2016

Building Resilience to Climate Change: Practical Experience

Sub-project:
Integrated Approach for Adaptation to Drought (IAAD)

Working Area: Lalpur, Natore.




Sub-project implemented by
Organisation for Social Advancement and Cultural Activities (OSACA)

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

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Abbreviation

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
CCCP	Community Climate Change Project
DPHE	Department of Public Health Engineering
EMF	Environmental Management Framework
FF	Field Facilitator
GoB	Government of Bangladesh
GRM	Grievance Redress Mechanism
HH	Household
HIES	Household Integrated Economic Survey
LGED	Local Govt Engineering Department
MDGs	Millennium Development Goals
MOEF	Ministry of Environment and Forest
MoU	Memorandum of Understanding
NGO	Non Govt Organisation
Nos	Numbers
OSACA	Organisation for Social Advancement and Cultural Activities
ODA	Overseas Development Assistance
OM	Operational Manual
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
SMF	Social Management Framework
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 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 has 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 0.05OC and 0.03OC 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 also is 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.

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 on the Sub-project

As a Project Implementing Partner (PIP) of the PKSF, the Organisation for Social Advancement and Cultural Activities (OSACA) is working to mitigate the threats posed by drought in Lalpur Upazila of Natore district. The Upazila is one of the severest drought-prone areas of Bangladesh. The geographical location of Lalpur is deficient in atmospheric, surface and ground water. Almost all the tube-wells of the Upazila fail to extract any water during the summer, creating an acute scarcity of safe potable water. This forces people to fetch water from the nearby water-bodies. Thanks to climate change fallout, this longstanding problem is now fast deteriorating.

By drinking unsafe water, the locals -- especially women and children -- are often being affected by waterborne diseases and their morbidity rate is fast increasing. Many defecate in the open as they can barely afford a sanitary latrine. In addition, severe heat waves damage crops and dries up arable lands. As part of the Integrated Approach for Adaptation to Drought, OSACA has excavated and re excavated ponds in the project areas. Hand-operated deep tube wells have been installed for ensuring safe drinking water and deep tube wells for irrigational purposes. Beneficiaries have also been provided necessary training and technical support for goat rearing. Besides, OSACA has also installed sanitary latrines to help people maintain hygiene. Different drought-tolerant varieties of crops have been introduced and made available to the beneficiaries.

1.3.1 Goal and Objectives

Goal: Enhancing the capacity of communities to build up sustainable resilience against climate change through community-based planning.

Objectives:

1. Enhancing the capacity of the poor and the ultra poor to adapt to the climate change fallout through promoting income generating activities and drought-resilient crops.
2. Ensuring WASH facilities for the poor and the ultra poor through alternative practices, keeping in consideration the climate change impacts.

Project Duration: February 2014 - December 2016.

1.3.2 Working Areas

OSACA is implementing this sub project in Lalpur, Bilmaria, Ishwardi and Arjunpur-Boromhati Unions under Lalpur Upazila of Natore district. Despite the fact that it's situated on the bank of the Padma River, the Upazila is the most drought-affected area in Bangladesh. The working areas were selected on the basis of climate vulnerability and poverty concentration. The working areas are:

Table 1: Name of working areas

District	Upazila	Union
Natore	Lalpur	1. Lalpur 2. Bilmaria 3. Ishwardi 4. Arjunpur-Boromhati

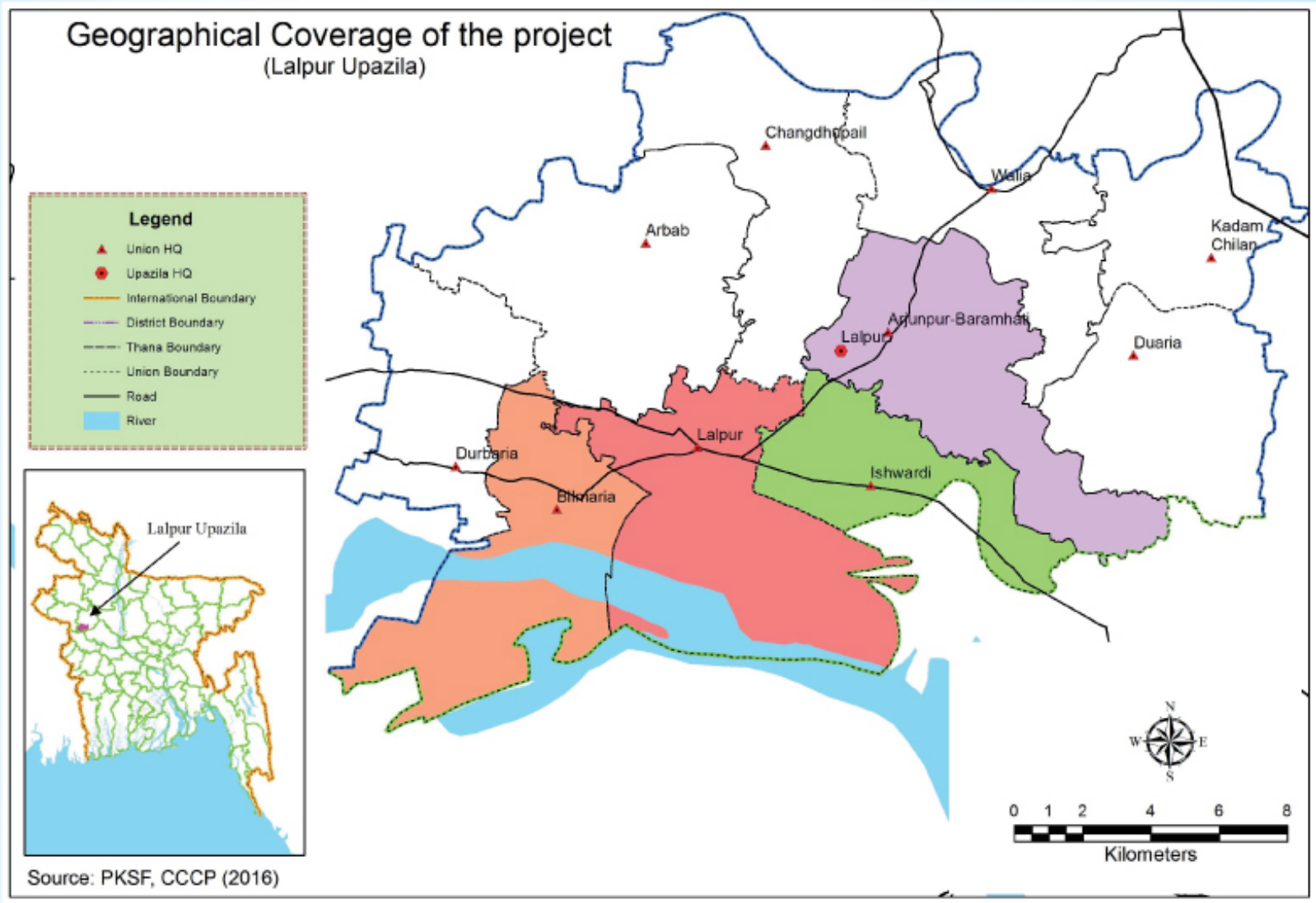

Figure 1: Map of Sub-project Working Areas

1.3.3 Target Beneficiaries

OSACA has been implementing this project in 25 villages of four unions. A total of 1,262 HHs are selected to implement the sub-project. Some 41 groups have been formed with an average of 31 members in each of them. The groups are known as "Climate Change Adaptation Groups (CCAGs)". The group members are mainly poor and marginal women who head their households. The CCAGs also included people from small and marginal farming communities. The sub-project also covers 5,048 people of the working areas as indirect beneficiaries who are mainly family members of the selected households, community leaders and local government representatives.

1.3.4 Budget

Project Budget: The total budget of the sub project is BDT 2,54,70,567 where the CCCP contribution is BDT 2,39,00,000, the OSACA contribution is BDT 5,04,509 and the community contribution is BDT 10,66,058.

1.3.5 Major Activities

- Training and technical support for goat rearing
- Promotion of drought-adaptive farming
- Installation of sanitary latrines
- Installation of hand-operated deep tube wells
- Re-excavation of ponds

2.1 Context of Climate Change

2.1.1 Temperature

Lalpur is considered as the hottest Upazila in Bangladesh. The average summer (March-June) temperature here is 34.80C, ranging between 32.10C to 38.70C. The average temperature during summer shows an increasing trend with significant variation from one year to another (Figure 3, blue line). On the other hand, the average minimum summer temperature summer is 22.20C, ranging from 20.90C to 23.90C. So, the range of maximum and minimum temperatures is quite high. Similarly, the average maximum temperature in winter ranges between 250C and 27.40C and the minimum temperature between 110C and 13.20C. Again, the range of maximum and minimum temperature in this particular time of the year too is very high. Higher temperature variation of a season indicates frequent variability in temperature which has negative impacts on agricultural production, water resources, human health etc.

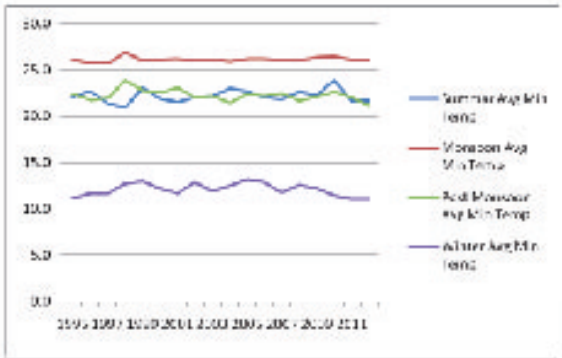

Figure 2: Average minimum temperature in different seasons

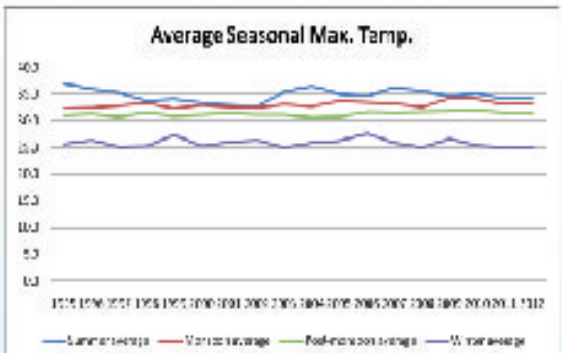

Figure 3: Average maximum temperature in different seasons

2.1.2 Precipitation

The average annual rainfall in Lalpur Upazila is 1,556mm whereas the national average is 2,400 mm. The annual average rainfall in Lalpur shows higher variability from one year to next (Figure 4). In the last 26 years, the Upazila experienced the highest rainfall in 1990 which was 2099mm and the lowest in 1994 which was 1,036mm.

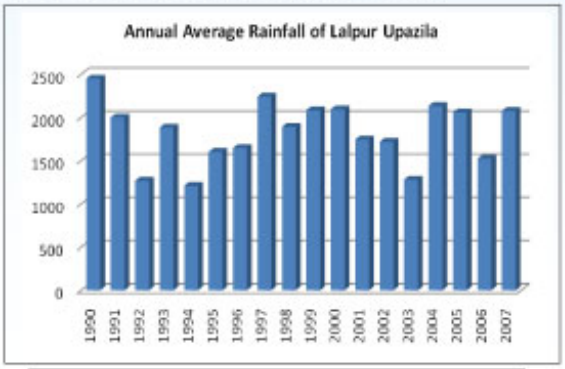

Figure 4: Annual average rainfall in Lalpur

The average monsoon rainfall in Lalpur is 1,094mm which means two-thirds of the rainfall occurs in monsoon (June-September) and only one-third occurs throughout the rest of the year. Naturally, the area remains dry during most of the months.

Lalpur remains almost dry during winter (November-February). The highest rainfall in this season was recorded in 1995 at 26mm and after that it started decreasing (Figure 6). It is significant that there was no rainfall at all in the winter of 2004-05. The following charts provide a picture of how unpredictable the amount of rainfall in the area has become over the years:

Figure 5: Average monsoon rainfall in Lalpur

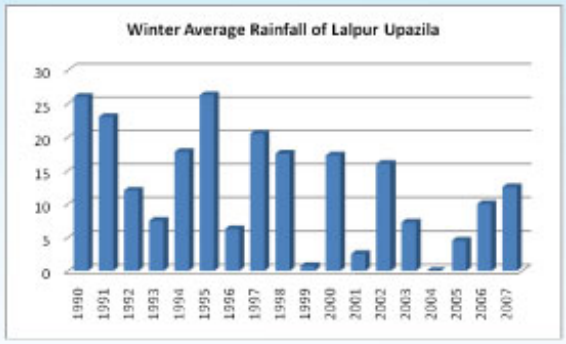

Figure 6: Average winter rainfall in Lalpur

Seasonal changes in rainfall are also remarkable. Frequency of intensive rainfall in the month of September is increasing whereas that of July is decreasing meaning monsoon rainfall is gradually shifting (Figure 7). On the other hand, all the months of winter is gradually experiencing low rainfall (Figure 8).

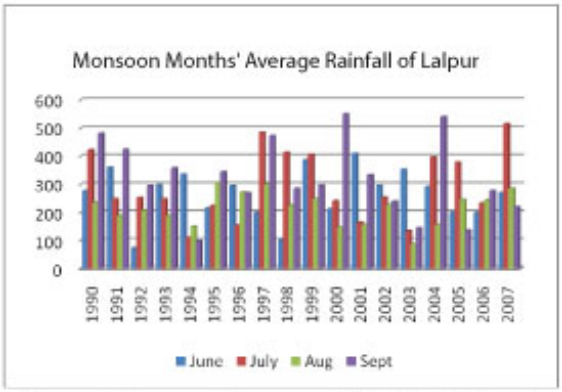

Figure 7: Average Monsoon Rainfall of Lalpur

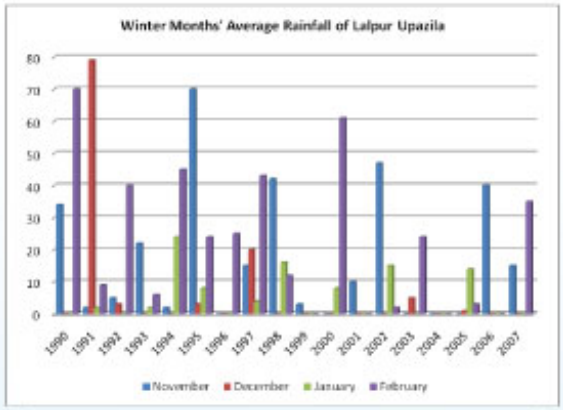

Figure 8: Average Winter Rainfall of Lalpur

2.1.3 Climate Change-Induced Hazards

A crucial climate-induced change has significantly affected the seasonal cycle in Lalpur. Of the six seasons, only summer, winter and monsoon have become prominent there. 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. Earlier, people of Lalpur were not much familiar with flood. But thanks to climate change, it now has become a recurring event with low inundation within a given year. The major hazards are described below:

Drought

Drought means a prolonged absence of rainfall and the shortage of water resulting from this. Drought is one of the main problems that plague Lalpur. Agricultural production takes the worst blow of this phenomenon Crops are highly affected by it. The layer of underground water in this area is at an average depth of 32 feet, which makes surface water scarce. This dire crisis of water is evident if one takes a look at the existing ponds, tube wells and canals etc.

Cold Wave

Bangladesh experiences a moderate winter like other tropical countries. However in recent years, numerous cold waves during winter have also been recorded. Cold wave acts as a disaster when it adversely affects the whole environment, including human beings, their shelters, or the resources essential for their livelihoods. Over the last few years, Lalpur has experienced some severe cold waves that caused serious distress to the locals.

Flood

Flood is a common phenomenon in Bangladesh. It usually occurs during the monsoon. The flood situation in Lalpur district generally worsens when incessant rains and onrush of water from the upstream happens.

2.2 Physical Context

Lalpur is located at 24.1833.N88.9750.E. It is located in an area that is at the same time the hottest and the coldest in Bangladesh. The Upazila is located on the bank of the river Padma. The Padma flows through the south eastern side of the area. There are a few riverside char lands whereas the other parts of the Upazila are flat land. There are a number of beels (vast marshlands) and canal crisscrossing the area. These water bodies are mostly seasonal. Different local species of trees dot the landscape.

2.3 Socio-economic Context

Lalpur is one of the poorest Upazilas in the country. A poverty map published by the World Bank in collaboration with World Food Program shows that Lalpur's upper and lower poverty lines are respectively 48.60 and 31.50 percent. According to the Poverty Map, 30.7 percent people are poor in the country. Kurigram is top in the district-level poverty rate where 63.7 percent people are poor while the rate in Kushtia district is only 3.6.

The economy of Lalpur is dominatingly agro-based. Ninety five percent households depend on agriculture. North Bengal Sugar Mill is the epicentre of a cropping pattern that especially focuses on sugarcane cultivation in this region. But the level of productivity is in decline due to the ever worsening unavailability of water. The wage of the labourers employed in the agro-based activities in Lalpur ranges from BDT 200 to BDT 250.The demand for labourers in agriculture increases seasonally. During the lean period, these labourers go to adjacent areas in search for employment. On top of that, women rear goats and poultry. Goats belonging to the famous Black Bengal species can be frequently found in Lalpur.

Chapter 3: Existing Practices of Adaptation and Risk Reduction

3.1 Government Initiatives

As Lalpur is one of the most vulnerable Upazilas of Bangladesh, the project area has a lot of government interventions including Integrated Agricultural Productivity Project (IAPP), Akti Bari Akti Khamar, Kabikha (Food for Work), Test and Emergency Relief (TER), Local Govt Sustainable Project (LGSP), Ultra Poor Program, LGD Program, and Rural Maintenance Program (RMP).

Lalpur is one of the most vulnerable Upazilas of Bangladesh in terms of climate change variability and extreme climate events like drought, cold wave and river erosion.

Table 2: List of projects implemented by government

Name of project	Objectives of project	Aims of project	Core activities	Duration	Implementing agencies	Funding agency	Budget
Disaster and Climate Risk Management in Agri-culture (DCRMA)	1. To enhance the risk management capability of the Department of Agriculture in the event of climate change and natural disasters 2. To increase ability of the agricultural knowledge disseminating schools at the grassroots level 3. To implement integrated co-operation and management in a bid to minimise disaster-induced risks and adapt to the effects of climate change 4. To adopt various strategies with a view to mitigating the climate change induced risks	To train the field-level officials of the Department of Agriculture and marginal farmers to develop adaptive strategies aimed at reducing the climate change-induced losses.	1.Enhancing capability 2.Raising awareness 3.Maintaining effective communication 4.Doing demonstrations at the field level	December 2010 to December 2014	Department of Agriculture Extension	UNDP, UKAID, EU, Norwegian embassy, Sweden, Australian AID	

3.2 Active NGOs in the Project Area

A number of NGOs are working in Lalpur Upazila of Natore. Care-Bangladesh, BRAC, Grameen Bank, ASA, OSACA, AVA are working in different development sectors in the district.

3.3 Existing Projects

The CCCP sub-project is being implemented in Lalpur. A number of projects are being implemented by different NGOs in the project areas. The existing projects and the NGOs concerned are:

Table 3: The existing projects and the NGOs concerned

Project	Objectives	Aims	Core Activities	Duration	Implementing entities	Funding agency	Budget
Disaster and Climate Risk Management in Agriculture (DCRMA)	1. To enhance the risk management capability of the Department of Agriculture in the event of climate change and natural disasters 2. To increase ability of the agricultural knowledge disseminating schools at the grassroots level 3. To implement integrated co-operation and management in a bid to minimise disaster-induced risks and adapt to the effects of climate change 4. To adopt various strategies with a view to mitigating the climate change induced risks	To train the field-level officials of the Department of Agriculture and marginal farmers to develop adaptive strategies aimed at reducing the climate change-induced losses	1. Enhancing capability 2. Raising awareness 3. Maintaining effective communication 4. Doing demonstrations at the field level	December 2010 to December 2014	Department of Agriculture Extension	UNDP, UKAID, EU, Norwegian embassy, Sweden, Australian AID	
MFP UPP UJJIBITO	1. To impart training and to give grants along with micro-credit to the poor 2. To hold seminars in this regard	1. To develop the socio-economic condition of the poor	1. Distributing the seeds of vegetables 2. Training the poor on rearing goats 3. Distributing worm-killing tablets	2012 to 2019	UDDIPON	EU	
Delivery of husking rice in Bangladesh	1. To fulfil the demand of Zinc through nutritious food	1. To reduce the deficit of Zinc by providing related	1. Agriculture-related training 2.Demonstration plot for collecting seeds 3. Distribution of fertilisers 4. Installation of signboards 5. Distribution of grants	2014 to 2022	AVA	IRRI and Harvest Plus	
Target the Ultra Poor (TUP)	1. To alleviate the plight of the ultra-poor by transferring the socio-economic properties to them	To distribute income generating hardware support and extend technical help in a bid to assist the poor in making financial and economic progress	1. Training on rearing cows, goats and poultry 2. Distributing grants on cows, goats and poultry 3. Providing primary healthcare for the beneficiaries	2002 to till date	BRAC	DFID	

Chapter 4: Outcomes of the Sub-project Activities

Activity 1: Training and Technical Support for Goat Rearing

Goat rearing is a traditional practice throughout the country. Mainly the poor and marginal people rear goats to support their livelihoods during the lean period. But they face problems in reducing diseases and mortality rate of these livelihood resources. 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 rarely are 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. These steps have significantly contributed to reducing the prevalence of different diseases among the goats and making them healthier and more productive.

Photo 1: Training session

Photo 3: Vaccination Camp

OSACA has trained 1,102 beneficiaries on improved management of goat rearing as part of efforts to reduce climate change impacts on goat health, and 1,102 slatted houses has been installed. This activity is the first of its kind in Lalpur. The people of this locality also responded positively to the goat rearing activity. They have by this time understood that slatted housing will be the proper way of rearing goats for them.

Photo 2: Slatted goat house

The impacts of this activity are clearly visible in Lalpur. On an average, four-five goats are kept in each slatted house. At present, about five thousand goats are being reared in the selected slatted houses. It plays a very important role in Lalpur's economic activities. Particular marketplaces have evolved for selling the leaves of jackfruit in response to the growing demand of these leaves, a favourite fodder for the goats. The leaves are sold every morning/afternoon at places like Chinir Mour Bottola, Lalpur Bazar and Bilmaria Bazar. This is an example of how the goat rearing activities are making an impact in the local economy.

Photo 4: Leaves of jackfruit being sold at a local marketplace

Activity 2: Promotion of Drought-Adaptive Agriculture

Agriculture is the most vulnerable sector to climate change. Increased temperature, low precipitation and scarcity of water are major problems in crop cultivation in the selected areas. Poor and marginal farmers mainly cultivate rice in the Aman season which is often affected by drought. The problems resulting from the climate change induced drought are given below:

Table 4: The problems resulting from the climate change induced drought

SL.	Marked Problems	Current Activities against Drought	Steps to be Taken
01	Unavailability of water is forcing the farmers to cultivate only one crop, viz. sugarcane, leaving other crops. As a consequence, the agricultural labourers remain unemployed.	A new dimension has been added to agriculture. Farmers have started cultivating spices and pulses because sugarcane is no more profitable as it once used to be.	Appropriate selection of crops in a cyclic manner is the best option. Three crops per year will ensure profitability. This will increase employment of agricultural labourers and also introduce new technologies. On top of that, the farmers will earn more than before.
02	Drought has made scarce the availability of water required for agriculture. As a result, the time for planting seeds fluctuates. Unavailability of surface water forces farmers to use groundwater, which increases the production cost.	The layer of underground water in Lalpur is going further down every year and so is the depth of the shallow pumps. The scarcity of water forces the farmers to cultivate only one crop in a year. Sugarcane is the only cash crop that is cultivated every year. In spite of high production costs involved, people have no alternative to relying on underground water for irrigation.	The use of agro-technologies can address these problems. Genetically modified crops, which can tolerate drought and take comparatively short time to be harvested, are being cultivated.
03	Climate change has made the seasonal cycle irregular. As a result, drought has been frequent in Lalpur. It rains when it is not needed, but when it's most needed it does not rain at all. Such irregular rainfall is hampering agriculture.	Many in Lalpur cultivate sugarcane to avoid this risk. Some of them also risk the whims of nature to cultivate other crops.	At least three crops need to be cultivated in a single season cyclically.
04	Climate change-induced drought has made the sources and reservoirs of water like ponds, canals and rivers go dry, which eventually is telling upon the natural sources of fishes and other aquatic resources. As a result, fishermen are becoming unemployed.	The crops sown in the beds of dried-up rivers, canals and ponds sometimes may be at risk due to the insufficient flow of water. The rest of the river bed remains fallow.	Rivers, canals and ponds should be re-excavated by the community in a bid to reserve water during the monsoon. Dams aimed at preserving water can be raised on the dead rivers in order to rear fish.
05	Drought hardens the surface of the earth, making farming all the more difficult. Tilling and preparing the land becomes a very a difficult task. On the other hand, soil becomes slippery during the rainy season, which hampers communication.	Farmers cannot grow crops in the hardened land. During rainy season, people cannot use the muddy and slippery roads for the purpose of communication and transportation.	Excessive use of underground water is allowing the entry of iron into the texture of soil, which is making the soil lumpy and hard. In such situations, lime and ash can be applied to make the texture of soil soft. In addition to this, bio fertilisers can be used to restore the softness of soil.

SL.	Marked Problems	Current Activities against Drought	Steps to be Taken
06	Drought hampers the production of jackfruits, mangoes and litchis.	Farmers apply water or insecticides to ensure the desired production. No advice is sought from the agro-scientists.	Fruit-bearing trees need to be taken care of in advance (at least 2 months before the arrival of flowers). Sufficient water should be poured around the roots during drought. Advice should be sought from agro-scientists.
07	Excessive level of drought triggers various diseases like cholera, diarrhoea, B-virus (jaundice) and dysentery.	Drought-induced diseases are usually treated by local quacks. Complex diseases require the patients to go to the Upazila or district level hospitals.	Use of safe water for drinking and domestic needs has to be ensured during drought. Homesteads must always be kept neat and clean. Specialist physicians must be consulted in case of complex diseases.

Photo 5: Drought-adaptive crop farming

Photo 6: Cultivation of drought-resilient crops

Keeping this in consideration, the sub-project introduces modified cropping pattern with improved varieties of crops. Presently, the selected farmers cultivate BINA-7, a short-duration drought-resilient variety of rice, during the Aman season.

Then in Robi season, they cultivate BARI Wheat-24 or BARI Mustard-15 which requires irrigation only twice whereas traditional varieties require it four-six times. And in Pre-kharip season, they cultivate BARI Mug-8 which requires little irrigation and a very short duration to grow. Many of them have already started cultivating fast-growing rice or mustard varieties like BARI-15. Drought-adaptive wheat cultivation has made many beneficiaries self-reliant. OSACA is working to publicise this modified cropping pattern in Lalpur Upazila.

Photo 7: Drought Tolerant Seeds Distribution Program

Photo 8: Paddy Processing

Comparative advantages of CCCP-promoted cropping pattern: The sub-project compares the improved cropping pattern introduced by the CCCP with the traditional one. The traditional cropping pattern identified by the sub-project is presented in the table below:

Table 5: Local Cropping Patterns

SL.	Seasons of Crops		
	Robi/Boro	Kharip-1	Kharip-2
01	Sugarcane	Sugarcane	
02	Sugarcane+Lentil	Sugarcane	Sugarcane
03	Sugarcane+Mustard	Sugarcane	Sugarcane
04	Sugarcane+Coriander	Sugarcane	Sugarcane
05	Boro (paddy)	Fallow	Ropa Aman (paddy)
06	Wheat	Jute	Ropa Aman (paddy)
07	Wheat	Sesame	Ropa Aman (paddy)
08	Lentil	Jute	Ropa Aman (paddy)
09	Vegetables	Vegetables	Ropa Aman (paddy)

Source: Department of Agricultural Extension, Lalpur, Natore

Though it shows several types of cropping patterns, most of the land (about 60%) is used for sugarcane farming, a labour-intensive crop harvested only once a year. Barely can the poor and marginal farmers afford its production cost. Besides, Boro paddy is cultivated on a limited scale whereas Ropa Aman is frequently affected by drought. To deal with the situation, the sub-project has selected the drought-tolerant and short-duration cropping pattern given below:

Table 6: CCCP-Prescribed Cropping Pattern

SL.	Seasons of crops		
	Robi/Boro	Robi/Boro	Kharip-2
01	Wheat (BARI-24)	Mug (BARI-6)	Paddy (BINA-7)

Table 7: Differences between Local and CCCP-Prescribed Cropping Patterns

SL.	Existing Cropping Patterns	CCCP-prescribed Cropping Pattern
01	It is quite impossible to harvest three crops per year in the selected area. Each crop grows once a year. As a result, the cost for insecticides increases. It is also inimical to the environment.	It is possible to harvest three crops per year successfully. There is no need for using pesticides to curb insect attacks and other such problems.
02	The cropping pattern prevalent in Lalpur is not environment-friendly. The use of old varieties of crops with a long lifespan pollutes environment. Apart from this, the use of excessive pesticides and fertilisers is also harmful to our environment.	The CCCP-prescribed cropping pattern gives importance on the use of genetically modified crops which have a high level of immunity from insects and diseases. In addition to this, the pattern is marked by a shorter lifespan of crops, use of round Urea and application of a proper dose of fertilisers. The irrigation system in such farming patterns is environment-friendly as well.
03	The cropping pattern followed at present cannot mitigate the impacts of drought. Sugarcane is the only cash crop in Lalpur.	The crops promoted by the CCCP are drought-tolerant. Drought-resilient wheat is being popularised by the CCCP. At the same time, BARI Mug-6 and BARI Mug-8 have also been made popular in Lalpur. These two varieties require a little water and a relatively short period of time for being harvested. These features of tolerance are also found in BRRI Dhan-56 and BINA-07, the life spans of which range between 105 and 110 days. This means they need 20-26 days less than their normal counterparts. These two varieties of paddy are also able to withstand drought for a period of 10-15 days in one spell.

SL.	Existing Cropping Patterns	CCCP-prescribed Cropping Pattern
04	Irrigation using underground water mostly results in waste of water. The Boro-jute-Aman and the wheat-jute-Aman patterns are heavily dependent on irrigation. No rule is maintained to retain the efficiency.	Drought-tolerant varieties of wheat, pulse and paddy have reduced the wastage of water. Schedules are being strictly followed to irrigate the fields efficiently. Irrigation is not necessary for growing pulse.
05	The cropping pattern prevalent in Lalpur does not improve the fertility of soil.	With its balanced features, the CCCP-prescribed cropping pattern is able to retain fertility of the land.

Sowing and Harvesting Periods of Selected Crops

In agriculture, sowing seeds and harvesting crops within a specific time are very important. The variations of time while sowing or harvesting crops may result in increased insect attacks, and may create a wide gulf between the yields of the present year and that of the previous year. So, time plays a great role in growing three crops within a year on a single piece of land. For example, if wheat, pulse and jute successively are grown on a piece of land in a year, the season of Aman paddy will lose 15 or 20 days and the possibility for the paddy to face drought will be very high. In such cases, wheat, lentil (pulse) and Mug beans can be grown successively and it will set aside enough time for the Aman paddy to grow without facing drought. Crops can be easily protected in the original lands where they are generally grown. In such conditions, attacks of insects and diseases become rare as well.

Table 8: The CCCP-Prescribed Cropping Pattern:

SL.	Crops	Wheat	Mug (Pulse)	Ropa Aman Paddy	
01	Season	Robi	Kharip-1	Kharip-2	
				Preparing bed	Planting in the field
02	Time of Sowing	01.12.14	10.04.15	13.05.15	16.06.15
03	Time of Harvesting	29.03.15	23.06.15		29.10.15
04	Duration (Days)	119	75		105

Table 9: Current Cropping Pattern:

SL.	Crops	Wheat	Mug (Pulse)	Ropa Aman Paddy	
01	Season	Robi	Kharip-1	Kharip-2	
				Preparing Bed	Planting in the field
02	Time of Sowing	30.11.14	04.03.15	05.07.15	02.08.15
03	Time of Harvesting	01.04.15	28.07.15		10.12.15
04	Duration (Days)	119	114		128

The cropping pattern given above describes that though jute and Mug (pulse) are sown simultaneously; Aman paddy can be easily grown and harvested in the fields where Mug (pulse) is being grown because the difference between the life span of jute and Mug (pulse) is only 39 days. The maintenance of a proper cropping pattern makes the land fertile and reduces the cost of production. The CCCP-prescribed cropping pattern can play a vital role in mitigating the negative effects of climate change.

Growth in Farmers' Income

The farmers used to sow 25-30 kgs of wheat seeds in a bigha of land previously. But, they are given only 20 kgs of wheat seeds under the CCCP supervision now. This has not reduced the rate of production; rather, the production of wheat has increased. The farmers would use only urea, TSP and MOP fertilisers in the past. But, the CCCP management has prescribed six fertilisers after analysing the texture of Lalpur's soil. The rate of irrigation has now come down from 4-5 times to 2-3. The cultivation of Mug (pulse) did not require irrigation. It has been known through discussion with the farmers that proper management has increased their margin of profit by BDT 3,000-4000 per bigha.

Preservation of Seeds

Generally, the farmers keep aside seeds from their yields. This kind of reservation helps the farmers a lot, but use of the same seeds brings variations in production. Every farmer has kept 30-40 kgs of seeds for the next year. The farmers were shown how to preserve the seeds of Mug beans on the spot.

Sustainability of the Activities

It has been proved by following the CCCP-prescribed cropping pattern that proper cropping pattern facilitates the growth of profit through as three crops can be grown in a year on the same piece of land. Cultivation in this way is not much affected by drought. The CCCP-promoted cropping pattern also generates employment opportunities for women, and makes the land fertile. OSACA believes that the farmers across this area will be applying the CCCP-prescribed cropping pattern in order to mitigate the effects of drought.

Activity 3: Installation of Sanitary Latrines

As per the guidelines of PKSF, 250 CCCP-designed environment-friendly sanitary latrines have been installed in Lalpur. The CCCP termed this design of latrine as "the second generation latrine". 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.

Photo 9: Sanitary Latrine

Photo 10: Sanitary Latrine visited by OSACA's Stuff

Three families are jointly using a single latrine. The beneficiaries now maintain the hygienic standards by using sanitary latrines and their medical costs have dropped dramatically. Diseases like cholera, typhoid and dysentery are no more frequent. The beneficiaries are happy to have got such a life-changing help.

Activity 4: Installation of Deep Hand Tube Wells

Ensuring safe drinking water is the biggest challenge in the changed environment. OSACA has installed 166 tube wells successfully in its catchments' area. Each tube well is being used by 5-7 families. A person selected by the community is given the task to look after each tube well. These tube wells can supply water not only in the monsoon but also during the dry season. Though the installation of tube wells is a traditional solution to scarcity of safe drinking water, the process of OSACA's intervention is innovative.

Photo 11: Deep Hand Tube Tube-Wells visited by Auditor of PKSF

Photo 12: Deep Hand Tube Tube-Wells visited by OSACA's Officers

A committee was formed and trained on maintenance and management of each tube well. This committee will look after the tube well in the long run. Cluster-based bank accounts were opened to save money for the maintenance of tube wells. A tripartite MoU was signed among the groups, tube well owners and organisations to make the intervention sustainable. It is interesting to note that the beneficiaries have contributed 10% of the total cost in cash. This cash contribution creates and strengthens a sense ownership among the beneficiaries. The poor people now have access to safe water for drinking and other domestic purposes all around the year.

Activity 5: Re-excavation of Ponds

Water is one of the most sensitive sectors in the event of climate change. Climate change affects quality, quantity and timing of water. It causes problems of too much water in monsoon and too little water in dry season. In the drought-affected areas of Bangladesh, the re-excavation of ponds helps the locals deal with the scarcity of water by increasing surface water availability for bathing, washing and irrigation. For sustainability of ponds, water-user groups have been formed and tasked with supervision and maintenance of the ponds regularly.

The group members are equipped with knowledge on the adverse effects of climate change. In addition, a bank account is opened with a view to collecting savings for pond management and maintenance. A tri-partite MoU has been signed between OSACA, pond management group and the pond owner. Pricing of water is also planned to increase savings for future maintenance. As of now, eight ponds have been re-excavated in our project area. The people of this area are highly benefited from this activity. Bathing, washing clothes, supplying water to the field and other important work are very easily done now. It also helps maximise use of surface water.

Photo 13, 14: Re-excavated ponds visited by Program Officer of PKSF-CCCP

Chapter 5: Future Adaptation Option

OSACA aims to incorporate the knowledge and opinions of the beneficiaries in the planning and management of the CCCP. In addition, it carried out future adaptation action plan for the region using available PRA tools including well-being analysis, hazard mapping and identification, focus group discussion etc. The adaptation plan is presented in a matrix below:

Table 10: Matrix of an Adaptation Action Plan

Problem/ Risk	Impacts	Existing Practices	Future Needs	Resources	Institutions/ Stakeholders	Time/ Duration
Drought	• Increase in sun heat • Degradation of water level • Change of occupation • Damage in agriculture fields • Soil cracked and fertility lost. • Drying up of ponds, fields, rivers and canals • Increase in diseases	• Installation of deep tube wells • Tree plantation around houses • Block-wise tree plantation • Digging deep ponds	• Drought-tolerant crop cultivation • More environment-friendly forestation • Irrigation system implementation at a small scale • Use of organic manure to increase soil fertility	• Adequate lands for tree plantation • Skilled manpower • River water	• UPs • NGOs • Upazila administration and line agencies (DAE, Fisheries and Livestock, LGED, DPHE, etc)	Short-term
Cold wave	• Increases incidence of diseases among human and livestock • Reduces crop production and growth • Increases mortality rate of the elderly and children • Shrinks workplaces and employment opportunities • Remote communication system	• Using warm clothes • Burning straw for warmth from cold • Spending days idly inside the house • Putting gunny sheets on cattle to protect them from cold	• More worm clothes • Winter-based crop cultivation • Training on cultivation of winter-based homestead vegetable gardening to ensure food security and nutrition • Forestation • Vaccination programmes • Technical training for IGA.	• Torn quilt, thin clothes • Mental stamina • Living house • Straw	• UP • NGOs • Upazila administration and line agencies (DAE, Fisheries and Livestock, LGED, DPHE, etc).	Short-term
Kal Baishakhi Storm	• Destroys houses and trees • Damages crops • Causes deaths of humans and animals by thunderbolts and uprooting of trees • Capsizes boats • Widespread damage on forests	• Replacing old bamboo poles with 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 • Understanding the possibility of storms by looking at the sky	• Housing with RCC pillars • Constructing semi-concrete houses • Storm forecasting through radio and other electronic media • Develop Early warning system • Building up teams of disaster volunteers and first aid providers	• Laborious/hard working people • Confident and brave men • Skilled manpower • Social cohesion/ bonding	• UP • NGOs • Upazila administration and line agencies (DAE, Fisheries and Livestock, LGED, DPHE, etc).	Short-term

Problem/ Risk	Impacts	Existing Practices	Future Needs	Resources	Institutions/ Stakeholders	Time/ Duration
River erosion	• Infrastructures (houses, roads, institution and shelters) are devoured by rivers. • Arable land is washed away and food production decreases. • Loss of agricultural land, cattle and household assets • Creation of health hazards due to absence of water and sanitation facilities • Damages in agricultural crops • Increase of poverty rate and deterioration of social well-being • Migrate in search for employment • Increase in unemployment and family strife • Change in course of the river	• Increase of population density along the riverbanks • Temporary shelters on embankments and Khas land • Loans on high interest taken to overcome risks • Increase in child labour • Increased migration • Erecting bamboo struts to prevent river erosion	• Construction of embankments, goring and block dams. • Tree plantation • Disbursement of loans on low or no interest among the affected people • Introduction of IGA to help people achieve economic development • Construction of easily transferable housing	• Knowledge among the locals on how to temporarily protect themselves from erosion • Bamboos, straw and wood trees • Skilled manpower Confident and brave people • Boats or banana trees	• CBO's • UP • NGOs • Upazila administration and line agencies (DAE, Fisheries and Livestock, LGED, DPHE, USWD, UWAO, PIO etc).	Long Term

Photo 15, 16: Process of Beneficiary Selection by using PRA Tools


Photo 17, 18: Focus Group Discussion (FGD)


Photo 19, 20: Group meetings attended by CCCP Program Officers and the Project Coordinator, PKSF


Photo 21, 22: Group meetings attended by CCCP Program Officer, PKSF and OSACA's Officers

Sumiara's rise from poverty to sufficiency

Photo 23: Sumiara in front of CCCP installed slatted house

Sumiara Shilpi lived a poverty-stricken life in Maharajpur village under Bilmaria Union in the drought-prone Lalpur Upazila. Abdul Malek, Sumiara's husband, was an egg peddler.

It was quite difficult for them to run the family solely on Malek's earnings. The tiny piece of land the family owned was barren due to the effects of climate change. Sumiara's life was like a turbulent sea. Under such deplorable circumstances, Sumiara expressed her willingness to join the OSACA-run group Integrated Approach for Adaptation to Drought (IAAD). She was then included as a member of the IAAD under the CCCP in Maharajpur.

Seeing Sumiara's interest in rearing goats, OSACA gave her a slatted house. She started with only three goats. Sumiara kept her enterprise going with the logistics supports and suggestions given by the IAAD officials. By selling three goats, Sumiara earned BDT 33,000 within a span of one year and a half. At present, she has nine goats.

Meanwhile, Sumiara's husband now sells eggs as a wholesaler. Change can also be felt in the structures of the houses. Sumiara's positive change has made an impact on fellow villagers. Many others now want to change their fate by rearing goats.

It is now an established fact in Lalpur that the IAAD under the CCCP is playing a formative role in graduating the people from poverty to sufficiency. Thus, the OSACA-led IAAD in Lalpur is working relentlessly to uplift the socio-economic status of the climate-vulnerable people like Sumiara.

Manoara, the happy shepherdess

Photo 24: Manoara, in front of CCCP installed slatted house

In small village named Shibnagar under Ishwardi Union in Lalpur, Manoara Begum lives with her husband and their two children. It was not long ago when abject poverty was her everyday companion and managing three square meals for the children was a big challenge.

He husband Mozam Malitha, the sole breadwinner for the family, would lease others' land and cultivated crops in those. However, drought would make Mozam's agricultural ventures very difficult. It was quite impossible to irrigate the farmlands because of continuous unavailability of water in the severely drought-prone area. Consequently, Mozam's yields did not match his hectic efforts, making it only worse for the family.

Then, Manoara became a member of the OSACA-run Integrated Approach for Adaptation to Drought (IAAD). The IAAD is a sub-project of the CCCP and is being implemented by OSACA and patronised by the PKSF. Manoara showed interest in knowing how to improve her financial conditions by rearing sheep and goats. She was then given a slatted house for keeping goats by the IAAD officials of OSACA.

Manoara put all her stamina and dedication to rearing goats and sheep. The IAAD officials extended every kind of help to her, be it logistics or suggestions. In addition to that, she received vaccines and medicines from the IAAD staff. Manoara started with only five sheep. Within a year and a half, she made a profit of Tk 70,000 by selling the sheep.

With 32 sheep in her little farm, Manoara is a self-reliant happy woman. She has bought a piece of land. Her husband now works in their own land. The wind of change can also be felt by looking at their house. Her success has inspired many more like her in the village to rear sheep and goats.

Unhygienic latrine and Akhi's marriage

Photo 25: Mabia, in front of CCCP installed sanitary latrine

Akhi, aged 20, was dreaming of a happy married life as her family was looking for a husband for her.

One day, the family of a prospective groom came to Akhi's house to see and get to know her, a common practice in Bangladesh. However, they were shocked to see the unhygienic latrine at Akhi's house; so much so that it made the matrimony impossible though the potential groom's family liked her.

Akhi was devastated. Mabia Begum, Akhi's mother, did not see any way to get out of her inability to install a sanitary latrine on her own. Afzalur Rahman, Akhi's father, was a poor farmer.

At that time, the IAAD was in operation in Budhpara, a village under Lalpur Union. Mabia Begum came to know from the locals that the IAAD can solve her problem. Mabia also learnt that a sanitary latrine would be given if three families reached a consensus to use and maintain it jointly.

Without delay, Mabia became a member of the IAAD. She also talked to her neighbours about installing the latrine. The IAAD officials installed a sanitary latrine for Mabia's family and two other families. In the meantime, she resumed the marriage talk with the groom's side and this time, they reached a consensus.

Akhi was eventually married off. Mabia's family is very happy now. The sanitary latrine not only facilitated Akhi's marriage but also shielded the family against various diseases, says Mabia.

No more unsafe water

Photo 26: People are using deep hand tube wells for domestic purposes

Safe water is the other name of life. Sadly enough, the availability of safe water was a far cry in North Nurullahpur, a poverty-stricken village under Ishwardi Union in Lalpur which is known to be the most drought-prone area in Bangladesh.

Most of the tube wells in Nurullahpur could not extract water during the Bengali months of Chaitra and Baishakh. Ponds too would dry up during the period. Animals as well as plants suffer heavily as a severe crisis of safe water crops up during the summer. People would have to walk miles to collect water for drinking and other domestic purposes, which eventually means significant loss of work hours. Tired of this, people would often resort to unclean, polluted water from any sources close at hand. As a result, waterborne diseases became very common.

At the end of 2014, OSACA, as a part of the IAAD under the CCCP, initiated the process of installing hand-operated deep tube wells in North Nurullahpur in collaboration with the PKSF. Nine such tube wells have so far been installed in the village. One tube well is being used by seven families.

The installation of hand-operated deep tube wells made safe water available to those living in North Nurullahpur in all seasons, which once was something like a dream for them.

Each tube well installed under the IAAD has a long drainage system with a covered soakwell. The water of the soakwell is also being used to water plants and vegetables. Thus, wastage of water has been brought down to the minimum. The availability of safe water has also checked the spread of waterborne diseases, which in turn has cut down the medical costs of the locals.

Ponds re-excavated, hopes rekindled

Photo 27: A re-excavated pond in Lalpur

One would have to pay special attention to realize that it was actually a pond. Forty to 45 percent of the pond was covered by weed then. This pond was clean enough for use only 10-11 years ago.

In the heyday of the pond, the owner used to culture fish and the families adjacent to the water body used its water for various purposes. It would be used for bathing, washing clothes and doing household chores. The water would also be used for irrigation of the adjacent farmlands.

However, climate change impacts hit the area soon and the pond would have no more than knee-deep water even during the monsoon and was actually a breeding ground of mosquitoes, and safe haven for snakes and frogs. Even the adolescents of the area could give a proof of the slow degradation of the pond. They never saw water in the pond round the year, except for three-four months during the monsoon.

Then the IAAD stepped in. The IAAD officials tracked down the pond's owner, Ilias. They along with the locals approached him and placed the proposal of re-excavating the pond for the greater interest of the people there. Ilias agreed to it. A committee was formed the re-excavation of the pond. Ilias was a member of the committee that later signed a contract with the IAAD in this regard.

After the re-excavation was done, mangoes, nuts and mahoganies were planted on all sides of the pond with a view to making the banks sustainable. At present, the pond is being used round the year. Locals are now using the pond for taking bath, washing clothes and dishes, and irrigating the nearby fields. This has lessened the pressure on the underground water. The rejuvenated pond is playing a great role in meeting the locals' demand for water and also helping the locals to adapt to the climate change-induced problems.

Drought-tolerant crops: a sustainable intervention

Photo 28: Drought tolerant wheat cultivation

In today's world, climate change has become a buzzword. The effects of climate change are also seen and felt in Bangladesh. Drought as an effect of climate change is making the livelihoods of the Lalpur people difficult. The Upazila's agrarian economy is at stake. Acres after acres of cultivable lands are turning barren due to the effect of prolonged drought.

Only ten years ago, one bigha (a local unit of measuring land) of land yielded 18-20 maunds of paddy but it now has come down to a half. Apart from this, most people here used to cultivate sugarcane which took a year for being ready for harvest. The sugarcane cultivation at that time only earned BDT 8,000-10,000 per bigha. OSACA as a part of its IAAD under the CCCP, in collaboration with PKSF, took multi-pronged initiatives to help the locals adapt to drought at the end of 2014.

One of the interventions made by the IAAD was the distribution of seeds of drought-tolerant crops among the locals. The IAAD encouraged the inhabitants of Lalpur, Bilmaria, Arjunpur-Boromhati and Ishwardi unions to cultivate drought-resilient crops. The farmers who were interested were trained by the IAAD officials. OSACA's effort has made many farmers cultivate drought-tolerant wheat, pulse and paddy. Observing the success of these varieties, local farmers started cultivating BR-62, a drought-tolerant variety of paddy. BR-62, the life span of which is only 100 days, saw a bumper production. So it's easy to cultivate another crop just after BR-62. The short lifespan helps BR-62 to evade drought. From a single bigha of land, 25-30 maunds of rice can be harvested in case of BR-62. The process of cultivating drought-resilient paddy does not differ with other varieties. At the age of 20 or 25, the plants can be sown and 2 or 3 plants are sown in a cluster at a time. Prior to the cultivation, 10 kg of urea, 9.5 kg of TSP, 4.75 kg of MOP, and 2.75 kg of Sulphar are applied in the field. After 10 or 25 days, 10 kg of urea, 4.75 kg of Mop and 2.75 kg of Sulphar are applied again. BR-62 is less prone to the attack of diseases and pests.

OSACA distributes not only seeds but also fertilisers. Realising the benefits of cultivating of such crops, locals are regularly requesting the OSACA officials to provide them with the seeds of wheat, pulse and paddy. They now want to accelerate their margins of profit by cultivating drought tolerant crops.

OSACA-led IAAD left a positive impact over Taslima's life

Photo 29: Taslima in front of self-made slatted house

Taslima led a life of hardship with her husband and two children in Nurullahpur village under Ishwardi Union of Lalpur Upazila. Her life was not worth enjoying. It was a kind of survival. Taslima's husband was a Tractor Driver. The small piece of land owned by Taslima's family turned barren due to negative effects of climate change.Taslima's husband earned a merge amount of BDT.-6000/=. In this circumstance, it became quite difficult for Taslima to bear Tanim's (her son studying in class five) education expense. Taslima could not afford the cost of her child Asha and other household expense also.

Assisted by Palli Karma-Sahayak Foundation, OSACA took many steps under its IAAD to what climate change induced effects. One of the interventions was how to become self-reliant by rearing goats.In the meantime, the interested or those people who had goats at that time were given houses for rearing goats.The suggestions made by the officers of OSACA helped the local continue their goat rearing venture. Goat-rearing soon turned out to be lucrative venture in the community. Taslima's husband developed on interest in goat-rearing by observing the people who were becoming financially sound through goat rearing. He built a house for rearing goats on his own. He consulted with the officials of OSACA about goat rearing.

At first, Taslima bought a female goat. At present, she has three goats, the price of those goats in approximately BDT-20,000/=. Taslima grew hopeful of her financial freedom become slatted housing increased the overall production of goats. She now intends to defry the cost of her whole family through goat rearing. Taslima proudly says adaption of slatted housing as well as advice from the officials of OSACA as timely administrations of vaccine have lessened the frequency of diseases. The goats are like their savings account. A part from this, they can me the amount that will come if they sell their goats. Above all, this step of goat rearing is a very effective step for Taslima's impoverished family.

Chapter 7: Guidelines and Manuals

Activity Implementation Guideline
OSACA, IAAD
Under
Community Climate Change Project (CCCP)
Lalpur, Natore

Procurement Guideline
OSACA 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.

Environment Management Framework
Environmental sustainability is the topmost priority of OSACA. Environmental assessment report has been developed before selecting every site in the working area. In implementing the activities, OSACA 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.

Social Management Framework:
OSACA 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.

Complaint Handling Mechanism
In order to ensure accountability and good governance, OSACA abides by sections 29 & 30 of the Public Procurement Act (PPA), 2006 and rules 56, 57, 58, 59 and 60 of the Public Procurement Rules, 2008.

Grievance Redress Mechanism
OSACA 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 Mizanur Rahman of Bilmaria UP, Md Zakir Hussain of Ishwardi UP, Advocate Mostafizur Rahman of Lalpur UP and Md Abed Hussian of Arjunpur-Boromhati UP.

Chapter 8: Lessons Learnt and Way Forward

Table 11: Lessons Learnt

Sl	Activities	Lessons Learnt
01	Goat/sheep rearing	1. The beneficiaries have become habituated to rearing goats in slatted houses. 2. Goats are not suffering from diseases frequently.
02	Installation of Sanitary Latrines	1. People are free from sanitation-related diseases. 2. Use of sanitary latrines has been ensured. 3. Spread of waterborne diseases is waning.
03	Installation of deep hand tube-wells	Safe drinking water during the dry season has been ensured for humans and livestock.
04	Re-excavation of ponds	1. The availability of surface water has been ensured so as to lessen the pressure on underground water.
05	Demonstration plot (wheat, paddy and pulse seeds)	1. Drought-tolerant varieties of crops have been popularised amongst the farmers. 2. Use of pesticides and chemical fertilisers is on the wane.
06	Use of guidelines and frameworks	The project is different in approach from any other grant based project. The implementation is guided by a number of policies and guidelines including 'Activity Implementation Guideline, Public Procurement Rules (PPR), 2008; Finance and Procurement Guideline, Environment Management Framework of the World Bank, Social Management Framework of the World Bank, Monitoring Guideline, Complaints Handling Mechanism and Grievance Redress Mechanism'. These policies and guidelines help implement very cost effective, participatory, accountable and transparent project. Implementation of Public Procurement Rules, 2008 by local level NGOs at the grassroots level was a great challenge but completed successfully. Now, PCD is capable to implement the PPR, 2008.
07	Financial contribution by community	Each of the project participants has contributed cash at least 10% of activity cost which is unique. This contribution created ownership of the beneficiary.

Way Forward

- Linking the sub-project participants with MFIs for continuous financial support
- Building awareness and capacity of the community on climate change issues
- Developing climate-resilient agriculture system
- Increasing storage of surface water
- Promoting climate-resilient IGA like vermi-compost and handicrafts etc.
- Forestation
- Strengthening local level institutions to combat climate change fallout
- Extension of proven technology

Sustainability of the Project

Sustainability of each of the programmes has been ensured by involving the communities concerned in the monitoring and evaluation process. Selected groups of the beneficiaries look after the implementation of various programmes to ensure sustainability. Signing of MoU, formation of committees, and saving for future maintenance of community-level structural interventions; long attachment of organisation with the community etc. will act as cementing agents of sustainability. In addition to this, selected beneficiaries will be gradually linked to MFIs for continuous financing.

Community Climate Change Project (CCCP)

Implemented by	Financed by	Sub-project Implemented by
পল্লী কর্ম-সহায়ক ফাউন্ডেশন	BCCRF Bangladesh Climate Change Resilience Fund	osaca