significant variation in temporal distribution of rainfall. Observed data shows that the number of days without rainfall and the annual total rainfall both are increasing, which means more rain is occurring within a short duration. It also reflects erratic behaviour of rainfall. The overall impacts of climate change on Bangladesh would be significant. It is estimated that climate change could affect more than 70 million people of Bangladesh

due to its geographic location, low elevation, high population density, 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 those living elsewhere (Alam and Laurel, 2005). Coastal resources, on which most of the local people depend for their livelihoods, are likely to be affected severely due to climate variability and change. It is predicted that a 45cm-rise in the sea level may inundate 10-15% of the country's land area by 2050, creating over 35 million climate refugees from the coastal districts. Ultimately, the adverse impacts have the potential to undermine poverty reduction efforts and could compromise the efforts to achieve the national development target. Also, the OECD and the World Bank estimate that 40% of the Overseas Development Assistance (ODA) to Bangladesh may be climate-sensitive or at risk.

A significant part of the country is drying up quickly. A desertification process is already underway. It will have disastrous impacts on the life and livelihoods of millions of people, especially the poor, and will ultimately negatively affect the country's economy as well.

1.2 Overview of Community Climate Change Project (CCCP)

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\$190 million (initially it was US\$125 million) from the bilateral development partners (United Kingdom, European Union, Sweden, USA, Australia, Switzerland and Denmark). Ninety percent of the available fund has been allocated to public sector projects, while 10 percent is channelled 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-Sahayak 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, Complaint Handling Mechanism and Monitoring and Evaluation Manual. Throughout the project, every NGO has to work as per the guidelines of these manuals. PKSF established a Project Management Unit (PMU) on its own premises to manage the activities of the CCCP and the project implementation supervision at the PIP level.

1.3 Brief of the Sub-project

The NDP has been implementing the sub-project titled “Development of Climate Resilient Community (DCRC)” under the Community Climate Change Project (CCCP) in Natore district since September 2013. The sub-project is mainly working to increase resilience of the community to adapt to drought by enhancing their knowledge and understanding about climate change and promoting various adaptation technologies and techniques. Establishing a mechanism within the communities to address future vulnerabilities to climate change in their localities and another area the sub-project is focusing on.

Natore is one of the drought affected districts of the country due to its geographical location. This area lies in between Chalan Beel and Barind Tract having both low and high land areas. Drought of this area is related mainly to the erratic behaviour of rainfall. Rainfall data of adjacent area (Bogra) shows that the number of days without rainfall is increasing while total annual average rainfall remains more or less same. This means, rainy season is gradually shrinking. With this consequence, the drought intensity is increasing. Visible impacts of drought include drying up ponds, canals, rivers and shallow water aquifers particularly in the dry and summer season.

The proposed project will fully comply with the theme of BCCSAP 2009. The goal of the project is to : ‘the community is equipped with technology and support services for adaptation to drought’ and its 2 objectives focus: (a) to introduce improved technology for alternative livelihoods of the drought vulnerable people (b) to increase access to water for drinking, household use and irrigation. The main focus of the project is livelihood security which is the First Pillar: T1 (food security, social protection and health) and its T1P8 and T1P9 (livelihood protection in ecologically fragile areas and vulnerable socio-economic groups) of the BCCSAP. The project will contribute several programs of BCCSAP including T1P3, T1P5, T1P7 etc.

A wide range of stakeholders were consulted for selection of the activities of the project. The areas were extensively visited to observe the physical situation. FGDs were conducted also. Field level problems, household-level problems as well as problems of female and male were discussed. About 50 farmers were individually consulted. In depth interview was done with two SAAO (Sub-Assistant Agriculture Officer). DAE (DD, CPI), Upazila Agriculture Officer, Upazila Fisheries Officer of Natore Sadar. We have also consulted with the Assistant Engineer and Estimator of DPHE, Natore in order to selected activities to ensure safe drinking water issue. We have also met with Additional Deputy Commissioner (General) and Addition Deputy Commissioner (Revenue) and discussed about the potentiality of re-excavation of canal/river. Their suggestions and recommendations of all the stakeholders have been incorporated in the proposal.

1.3.1 Goal and Objectives

The goal of the sub-project is:

"The Community is equipped with technology and support services for adaptation of drought".

The specific objectives are:

" To introduce improved technology for alternative livelihoods of the drought-vulnerable people, and

" To increase access to water for drinking, household use and irrigation.

1.3.2 Name of Working Area

The sub-project has been implementing at Natore Sadar Upazila of Natore district. The working area was selected on the basis of vulnerability and poverty concentration. Four unions of Natore Sadar have been selected for the intervention. The unions were selected in consultation with local government and community

representatives of the Upazila. Names of the working unions are as follows:

Table-1: Working areas

District	Upazila	Union
Natore	Natore Sadar	1. Boro Horishpur
		2. Tebaria
		3. Kafuria
		4. Laxmipur Kholabaria



Figure 1: Map of the sub-project working area

1.3.3 Target Beneficiaries

The project has covered 35 villages under the four unions. A total of 2,381 poor and extreme poor households that are vulnerable to drought have been selected as the target beneficiaries. Thirty-five groups-styled as "Jol Baiyoo Obhijojon Dal" meaning "Climate Adaptation Group"- have been formed with one member from each of the selected households in the groups. All the group representatives are women. People of this drought-prone zone suffer from acute crisis of safe drinking water for at least five months of a year. They face acute crisis of water to drink and to maintain hygiene/sanitation during the dry season. To address the problem according to the need of the target beneficiaries, the NDP ensured participation of the drought-vulnerable people of the area in problem identification, project planning, implementation and monitoring processes. The sub-project under Community Climate Change Project (CCCP) is undertaken to serve the poor and the ultra poor drought-vulnerable people living in the project area. It aims to ensure their access to water for drinking and other household purposes, including maintaining hygiene, as well as dissemination of technologies for livelihood adaptation and climate change mitigation.

1.3.4 Budget

The total budget of the sub-project is BDT 1,95,22,638

(One core ninety five lac twenty two thousand six hundred thirty eight) where the CCCP's contribution is BDT 1,78,54,000 (One core seventy eight lac fifty four thousand), the NDP's contribution is BDT 3,01,438 (Three lac one thousand four hundred thirty eight) and the community contribution is BDT 13,67,200 (Thirteen lac sixty seven thousand two hundred only).

1.3.5 Major Activities

The activities of the sub-project were selected in consultation with the community people and local government representatives. A series of consultation meetings were held during the proposal development phase. The major activities include providing training and technical support for goat/sheep rearing in slatted housing system, environment-friendly cooking stoves (ICS), re-excavation of water-bodies, installation of sanitary latrines, construction of tube well platforms to keep the water source safe, installation of semi deep-set tube wells, etc. The sub-project also provides necessary trainings to build capacity of the community on climate change and its relation with their livelihoods. The community prepared adaptation action plan for their locality to address the adverse impacts of climate change in the long run. The sub-project also disseminates disaster and weather-related messages at the community level in group meetings on a regular basis, which makes people aware about climate change adaptation and mitigation.



Photograph 1: Slatted house for goats



Photograph 2: Improved Cooking Stove (ICS)



Photograph 3: Re-excavated pond



Photograph 4: Sanitary Latrine



Photograph 5: Tube-well platform



Photograph 6: Tube well installation

Chapter 2: Vulnerability of the Sub-project Area

2.1 Context of Climate Change

2.1.1 Temperature

Natore Sadar is one of the most temperate Upazilas in Bangladesh. The average summer (March-June) temperature here is 34.8°C, ranging from 32.1°C to 38.7°C. The average summer temperature shows an increasing trend with significant variation from one year to the next (Figure 2, blue line). On the other hand, the average minimum temperature during summer is 22.2°C, ranging from 20.9°C to 23.9°C. So,

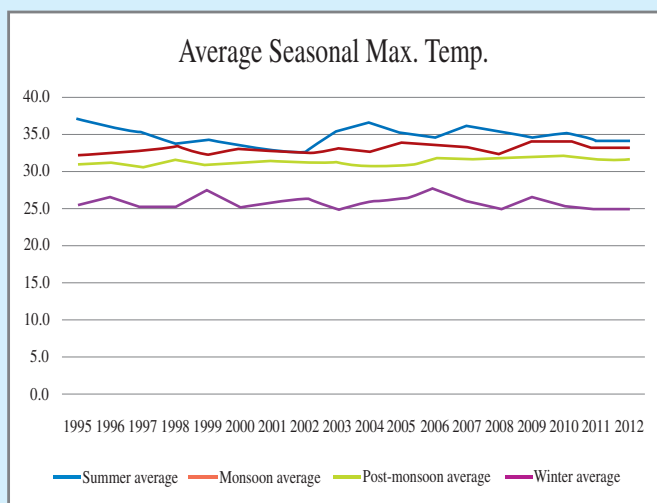


Figure 2: Average maximum temperature

the ranges of the maximum and the minimum temperatures are quite high. Similarly, the average maximum temperature during the winter range from 25°C to 27.4°C and the minimum temperature from 11°C to 13.2°C. Again, the ranges of the maximum and the minimum temperatures in winter is high. Relatively high temperature variation in a season indicates frequent variability in temperature which has negative

impacts on agricultural production, water resources, human health, etc.

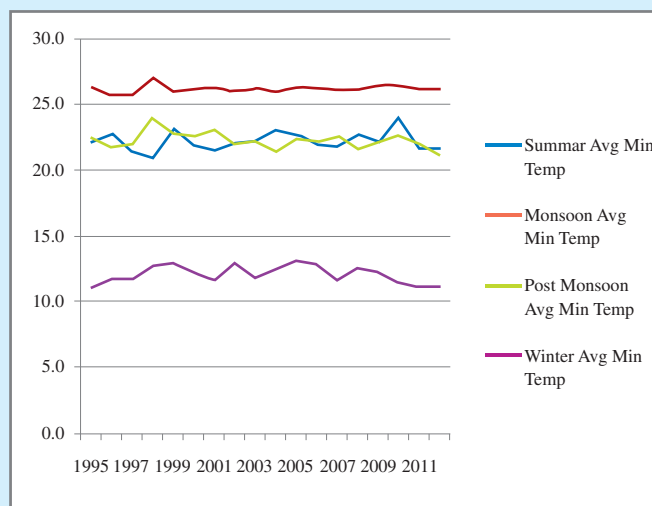


Figure 3: Average minimum temperature

2.1.2 Average Rainfall

The average annual rainfall of Natore Sadar Upazila is 1,556 mm whereas the national average is 2,400 mm. The annual average rainfall of this area shows higher variability from one year to the next (Figure 4). Between 1970 and 2007 the upazila experienced the highest rainfall in 1990 which was 2,099 mm and the lowest in 1994 which was 1036 mm.

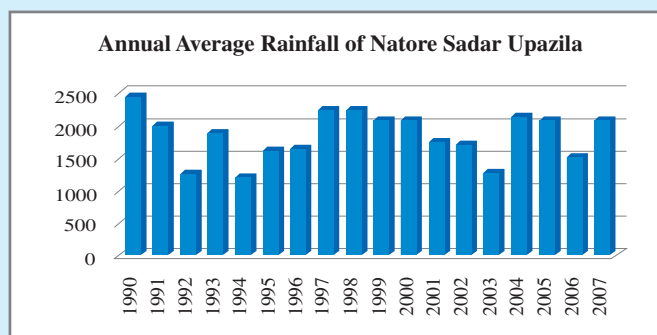


Figure 4: Average annual rainfall

Monsoon average rainfall of Natore Sadar Upazila is 1094 mm which means two-third of rainfall occurs in monsoon (June, July, August and September) and only one third occurs throughout the year. Naturally, the area remains dry in most of the months. The area remains almost dry in winter (November, December, January and February). The highest rainfall in winter season

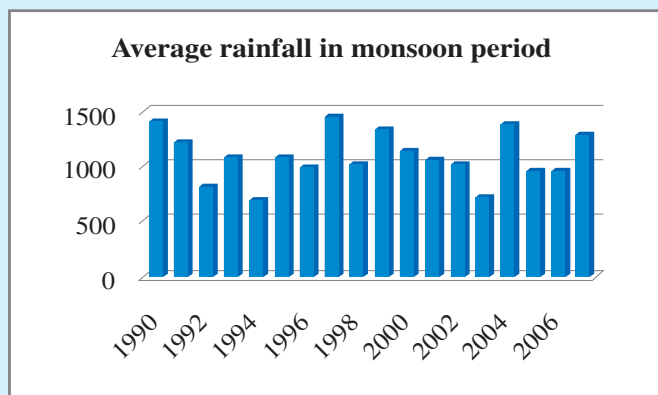


Figure 5: Average rainfall in monsoon period in Natore Sadar

was recorded in 1995 which was 26 mm and after that, it was gradually decreasing (Figure 6). It is significant that there was no rainfall in the winter of 2004-05. All these seasons show an unpredictable amount of rainfall.

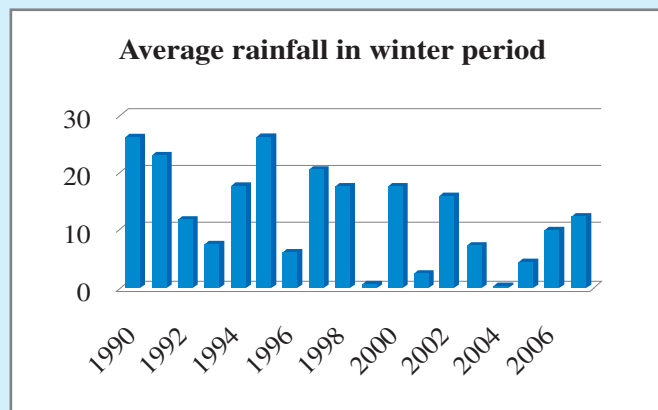


Figure 6: Average rainfall in winter period in Natore

The seasonal changes in rainfall are also remarkable. The frequency of intensive rainfall of September is increasing whereas that of July is decreasing, meaning the monsoon rainfall is gradually shifting. On the other hand, all the months of winter is experiencing only lower rainfall.

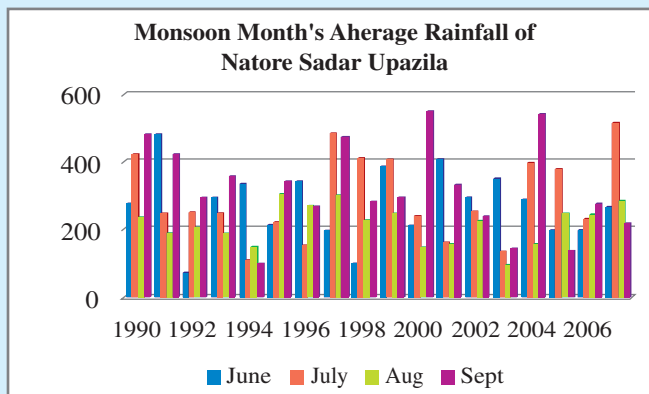


Figure 7: Average monsoon month's rainfall in Natore

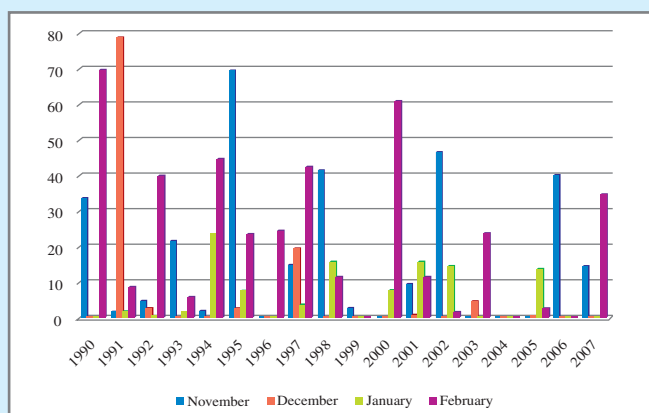


Figure 8: Month-wise average monsoon rainfall in Natore

2.1.3 Climate Change-induced Hazards

The people of Natore district are noticing visible anomalies or changes in the seasonal weather patterns. Previously six seasons were the feature of Bangladesh weather. Now three seasons- summer, monsoon and winter- have become dominant. The other three seasons- autumn, late autumn and spring- seem to have merged with them due to climate change. Summer has become prolonged and very hot. The rainy season starts late and manifests in a few bouts of 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. The major hazards are described below:

Drought

Natore district is located in the Barind Tract. It is a district under Rajshahi division located in north-western Bangladesh. It is one of the most drought-affected districts of the country due to its geographical location. Drought of this area is related mainly to the erratic behaviour of rainfall. Annual rainfall in the district during 2008, 2009 and 2010 was 1,371 mm, 1,239 mm and 678 mm. 2010 was the hottest year when Natore district experienced only 678 mm rainfall and the maximum temperature was experienced at 37.2°C. Rainfall data of the adjacent areas shows that the number of days without rainfall is increasing while total annual average rainfall remains more or less the same. This means the rainy season is gradually shrinking, and consequently, the intensity of drought is increasing. Visible impacts of drought include drying up of ponds, canals, rivers and shallow water aquifers, particularly during the dry and summer seasons.

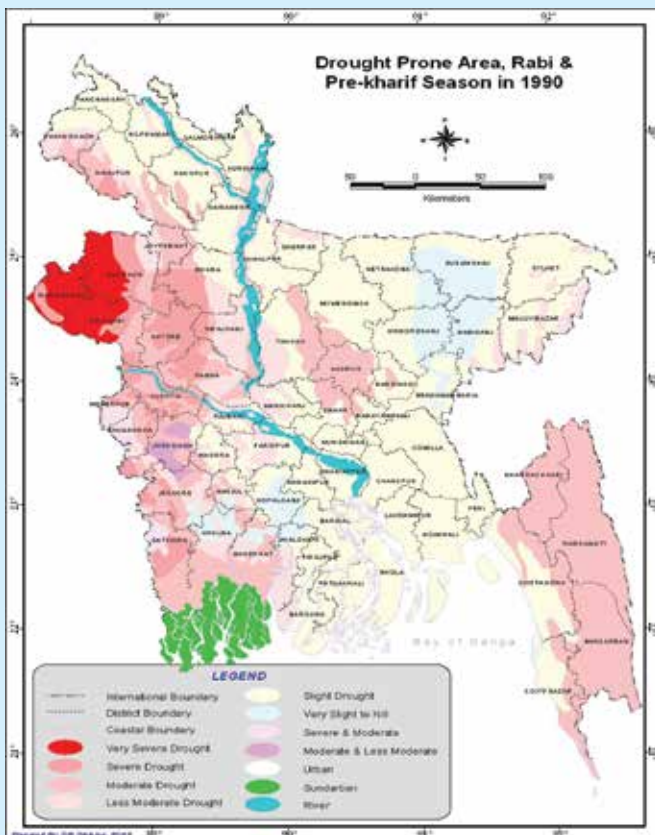


Figure 9: Drought Prone Area, Rabi & Pre-kharif Season in 1990

The groundwater table in Natore district is declining, causing shallow tube-wells non-operational during the dry season. People do not get adequate water for irrigation, drinking, and household uses, including for maintaining hygiene. While people are facing serious water crisis, farmers are changing option from low-rooted crops for cultivation to deep-rooted fruits such as litchi, mango, banana, plums, guava etc, resulting in the increase in agricultural unemployment and career migration.

The community people, especially the poor ones, normally use traditional stoves for cooking. Sometimes the burning fuel springs out of the oven and results in often deadly fires. The hot temperature makes it only worse. In the drought-prone areas, open latrine can cause of diarrhoea and other waterborne diseases because warm weather is conducive to the germs of these diseases. Various studies indicate that a rise of 1-2°C temperature in combination with lower

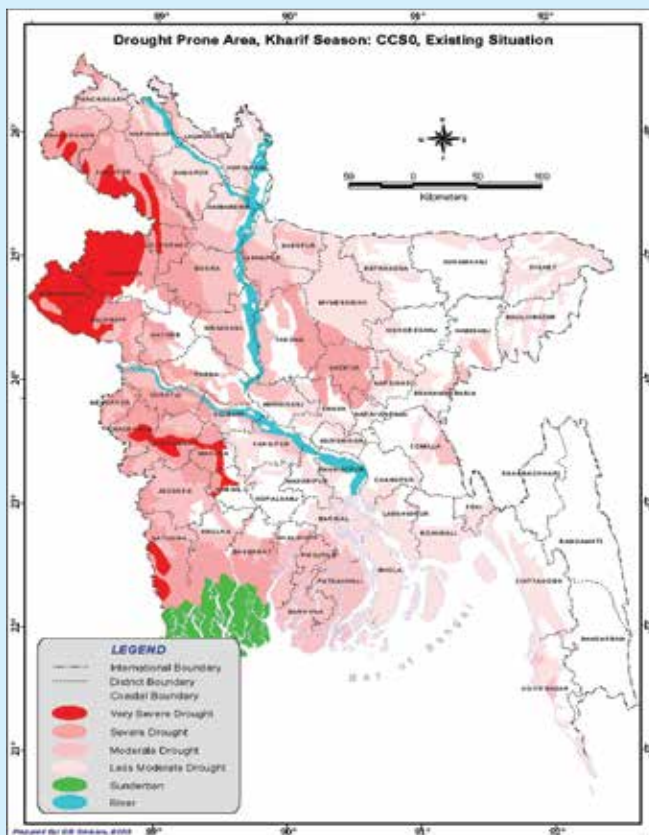


Figure 10: Drought Prone Area, Kharif Season

solar radiation causes sterility in rice spikelets. Climate change impacts, especially in temperature, humidity and radiation, have great effects on the incidence of attacks by insects, pests, diseases and micro-organisms.

Droughts are associated with the late arrival or an early withdrawal of monsoon rains and are often marked by intermittent dry spells. Severe droughts occurred here in 1966, 1969, 1973, 1978, 1979, 1981, 1982, 1989, 1992, 1994, 1995, 1998 and 2000, causing substantial reduction in food production. The consecutive droughts of 1978 and 1979 directly affected 42% of cultivated land and reduced rice production by an estimated 2 million tonnes (TT, Zarrin, A Drought in India). Rice production losses due to drought in 1982 were about 50% more than the losses due to floods in the same year. The 1997 drought caused a reduction of around 1 million tonnes of food grains, of which about 0.6 million tonnes was transplanted Aman, entailing a loss of around US\$ 500 million.

Nor'wester



Photograph 7 : Destruction by a storm

Nor'wester, or Kalbaishakhi as it is known locally, is a violent storm with heavy speedy wheeling winds coupled with rainfall. It often hits Bangladesh during the early summer in the lead up to the monsoon, which

usually begins in the first week of April.

A Nor'wester sweeps over houses built of mud and corrugated iron sheets, the walls often collapse, a large number of trees and electricity poles get uprooted, power supply disrupted, and croplands badly damaged. It kills and injures human beings, cattle and damages resources. Sometimes, it turns into a disaster and leaves a trail of devastation in the Natore district. Death occurs mostly due to falling of trees or collapse of houses and walls.

Following is an extract from a recent news report that appalled many at home and abroad: "Storms lash 11 villages in Satkhira, Natore: One killed, 500 houses damaged". It also known that "the dead was identified as Shilpi Begum, 30, wife of Abdus Sattar of Bagrom village in Natore Sadar Upazila. She died on the spot as a Banyan tree fell on their house". (Ref: The Daily Star, March 08, 2015).

The UNB published on 23 April 2015 that "200 houses damaged by storm in Natore".

The Express Tribune citing the Agence France-Presse

reported on 06 April 2015 that "At least 37 people were killed when powerful storms swept Bangladesh at the weekend and left a trail of devastation in the northwest".

Cold Wave

Bangladesh as a tropical country enjoys a moderate winter. However, in recent years the country has experienced numerous cold waves during the winter. These natural events are termed as disasters when they adversely affect 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 and distress to the affected people. In January 2010, northern parts of the country experienced a rapid fall in temperature with cold winds and dense fog, which resulted in a significant rise in respiratory illnesses and, in some cases, deaths. Next year, the Meteorological Department recorded the average temperature in January at 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 natural calamities in Bangladesh as far as the damage, distress and death toll are concerned. The cold wave of January 2011 claimed 39 lives, mostly children and the elderly. Hospitals in the affected districts reported a higher number of patients with cold weather-related illnesses. The weather also caused significant damage to crops and other natural resources, which is feared to have a long-term negative impact on the economic situation of the already poor communities in the worst affected areas.

In 2013, cold wave almost crippled the country during the first week of January, affecting more than 20 districts including Natore. More than 50% of the population living in those districts were affected and 80 people died, many of whom were children. During the cold wave, the temperature in Syedpur Upazila of dropped down to 3 degree Celsius, the lowest in Bangladesh since 1968.

2.2 Physical Context

Natore, a district under Rajshahi division, located in the northern Bangladesh between 24°25' and 24°58' north latitudes and between 88°01' and 88°30' east

longitudes.

The total area of the district is 1900.19 sq km (733.00 square miles), of which 2.44 sq km is forest area. It is surrounded by Naogaon and Bogra districts on the north, Pabna and Kushtia districts on the south, Pabna and Sirajganj districts on the east, Rajshahi district on the west. Most part of the district is plain land. Chalan Beel, the largest marshland in Bangladesh with an area of 1,896.05 square kilometres, is partly in Natore. The average annual maximum temperature is 37.8°C, the minimum is 11.2°C and the annual rainfall stands at 1,862mm. There are mainly 10 rivers that flow through Natore. The Atrai, the Baral, the Narod and the Nandakunja rivers are the notable of them.

2.3 Socio-economic Context

People of the natore district are involved many occupations in Natore district like agricultural labourer, wage labourer, fishing service, transport job and other businesses, etc. But agriculture is the main source of livelihood in this area. Major occupation is subsistence agriculture which is highly sensitive to drought. The sectoral shares of the occupations are agriculture 41.75%, agricultural labourer 28.84%, wage labourer 3.01%, business 10%, service 5.02%, fishing 1.32% and others 10.06%. Climate change aggravated impacts of these consequences, affecting livelihoods, agriculture, health and other resources. It also affects employment of the rural people, particularly those who live on daily wage labour.

Most of the poor people of this area take loans to recover their loss. The average annual loss suffered by the project's beneficiaries is estimated BDT 6,877. The selected beneficiaries of the project have no cultivable land of their own. Some of them cultivate crops on leased land. Most of them live in crammed shanties, made with bamboo and corrugated iron sheets, with their children. The roof of their kitchen is made with jute-sticks and/or leaf of sugarcane and polythene. The average size of their homestead is 2.5 decimals and their average monthly income is BDT 4,178 only. Most of the beneficiaries rear domestic animal and or birds (Ref: Baseline survey of this project).

Chapter 3: Existing Practices of Adaptation and Risk Reduction

3.1 Government Initiatives

Natore is one of the most climate-vulnerable districts in Bangladesh. There are a couple of government interventions in the project area such as: Integrated

Agricultural Productivity Project (IAPP), Ektee Bari Ektee Khamar, Test and Emergency Relief (TER), Local Govt Sustainable Project (LGSP), Ultra Poor Program, Food for Work (Kabikha), LGD Program, Rural Maintenance Program (RMP), etc.

Table:2. List of Projects implemented by Government.

SI No	Project title	Goal and objectives	Major Activities	Duration	Implemented by	Funded by
1	Ektee Bari Ektee Khamar	Poverty reduction	Mobilization for saving, distribute credit	2009-2016	BRDB	GOB & community
2	Integrated Agricultural Productivity Project (IAPP)	To increase food production	Demo plot, training for agriculture, mobilization, exposure visit.	2015-2016	Agriculture department	GOB
3	Social Protection	Economic support for old aged vulnerable people	Allowance support	1998-Continue	Social welfare department	GOB
4	Widow Allowance	Safety net support to vulnerable widows	Allowance support	2000-Continue	Social welfare department	GOB
5	Disable Allowance	Safety net support to disable person	Allowance support	2000-Continue	Social welfare department	GOB
6	VGF	To reduce food inseceerity	Rice support	1989-Continue	Disaster management department	GOB
7	Vulnerable Group Development (VGD)	To build hunger and proverty free Bangladesh	Saving collection and refund with interest, training, food distribution.	January-2015-december-2016	Female welfare department	GOB
8	Pregnant Mother allowance	Reduction of child and mother death, increase breast feeding, increase nutrition for pregnant mother, pre and post pregnancy support, increase EPI and family planning, protection of early marriage, birth and marriage registration.	Allowance support and training	20 years	Female welfare department	GOB

3.2 Active NGOs and CBOs in the Project Area

A number of NGOs are working in different development sectors in Natore district, which are National Development Programme (NDP), CARITAS, SATHI, Landless Upbringing Social-work Therapeutic Rural Establishment (LUSTRE), KOINONIA, Center for Development Services (CDS), Proshika- Manokbik Unnayan Kendra, Association for Social Advancement (ASA), Bangladesh Rural Advancement Committee (BRAC), Access toward Livelihood and Welfare Organization (ALOW), Thengamara Mohila Sabuj Sangha (TMSS), LEpra Bangladesh, NEDA Sociaty, Transparency International Bangladesh (TIB), Nandan, Uttara Development Program Society (UDPS), Socio Economic and Educational Development Society (SEEDS), Jagorani Chakra Foundation (JCF), Rural Reconstruction Foundation (RRF), Shakti Faundation, UDDIPAN, Eco Social Development Organization (ESDO), Light House, Democracy Watch, Resource Integration Center (RIC), Wave Foundation, RDRS Bangladesh, etc.

3.2.1 Completed Projects

Recently some projects of different NGOs have been completed in the project area. These projects and the

implementing NGOs are- Water Sanitation and Hygien (HySaWa) by SHATHI, LUSTER & BRAC, Human Rights and Good Governance by Adibashi Unnayan Songsta.

3.2.2 Existing Projects

The CCCP sub-project is being implemented in four Unions- Boro Harishpur, Tebaria, Kafuria and Laxmipur Kholabaria- of Natore Sadar Upazila in Natore District. A number of projects are being implemented by different NGOs in the project area. The existing projects and their implementing authorities are Community Climate Change Project (CCCP) and Ujjibito project by NDP; Disaster Management and Development project by CARITAS, Vulnerable Group Development (VGD) by LUSTRE, Electrical House Wiring and Machinery Repairing Project by KOINONIA, Micro Finance program by ASA, NDP, BRAC; Health program, Ultra Poor Program (UPP), WaSH program by BRAC etc. The existing safety net program are Ektee Bari Ektee Khamar, VGD, VGF, old age allowance, disable allowance, pregnant mother allowance, widow allowance programs are being implemented by Bangladesh government.

Table: 3. The existing Projects and the concerned NGOs

Sl No	Project title	Goal and objectives	Major Activities	Duration	Implemented by	Funded by
1	UPP Ujjibito component	Food Security	Nutrition, Protection of Child Labor Pregnant Mother and Child Health Care, Poultry & Lilestock feeding, School living Child Care, Homestead Gardening, Varmi Compost.	2012-2019	NDP	EU
2	Education Program	World change starts with educated children	Literacy, Girl education, School infrustructute construction	2014-continue	Room to read Bangladesh	Room to read Bangladesh, Community
3	Vulnerable Group Development (VGD) Program	To make positive change in livelihood of ultra poor women with attention to protect further deteriorate of living condition	A safety net program with orientation	2007 to continue	Access toward livelihood and welfare organization (ALOW)	Women affairs Department, GOB

SI No	Project title	Goal and objectives	Major Activities	Duration	Implemented by	Funded by
4	National Domestic Biogas and Manure Program	Use of renewable energy	Construction of Bio-gas Plant, Installation of Solar panel	2012 to continue	Access toward livelihood and welfare organization (ALOW)	IDCOL
5	Food and Livelihood Security (FLS) Program	To ensure food security of destitute woman and marginal farmer	Provide allowance to marginal farmer, AGA Training, Saving	2007-2015	Access toward livelihood and welfare organization (ALOW)	European commission (EC), RIC
6	Aparajita	Political empowerment of women	To empower the female UP member, Early marriage protection, Women education	2011-continue	Access toward livelihood and welfare organization (ALOW)	SDC, Khan foundation
7	Housing Project	To build idle house	Loan disbursement and technical support for house building.		Access toward livelihood and welfare organization (ALOW)	Bangladesh Bank
8	Climate Change Adaptation	To make climate adaptive	Tube-well installation, Community latrine installation, Awareness raising.	2012-2019	Landless Upbringing Social work Tharaphitics Rural Establishment (LUSTER)	DANIDA
9	Education Program	Early child development	Conduct of child center	2005-continue	SATHI	Save the Children
10	Non Formal Education Program	Continuation of poor and ultra poor drop out child education	Education material support, Child recreation	2002-2018	NIDA Society	BRAC
11	Climate Change Adaptation (CCA)	To make climate adaptive community	Tube-well installation, Community latrine installation, Awareness raising.	2015-2016	NIDA Society	HySaWa
12	Community based disable rehabilitation and development project	To mainstream the disabled people	Ramp construction, Provide therapy, Support to disabled card preparation	2002-Continue	NIDA Society	Self Finance

Chapter 4: Outcome of the Sub-project Activities



Photograph 8 : Goat rearing in slatted housing system

Activity 1: Goat/sheep rearing in slatted housing system

One of the important activities of the project is to promote goat/sheep rearing in slatted houses. The changing weather has negative effect on animals' health. The poor households of Natore Sadar Upazila rear sheep/goats, which is an important income generating and livelihood activity for them. Unfortunately, due to the changing weather, the animals have recently been falling sick more often than earlier, sometimes even dying. The poor people have to spend money for treatment of their sick animals. Death of animal means huge loss for a poor household. The major problem in traditional process of goat rearing is that people keep goats on soil at night. It makes the goats to inhale methane created from their own urine, and causes bronchitis, cold and other respiratory diseases. To overcome this problem, the sub-project has introduced slatted houses for goats, a proven technology for reducing these diseases. In addition, rural poor people are rarely informed of the vaccination and treatment of goats. The sub-project supports them to make slatted houses for goats, and provides them with training on improved management of goat rearing, vaccine and other veterinary services.

A total of 731 beneficiaries have been given the assistance to make slatted houses. Before that, they were given two day's training on goat rearing and improved management. Campaigns were also carried out to vaccinate, de-worm and provide vitamins to goats. The goat manure is being used to make farmlands fertile. This method of goat rearing is completely eco-friendly. Incidence of sickness and death of goats has reduced to a great extent. These steps have significantly contributed to reducing the prevalence of different diseases among the goats and making them healthier and more productive.

"The prevalence of disease and the mortality rate among my goats have reduced. Their health has improved a lot. I now have 12 goats, valuing Tk 40,000 ... I sold four goats for Tk 12,000 over the last six months. I want to rear more goats ... My neighbours too are getting interested in rearing goats in slatted houses."



Khodeza Begum, 34
Goaldanga, Natore Sadar
Natore

Results

The initiative has protected livelihoods of poor households by reducing morbidity and mortality of goats due to diseases including those induced by climate change. Life-long traditional practice of goat rearing has been replaced with a new method. The community has gladly accepted this simple but



Photograph 9 : Amena is self-sufficient by goat rearing

prominent method. The animals have a better living place. Prevalence of diseases and mortality rate among goats have reduced and health of the animals has improved a lot. Poor people are making profit from goat rearing. Increased economic capacity has enabled them to adapt to the adverse impact of climate change, drought in particular. The beneficiaries and their neighbours have become more interested in rearing goats in slatted houses and increasing the number of goats in the hoard.

Activity 2: Installation of Improved Cooking Stove (ICS)

The project is promoting the use of improved cooking stoves among the community people, especially among the poor households in the working area. Traditional cooking stoves are often called "silent killers in the kitchen". Usually, it's the women who are responsible for cooking food for the family. The traditional stoves need more fuel which is becoming scarce due to drought and other climatic phenomena. The stoves also create a lot of smoke and the women have to inhale smoke when they cook. Small children also inhale smoke as they stay around with their mother. Smoke causes eye irritations. Both women and children get affected by various respiratory diseases and children

especially grow up with respiratory diseases, when they inhale/experience smoke over a long period of time. In addition, traditional stoves emit relatively high carbon dioxide. Furthermore, smoke makes furniture, clothes and other materials inside the kitchen dirty. To address the issue of health hazards and CO2 emission, the project is promoting the use of improved cooking stoves called 'Bondhu Chula', literally meaning friendly cooking stoves. The stove consumes less fuel and keeps the kitchen smoke-free. As a result, a clean environment prevails inside kitchen.

Due to use of low carbon emitting improved cooking stoves, their health is improving. The project supported a total of 400 families to have environment-friendly 'improved cooking stoves'. They also were been given orientation on the necessity, importance and use of the stove.

Results

Fuel consumption has reduced and so has the time spent for collecting firewood and other fuels. Some households used to purchase fuel. The improved stove has contributed to reducing fuel cost as well. The 'bondhu chula' creates no smoke inside the kitchen. Hence, a clean environment prevails inside kitchen. Furniture, clothes and other materials inside their kitchen remain clean. The beneficiaries enjoy the smoke and hazard-free cooking. It has reduced health risks of their own and their children. Now they are contributing to reducing carbon emission and most importantly, keeping their health fit and the environment clean. More and more people are realising the necessity of using the improved cooking stoves.



Photograph 10 : Cooking in a ICS

Activity 3: Re-excavation of water bodies

Another significant activity of the project is re-excavation of ponds to increase water-holding capacity of them. Traditionally, rural people use ponds for taking bath and other household chores including washing clothes and utensils. Due to climate change, ponds in the working area do not contain enough water for the villagers to do such activities for most part of

Results

The capacity of the water-bodies has increased and people of the surrounding communities are using the water for various purposes all the year round. Water scarcity and the related problems have reduced. Dependence on groundwater, especially for bathing, washing clothes and household use, has reduced. It helps them to maintain personal hygiene. Owners of



Photograph 11 : Locals using a re-excavated pond

the year. Due to less rainfall in the area and hot weather, water bodies of the project working area dry out quickly during the pre- and post-monsoon period. Due to climate change, the situation is deteriorating quickly. Traditionally women are being given duties to collect water and do the household activities, including washing clothes, either by fetching water from distant water-bodies or going to the water-bodies to bath or wash clothes.

Considering the above circumstances, the sub-project has taken initiatives to re-excavate the local ponds. Five water-bodies of the area have been re-excavated to preserve rainwater, which can be used around the year. For sustainability of ponds, water-user groups have been formed and tasked with supervision and maintenance of the ponds regularly. With the support from the project the pond is re-excavated and stairs are constructed. The community also contributed cash as well as through their labour.

the pond are also benefitted as it has given them the opportunity to cultivate fish. They also feel good for the community people are using their pond. The community people are learning to cope with drought and to make themselves climate-resilient.

Activity 4: Installation of Sanitary Latrine

In order to develop a climate resilient community, installation and demonstration of a specially designed sanitary latrine has become an important activity under the sub-project being implemented by the NDP. Sanitation in the drought-prone areas is one of the highly climate-sensitive sectors. Unhygienic latrines are breeding grounds for germs. Among the poor people in the area, there is a lack of proper hygiene facilities and the climate change is worsening the situation. As a result, poor people are suffering from various diseases, mostly waterborne. Most people of these areas use low cost latrine on flat land which is

not hygienic. Due to a shortage of water, they could not clean themselves and the toilet properly. Considering these perspectives, the CCCP has designed an improved sanitary latrine which will ensure hygiene facilities of the poor project participants. The unique feature of the latrine is that it has a water supply system (a water reservoir is attached to the structure and connected with pipes and taps); a handle inside the latrine for children, pregnant women, the elderly and people with disabilities; a ceramic pan; separate pit connected with PVC pipe; tin-roof with sufficient ventilation etc. A strong



Photograph 12: Installation of Sanitary latrine

cemented soak-well has been constructed with latrine for waste management. This type of latrine is being demonstrated in Bangladesh for the first time. Under the sub-project, the NDP has provided support to construct 162 sanitary latrines with a superstructure that have created access for 486 families (three families per latrine) to safe sanitation and proper hygiene practice. The field observation shows that those who have already received the latrines are maintaining hygiene.

Result

The latrine has created huge stir among the community people. Due to the built-in running water system, it has become easy for them to keep the latrines clean. Women's personal hygiene-related problems have reduced. The environment has become odor free. As a

result, hygiene practice has increased among the beneficiaries all round the year, including during the dry season, which is leading to the reduction of waterborne diseases. It is also contributing to keeping the environment clean. Women and children are especially benefiting from it. Many are planning to build their latrines following the same design. It is helping the community to become more climate-responsive and climate-resilient.

Activity 5: Construction of Tube Well Platforms

Water is life but only when it is safe and clean. Shifting of weather creates water scarcity in the working area. In a drought-prone area like Natore Sadar Upazila, safe drinking water is becoming a scarce resource. A huge number of hand operated tube wells have been installed since the '70s to address the scarcity of drinking water. The low lift hand pumps are cheap but construction of the platform is relatively expensive. Thus many poor people have installed hand operated tube wells without platforms. Unfortunately, water from such tube wells may not be safe for drinking as unsafe water from nearby the tube-well boring can ingress and contaminate the water from the tube well concerned. Some tube wells of the area are still functional but have no platform, which often causes waterborne diseases like diarrhoea and dysentery among the beneficiaries, particularly among children. A total of 210 tube-well platforms with soak wells have been constructed under the project, with the assistance of project and community contribution,



Photograph 13 : Construction of tube well platforms

to ensure safe drinking water to 210 small groups of beneficiaries. The used water from the tube wells is reserved in the soak wells for use for irrigating homestead gardens. This environment-friendly process helps reduce dependence on groundwater. Eight to 10 families use each tube well. Community contribution in setting up the platforms has created a sense of ownership among them. The communities have taken the responsibility of operation and maintenance of the tube wells.

Result

Beneficiaries can wash their hands, faces, take bath or wash clothes on the platform easily. Their access to safe water has reduced the health risks of the beneficiaries. Even the children can use the tube wells without hassles. Hygiene practice has increased among the beneficiaries, which is contributing to the reduction of the incidence of waterborne diseases. The beneficiaries feel comfortable in using the tube wells and waste of water has dropped. The pressure on groundwater has decreased as waste of water has dropped and waste water is being re-used.

Activity 6: Installation of Deep-set Tube Wells

The project supports a cluster of drought-affected poor households to have deep-set tube-wells to ensure their



Photograph 14 : Installation of deep-set tube wells

access to safe drinking water all round the year. A total

of 113 community tube wells with soak wells have been installed and the average depth of each tube well is 160ft. The tube wells are able to extract water from 60ft below. It has ensured access to safe water for 113 groups comprising 791 households. Used water from the tube wells is reserved in the soak well so that it can be used for watering homestead gardens.

The consequence of climate and weather change is very evident in the working area, as the underground water level is going further down every year. The poor people are facing serious crisis due to the shortage of safe drinking water as the shallow hand-operated tube wells of the area are losing ability to extract water from the deep aquifer. The poor cannot afford installing deep tube wells on their own. The women had to fetch water from a long distance, which is a laborious and time-consuming task. Scarcity of water sometimes bars people from maintaining proper hygiene. In consultation with the Department of Public Health Engineering (DPHE) in Natore Sadar Upazila, NDP selected the deep-set tube well as a means to solve the potable water crisis and to combat drought. The community people are involved in selecting the tube well sites and determining operation, maintenance and security measures. A user group/committee was formed for each tube well. The committee members have been given training on maintenance and management of tube-well. Members of the user group contribute a small amount to create a fund for future maintenance of the tube well. A bank account was opened to save money for maintenance of the tube-well. A tri-partite MoU (Memorandum of Understanding) was signed among the groups; tube well owners and the organisation to make the intervention sustainable. The community provided land and made a financial contribution of Tk 2,000-4,000 for each tube-well.

Result

People now have access to safe drinking water without hassles. They no more have to carry water from long distance, which saves them work hours. Children are drinking safe water and washing themselves with clean water. As a result, hygiene practice has increased among the beneficiaries, which leads to reduction of waterborne diseases and making the children healthy.

Capacity Building Training

The sub-project organised two-day capacity building trainings on goat rearing and management. A total of

731 participants received training in 29 batches. They actively participated in the training for building their capacity. Now they have the knowledge and skills on proper goat rearing and management.



Photograph 15 : Training on tubewell maintenance and management

Chapter 5: Need Assessment and Future Adaptation Option

For future action, the community people developed an adaptation action plan and it is given below:

Table 4: Matrix of an Adaptation Action Plan

Problem/ Risk	Impacts	Existing Practices	Future Needs	Resource	Institution/ stakeholders	Time/ Duration
Drought	<ul style="list-style-type: none"> - Poverty increase. - Diseases rise. - Vegetation decrease. - Water-level going down. - Change in occupation. - Damage in agriculture crops. - Cracks in soil crack and loss of fertility. - Drying out of ponds, farmlands, rivers and canals. 	<ul style="list-style-type: none"> - Tree plantation around houses. - Block tree plantation. - Installation of deep tube wells. - Digging deep pond. - Alternative crop cultivation - Career migration 	<ul style="list-style-type: none"> - More environment-friendly forestation. - Drought tolerant crops cultivation. - Improvement in irrigation system (at small & large scales). - Use of organic manure to increase water holding capacity of soil - Use of renewable energy. 	<ul style="list-style-type: none"> - Skilled manpower. - Adequate land area - River water. - Adequate land for tree plantation 	CBOs, UP, NGOs, Upazila administration and agencies concerned (DAE, Livestock, Fisheries, LGED, DPHE, USWD, UWAO, PIO etc).	Short term
Cold wave	<ul style="list-style-type: none"> - Fall in the crop production and growth - Rise in mortality rate among old people and children - Increase in the incidence of diseases among human and livestock - Drop in the number of workplace and employment opportunities. - Obstruction in the communications systems on the way to rivers. 	<ul style="list-style-type: none"> - Straw burning for warmth from cold. - Spending whole day idly inside the house. - Using warm clothes. - Putting gunny sheets on cattle to protect them from cold. 	<ul style="list-style-type: none"> - More warm clothes. - Winter-based crop cultivation. - Training on and cultivation of winter-based homestead vegetable gardening to ensure food security and nutrition. - Forestation. - Vaccination programmes. - Technical training for IGA. 	<ul style="list-style-type: none"> - Mental stamina. - Torn-up quilts, thin clothes. - Straw. 	CBOs, UP, NGOs, Upazila administration and agencies concerned (DAE, Livestock, Fisheries, LGED, DPHE, USWD, UWAO, PIO etc).	Short term

Problem/ Risk	Impacts	Existing Practices	Future Needs	Resource	Institution/ stakeholders	Time/ Duration
Nor' wester	<ul style="list-style-type: none"> - Destruction of houses and trees. - Damage of crops. - Sudden loss of lives of humans and animals in thunder strikes and under fallen trees. - Capsize of boats. - Widespread damage of trees. 	<ul style="list-style-type: none"> - Replacing old bamboo poles at home with the new ones. - Pulling the stake from the shed with a rope and temporarily fixing the house with bamboos. - Staying under the cot during the storms. - Planted trees around the houses. - Keeping houses low in height. - Understanding the possibility of storms by looking at the sky. 	<ul style="list-style-type: none"> - Housing with RCC pillars - Constructing semi-concrete houses at permanent char areas - Storm forecasting through radio and other electronic media - Develop early warning system - Building up teams of disaster volunteers and first aid providers - Building forest walls around the houses 	<ul style="list-style-type: none"> - Laborious/ hard working people - Confident and brave men - Skilled manpower - Social cohesion/ bonding 	CBOs, UPs, NGOs, Upazila administration and agencies concerned (DAE, Livestock, Fisheries, LGED, DPHE, USWD, UWAO, PIO etc).	Short term



Photograph 17 : CCAG members are preparing Community Action Plan by using PRA method.

Chapter 6: Best practices/case studies

Tube-well installed in Kasharigacha Village

Ten extreme-poor families of Kasharigacha village now have access to safe drinking water even during the dry season. However, they did not have this even a few months ago. Located 12km from Natore Sadar town, Kasharigacha village is one of the most drought-affected areas in the Upazila. About one-third inhabitants of this village are poor. Ten extremely poor

According to the Upazila office of the Department of Public Health Engineering (DPHE), the water level in Natore Sader is 20 feet during the monsoon but its goes down to 32 feet or more during the dry season. This downward trend is continuing every year. If this trend continues, this water level will go down to 48 feet or deeper within the next 50 years. Then the



Photograph 18 : Tube-well installation in Kasharigacha Village

households were silently living in the south-west corner of the village. They had for long been suffering from scarcity of drinking water as there was no deep cylinder tube well around. The situation became severe during the dry season when low lift hand pumps/tube wells became unable to extract water. They had to fetch water for drinking and other household purposes from a distant place.

Natore, a most drought-prone area lying between the Chalan Beel and the Barind Tract area, have been experiencing relatively low rainfall over the years, to climate change. The groundwater level is declining, triggering acute scarcity of drinking water. The water of river, ponds and other sources of the area depletes quickly making the situation only worse.

scarcity of pure drinking water will be severe beyond imagination.

To address this problem, the 'Development of Climate Resilient Community (DCRC)' project of the NDP has supported the community to install a semi-deep tube well. The average depth of such tube-wells is 160 feet. The tube well is expected to be able to provide service more for than fifty years even if the current trend of decreasing water level continues. More than 10 households are getting benefits directly and 25 households (about 100 people) indirectly from this tube-well. A tube-well maintenance committee and a climate safety fund have been formed with the community participation for maintenance of this tube-well.

ICS makes Joshna Begum's life healthier

Joshna Begum belongs to a very poor family living in Ramaigachi village, located 2km from the Sadar Upazila. Mother of four children (including a disabled child), she previously used the traditional stove. Her kitchen was full of dust and smoke. Smoke from fuels would cause various diseases. Her children would often get sick. Because mothers and young children are the household members who regularly have to

explained the benefit of ICS, she was immediately got interested in using it.

The DCRC project assisted about 400 families to install ICS with the money from the CCCP fund and the community contribution. ICS is cost-saving and environment-friendly.

Joshna says she is happy to use the ICS. It reduced the



Photograph 19 : Joshna Begum is cooking food using ICS

inhale smoke from cooking stoves, they are disproportionately affected by the various health issues. Children are specially vulnerable to acute respiratory infections, where there is casual linkage with the biomass combustion emission.

To address this issue, the NDP provided Joshna improved cooking stove (ICS) through the "Development of Climate Resilient Community (DCRC)" sub-project under the Community Climate Change Project (CCCP) of the PKSf. When field officer Md Rafiqul Islam went to her house and

expenses for firewood, and possibility of health hazards caused by smoke and carbon emission. Her kitchen remains clean now. The popularity of ICS is increasing day by day..

Some users initially complained that the ICS was requiring more fuel than usual to heat up properly. Following this, the ICS design was upgraded. The radius of the oxygen chamber pipe was enlarged and the radius of smoke emission pipe was narrowed. Like Joshna Begum, many people in Natore are being benefited using the ICS.

Anwara has a better life now

Anwara Begum did not know why her goats would often get sick and die every year. Her husband is a day labourer and because of his old age, his earning was uncertain. They do not have their own land and live on a piece of state-owned land.

Goats were their only asset. Anwara took care of her goats and kept them in the same room she used to

environmental humidity, solar radiation, wind and rain. Again, good housing facilitates good management and breeding.

Anwara's goats stayed outside during the daytime. As the outside temperature is very hot, the goats would often get sick. She had no idea what could be done. Like Anwara, many women were facing the same



Photograph 20 : Representatives of PKSF & NDP are visiting anwar's slatted house of goat

sleep in. The difference was she would stay on the bed but the goats would be kept on the floor under the bed. She knew living in same room with goats was unhygienic but she had no choice. She could not afford a separate shelter for the goats.

Her village, Gunarigram, is 2 km from Natore Sadar town. The area being one of the most drought-prone ones, the situation requires special design and construction of optimum animal housing. The basic requirement for good animal housing is that it should be altered or modified according to the environment for the benefit of animals and for protection of them from predators and theft. A decent housing protects animals from stretch and facilitates proper growth. The main climatic factors from which protection is needed are high and low ambient temperatures,

problem.

After analysing her condition, the DCRC project decided to assist her in making slatted goat house. Including Anwara, about 731 households were supported by the project to build slatted shelters for goats. The fund partially came from the CCCP and the rest were raised from the community contribution. The shelter's floor is constructed on a higher platform so that goats do not have to inhale the methane gas from their excreta and urine. Inhalation of this gas cause different diseases. It keeps the platform dry and easy to clean. The mortality rate of goats in that area has reduced significantly afterwards.

Now Anwara's goats are healthy and she plans to expand the herd in future.

Chapter 7: Guidelines and Manuals

Procurement Guideline

NDP is implementing the sub project "Development of Climate Resilient Community" in the northwest part of Bangladesh by following the procurement guideline developed by the CCCP-PKSF. The CCCP has to follow World Bank's Procurement Guidelines as well as the Public Procurement Act 2006 (PPA 2006) and Public Procurement Rules 2008 (PPR 2008) in its procurement activities. The guideline has simplified the process of procurement. NDP has the capability and experience to perform procurement under the PPA 2006/PPR 2008. NDP follows the PPA/PPR of the guideline in procurement of the project. Effective and sound procurement process ensures value for money, economy, efficiency, equity, fairness, transparency, accountability and reliability as well. In public procurement, it was a legal obligation to meet the above-mentioned criteria. Procurement is an indispensable part of the activities under the CCCP, both at the Project Management Unit (PMU) level and the PIP (NDP) level. The Project Appraisal Document (PAD) and the Operational Manual (OM) of the CCCP provide the overall procurement responsibilities for both the PMU of the PKSF and the NDP. Procurement is carried out in accordance with World Bank guideline: procurement of goods and works. It also helps procurement of goods and works ensuring value for money.

PIP Procurement methods/policy for sub-project

NDP strictly follows the CCCP-designed procurement procedures, developed in the light of the Public Procurement Act, 2006 and the Public Procurement Rules, 2008. Procurement for various projects is done through the RFQ method.

Monitoring and Evaluation Manual

PKSF-CCCP has formulated a Monitoring and Evaluation Manual for assessing progress on planned activities and results. It is also a tool to monitor the implementation of the CCCP in view of PKSF's emergence as a financing entity in the climate change adaptation initiatives. The manual guides the project management to monitor the progress of implementation

at the NDP's working areas and results at the community level. The manual serves as the basis for the NDP in implementing the sub-project monitoring practices in consistence with the CCCP practices. It helps document information and knowledge in a way beneficial for knowledge management.

The purpose of the Monitoring and Evaluation Manual is to support implementation of the management decisions of the CCCP PMU and the NDP provided useful and timely information to internal management at all levels, fulfilled the reporting requirements of PKSF-CCCP and provided for dissemination of useful information and learning among 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 failures, cases have been documented and would be reported accordingly. The PKSF-CCCP and the NDP management provided guidance and support to ensure the quality of works and generation of accurate data.

Social Management Framework (SMF)

The NDP prepares and implements all the adaptive activities taking into account the gender dimensions of climate change vulnerability as a social safeguard requirement before project screening, preparation and implementation. While forming groups amongst the beneficiaries, the females, the disabled and the indigenous people are given priority.

Environment Management Framework (EMF)

Environmental sustainability is the topmost priority of NDP. Environmental assessment report has been developed before selecting every site in the working area. In implementing the activities, NDP ensures that the surface of the agricultural land is not tampered or no trees are cut down or the connection between water bodies and rivers remains as usual. So no harm is caused to water, soil, biodiversity and other environmental resources.

Grievance Redress Mechanism (GRM)

NDP has successfully established Grievance Redress Mechanism at its central and sub-project level to deal with any complaints or grievances about environmental or social issues under the CCCP. The local grievance redress focal persons are Md Osman Goni Bhuiyan, Chairman of Boro Horispur UP; Md Omar Faruk Prodhan, Chairman of Tebaria UP; Md Elius Hossain, Chairman of Kafuria UP; and Md Abdul Baten Bhuiyan, Chairman of Laxmipur Kholabaria UP.

Complaint Handling Mechanism (CHM)

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, the CHM will refer to sections 29 and 30 of the Public Procurement Act (PPA) 2006 and rules 56, 57, 58, 59 and 60 of the Public Procurement Rules (PPR) 2008.



Photograph 21 : ED-NDP, PC-CCCP & PM-DCRC are interacting with CCAG members.

Chapter 8: Lessons Learnt and Way Forward

Lessons Learnt

- * The idea of forming Community Climate Adaptation Groups is excellent and the motivation of the groups can foster the relationship across the different socio-economic sectors and adaptation options.
- * Community mechanism for each activity is encouraging and helpful to make the activity sustainable.
- * Through PRA tools, the community now can identify the problems and is able to plan for their future strategy programmes and communications with service providers.
- * The frequent visits of both donor and partner representatives have increased the quality of work.
- * The ICS fights directly against the adverse effects of climate change. It emits low-carbon in the atmosphere and reduces health risks caused by smoke. It keeps kitchen and the surroundings clean as well.
- * 'Goat rearing in slatted houses' is a very simple but promising method and is helpful to reduce mortality rate among goats. It is an innovation for this field.
- * A tube well without platform is a breeding ground for germs. Hygiene practice has increased among the beneficiaries, which is contributing to reducing waterborne diseases.
- * The new tube wells have remarkable positive effects on the hygiene practice of the beneficiaries, especially women and children. Using the stored water in the soak well for irrigation, the pressure on underground water has reduced.
- * Use of sanitary latrin assists the beneficiaries to change their behaviour positively towards cleanliness. It is also contributing to keeping their environment clean and health hazards away. Women and children are especially benefited from it.

- * Due to re-excavation of the water-bodies, surface water reserve has increased, contributing directly against the adverse effects of climate change. Dependence on underground water is reducing especially for bathing, washing clothes and household use.

Way Forward

- * Capacity building of local institutions to combat climate change and its negative effects.
- * Increasing availability of surface water and promoting use of the same.
- * Providing the poor and extremely poor families with alternative livelihood supports or IGA for strengthening their adaptation capacity.
- * Emphasising on promotion of cultivation of drought-tolerant crops.
- * Promoting use of renewable energy.

Sustainability of the Project

The project promotes adaptation so that the people can adjust with the changing situation. It also aims to build their resilience so they can survive against the consequences of climate change. The project supports technology-based solutions and means and capacity building. The sub-project is developed and implemented in consultation with and active participation of the community people. Mechanisms have already been placed for taking care of operation and maintenance beyond the project period by the community. Local administration and government departments concerned are also involved and linked with the beneficiary to fulfil their future needs and demands.

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