

Community Climate Change Project (CCCP)



# Pathways to Resilience

CCCP EXPERIENCES



**Palli Karma-Sahayak Foundation (PKSF)**

With financial  
assistance from BCCRF





Community Climate Change Project (CCCCP)



# Pathways to Resilience

*CCCCP Experiences*



**Palli Karma-Sahayak Foundation (PKSF)**

With financial  
assistance from BCCRF



## **Pathways to Resilience: CCCP Experiences**

### **Advisor**

Md. Fazlul Kader, Deputy Managing Director, PKSF

### **Editor**

Dr. Sharif Ahmed Chowdhury, General Manager, PKSF  
Zahir Uddin Ahmed, Assistant General Manager, PKSF

### **Contributors**

Md. Rabi Uzzaman, Program Officer, PKSF  
KM Marufuzzaman, Program Officer, PKSF  
Md. Mahmuduzzaman, Program Officer, PKSF  
Suhas Sankar Chowdhury, Program Officer, PKSF

### **Published by**

Project Management Unit (PMU)  
Community Climate Change Project (CCCP)  
Palli Karma-Sahayak Foundation (PKSF)

Published in December 2016

*All rights reserved by Palli Karma-Sahayak Foundation (PKSF)*

design & production • communicator, 9121472



Pathways to Resilience



# Contents

## Pathways to Resilience: CCCP Experiences

<b>1</b>	<b>Introduction</b>	<b>9</b>
1.1	Background	9
1.2	Objectives of the report	10
1.3	Learning approach and methods	10
1.4	Scope of lessons learnt	11
<b>2</b>	<b>Brief Overview of Community Climate Change Project</b>	<b>12</b>
2.1	Background	12
2.2	Project Development Objectives (PDO)	15
2.3	Geographical coverage	15
2.4	Project participants	16
2.5	Project's measurable indicators	16
<b>3</b>	<b>How Communities Became Resilient</b>	<b>18</b>
3.1	Concept of Resilience	18
3.2	Measurement of Climate Resilience Index (CRI) in CCCP	19
3.3	Community-applied sustainable adaptation practices	21
3.3.1	<i>Protected households</i>	21
3.3.2	<i>Access to potable water</i>	23
3.3.3	<i>Diversified livelihoods</i>	26
3.3.4	<i>Sanitation, health and education</i>	29
3.3.5	<i>Agriculture and special livelihood</i>	32
3.3.6	<i>Community mechanism- a cross cutting issue</i>	35
3.4	To what extent communities became resilient	36
3.4.1	<i>Medium term outcome</i>	36
3.4.2	<i>Long-term impact at community level</i>	38
3.4.3	<i>Progress against the logframe at PDO-level</i>	38
<b>4</b>	<b>Implementation Process</b>	<b>45</b>
4.1	Rigorous screening process	45
4.2	Diverse activities	49
4.3	Monitoring and evaluation	50
4.4	GIS-based monitoring system	50
4.5	Tools and guidelines	51
4.5.1	<i>Activity Implementation Guideline</i>	51
4.5.2	<i>Procurement</i>	51
4.5.3	<i>Environmental Compliances</i>	52
4.5.4	<i>Social Compliance</i>	52
4.5.5	<i>Complaint Handling Mechanism (CHM)</i>	52
4.6	Knowledge management	53
4.6.1	<i>Publications</i>	53
4.6.2	<i>Library corner on climate change</i>	53
4.6.3	<i>CCCP website</i>	54
4.6.4	<i>Capacity building of the PIPs</i>	54
4.6.5	<i>Fund management</i>	55
<b>5</b>	<b>Conclusion</b>	<b>56</b>

# Executive Summary

Bangladesh is one of leading countries in the world combating climate change with own financial resources as well as support from various development partners. The Government of People's Republic of Bangladesh successfully sensitised the developed countries (that are mainly responsible for climate change and global warming) by establishing Bangladesh Climate Change Trust Fund (BCCTF) from public money for implementing Bangladesh Climate Change Strategy and Action Plan (BCCSAP), 2009. Influenced by the initiative of the Government of Bangladesh, the development partners established Bangladesh Climate Change Resilience Fund (BCCRF) in 2010 to support the government in implementing The BCCSAP. As per the BCCRF policy, 10% of the money should be implemented by Non-government Organizations (NGOs). The governing body of the BCCRF entrusted the PKSF to implement the NGO window of the BCCRF under the name of Community Climate Change Project (CCCP).

It identified three climate risk zones i.e. flood, salinity and drought, in the project designing phase. Considering differential vulnerability in different risk zones, the CCCP implemented risk-specific adaptation technologies. The main objective was to make flood-affected communities resilient by protecting houses; to make salinity-affected communities resilient by increasing access to drinking water; and to make drought-affected communities resilient by increasing access to drinking and irrigation water. The project has achieved these objectives by implementing community-based adaptation activities. The activities are mostly climate risk-specific. These activities were mainly proposed by the vulnerable communities of the selected areas. The CCCP added simple management technologies or improved the management system of those activities to make them climate-resilient. For example, the CCCP provided technologies like slatted houses for goat rearing, poultry houses for duck and hen rearing, plastic boxes for crab fattening etc in order to protect the livelihood assets of the selected vulnerable people from the adverse impacts of climate change and associated extreme events. The project emphasised on climate-resilient homestead development and safe drinking water supply for the poor and vulnerable communities. The CCCP adopted cluster-based approach for raising homestead plinths of the flood-vulnerable and coastal communities. It enhanced sustainability of the plinths as well as increased social cohesion, particularly during flood. The CCCP provided different types of water technologies in the three different risk zones to increase access to safe water for drinking, household uses and irrigation. The project provided shallow tube wells in the flood-prone areas, submergible tube wells in the drought-prone areas, and deep tube wells, rainwater harvesting plants, desalination plants, PSF with ponds etc in the salinity-prone areas. In addition, the CCCP provided training to about 500 staffs and 43,000 project participants on climate change issues.



*The project introduced Results Based Monitoring (RBM) system and Geographic Information System (GIS)-based monitoring system, which proved to be the most effective and quality monitoring system for climate change adaptation projects*

The project had two major project participant groups: the ultra-poor and the poor people who are vulnerable to climate change in flood, drought and salinity-prone areas. Project Participants were supported both as individuals and communities. The project established an effective mechanism for channelling adaptation fund through NGOs.

The project developed standard guidelines and tools for effective implementation of the activities. Major guidelines and tools included 1) Activity Implementation Guideline, 2) Procurement Guideline, 3) Environmental Safeguard and Management Framework, 4) Social Management Framework (SMF), 5) Monitoring and Evaluation Manual, 6) Operational Manual etc.

The project selected Project Implementation Partners (PIPs) through a rigorous screening process. World-renowned climate scientists and experts were actively involved in the screening process. The project developed a set of policies and guidelines for implementing adaptation interventions effectively. The CCCP adopted the PKSf's monitoring process which is very strong and transparent. In addition to this, the project introduced Results Based Monitoring (RBM) system and Geographic Information System (GIS)-based monitoring system, which proved to be the most effective and quality monitoring system for climate change adaptation projects.

The outcomes and impacts of activities under the CCCP are clearly visible and measurable. The reason for this is that the activities were selected by the vulnerable communities. Most of the activities were practiced by them for generations. The CCCP just added simple technologies and capacity building options with those activities. Besides, project participants made contribution in cash in most of the activities and in kind in some like plinth raising, slatted house etc. So, it can be said with confidence that community people will continue these activities in the long run.

The outcome about resilience varies by risk zones. The RBM study found that 82% of the targeted households in



flood risk zone became moderately to completely resilient. 36% of the community members became completely resilient in the flood risk zone. It is 31% for all risk zones. 34% of the targeted households in drought-prone areas have become completely resilient and it is 24% in salinity-prone areas. In flood-prone areas, 22% of the community members have become mostly resilient. It is 24% in drought and 23% in salinity-prone areas. Similarly, 31% of the community members are moderately resilient in flood zone, 28% in drought zone and 29% in the salinity-prone areas. The coastal zone usually experiences multiple climate change events throughout the year. For example, cyclone in pre- and post-monsoon periods, tidal surge in monsoon, and salinity and drought in dry season. This may be a reason why the coastal people became less resilient than those in the two other risk zones.

The final RBM study found that 97% of the targeted households became mildly to completely resilient. More importantly, 82% of the community members became moderately to completely resilient, which means the communities truly built their resilience through CCCP interventions. It also found that 31% of the community members became completely resilient, followed by 23% mostly and 28% moderately. It is also to be noted that during the first round RBM in March 2015, the highest percentage of participants were mildly resilient which is 36.3%. It has gradually been transferred to stronger resilient and during the final RBM in June 2016, the highest percentage of participants were completely resilient. The World Bank, the fiduciary manager of the CCCP, rated the project 'satisfactory'. As per the evaluation of the World Bank, the CCCP achieved all the targets set in the result framework.

The project experienced that there was lack of grassroots-level specialized organisations for addressing the adverse impacts of climate change. The MFIs have strong presence at the community level. These organizations require an enhanced knowledge base and human resources for integrating climate change in their core programmes, which would strengthen the government's efforts to address the climate change fallout.

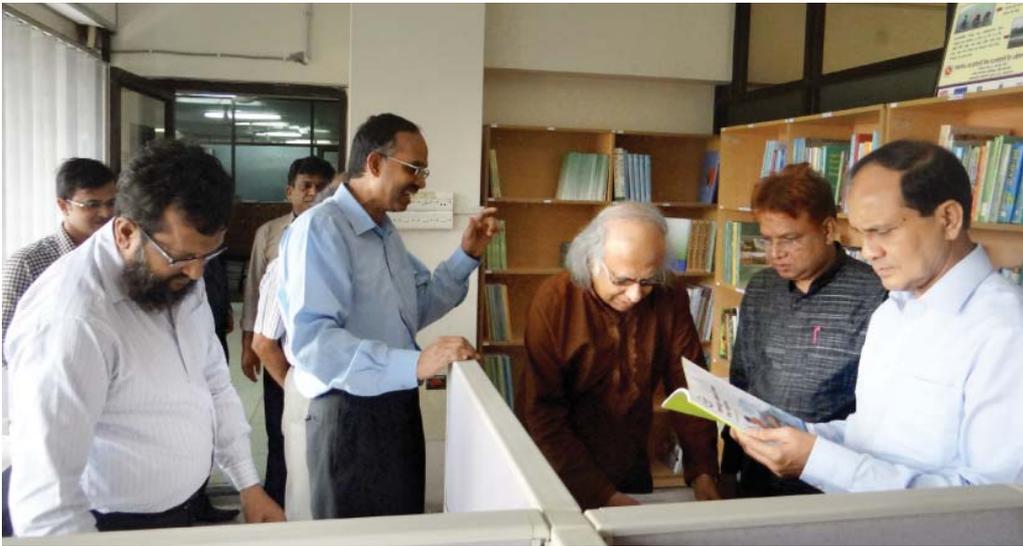
*The final RBM study found that 97% of the targeted households became mildly to completely resilient. More importantly, 82% of the community members became moderately to completely resilient, which means the communities truly built their resilience through CCCP interventions*



# Introduction

## 1.1 Background

In terms of financial mechanism, Community Climate Change Project (CCCP) is very unique in Bangladesh and also in other parts of the world. The Government of People's Republic of Bangladesh successfully sensitized the developed countries (who are mainly responsible for climate change and global warming) by establishing Bangladesh Climate Change Trust Fund (BCCTF) from public money for implementing Bangladesh Climate Change Strategy and Action Plan (BCCSAP), 2009. Being influenced by the initiative of the government of Bangladesh, the development partners established Bangladesh Climate Change Resilience Fund (BCCRF) in 2010 to support the government in implementing the BCCSAP. As per the BCCRF policy, 10% of the money should be implemented by NGOs. The CCCP is basically a learning project in the areas of adaptation to climate change. However, being encouraged by the quality



PKSF Chairman Qazi Kholiqzaman Ahmad, accompanied by Managing Director Md Abdul Karim, and Deputy Managing Directors Md Fazlul Kader and Dr Md Jashim Uddin, browsing books after inaugurating the Library Corner on Climate Change in the PKSF Bhaban.

implementation of the project, the PKSF decided to capture lessons of the project at all phases. The lessons have been identified based on experience of the PKSF and the Project Implementing Partners (PIPs). The PKSF has found that there is a lack of specialized institutions at the grassroots for addressing climate change. The CCCP has built the capacity about 500 staffs at the grassroots who are now familiar to implementing climate change projects. The communities' cash contribution in this project has emerged as an effective way of fund management. The introduction of Public Procurement Acts, 2006 and Public Procurement Rules, 2008 at local level (upazila or sub-district) was a big challenge, particularly in case of procurement requiring small amounts of money. Though issues related to environmental management and social management were insignificant, the CCCP ensured all of the compliances including grievances at all sub-projects level. The PKSF considers the lessons as the basic tools for implementing climate change adaptation projects.

## 1.2 Objectives of the report

The main objective of the report is to capture lessons learnt from the CCCP as a tool for the practitioners at all levels, particularly in the field of climate change adaptation.

## 1.3 Learning approach and methods

The process of capturing lessons is built on the operational procedure of the CCCP. Knowledge management is one of the three components of the CCCP. Lessons have been gathered under this component. From the very beginning of the project, the PKSF tried to gather knowledge

from this learning project. Day-to-Day experience of the PKSF and the PIPs is the key source of gathering knowledge and learning of the project. The PKSF organised a series of meetings, workshops and training sessions to discuss progress, quality, challenges, lessons etc. In addition, quarterly narrative reports and progress reports were produced as part of monitoring where lessons are discussed. Besides, Project Management Unit (PMU) of the CCCP physically visited project areas, which helped identify lessons of the project. Case studies have also been collected as part of the lessons.

#### 1.4 Scope of lessons learnt

The learning elements of the CCCP can be divided into two broad categories: 1) achievement of indicators against target which is mainly based on activities, and 2) implementation process. The first category involves in activities at the PMU level and the PIP level including output, outcome and impact. The second category concerns guidelines, manuals and implementation procedures, for example, budget planning and execution, revision, additional financing etc.; working with POs and non-POs of the PKSF or MFIs and non-MFIs, coordination, participation of Local Government Institutes (LGIs) and community people etc.



PKSF Managing Director Md Abdul Karim helping the Head of European Delegation in Bangladesh get a better understanding of CCCP interventions during a field visit.



# Brief Overview of Community Climate Change Project (CCCP)

## 2.1 Background

Climate change is the biggest global threat to humanity in the 21st century. Bangladesh is one of the most vulnerable countries in the world facing the impacts of climate change. With an understanding of the nature and magnitude of the adverse impacts of climate change and the efforts required to enhance resilience, the Government of Bangladesh (GoB) formulated 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. The BCCRF has

attracted funds from the bilateral development partners (United Kingdom, European Union, Sweden, USA, Australia, Switzerland and Denmark). Ninety percent of the available fund will be allocated to public sector projects, while 10 percent will be channeled through NGOs for community-level climate actions through a different project titled 'Community Climate Change Project (CCCP)'. The Governing Council of the BCCRF entrusted Palli Karma-Sahayak Foundation (PKSF) with implementing the community-level climate change adaptation activities through the 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.

Initially, the CCCP's total budget was US\$12.5 million and with the increase of the BCCRF, additional US\$ 0.5 million was added. Hence, total budget of the CCCP was US\$13.0 million. The duration of the project was from August 2012 to December 2016. It is important to note that though budget was increased by US\$0.5 million but the duration remained the same, which put extra pressure on the PKSF to complete the additional tasks within the stipulated time with the same manpower at the PMU and the PIPs. However, this challenge was overcome by hard work.

In order to achieve the project development objectives, the CCCP worked through a number of

sub-projects implemented by NGOs known as the Project Implementing Partners (PIPs). The project had its targets and gradual achievements in accordance with the agreed results framework mentioned in the appraisal document. After starting the project, the Project Management Unit (PMU) regularly submitted progress reports to the World Bank.

The CCCP identified three risk zones namely flood, drought and salinity-affected vulnerable areas. Sub-grants were provided to 41 NGOs to implement sub-projects focusing on community-based climate change adaptation activities in compliance with the BCCSAP. The budgetary limit of the individual sub-project ranged from US\$ 0.02 million to US\$ 1.0 million.

The CCCP had its own Operational Manual (OM), Activity Implementation Guideline, Environmental Management Framework (EMF), Social Management Framework (SMF), Procurement Guideline and Monitoring and Evaluation Manual. Throughout the project, every NGO had to work as per the guidelines of these manuals. The PKSF established a Project Management Unit (PMU) on its own premises to manage the CCCP activities. Twelve officers recruited for this unit.



The World Bank Country Director for Bangladesh Qimiao Fan, accompanied by Md Fazlul Kader, Deputy Managing Director of PKSF, visiting a CCCP activity site.

## A glimpse of lessons

- **Lesson 1:** The CCCP identified three climate risk zones i.e. flood, salinity and drought. Considering differential vulnerability in different risk zones, the CCCP implemented risk-specific adaptation technologies. The vulnerability of climate change in salinity-prone areas are always severe than other non-saline areas. Making protected homesteads from floods was the main objective in flood-prone areas, increasing access to potable drinking water in the salinity-prone areas and increasing access to drinking and irrigation water in the drought-hit areas.
- **Lesson 2:** Cluster-based homestead raising has proven to be one of the most effective adaptation activities to riverine and coastal flooding. It provided multiple opportunities including vegetable cultivation, seedlings growing, livestock rearing, providing shelter during floods and other emergencies etc.
- **Lesson 3:** Cluster-based homestead plinth raising approach optimizes land use and makes the participating people safe and secure. It also catalyzes socialization and strengthens social unity among the cluster members.
- **Lesson 4:** Water sector is highly sensitive to climate change. So, investment in water sector in the coastal and the drought zones is higher than in other interventions. Water technologies are highly variable among different risk zones. Also, options for safe water availability are very limited, especially in salinity-prone areas.
- **Lesson 5:** Selection of appropriate Income Generating Activities (IGAs) differs from area to area. Before implementation, it is very difficult to assess whether an IGA is suitable for a community. The project used its resources efficiently to achieve the desired results. The CCCP supported technology, vaccination, capacity development etc. to make livelihood assets climate-adaptive and productive. With a relatively small investment in IGAs like goat/sheep rearing, poultry rearing, crab and fish culture and homestead gardening, the CCCP has achieved satisfactory returns.
- **Lesson 6:** Slatted house for goat rearing has proven to be a very effective technology for increasing productivity of goats in all three risk zones because of its adaptation capacity, availability and indigenous knowledge associated with it. But there is a scarcity of fodder for goats at the community level, especially in the salinity zone. So, before providing support in the livestock sector, accessible and available feed for the livestock must be ensure.
- **Lesson 7:** Financial contribution (minimum 10% to 20%) by the community strengthens the ownership of community resources and enhances sustainability of those. The community's financial contribution reflects the need for the activity. The CCCP has ensured community cash contribution in all activities.
- **Lesson 8:** A combination of results-based and GIS-based monitoring systems has proven to be more effective than the traditional ones. The CCCP developed ATOM (Activity To Output Monitoring) and GIS database which is accessible to all on the CCCP website: [www.pksf-cccp.bd](http://www.pksf-cccp.bd).
- **Lesson 9:** Flexibility of budget and continuous support is necessary for effective and on-time utilization of saved financial resources within the limited project timeline.
- **Lesson 10:** To implement any new policy, it is very important to identify the knowledge gap for any concept to introduce, and then sensitize and give proper training to all the project personnel so that they can stay on the same page.

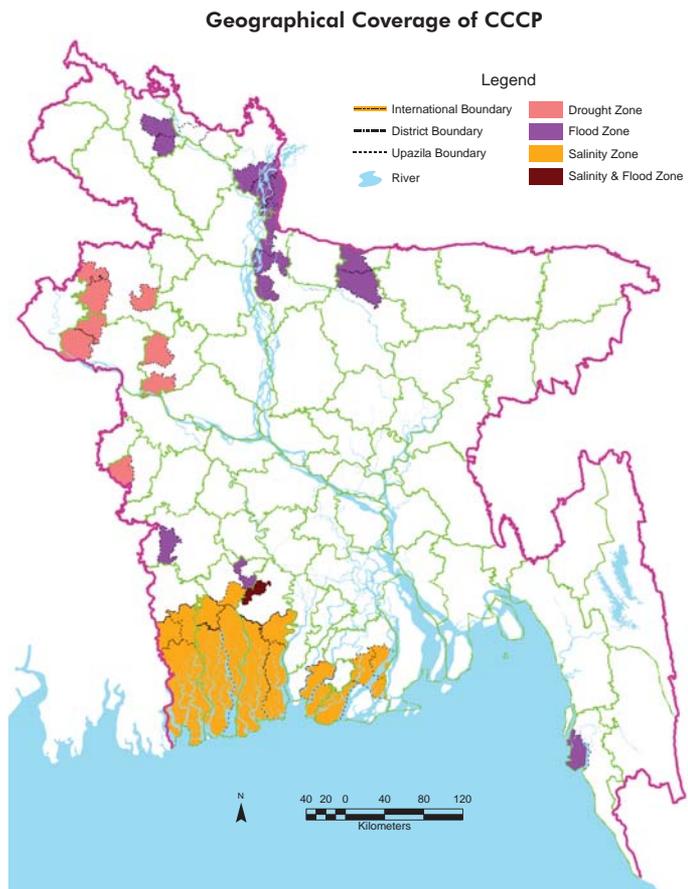
## 2.2 Project Development Objectives (PDO)

The Project Development Objective was to enhance the capacity of selected communities to increase their resilience to the adverse impacts of climate change.

## 2.3 Geographical coverage

The CCCP was implemented in 40 upazilas of 15 districts. The flood risk zone covered Jamalpur, Mymensingh, Kurigram, Nilphamari, Khulna and Bagerhat. The salinity risk zone included Barguna, Patuakhali, Bagerhat, Khulna, Satkhira. And the drought risk zone included Chuadanga, Rajshahi, Natore and Naogaon. The districts and upazilas were selected based on the analysis of poverty and disaster-related national data and information, using GIS techniques.

The CCCP identified three climate risk zones i.e. flood, salinity and drought. Considering differential vulnerability in different risk zones, the CCCP implemented risk-specific adaptation technologies



## 2.4 Project participants

The project participants were from poor and ultra-poor communities that were vulnerable to climate change in flood, drought and salinity-prone areas. They were supported both as individuals and as communities to ensure the best approach in building community resilience in a holistic way. Those who participated in the household-level activities are considered as individual project participants. For example, goat rearing, crab fattening, improved cooking stoves etc. And the community-level participations are those who participated in the community-level activities like pond re-exavation, desalination plants, tube well installation, sanitary latrines etc. A total of 43,289 individual HHs and 94,415 community-level HHs participated in the project. It was a principle that an individual household would get support for only one income generating activity but can be involved in other activities under the project.

## 2.5 Project's measurable indicators

Two types of measurable indicators were measured understanding outcome and impacts of project interventions. These are: 1) PDO-level indicators, and 2) CCCP-level indicators. The PDO-level indicators were set to measure the PDO-level objective (Section 2.2). The measurable indicators are: 1) Community mechanisms established and functioning in selected communities to respond effectively to specific climate risks; 2) Communities have applied sustainable adaptation practices to address specific climate change risks; and 3) Sub-grants implemented in the selected communities are assessed to have achieved the targeted objectives.

*The project participants were from poor and ultra-poor communities that were vulnerable to climate change in flood, drought and salinity-prone areas*





The CCCP developed Climate Resilient Index (CRI) to understand how communities would become resilient by the interventions under the CCCP. The CRIs are: 1) food security in terms of food availability and nutrition, 2) protected household, 3) reduction of waterborne diseases and 4) livelihood diversification.

The implementation process included two major elements i.e. 1) monitoring and evaluation and 2) tools and guidelines. The CCCP had a strong monitoring system which proved quality and timely implementation of activities towards achieving the indicators at all levels. A number of necessary guidelines and manuals were developed which included operational manual, activity implementation guideline, procurement guidelines, financial management guidelines, monitoring and evaluation manual, social management framework, environment management framework, grievance redress mechanism etc.



# How Communities Became Resilient

## 3.1 Concept of Resilience

Understanding the concept of “Resilience” is diverse because of diversity in social, economic and ecological characteristics and their inter-relationship. In general, understanding of social-ecological resilience includes concepts of resisting change (Holling, 1973; Miletti, 1999; Timmerman, 1981), bouncing back (Walker et. al., 2004), or transforming (Kirmayer et al 2009; Opstal, 2007; Paton and Johnston, 2006) in response to environmental or social perturbations, or even a combination of these (Kirmayer et. al., 2009; UN/ISDR, 2002). Resilience is also viewed as being transformative and adaptive; as a process leading to an end state (Kirmayer et. al. 2009, Norris et al 2008). Vulnerability and sustainability are further related concepts.

*Resilience means the capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance responding or recognising in ways that maintain their essential functions, identity and structure, while also maintaining the capacity for adaptaion, learning and transformation*

Community resilience is described differently in various studies and defined more loosely (Kulig, 2000) and there is limited empirical evidence to inform understandings about community resilience (Karen Vella et. al., 2012). In general, descriptions of community resilience take three different forms: (1) resistance: which refers to the ability of a community to absorb perturbation (Geis, 2000); (2) recovery: which focuses on the speed and ability to recover from the stressors (Adger, 2000; Breton, 2001); and (3) creativity: which addresses the ability of a social system to maintain a constant process of creating and recreating, so that the community not only responds to adversity, but in doing so, reaches a higher level of functioning (Kulig, 1996; Kulig and Hanson, 1996). The IPCC suggests a similar type of concept of resilience. It says, resilience means the capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance responding or recognising in ways that maintain their essential functions, identity and structure, while also maintaining the capacity for adaptaion, learning and transformation (IPCC, 2014). The CCCP developed Climate Resilience Index (CRI) to measure resilience of the communities boosted by the CCCP interventions.

### **3.2 Measurement of Climate Resilience Index (CRI) in CCCP**

Under the Result-Based Monitoring Framework, Community Climate Change Project (CCCP) developed climate resilience index (CRI) to measure the achieved resilience through community-based adaptation interventions implemented under the CCCP. First, three risks zones i.e. flood, salinity and drought, were weighted based on their impacts on community and budgetary allocation. Salinity received the highest score which is 45%, followed by flood 30% and drought 25%. Four indicators were set to measure the resilience. These are a) resilient HHs established, meaning HHs are protected from climate change variability and related shocks mainly in char lands and coastal areas by raising plinths above the flood level and reconstructing houses, b) reduction of disease incidence as to improving health and wellbeing of the community by securing water and sanitation systems and raising awareness, c) food security in terms of food availability and increased



nutrition status by providing alternative IGA support and d) ensured available water. Each of the indicators was weighted based on their significance in the context of minimising risks, budget allocation and community needs. It was found that weightage of an indicator varies in different risk zones. For example, the indicator “resilient HHHs established” gets 50% weight for flood and 30% for salinity whereas this indicator is not considered in drought zone. Reduction of waterborne diseases is a common indicator for all three risk zones, which is weighted 20% for flood, 40% for salinity and 20% for drought. Food security is the other common indicator which is weighted 30% for all three risk zones. “Ensured available water” is the only indicator which is set for the drought risk zone and weighted 50%. The weightage has been distributed considering severity of impacts, proposed interventions and budget allocation. The RBM measured achievements of the CCCP against these weightages.

The CCCP adopted result-based monitoring framework to measure CRI in the project. To do so, the CCCP developed a total of four result frameworks. A mother result framework was developed to measure CRI at the CCCP-level. This mother framework was supplemented by three other result frameworks for three distinct risk zones i.e. flood, salinity and drought. In addition, 41 PIPs developed their own result frameworks to measure outcome and impact of their interventions.

A baseline survey was conducted in 2014, before physical interventions at the community level. Later, two RBM studies were carried out to measure intermediate results and final results, and impacts. The project also monitored monthly input and output of each sub-project activities through monthly reporting and an online system called ATOM (Activity to Output Monitoring).





### 3.3 Community-applied sustainable adaptation practices

#### 3.3.1 Protected Households

##### *Raising homestead plinth-common for flood and salinity*

The CCCP found that raising plinth in the low-lying char lands and coastal areas is a very effective adaptation activity. The project raised cluster-based homesteads instead of single houses. As per guideline of the CCCP, a cluster must have at least 4 households because raising a large place is more durable than a small one. In addition to durability, cluster-based raised homesteads work as flood shelters during floods. The participants get multiple opportunities from this single intervention. They can grow vegetables round the year, which they could not do earlier. They prepare seed bed on the raised plinth during floods so that they can transplant immediately after receding of flood water. Their poultry and livestock are safe from flood which they used to sell at a relatively cheap price during floods. It is important to note that other flood-affected people from surrounding areas take shelter on the cluster-based raised plinths. In addition, the following lessons were gathered while implementing the activity:

- Participants have access to safe drinking water and sanitation facilities round the year.
- Cluster dwellers are able to establish a social network within the cluster and can exchange daily necessary commodities during emergency periods which they could not do before.
- Participants plant fruit and other trees by themselves on a cluster-based raised plinth. It helps them meet nutrition, earn extra money and prevent soil erosion.
- Having a secure home enables the dwellers, especially women, to engage in income-earning activities such as poultry, cattle rearing and vegetable cultivation.

#### • Lesson 11:

Raised plinths in flood-prone areas enhances resilience as it provides multiple benefits like round-the-year vegetable cultivation, seed bed preparation, other farming activities, providing shelters during emergencies etc.

#### • Lesson 12:

Raising homestead plinths in the coastal areas created opportunities for digging rainwater reservoirs/freshwater ponds and fish farming. But the rebuilding cost of houses are higher in salinity-prone areas than that in the flood-prone areas due to strong structures required the houses in coastal belt.

#### • Lesson 13:

Cluster-based approach for plinth raising enhances social cohesion and security during disasters.

#### • Lesson 14:

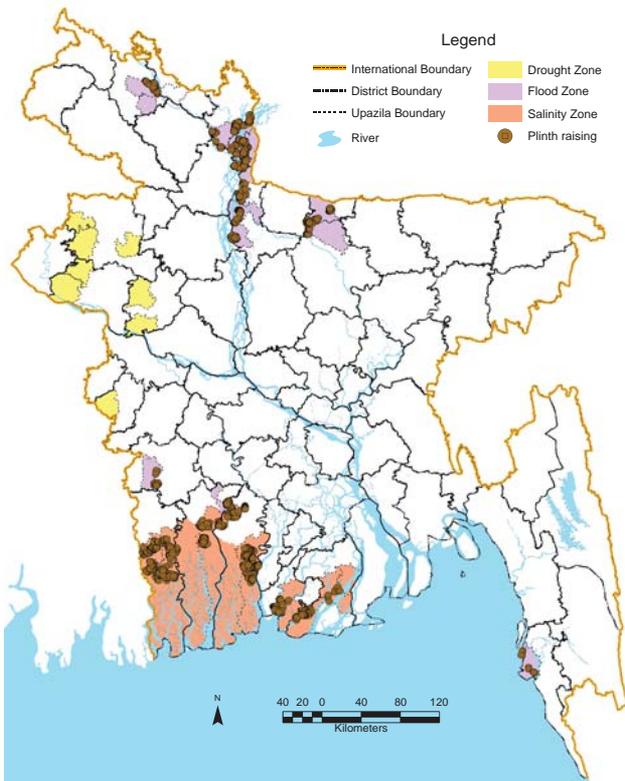
Contractual system of earthwork is more cost-effective and efficient than man-day-based system.

- Heights of plinths vary by locations. In the flood-prone areas, it is easy to raise the plinths at required height because of availability of soil. In addition, simple structure of houses in flood-affected areas allows shifting them from one place to another easily. But in the salinity-prone areas, there is a scarcity of soil for raising plinths at the expected height. The house structures in the salinity-prone areas are heavy, which makes it difficult to move the structures and its reconstruction cost gets high. In addition, their roofs require to be sloping downwards to avoid strong wind; otherwise the roofs may be blown away by strong winds and storms. That's why, people in the coastal zone don't want to raise the plinth height as much as required.

*We are not afraid of floods anymore. Floods may cause some disruptions but can no more displace us.”*

- Anjumanara  
Middle Char, Bozra  
Ulipur, Kurigram

**Geographical distribution of Plinth raising**



## Case Study

### “Plinth raising makes char community flood-resilient”

Most of the people in Middle Char Bozra village of Bozra union in Ulipur Upazila of Kurigram district are disadvantaged and vulnerable to climatic events. Their geographic location on the bank of the Teesta river made them vulnerable to extensive flooding and river erosion of varying intensities every year. The disasters cause many casualties and substantial damage to houses, assets, crops and, livestock and human health. In this situation, people of 24 households joined hands with the sub-project to strengthen capacity for identifying different problems through consulting community by forming Climate Change

Adaptation Group (CCAG) to take adaptation and mitigation measures to rebuild resilient community. For coping with the situation, they got support from the sub-project with the technical and financial assistance of the PKSf. The support includes household plinth raising, promotion of backyard livestock rearing, mainly goat rearing, ensuring safe drinking water through tube well installation, safe drinking water through tube well platform construction, vegetable and grass cultivation to meet nutrition demand for them and for their livestock, timber and fruit tree plantation and promotion of sanitary latrines etc.

The community people, who were provided with plinth raising supports, could save themselves from the flood in 2014. They did not have to leave the house to seek shelter at some school ground or high roads. They also could keep their domestic animals and other assets with them.

The experience of 2014 flood made them believe that they are capable of adaptation and mitigation measures to deal with climate change fallout. Anjumanara, a villager, says, “We are not afraid of floods anymore. Floods may cause some disruptions but can no more displace us.”

### 3.3.2 Access to Potable Water

#### *Installation of tube wells- across all risk zones with various technology*

It is a community-based intervention. A tube well management committee was formed for maintenance of the tube well. For environmental benefit, a soak well was constructed with each tube well for preserving waste water so as to recharge groundwater. Part of the water is also used to irrigate vegetables. To ensure the proper utilization of resource, construction, bill payment was made on the basis of depth of specific tube well because the depth varies by locations. Local offices of the Department of Public Health and Engineering (DPHE) provided technical support



#### ● Lesson 15:

Collective cash contribution in the community activities create and strengthen a sense ownership among the participants, which ensures sustainability of the activities.

#### ● Lesson 16:

Part of the extracted groundwater can be recharged through soak wells set up beside tube wells.

#### ● Lesson 17:

It was observed that groundwater recharge through soak wells happens better in flood and salinity-affected areas than in drought areas, depending on the soil textures.

#### ● Lesson 18:

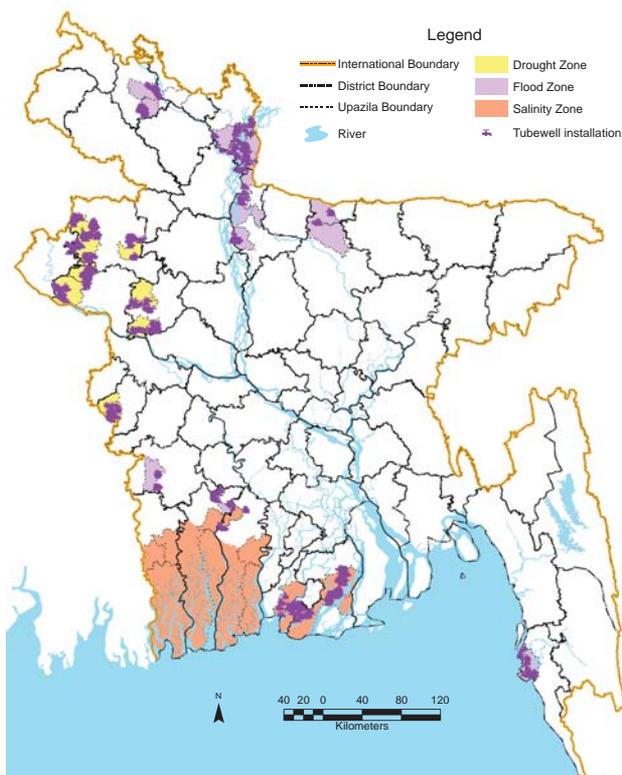
Formation of a management committee for future maintenance of a tube-well ensures sustainability of the activity.

#### ● Lesson 19:

Submersible pumps are necessary in drought-prone areas.

to install tube wells in the respected areas. As per the definition of DPHE by depth (upto 300 ft is shallow), most of the tubewells are shallow particularly in flood and drought-prone areas but deep in salinity-prone areas. In drought-prone areas submersible tube wells were installed so that the participants had access to safe drinking water round the year, which was not the case in the past. They have increased access to water for livestock and other household usages. All tube wells are arsenic free but there are dissolved iron in some areas particularly in char areas and Nagaon Sadar Upazila. It is documented from the field that time spent and distance walked for collecting water has reduced. Community people contributed 10-20% of the total money. They also opened bank accounts for saving for future management of tube well. MoUs were signed between the PIPs, land owners and tube well management committees to ensure sustaibility, which is unique.

### Geographical distribution of tubewell installation



#### • Lesson 20:

The problem with water due to climate change is different in different climate risk zones. Hence, the technologies for solution of the problem are also different.

#### • Lesson 21:

In coastal areas, ponds are re-excavated to preserve rainwater for drinking purposes, but in drought areas, it is for household uses and irrigation.

#### • Lesson 22:

The PSF is used only in salinity-prone areas. This technology may be transferred to drought-prone areas to use rainwater for drinking purpose.

#### • Lesson 23:

People in the coastal area drink pure rainwater during the monsoon and at that time, the PSFs remain unused. As a consequence, it becomes non-functional by the next dry season. But if the PSF management committee is active and raises fund for maintenance, then the PSF will become the most effective technology for addressing drinking water crisis.

### ***Pond re-excavation- in salinity and drought-prone areas***

Ponds were re-excavated for preserving rainwater in salinity and drought-prone areas. It is interesting to note that the purpose of pond re-excavation in salinity and drought-prone areas was different. In extreme salinity-prone areas, ponds were re-excavated for drinking purpose and in drought areas, it was done for household uses and irrigation purposes. In salinity-prone areas, Pond-Sand-Filters (PSFs) were installed with each pond to make the pond water safe for drinking. A pond management committee was formed for each pond for future maintenance. The committee opened bank accounts on their own for managing future cost of maintenance. It is found that access to water for drinking and other purposes has increased, which reduces the sufferings of women in the rural areas because traditionally it is the women who always collect water for household members. The CCCP learnt that PSFs must be kept active throughout the year; otherwise it will not be functioning after a year. The CCCP has worked on this and expects good result. If the committee becomes functioning, the PSFs will function. The CCCP also learnt that ponds which belong to community institutions like mosque, school, madrasa etc. are properly maintained.

### ***Rain-water harvesting at household and community levels in salinity-prone areas***

The coastal communities heavily depend on rain water. Recognizing the acute crisis of drinking water, the CCCP established Rain Water Harvesting (RWH) plants at both household and community levels. Based on previous experience of the PKSF and other organisations, the CCCP focused on the problems of managing RWH technology by the community people. Hence, the CCCP installed the plant in a shady place. Water collection point of RWH must be made with corrugated tin sheets instead of polythene to avoid dust. For community-level RWHS, community institutions are selected and committees are formed for future maintenance. It is evident from the field that access to safe drinking water increased in the project area. Women do not need to travel far to fetch water. But the drawback is that if the reservoirs are not kept clean, water may be contaminated with infectious agents like micro-organism parasitic larvae. The CCCP experienced that where tube well water is available, people do not drink rainwater. So, we should not install RWH plants where tube well water is available.

### ***Installation of desalination plants in the saline zone***

A total of 30 desalination plants have been established in the salinity affected areas of Bangladesh. About 2.4 million liters of water is produced daily, which benefits about 0.2 million people. Rural people in coastal areas have become

#### **● Lesson 24:**

Rainwater harvesting is the easiest and most popular solution to the scarcity of drinking water in the coastal zone.

#### **● Lesson 25:**

The water in the first five minutes of the first rain must be used to clean the roof only.

#### **● Lesson 26:**

Depending on its water-holding capacity and the size of a family, a tank full of rainwater can support a family for up to six months during the dry seasons.

#### **● Lesson 27:**

Rainwater reservoir or desalination plant is not feasible where sweet water is available from tube-wells.

#### **● Lesson 28:**

Proper hygienic maintenance of the water reservoir is pre-requisite to ensuring quality of water over a long period of time.

habituated to buying drinking water which is a new changing behaviour in the society. The new social character will drive the entrepreneurs scaling up the desalination plants at commercial scale. The scaling up should consider three things: a) population per unit plant- CCCP experienced that a desalination plant having the production capacity of 10,000 liter water/day can provide services to 500 families, which means a commercial desalination plant should target at least 500 families, otherwise water-market may be saturated; b) the price of water- must be kept as cheap as possible considering purchasing power of vulnerable group i.e. not more than BDT. 0.60/liter; and c) the location where there is no source of drinking water at all.



### 3.3.3 Diversified livelihoods

#### *Slatted housing system for goat/sheep rearing- all risk zones*

Goat rearing is a very traditional practice all over the country. Mainly the poor and marginal people rear goats to support their livelihood during the lean period. But challenges related to high morbidity and mortality of goats have been a major problem for traditional goat rearing. This is due to overall poor management especially housing, feeding, veterinary care and breeding. Prech system of rearing together with deworming, vaccination, supplemental feeding and timely breeding has substantially improved productivity of goats. Training provided under the CCCP has further strengthened knowledge base together with good management practices.

It was observed that incidence of different goat diseases (e.g. PPR, Goat Pox, Pnumonia etc.) reduced from 20% to 6.5% in the CCCP working area. As the goat population became healthier and more productive, goat

- **Lesson 29:**

Desalination plants require technical capacity for long term maintenance.

- **Lesson 30:**

It must be a social enterprise because it has maintenance cost

- **Lesson 31:**

Coastal people started buying potable water from desalination plants, which can ensure sustainable supply of drinking water.

- **Lesson 32:**

In operating desalination plants, solar energy may be used where national grid electricity is not available.

- **Lesson 33:**

The pricing of water from a desalination plant must be done keeping in consideration all costs including depreciation and system loss.

- **Lesson 34:**

Sheep is more resilient than goats for all risk zones because of its glucogenic metabolic behaviour.

- **Lesson 35:**

Diseases of goats have been significantly reduced due to use of slatted house for goats, leading to increase of productivity.

## Case Study

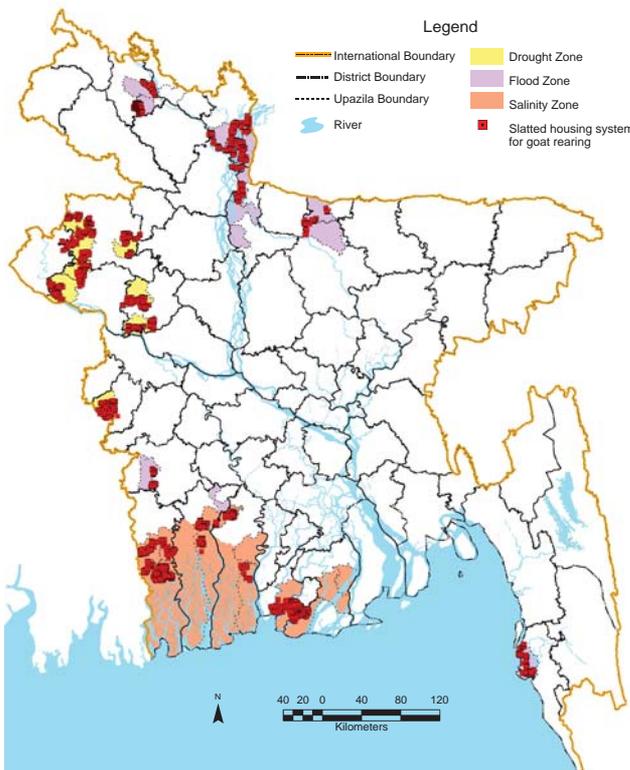
### **Hazra Begum successful by goat rearing in slatted house**



Hazra Begum, 48, lives with her family of farmer husband Akbor Ali and three daughters in Kashimpur of Lalpur in Natore. They had no cultivable land except eight decimals of homestead. Their life would be plagued by drought and they would sometimes have to borrow from others.

Amid such hardship, she became a participant of the CCCP sub-project there in January 2016. She was inspired by the discussions in the Climate Change Adaptation Group (CCAG) and become interested in goat rearing. With the technical and financial assistance of CCCP, she started goat farm with 3 goats in slatted house. Within 2 years she now has 10 goat having a market value of Tk. 1,54,800. She is planning to expand the farm. Despite being placed in drought prone area, she can now earn her livelihood and lead normal life.

### **Geographical distribution of slatted housing system for goat rearing**



#### ● Lesson 36:

Due to the support of slatted housing for goats, farmers are relieved from the stench of goat urine because they no more keep their goats in their living room.

#### ● Lesson 37:

Goat litter is used to make compost in pit system.

#### ● Lesson 38:

Goat houses constructed by farmers on their own are usually more durable than those provided by others.

population of the areas increased by over 50%. Goat rearing has become a popular livelihood activity. One very important lesson here is that technological support is more effective and sustainable than grant support. Another feature is that sheep are more resistant to climate change than goat .

### **Poultry rearing in semi-scavenging method for all risk zones**

Poultry rearing in rural Bangladesh is a traditional source of income, particularly for the poor household. But traditional process of poultry rearing restricts expected productivity. The CCCP introduced semi-scavenging poultry rearing technique with structured house, supplemental feeding and timely vaccination. It was found that the intervention of the CCCP reduced incidence of diseases and improved productivity significantly. It was evident that duck is more resilient to climate change impacts than hen, particularly in salinity-prone areas. In addition to hen and duck, the CCCP introduced pigeon and quail rearing to foster rapid income of the vulnerable community. Though the sub-projects provided training to their participants on improved management of poultry rearing, more efforts would require to change behavior of the communities towards improved management of poultry. MFIs can take initiatives in this regard.

#### ● **Lesson 39:**

Semi-intensive poultry rearing can be a potential livelihood option in salinity-prone areas where crops cannot grow due to high salinity in the soil or water stagnation.

#### ● **Lesson 40:**

Litter of poultry and other birds can be used to make compost.

## Case Study

### **Duck rearing bolstering resilience of Manik Jan**



Diglarkanda is a poverty stricken village of Noril union of Haluaghat Upazila under Mymensingh district. The area remains inundated for five to six months every year. Manikjan is a one of the CCAG members of the CCCP sub-project. Her family is consisted of 6 members. Husband Abdul Hannan is a day laborer and is the only earning member of the family and Manikjan is a housewife. Hannan had no cultivable land and had to depend on day labor. During the lean period, he migrated to

other districts as seasonal labour. Very often, they had to borrow money from money lenders. Following instructions of the CCCP staff, Manikjan started duck farming with 40 Kagi Campbell duck. She received duck rearing training from the CCCP. Now, she has 100 ducks. She now sells 50 to 60 eggs at over Tk. 500 daily. After covering the production expenses, she earns a net profit of Tk. 50 to 60.

*"I always inspire and encourage unemployed youths to be involved in this kind of self-reliant works so that they can achieve solvency. I urge government and non-government organisations to provide interest-free loans to further expand the farm,"* Manikjan said. Many people including youths from several villages come to Manikjan's farm every day and they become

inspired after hearing her success story and go back with fresh inspiration to be involved in this kind of venture. Upazila Livestock Officer of Haluaghat Upazila Dr. AKM Anisur Rahman said through duck rearing, interested women and others remove unemployment problems, especially in villages of haor areas. In this case, Manikjan may be a good model. With abundant natural feed and other environmental advantages, Manikjan is now planning to expand her farm size further. She is now confident of coming out of poverty cycle. Now, 4 of her children go to school. Manikjan expects that her husband will not have to migrate as a day labour during the lean period. Thus duck farming helped Manikjan to be resilient to climate change.

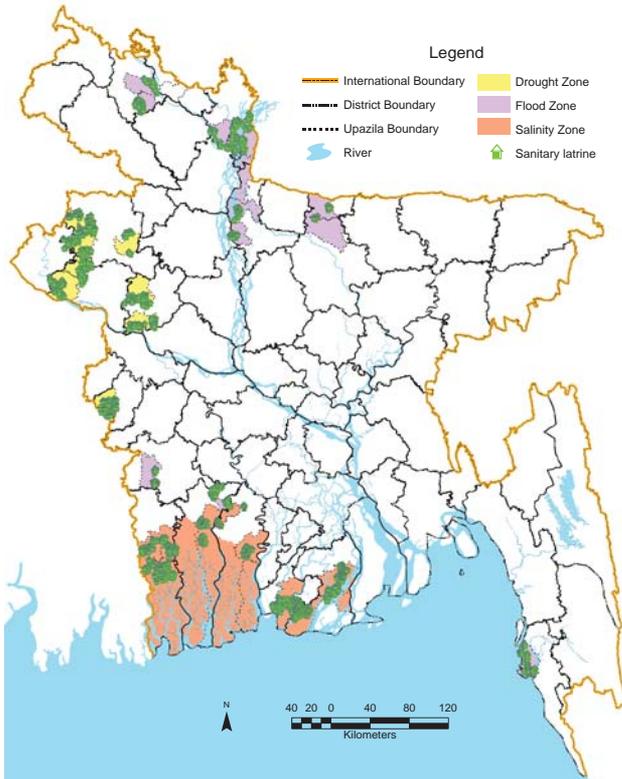
### 3.3.4 Sanitation, health and education

#### Household-level sanitary latrines for all risk zones

The CCCP designed a sustainable climate-adaptive sanitary latrine. The poor and vulnerable people constructed latrines with three rings and one slab. This sanitary latrine significantly contributed to decreasing open defecation but did not ensure the hygiene use. The CCCP demonstrated improved latrines with ceramic pan, plaster surface, available aeration and lighting system, fence with colored corrugated iron sheets, inside water supply system, handle for aged, pregnant women and children etc. The CCCP model latrine is comparatively costly (BDT 15,000 to BDT 17,000) than the conventional one. A single poor household may not be able to construct this one alone. But it is very much possible if three or more households together construct the latrine. Considering this, the CCCP suggested three close relatives to get one latrine. Initially, most of the participants did not want to share a latrine. But after construction, they cordially received because of its user-friendly features. The model latrine increased the social and health status of project participants. Now, there is a



Geographical distribution of sanitary latrine



- **Lesson 41:**

The CCCP has provided a latrine to three blood-related families. Initially this approach challenged the implementation of the activity but over the project period, it is fully adopted by the society.

- **Lesson 42:**

Positive change of behavior towards hygienic use of latrines was observed in the selected community.

- **Lesson 43:**

Demonstration effects of the CCCP-designed latrines were observed in the community.

huge demand of the latrine in the project areas. The community contributed more than 10% of the total cost. Now other people agree to contribute 50% of the cost. The CCCP has developed and shared guideline for latrine users incorporating characteristics of latrine hygiene and sanitation through awareness building.

The participants perceive that incidence of different diseases has reduced and living standard has increased. It was observed that concrete tank for water is more durable than plastic tank. Y-chamber of latrine is more effective than single chamber for waste management in soak well. In addition, better corrugated iron sheets (above 0.19mm) are more durable than color-coated ones especially saline areas.

### Improved cooking stove for all risk zones

The CCCP faced enormous challenges in promoting improved cooking stoves (ICS). Because women are used to cooking with traditional three stand stoves. If they don't see fire, they think grain is not boiling properly. Besides, ICS requires wooden fuel but women are used to using leaves, straws etc. So, in spite of contributing 30% to 50% in cash, initial rate of use was not

- **Lesson 44:**

A model latrine needs to be displayed to make the participants and the contractor understand the cost of the CCCP designed latrine.

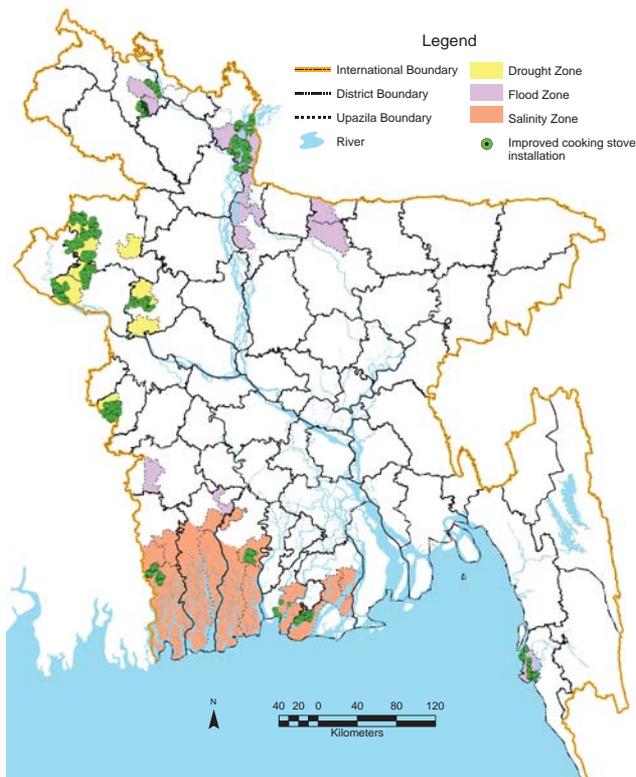
- **Lesson 45:**

Behaviour change towards hygiene practice of latrines requires 2-3 months of continuous and intensive mentoring.

- **Lesson 46:**

The CCCP-designed latrines increased social status and living standards of the participants.

### Geographical distribution of ICS installation



- **Lesson 47:**

Diameter of chimney of ICS should not be less than 5 inches to ensure durability.

- **Lesson 48:**

The ultra poor cannot afford the cost, hence they require subsidy in ICS.

- **Lesson 49:**

Roof of kitchen of the poor community is usually made of straw which is vulnerable to catching fire. Proper safety must be ensured before installing ICS.

satisfactory. Breaking chimney, invisibility of fire, shifting of kitchen, lack of appropriate fuel etc. were main reasons for their not using ICS. However, with continuous motivation, use of ICS has been increased by to 90% by December 2016.

## Case Study



### ICS makes Joshna Begum's life healthier

Joshna Begum belongs to a very poor family living in Ramaigachi village, located 2km away from the Sadar Upazila of Natore district. Mother of four children (including a disabled child), she previously used traditional stove. Her kitchen was full of dust and smoke which used to cause various diseases in her family especially herself and her young children. 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 with an 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 explained the benefit of ICS, she was immediately got interested in using it.

The DCRC project assisted about 200 families to install ICS with the money from the CCCP fund and the community contribution. An ICS is cost-saving and environment-friendly.

Joshna is now happy to use the ICS as it reduced her expenses for firewood, and reduced health hazards related to smoke and carbon emission. Her kitchen is now much clean. Observing the benefit of ICS, the popularity 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 from using the ICS.

*Breaking chimney, invisibility of fire, shifting of kitchen, lack of appropriate fuel etc. were main reasons for their not using ICS*

### 3.3.5 Agriculture and special livelihood

#### *Drought-resilient cropping pattern in drought risk zone*

Drought is one of the most common environmental stresses in the project catchment area. Continuity of drought can be a major threat to agricultural production. Due to severe drought, farmers are facing problem to produce crop for their livelihood. Water level is gradually decreasing as the excessive use of underground water for crop production. Moreover, farmers can't cultivate 03 crops in a year because of drought. So, it needs to introduce drought-tolerant crop varieties. If not, agricultural workers will be unemployed. Considering this, the sub-project introduced modified cropping pattern with improved varieties of crops. Presently the selected farmers cultivate BINA-7 & BRRI-56 in Aman season, which are short duration varieties of rice known as drought-escaped varieties. In the Rabi season, they cultivate BARI Wheat-24 which requires irrigation only twice whereas the traditional variety requires it 4-6 times. And in pre-kharif season, they cultivate BARI Mug-5 & BINA Mug-8, which too are very short duration crops and require little water. Many of them have already started cultivating short duration rice and wheat varieties like BARI-24. Drought-adaptive wheat cultivation has made many participants self reliant.

- **Lesson 50:**

Water management in crop-lands is important for drought management

- **Lesson 51:**

Crop selection based on the local situation is very important.

- **Lesson 52:**

There is a scarcity of newly released drought-resistant varieties of seeds at the farmer's level.

- **Lesson 53:**

The information on the demonstration effects of new varieties of crops requires rapid dissemination among farmers so that they can get quick access to these crop varieties.



Demonstration of drought-tolerant mustard (BARI-15) variety by Ashrai



Demonstration plot (BARI-MUNG-6) by NSS in salinity-prone area



Demonstration of drought-tolerant rice (BARI-28) variety by Ashrai

The information on the demonstration effects of new varieties of crops requires rapid dissemination among farmers so that they can get quick access to these crop varieties

## Comparative of CCCP-prescribed cropping patterns and traditional cropping patterns

S. N.	Traditional cropping patterns	CCCP-prescribed cropping patterns
01	Rabi Kharif-1 Kharif 2 Sugarcane-Sugarcane-Sugarcane Sugarcane+Lentil-Sugarcane-Sugarcane Sugarcane+Mustard-Sugarcane-Sugarcane Boro-Fallow-T. Aman	Rabi Kharif 1 Kharif 2 Wheat-Mugbean- T.Aman Mustard-Mugbean-T.Aman
02	It is quite impossible to harvest three crops per year unless the crops are grown on an early basis. Then, the cost and use of insecticide will increase. It is also inimical to the environment.	It is possible to harvest three crops per year successfully. There is no need for using pesticides in order to curb insects and other related problems.
03	The cropping pattern prevalent in Lalpur is not environment-friendly. The use of old varieties of crops with a long life span pollutes environment. Apart from this, the use of excessive pesticides and fertilizers is also injurious to our environment.	The CCCP-prescribed cropping pattern gives importance to the use of genetically modified crops which have a high level of immunity from insects and diseases. In addition to this, the CCCP-prescribed pattern also ensures the short life span, the use of urea super granate (USG) and the application of a proper dose of fertilizer. The Irrigation of the CCCP-empowered crops is also environment-friendly.
04	The cropping pattern followed at present can't mitigate the effects of drought. Sugarcane is the only cash crop in Lalpur.	The crops prescribed by the CCCP are drought-tolerant. Drought tolerant wheat is being popularized by the CCCP. Side by side, Bari Mug-6 and Bari Mug-8 have also been made popular in Lalpur. These two varieties require less water as well as shorter duration. The features of tolerance are also found in Bridhan-56 and Bina-07. The life span of these two varieties ranges from 105 to 110 days, that is to say, they need 20 to 26 days less than conventional varieties. These two varieties of paddy are also able to withstand the effects of drought for a period of 10 to 15 days.
05	The traditional cropping pattern requires huge irrigation. Poor water management of this irrigation led wastage of water which increase production cost as well as deplete groundwater level.	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.
06	The cropping pattern prevalent in Lalpur does not improve the fertility of soil.	The CCCP-prescribed cropping pattern with its balanced features is able to retain fertility of soil.

### Vermi-compost for all risk zones

Vermi-compost has been found as a potential income generating option as it is highly productive for agricultural crops and vegetables. It increases soil productivity and quality through increasing microbial activity and water holding capacity of soil. The CCCP experienced that about 12% participants of sub-project started producing vermi compost on their own initiative whereas 16% of vermi participants expanded their plants on a semi-commercial scale. This women-friendly technology helped earning both from selling compost and earthworms. Though it is a new technology, its social acceptability is very high. It requires development of enterprise for long term sustainability.

#### ● Lesson 54:

Vermi-compost brought visible changes in vegetable cultivation in the community. It is very effective for home-based vegetable cultivation.

#### ● Lesson 55:

Utility of vermi-compost is very high. Farmer can sell both vermi and fertilizer

#### ● Lesson 56:

The practice is mainly cow dung-dependent. It requires alternative composting material (i.e. goat or poultry litter, decomposed plants etc. to supplement cow dung).

#### ● Lesson 57:

Packaging and marketing of vermi-compost remain a challenge for commercialisation of this IGA.

## Vermi-compost brings better days for Aleya



Aleya Begum's is not a story of overnight success but one of a systematic effort to utilize opportunities offered to the farmers in the village from a variety of agencies. A resident of Char Patrakhata under Romna Union of Chilmari Upazila in Kurigram district, she once was a house wife. Her husband, Md Abu Syeed, used to be a day labourer. During the Bengali months of Ashwin and Kartik (between September and November) when employment becomes scarce in agricultural fields, sufferings of the family members knew no bounds. Her husband used to be unemployed for three months every year. She used to work as a domestic help. But it was very difficult for her to earn enough to support the six-member family.

Hailing from a poor farmer's family, Aleya's husband has inherited half acres of dry

land of which most is uncultivable char land. Wage labor, hence, was more important a source of livelihood for the family than agriculture in the half acre land. Her parents wanted their two sons to study. It was however not possible for him to go beyond the school level due to extreme poverty. She was forced to return and join her parents in farming.

In 2013, Aleya became a Climate Change Adaptation Group (CCAG) member under the CCCP sub-project of RDRS Bangladesh. Under CCCP, she received training on vermi-compost and in October 2014, she received 1,050 earthworms and two earthen vat for producing vermi-compost. In the first batch, she produced 30kg vermi-compost and used some of it in her own vegetable garden and the rest in the paddy field. The result

was satisfying and she took an initiative to increase the production and conduct some marketing. In 2015, Aleya produced 504kg vermi-compost. She used this fertilizer in her 50 decimals of barren land for vegetable cultivation. "I earned about Tk 6,000 in the first six months of 2015 and Tk 8,000 in the next half of the year by selling vegetables," she says.

She also sold 3,500 earthworms at Tk 0.50 per piece, making a total of Tk 1,750 in 2015. The villagers, mainly small and marginal farmers of the village were buying earthworms from her and making the compost in the same way as Aleya did. Most of the farmers of Char Patrakhata and adjoining villages are now using this compost in their farmlands. Thus, Aleya has changed the mindset of the farmers of area and paved the way for other poor people to earn their livelihoods by producing the earthworm compost.



### Crab fattening in salinity risk zone

Crab fattening has been an effective livelihood option for the marginalized and poor fish farmers in the salinity-affected coastal area. It requires a small pond which is affordable to the poor community. The CCCP found that crab fattening has rapid and higher income than any other livelihood options in the coastal zone, with less time and labour. The most important feature is that it is a very easy technology and women can get easily involved in crab fattening. The CCCP found it as a potential alternative to shrimp farming. Crab is seldom affected by diseases. It has an emerging market at local, national and international levels. The negative part of crab fattening is that crab farmers collect crablets from rivers. With increasing popularity of crab fattening as a livelihood of some of the poor, crablets are gradually decreasing. In this context, the PKSF has experimentally established crab hatchery.



- **Lesson 58:**

Crab fattening has proven as one of the most effective pro-poor livelihood adaptation options in the coastal zone where crops cannot be grown at all due to salinity.

- **Lesson 59:**

Establishing crab hatchery is necessary for sustainability of crab fattening as an IGA.

### 3.3.6 Community mechanism- a cross cutting issue

Resilience is defined as the ability of people, households and communities to mitigate, adapt to, recover from and thrive and learn in the face for shocks and stress in order to reduce chronic vulnerability and enable sustained development, inclusive growth and learning and transformative capacity. The goal of the CCCP was to build a resilient community which is a progressive and long term process and includes a wider set of inherently connected challenges that help community to withstand against any kind of vulnerability.

To make a resilient community, the CCCP participant groups have already developed a workable institutional structure. The groups organize meetings to manage and deal with climate change adaptation issues. A total of 24 topics pertaining to climate change adaptation issues have been selected for discussion in the meetings.

- **Lesson 60:**

Concept of a new term like community mechanism should be clearly defined in the project documents.

- **Lesson 61:**

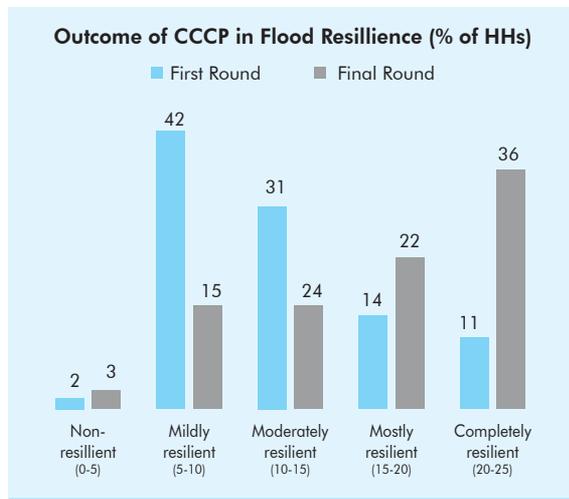
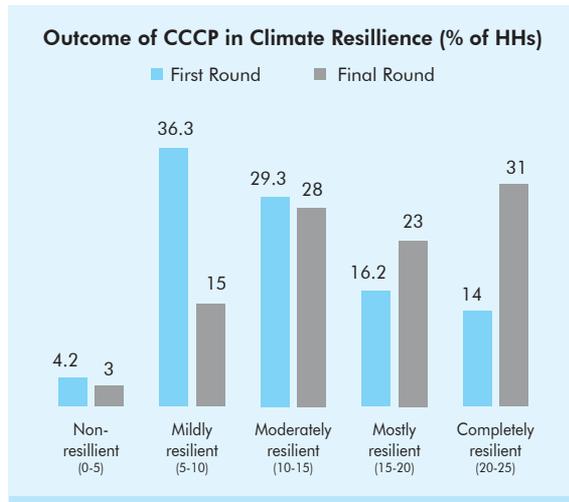
Functioning of community mechanism requires cementing factors. Financial services might be a good option.

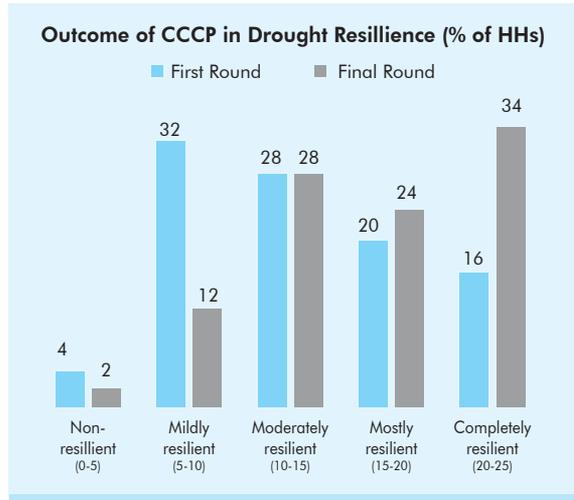
### 3.4 To what extent communities became resilient

#### 3.4.1 Medium term outcome

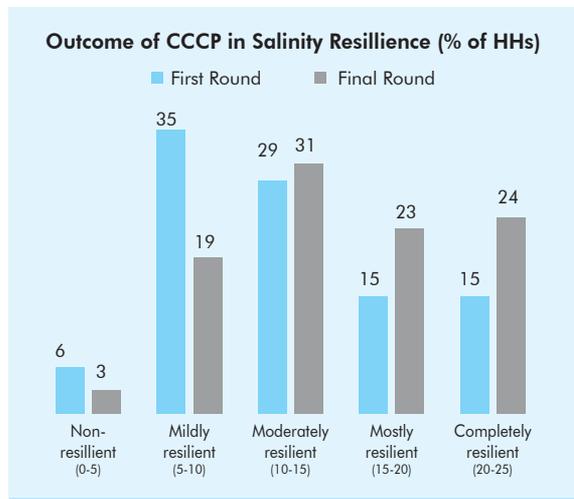
To measure the outcome-level indicators, the levels of resilient were divided into five categories- a) Non-resilient HHs, b) Mildly resilient, c) Moderately resilient, d) Mostly resilient and e) Completely resilient. These are measured in a scale from 0-25. Category on 'a' is scaled 0-6, category 'b' is 6-10, category 'c' is 11-15, category 'd' is 16-20 and category 'e' 21-25. The final RBM study found that 97% of the targeted households became resilient from mildly to completely resilient. More important is that 82% of the communities became moderately to completely resilient, which means the communities truly built their resilience through the CCCP interventions. The RBM study found that 31% of the communities became completely resilient followed by 23% mostly and 28% moderately. It is also to be noted that during the first round RBM in March 2015, the highest percentage of communities were mildly resilient which was 36.3%. They have gradually been more resilient and during the final RBM in June 2016, the highest percentage of communities were completely resilient.

However, resilience varies by risk zones. 82% of targeted households in flood risk zone became moderately to completely resilient. Over 36% of the community became completely resilient in flood risk zone. About 34% of the targeted





households in drought-prone areas became completely resilient and 24% in salinity-prone areas. In flood-prone areas, 22% of the community has become mostly resilient. It is 24% in drought and 23% in salinity-prone areas. Similarly, 31% of the community is moderately resilient in flood zone; it is 28% in drought zone and 29% in salinity-prone areas. The coastal zone usually experiences multiple climate change events throughout the year. For example, cyclone in pre- and post-monsoon, tidal surge in monsoon and salinity and drought in dry season. This may be a reason why coastal people became comparatively less resilient than those in the two other risk zones.



### 3.4.2 Long-term impact at community level

The Climate Resilience Index (CRI) in flood prone area was 73% in June 2016, which was 12% during the baseline in June 2014. For the drought risk zone, CRI in June 2016 was 69% compare to a baseline value of 20%, and 62% in salinity risk zone compared to 13% during the baseline. The aggregated CRI for all risk zones increased from 15% at baseline to 67% during June 2016.

### 3.4.3 Progress against the logframe at PDO level

The CCCP also assessed the PDO-level impact and outcome/results. Necessary indicators have been developed to measure the PDO-level impact and results. The indicators have been achieved through implementation of various activities at different levels. This section describes to what extent and how the CCCP has achieved the targeted indicators.



**Intermediate results indicator one:** *Community mechanism established and functioning in selected communities to respond to effectively to specific climate risk*

As per assessment of the 6th implementation support mission, the CCCP has achieved 75% against the target of 70%. Each PIP has formed beneficiary groups for implementing different adaptation technologies. The group is known as “Climate Change Adaptation Group (CCAG)”. A total 1696 groups have been formed under the CCCP. In addition, a number of committees and sub-committees have been formed for long term maintenance of community-level infrastructures and resources. They signed tri-partite agreement between PIP, committee and the land owner to maintain each technology/resource in the long run. It is more of a commitment than an agreement. Even the individual HHs also signed

The aggregated Climate Resilience Index (CRI) for all risk zones increased from 15% at baseline to 67% during June 2016

agreement with respective CCAGs and PIPs. The group members sit twice a month to discuss climate change issues, management and maintenance of technologies, quality of implementation etc. They have prepared long-term adaptation action plans for their locality. The CCCP expects that they will gradually implement their own adaptation plan.

**Indicator two:** *Communities to have applied sustainable adaptation practices to address specific climate risk.*

The CCCP has achieved 83% against the target of 70% as measured by the World Bank. The achievement has exceeded the target value. This is mainly because the adaptation interventions were suggested by the community people of the three risk zones i.e. flood, salinity and drought risk zone. Considering differential vulnerability in different risk zones, the CCCP implemented



Slatted housing system for goat rearing is the most replicated adaptation intervention of CCCP

risk-specific adaptation technology. The main activity in flood-prone area is “raising cluster based homestead plinths”; in salinity-prone areas, “raising cluster-based homestead plinths and increasing access to potable drinking water through desalination plants, ponds with PSF and rainwater harvesting system” and in drought-prone area, “increasing access to drinking and irrigation water through sub-merged tube well and pond re-excavation”. Though water is a common issue for salinity and drought affected areas, the problem with water is not same. There is available water in salinity-prone areas but not usable due to salinity. On the contrast, there is a severe shortage of water in the drought-affected areas. So, water technology in the salinity and drought-affected areas varies widely. The popular technologies in salinity-prone areas are desalination plants, ponds with PSF, rain-water harvesting system etc. In drought-prone areas, these are mainly sub-mergible

## Demonstration Effects

The CCCP has significant demonstration effects at the community level. The activities that have been implemented by other people being influenced by CCCP participants include raising homestead plinths, slatted house, vermi compost, improve cooking stoves, sanitary latrines, poultry and duck rearing, crab fattening, and drought and salinity resistant crops

tubewell and pond re-excavation. In addition, salinity-tolerant, flood-tolerant and drought-tolerant varieties of crops were demonstrated in the respective risk zone. Besides, the community people suggested some income generating activities which are common for all the three risk zones. For example, goat rearing, poultry and duck rearing, vermin-compost, sheep rearing etc. The communities easily adopted all these technologies because these are their inherent practices. They used to practice all these adaptation practices for generations. The CCCP only added simple technology and improved management system. For example, rural people rear goats and keep their goats on mud floors which increased diseases and decreased productivity. The CCCP provided them slatted houses, trained them on diseases and vaccinations, and linked them with local service providers. Now, income from this intervention significantly contributes to their main income. In many cases, this has become their main income source.

**Indicator three:** *Sub-grant implemented in the selected communities are assessed to have achieved the targeted objectives*

The 6th implementation support mission of the World Bank assesses that the CCCP has achieved 86% against a target of 75%. This indicator depends on successful implementation of each sub-project under the CCCP. A detailed achievement of the CRI, outcome and output is presented below:

**3.4.3.2 Intermediate result:** A functional financing mechanism for community-based adaptation sub-projects established

**Intermediate result indicator one:** *Number of community-based adaptation sub-grants awarded*

The 6th Implementation Support Mission of the World Bank assessed that the CCCP has achieved more than the target. The target was set at 40 sub-grants and the CCCP awarded 41 sub-grants. This has been achieved through a rigorous screening process in three different phases. 11, 14 and 16 sub-grants were awarded in first, second and third phase respectively. The screening process was highly transparent and participatory which was



appraised by the government of Bangladesh, World Bank, development partners, civil society and medias. Brief of the screening process is discussed below:

**Intermediate result indicator two:** % of PIPs with awarded sub-projects found fully compliant with policies and procedures agreed under CCCP.

The mission found that 95% of the PIPs against a target of 80% fully complied with the policies and guidelines of the CCCP. The reason behind this high-level achievement is intensive participation, training and day-to-day mentoring the sub-project staffs by the PMU. The PMU developed its manuals and guidelines in participation with representatives from the PIPs. The guidelines and manuals were also shared with The World Bank's Team. There was also flexibility for any special situation if arose during implementation of activities. Two major guidelines have been reviewed to address field-level progress with the Bank's concern. One is procurement guideline and the other is activity implementation guidelines. The procurement guideline extended the seiling of RFQ limit and relaxed few legal documents including VAT and Tax Registration. The environment and social management frameworks were mostly favorable to the community-level adaptation activities. Thus the manual and guidelines were fully addressed by the PIPs. The rest 5% PIPs were less capable compared to others in terms of management and implementation of project.

*The mission found that 95% of the PIPs against a target of 80% fully complied with the policies and guidelines of the CCCP. The reason behind this high-level achievement is intensive participation, training and day-to-day mentoring the sub-project staffs by the PMU*





**Intermediate result indicator three:** *Sub-grants have been disbursed to the NGOs in a timely manner.*

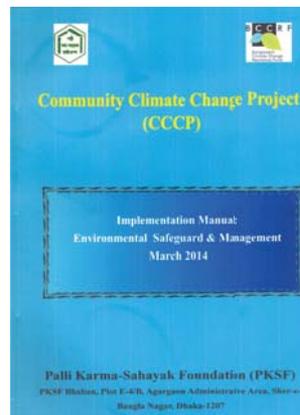
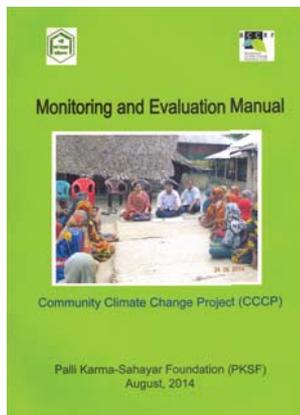
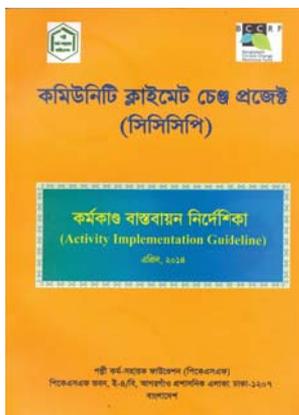
Achievement of the CCCP is 81% against a target of 80%. The PMU put emphasis on disbursement of reimbursement to the PIPs within its all other activities. Though the CCCP achieved the target, it had to struggle with poor quality of reimbursement report submitted by the PIPs. However, to speed up the process, the PMU took clarifications over cell phone and received necessary documents over email. The Audit department of the PKSf checked all the reimbursement bills ins and outs so that all the bills comply with legal issues, policies and guidelines as per contracts with the respective PIPs. Though fund disbursement was a critical task, it was made simple in collaboration with the PKSf Audit section, the PMU and the PIPs.

**3.4.3.3 Intermediate result (component two):** Knowledge Management, M&E and Capacity Building.

**Intermediate result indicator one:** *PIPs with awarded sub-projects have identified a list of lessons learned during annual workshops for use in their adaptation initiatives.*

Lessons learnt is a continuous process. Both formal and informal methods are applied to capture lessons of sub-projects. The PIPs based on their field experience identify lessons of their respective sub-project. The CCCP achieved 85% against the target of 80% which means 85% of the PIPs have identified lessons. They included all the lessons in

*Though fund disbursement was a critical task, it was made simple in collaboration with the PKSf Audit section, the PMU and the PIPs*



different communication documents including brochures and booklets.

**Intermediate result indicator two:** *Percent of PIPs report best practices to PKSF and other stakeholders.*

The PMU has achieved 89% against the target of 80%. All the PIPs reported best practices but quality of the practices of all PIPs is not satisfactory. However, 89% of the PIPs' best practices are satisfactory.

**Intermediate result indicator three:** *Toolkit & guidelines prepared for community-based climate change adaptation*

The target was preparing three tool kits and guidelines. The PMU developed a total of 15 guidelines, manuals, reports and tools during the project period which are Operational Manual, Implementation Manual, Activity implementation guideline, Procurement Guideline, Financial and Accounts Management Guideline, Monitoring Manual, Baseline questionnaire, Beneficiary profile format Community Profile Format, Reporting format for RBM report, Manual for GPS data collection, Quarterly reporting template for updating GIS data etc.

**Intermediate results indicator four:** *Number of inter-community visits*

Twenty-one visits were arranged against a target of 20. The activities visited are- Climate change-adaptive homestead, Fodder cultivation, Vermi-compost, Pigeon rearing, PSF management, Plinth raise, Sanitary latrine, Tube well management, Savings collection and management in CCAGs, Improved Cooking Stove, cropping pattern and Rain Water Harvesting System (RWHS).

*The PMU developed a total of 15 guidelines, manuals, reports and tools during the project period*

**Intermediate results indicator five:** Sub-project has conducted a baseline study, vulnerability and risk assessment and investment plan.

Achievement 87% against a target of 80%. 11 sub-projects conducted a RBM study during this period. Every PIP conducted vulnerability and risk assessment and investment plan at the beginning of the project.

**3.4.3.4 Intermediate result :** A Project Management Unit (PMU) established to administer project funds and to monitor implementation performance of activities.

**Intermediate result indicator one:** PMU has the required staff, equipment, office space & manuals

The PKSf achieved 80% against against the target of 80%. The PKSf established well functional Project Management Unit (PMU) before launching the project. 12 experienced staffs having specific expertise were recruited who were well equipped with desks, computers, telephone and other necessary logistics. The PKSf did not face much problems related to staff drop-out.

**Intermediate result indicator two:** PKSf produces regular Activity report (quarterly), Progress report (bi-annually, annually) and Impact evaluation reports (MTR and Project Completion); Third Party outcome monitoring (Annual)

The PKSf prepared Activity Report(1), workshop report (1) Env. and social impact report (2), Booklet (41), lessons learnt (1), communique (5)





# Implementation Process

## 4

### 4.1 Rigorous screening process

The screening process included inception workshops of CCCP, call for Project Concept Note (PCN), screening PCN, detailed sub-project proposal submission and review, presentation of sub-project proposal to external technical review committee for clarification, selection of PIPs and communicate rejection of the proposals.

An inception workshop was organised at the beginning of CCCP in participation with local and National level NGOs, government representatives, civil society representatives and medias. More than 300 participants were attend the inception workshop. The objective of the workshop was to inform all levels of stakeholders about the project, its goal and objectives, conceptual frameworks etc. so that the

NGOs can properly submit their concept note and proposal in line with CCCP goal and objectives. Then Project Concept Note (PCN) was asked from the PIP through advertising four national dailies in both Bangla and English. The advertise of the call for PCN was also published in the website of PKSf. A database was developed after receiving the PCNs. The PKSf developed a set of criteria for screening the concept notes. These criteria were agreed by the World Bank. The criteria are as follows:

- Location of the project activities which must be in one of the following three vulnerable zones: salinity affected coastal areas; flood affected char-lands and river basins; and drought affected or rainfall scarce areas. A list of 'Upazilas' covered by these three vulnerable zones (in Annex 7) will be available on the CCCP website;
- The NGO must be registered with an appropriate GOB authority allowing it to undertake the kinds of activities they are proposing and the registration should be current;
- NGOs requesting funds must prove that they have had an established presence of at least three years in the region where the project is proposed to be implemented and the proposed project should preferably build upon the foundation and social capital of other projects that the organization is already implementing;
- The applicant NGO must provide evidence that it has been active during the last five years in pro poor activities as proposed in the grant request. Annual Reports and Audit Reports for the last three years have to be submitted;
- The applicant NGO must have an annual turn-over of at least US\$ 150,000 (approximately ten million taka);
- The NGO must provide detailed information on its organizational structure, staffing and corresponding responsibilities of the staff.



Internal Technical Review Committee meeting

• **Lesson 62:**

Wider participation in screening process ensures transparency and accountability for quality implementation of adaptation projects.

• **Lesson 63:**

Multi-layer evaluation system (concept note evaluation, field visit, proposal evaluation, presentation etc.) ensures quality of concepts and proposals.

• **Lesson 64:**

Presentation on proposals by NGOs has proven as an efficient means of clarification of concepts and negotiation

• **Lesson 65:**

Working experience of NGOs in the respective proposed working areas is very important. Field visit is necessary for verification of NGOs' presence in their proposed areas.

• **Lesson 66:**

Most of the concept notes failed to make connection between proposed activities and climate change situation in the proposed areas due to their lack of understanding on climate change.

• **Lesson 67:**

This may be the first project in Bangladesh which communicated with disqualified NGOs reason for their disqualification. There was no dispute regarding rejection. If the screening process is transparent and participatory, grievances can be easily managed.

• **Lesson 68:**

Quantitative threshold is a more effective criteria to accept or reject applications than qualitative benchmark.

The PMU developed a concept note format in line with the above criteria. The format also included description of climate-change related problems, links between climate change and proposed activities and themes Climate Change Strategy and Action Plan (BCCSAP). This helped the NGOs in selecting relevant activities for different vulnerable zones. The PMU received a total of 496 concept notes. Pass marks for next phase i.e. proposal phase, was 60% of the total marks. Based on the above mentioned criteria, the PMU selected about 158 concept notes which complied all the above criteria. These 158 concept notes were ranked by marking for next phase. The PKSf selected these NGOs irrespective of their partner organisations and non- partner organisation. The PMU issued rejection letters to disqualified NGOs citing reasons for rejection. There was no complaint or challenge from the rejected NGOs. This means the screening process was highly transparent.

After selection of the PCNs, the PMU organised a workshop with primarily selected NGOs to share the proposal format so that they could properly address all elements toward achieving the PDO-level objective. The PKSf called for proposals from the selected NGOs. The PMU developed a Detailed Project Proposal (DPP) and guideline to prepare the DPP. The PMU provided them with necessary clarifications on the DPP format. An internal evaluation team of the PMU ranked the DPPs based on the following criteria:

*The PMU issued rejection letters to disqualified NGOs citing reasons for rejection. There was no complaint or challenge from the rejected NGOs. This means the screening process was highly transparent*

S. N.	Criteria
01	Justify how the project fits one of the pillars of BCCAP.
02	How will the sub-project enable communities to adapt to the potential climate vulnerability in the target area? How will it involve the community and enhance the capacity and knowledge of the community to adapt? Extent of community contribution to the project.
03	Is the sub-project scaling up an ongoing successful adaptation intervention, or enhancing an ongoing intervention to include adaptation? Tools such as Vulnerability and Capacity Analysis (VCA) may be utilized.
04	Detailed sub-project cost (overhead cost should not exceed 10%), an implementation plan; how sub-grant funds will be used by quarter and over what period of time.
05	Description of the organizational arrangements and staffing, and their relevance to the proposed activities.
06	Arrangements for handling financial management and procurement-related issues.
07	Arrangements for handling environmental and social issues including grievance resolution.
08	Arrangements for monitoring and reporting of sub-project activities.
09	Linkage of the sub-project with local government systems and programs.
10	How will the sub-project activities be sustained?

An internal and an external technical review committee was formed with technically sound senior staffs of the PKSf. Based on the above mentioned criteria, NGOs were ranked by merits. A total of 41 NGOs were selected in three phases. In the first phase, 42 NGOs were physically visited by the PMU and the PKSf staffs. For avoiding bias, core operation officers of the PKSf visited the non-POs and the PMU officers visited the POs to verify their existence and other information provided in the DPP. 10 NGOs were rejected at this stage for not meeting the required criteria. Rest of the 32 NGOs were asked to present their proposal for technical clarification and negotiation of budget. Budget negotiation was important because almost all the NGOs provided the highest limit of the budget i.e. BDT 8 crore. As per the PAD, at least 40 sub-grants should be awarded. Without negotiation, only 12 proposed sub-grants covers all the budgets to be implemented at the community level. So, to achieve the target, the PKSf negotiated with the selected NGOs. After negotiation and clarification, 11 NGOs were selected as potential Project Implementation Partners (PIPs) in the first phase. These NGOs were asked to present their updated proposal to the high-level external technical review committee. All the 11 NGOs passed the screening by the external technical review committee. Then the DPPs were sent to The World Bank for attaining NO Objection. The World Bank with some general comments provided NO Objection to all the 11 NGOs. The PKSf governing body then approved the proposals. Other two phases followed the same path.

*NGOs were physically visited by the PMU and the PKSf staffs. For avoiding bias, core operation officers of the PKSf visited the non-POs and the PMU officers visited the POs*

### Concept Note and Proposal Review Process



PMU discussion



Internal Technical Committee discussion



External Technical Review Committee meeting

## 4.2 Diverse activities

Implementation of a climate change project with government fund by NGOs is very new in Bangladesh. At the beginning of the project, there was no example to follow quality implementation of the proposed interventions. The proposed interventions were so diverse and critical in the context of climate change vulnerabilities. For example, plinth raising was proposed in the flood-prone and salinity-prone areas. But ecosystem, socio-cultural character, economy etc are different. Consequently, vulnerability context is also different. So, the CCCP had to face challenges to make harmonization of a single activity for different risk zones. On the other hand, the CCCP had considered that different activities for different areas as impacts of and vulnerabilities to climate change are context-specific. At the concept phase, the CCCP received more than 200 activities from 498 concept notes. For better management, these activities were clustered into four components i.e. Diversification of livelihoods, protected households and community infrastructure, Health and water & sanitation, and community mechanism. The following diagram shows the components of the CCCP:

- **Lesson 69:**

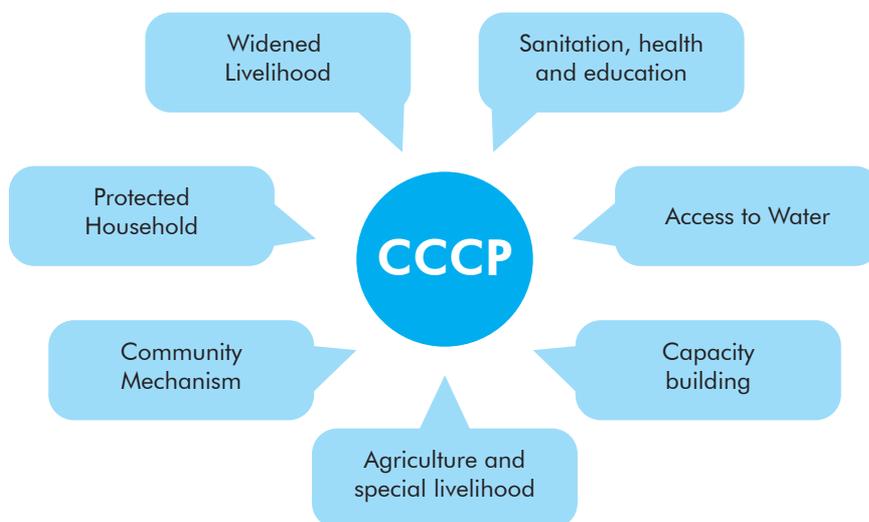
For effective monitoring, the verifiable indicators of the activities were standardized at the beginning of the project.

- **Lesson 70:**

Visible interventions are more effective in building resilience to climate change than invisible activities like awareness building etc. The awareness activities should be built-in among the visible activities.

- **Lesson 71:**

CCCP standardized the budget allocation for physical interventions, awareness activities and project management cost. 10% of total budget was allocated for awareness activities and 25% for management cost. This approach showed efficient use of resources.



**Fig 1:**  
Components of CCCP

### 4.3 Monitoring and evaluation

The PKSF established a strong monitoring system which included both onsite and offsite monitoring, web-based monitoring, monthly and quarterly reporting etc. Day-to-Day communication over phone and email were also part of the monitoring process. The PKSF introduced Result Based Monitoring (RBM) systems which helped the management to take decisions for improving output, outcome and impact of programs and projects. The CCCP adopted the PKSF's monitoring and evaluation systems to ensure quality implementation of project activities. The CCCP developed a "Monitoring and Evaluation Manual" which described monitoring system and tools elaborately. The CCCP developed result framework at the PMU level and three more for three risk zones. In addition, the PIPs developed their own results frameworks. The PMU conducted monitoring based on these result frameworks. Necessary tools including questionnaire, checklists etc were developed to carry out RBM at the PIP level. To support the RBM, the CCCP developed web-based monitoring tool which is known as Activity To Output Monitoring (ATOM). The PIPs monthly uploaded progress data to the ATOM. The output progress report was accessible to all people. The PMU produced quarterly progress report to ensure timely and quality implementation of activities at the community level. In addition, the PMU conducted a baseline study and periodically carried out RBM. Acknowledging budget constraint, the PMU produced two RBM reports which described the achievement of indicators and suggested management decisions. Besides, the PMU staffs physically visited each PIP at least once in a quarter to monitor implemented activities including accounts and finance. The PMU also communicated with PIP staffs over phone and email as part of monitoring.

● **Lesson 72:**  
Result Based Monitoring (RBM) system has been emerged as an important tool for outcome and impact monitoring of projects. It requires additional financial and human resources.

### 4.4 GIS-based monitoring system

The CCCP adopted GIS-based data management and monitoring system. GPS coordinates of each activity and its households were



incorporated with community investment plan. Maps for each unit of activities were produced to understand the spatial distribution of all activities under the CCCP. A KML file of the database was produced to link it with Google Earth. Now each activity under the CCCP is linked with Google Earth and anybody can see and count from anywhere of the world. The KML file is uploaded on [www.pksf-cccp.bd.org](http://www.pksf-cccp.bd.org). The GIS-based monitoring has proven as one of the most effective monitoring systems of adaptation projects. For example, according to the Department of Public Health and Engineering, distance of a tube well and a latrine should be at least 30 ft. It is possible to measure this distance using Google Earth. So, the PMU can easily monitor whether these types of infrastructures are rightly placed or not. The system also ensured the quantity of interventions. So, there is no scope of misuse of resources.

## 4.5 Tools and guidelines

### 4.5.1 Activity Implementation Guideline

An Activity Implementation Guideline was prepared to ensure quality implementation of activities. The guideline included design of each activity, must dos, considerations, budget, community contributions and future sustainability etc. The activity implementation guideline was the main guiding document for sub-project staffs. It helped them understand process and measurement of each activity separately. On the other hand, the guideline helped the PMU ensure unique and quality implementation of each activity with transparency and accountability. The guideline was considered as a living document because it needed periodically modification based on experience and field situation. It is important to note that the guideline was prepared in Bengali so that field-level staffs easily understand how to execute an activity.

### 4.5.2 Procurement

As per Grant Agreement of the CCCP, procurement at the PMU and the PIP levels has to follow the Public Procurement Rules, 2008; the Public Procurement Acts, 2006 and the World Bank Guideline. The CCCP faced enormous challenges to implement public procurement rules and acts at PIP level, because none of the NGOs and their staffs were familiar with public procurement system. To make them capable, a simplified procurement guideline was prepared by a Procurement Specialist in collaboration with the World Bank. The sub-project staffs were provided training on the

- **Lesson 73:**

GIS-based monitoring system ensures both quantity and quality of interventions.

- **Lesson 74:**

GIS helps make decisions on spatial distribution of certain interventions, quantity, overlapping etc.

- **Lesson 75:**

GIS helps visualization of structural interventions.

- **Lesson 76:**

Activity implementation guideline is considered as a living document. It requires flexibility which is a big strength of the project.

- **Lesson 77:**

Available knowledge, practice and availability of vendor should be considered to customize standard procurement policy.

- **Lesson 78:**

Modified and simple procurement guideline is effective for implementing procurement methods at the grassroots level.

procurement policy. In addition, the PMU staffs closely supervised individual staffs of sub-project as and when necessary. Besides, the local-level contractors and suppliers too were unfamiliar with the public procurement acts and rules. Many of them did not have valid trade licences, VAT or Tax registration, TIN number etc. Considering all these constraints, the CCCP prepared the procurement guideline as simple as possible in compliance with the PPR, 2008 and the PPA, 2006. Now, many of the sub-projects staffs are capable to implement the PPR, 2008 and the PPA, 2006.

### 4.5.3 Environmental Compliances

Environmental impacts of a community adaptation project was negligible. Whatever the impact level is, each sub-project had to carry out environmental impact assessment and management plan. Again, it was a difficult task for the CCCP to introduce environmental compliances. Initially, the PMU developed environmental management framework (EMF) in compliance with The World Bank's environmental guideline and environmental acts and rules of the government. The sub-project staffs were provided training on the EMF, environmental monitoring and reporting etc. The sub-project staffs submitted quarterly environmental monitoring report. The CCCP noticed from these reports that environmental impacts of community-level adaptation activities are not a big concern. Very few impacts were found in different areas. For example, urine of goat, drainage of tube well water, top soil etc. It is to be noted that community people did not perceive these impacts because these happen in their daily life.

### 4.5.4 Social Compliance

Social compliance mainly focused on protection of rights and culture of tribal people. The sub-project has carried out a social screening at the proposal stage. The PMU has prepared Social Management Framework (SMF) to ensure that the selected NGOs are properly addressing social compliance. The PMU found that all sub-projects fully complied social issues as per SMF.

### 4.5.5 Complaint Handling Mechanism (CHM)

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

#### ● Lesson 79:

NGOs require training and intensive supervision to implement the PPR and the PPA.

#### ● Lesson 80:

More flexibility in procurement methods is required to complete activities of small amount of packages in a short duration project.

#### ● Lesson 81:

Environmental impacts of community-level adaptation interventions in the remote areas of Bangladesh are minimum.

#### ● Lesson 82:

Most of the interventions of the CCCP like pond re-excavation, tree plantation, rain water harvesting, vermi-compost have positive impacts on environment.

#### ● Lesson 83:

Community-based adaptation interventions are localized and demand-based and selected through community consultation. So, all sub-projects fully complied to social issues.

## 4.6 Knowledge management

### 4.6.1 Publications

Knowledge management is an integral part of the project. The CCCP had certain activities and designated staff pertaining to Communication and Knowledge Management (KM). Knowledge Management (KM) is defined as connecting different sectors and ideas to make sure that the right people, processes, and technology are in place to support knowledge interchange. KM helps grasp existing knowledge which saves our valuable time and it also supports organization to preserve its institutional memory due to an employee transition. KM in the CCCP helped to make sure PIPs, project participants and other stakeholders have access to the right information and knowledge. Different types of guidelines, brochure, newsletter, half-yearly bulletins named 'Communique' booklets were produced from the KM section of the project. The publications under KM are as follows:

● **Lesson 84:**  
Local-level NGOs require capacity building on producing standard reports, documentation, communication and knowledge materials.

#### List of Publications

- Operational Manual (OM)
- Environmental Management Framework (EMF) (English & Bangla)
- Social Management Framework (SMF) (English & Bangla)
- Procurement Guideline for PIPs
- Finance and Accounts Guideline.
- Complaint Handling Mechanism
- Grievance Redress Mechanism
- Monitoring and Evaluation Manual
- Activity Implementation Guideline
- Knowledge Management & Capacity Building Strategy
- Five half-yearly communiqués
- Brochures of CCCP in Bengali and English
- Brochures of 41 PIPs in Bengali and English
- Booklets on 41 sub-project



### 4.6.2 Library corner on climate change

Library is a great source of education, learning and knowledge as well. With the help of CCCP, a Climate Change Section was inaugurated by the Chairman of PKSf on 26 June, 2014. About 3000 books and reports are in the PKSf-CCCP Library Corner. The books and reports are from the area of climate change, environment, flood, salinity, drought, agriculture, etc. PKSf library is open for all.

# The unique feature of the CCCP website is ATOM (Activity To Output Monitoring) by which monthly, quarterly and cumulative progress of individual PIP is remotely monitored from PMU

## 4.6.3 CCCP website

The project has a well-designed, professional looking website. It means the CCCP has developed a virtual space for the PIPs, donor and other stakeholder which enables people to connect with each other, document the processes and it is kind of information hub of project as well. The address of website is [www.pksf-cccp-bd.org](http://www.pksf-cccp-bd.org). All guidelines, manuals, brochures, project brief, current events and news and training materials/presentations of the project are available in CCCP website. The unique feature of the website is ATOM (Activity To Output Monitoring) by which monthly, quarterly and cumulative progress of individual PIP is remotely monitored from PMU.

## 4.6.4 Capacity building of the PIPs

The project has a well-functioning Project Management Unit (PMU) with skilled staff that were efficiently and effectively managing the project. Project Management Unit (PMU) of CCCP is composed of trained and expert program officers on particular arena e.g. finance, procurement, monitoring & evaluation, environment, engineering to give clear direction and guidance to PIPs for successful implementation of project intervention in field. Project staffs of the PIPs received training from dedicated and assigned program officers of the PMU.

A very little amount of money was spent for the capacity development of project participants because of its unique strategy. No cash support was provided from the project to project participant.

### ● Lesson 85:

Website is very useful for disseminating knowledge and information

### ● Lesson 86:

Website enhances transparency and accountability. It ensures wider participation

### ● Lesson 87:

Exchange visit is more effective than class room training.

### ● Lesson 88:

There is huge scope for building institutional and individual capacity on climate change.

### ● Lesson 89:

Transfer of scientific knowledge on climate change to the community is a challenge. Easy interpretation of the scientific facts and terms suitable for the local context is required.

#### 4.6.5 Fund management

The CCCP fund flowed through a segregated Designated Account (DA) in the form of Convertible Taka Special Account (CONTASA) opened by the PKSF and acceptable to the World Bank. The disbursement was report-based; i.e., advances to the DA were made on submission of quarterly Interim Unaudited Financial Reports (IUFs), including a forecast of projected expenditures for the next two calendar quarters. Further advances as required would be made to the DA on the basis updated expenditure forecasts for the subsequent two quarters. The amounts spent from the DA on eligible expenditures was documented as project expenditures on the basis of claims for documentation in the IUFs, and the advances to the DA was adjusted accordingly.

Fund management of the PIPs was carried out as per the financial guideline provided by the CCCP PMU. The CCCP project introduced both the advance and the reimbursement systems for fund disbursement. Initially, 35% of the first year's total budget of CCCP contribution was provided at the time of agreement. Advance fund can only be used for the activities of the project approved by the PKSF. The initial advance paid by the PKSF in favor of the PIP will be accounted for as an advance in the PIP's Books of Accounts and financial reports until actual expenditures are reported by the PIP and further verified and accepted by the PKSF. After that the remaining amount was disbursed quarterly on reimbursement basis subject to satisfactory performance of the PIP in implementing the sub-project. The advance was adjusted in the second last quarter of the sub-project. Payment from PKSF to each PIPs was made on the terms and conditions specified in the sub-project agreements. Funds were flown to the PIPs on completion of progress milestones, after PKSF receives a financial report with a copy of the PIPs bank statement, evidence of completion of milestones and expenditures reports.

The CCCP implemented a contributory fund with contribution from the BCCRF, community and PIPs. Communities contributed 5%-20% of actual expenditure of each activity except IGA interventions and raising plinths. Both for IGA and plinths, they contributed materials and labour. The PIPs contributed in kind for office rent, furnitures, head office personnel cost etc.

There was flexibility to revise budgets of PIPs. Based on demands at the community level, PIPs proposed change of activities. The PMU reviewed there proposals and consulted with the World Bank. Once a common understanding was built among WB, PMU and PIPs, then budgets were revised. But PIP did not have any right to revise their budget without any concern from the PMU. This flexibility helped fully implement of the PIP budgets.

- **Lesson 90:**

Community-based adaptation interventions require flexibility (may be 10%) of budget because the costs vary by areas/locations.

- **Lesson 91:**

Community people are willing to contribute money if there is a high demand of the intervention like water.

- **Lesson 92:**

Local-level NGOs should contribute in cash for building ownership and enhancing sustainability of the project interventions.



# Conclusion

## 5.1 Challenges

The project had two major project participant groups: the ultra-poor and the poor people who are vulnerable to climate change in flood, drought and salinity prone areas. Project participants were supported both as individuals and communities. The project established effective mechanism for channelling adaptation fund through NGOs.

The following issues need to be addressed for efficient operation of the model:

# challenges

- Local NGOs lack institutional capacity in implementation, monitoring and documentation of lessons learned and good practice of climate change related projects or programmes.
- There is a need to increase capacity of the CCAG through facilitating saving accumulation and group management process.
- Linkage building initiatives between community groups and the public and private sector service providers could be reinforced.
- A two-to-three years' implementation period is not realistic for a climate change project because of its complex nature.
- Community mechanism should be more operationalized and be continued to address the adverse effects of climate change in order to attain the sustainability of the approach pursued by this project.
- Mode of payment for the PIPs should be made easy by simplifying the existing process of legal deed preparation for each installment.
- A large amount of infrastructural support have been provided from the project and now the time has come to make sure its durability by developing operation and maintenance (O&M) manual for climate change adaptation infrastructures, and this manual should be put in place and monitored over time.



## 5.2 Recommendations

The project identified the following recommendations are put forwarded for action related to the three project components:

# recommendations

- i. The design of community based adaptation project should incorporated mechanisms of sustainability of the groups by providing financial services (credit and savings).
- ii. In “char” areas, proper documentation should be prepared to establish land rights in order to avoid social conflicts.
- iii. In flood climate risk areas, especially in areas where cluster plinths are raised, additional space should be allocated for use as “Flood Protection Centres”. This is a community demand.
- iv. Protection measures and maintenance provisions should be included in constructions of side slopes to minimizes soil erosion.
- v. Operation and maintenance guidelines for sanitary latrines should be prepared and strictly monitored.
- vi. It is recommended that modern goat husbandry be promoted to generate income from a demonstrated sustainable climate change adaptation technology.
- vii. More research and innovation activities with potential for climate change adaptation can be initiated and funded for generating and promoting climate change adaptation technologies. But there is a risk of unsuccessful demonstration of introducing new research.
- viii. Many activities are ready for up-scaling both horizontally and vertically and it is recommended that this be done in the interest of effective resource use and project sustainability.



Brainstorming workshop on “Pathway to Build Climate Resilient Bangladesh”,  
Venue: Royal Tulip Sea Pearl Resort, Inani, Cox’s Bazar; Date: 30-31 March, 2016

## Annex-I: Project Data Sheet

		<b>Salinity</b>	<b>Flood</b>	<b>Drought</b>	<b>Total</b>
Districts		5	8	4	15
Number of PIPs		15	17	9	41
Number of Individual HHs		15572 (35.97%)	16462 (38.04%)	11255 (25.99%)	43289
Number of CCAGs		616	629	479	1724
Number of Community HHs		47377	25877	21161	94415
Budget (in lac Taka)		CCCP: 2872.55 (34.57%) Community: 202.91 PIP: 89.48 Total: 3164.95	CCCP: 3461.22 (41.44%) Community: 268.78 PIP: 121.60 Total: 3851.61	CCCP: 1974.16 (23.76%) Community: 142.74 PIP: 54.58 Total: 2171.49	CCCP: 8307.94 Community: 614.44 PIP: 265.67 Total: 9188.06

## Annex-II: Result Matrix

Name of indicators	Salinity	Flood	Drought	Total
<b>ACTIVITY LEVEL</b>				
Protected Households	<ul style="list-style-type: none"> <li>• Homestead plinth raising</li> <li>• HH connecting road repairing</li> <li>• Homestead gardening (medicinal plants, dyke cropping, vegetable)</li> </ul>	<ul style="list-style-type: none"> <li>• Homestead plinth raising</li> <li>• Homestead gardening (medicinal plants, vegetable)</li> <li>• Tree plantation</li> <li>• Repairing flood shelters and community link roads</li> </ul>	<ul style="list-style-type: none"> <li>• Homestead gardening (medicinal plants, dyke cropping, vegetables)</li> </ul>	
Livelihood	<ul style="list-style-type: none"> <li>• Technical support &amp; training for goats and sheep rearing in slatted houses</li> <li>• Duck and poultry rearing in semi scavenging method</li> <li>• Crab fattening (Pen/bucket culture)</li> <li>• Technical and material support for vermi-compost</li> </ul>	<ul style="list-style-type: none"> <li>• Technical support and training for rearing goats in slatted houses</li> <li>• Supports for duck and poultry rearing in semi scavenging method</li> <li>• Technical and material support for vermi-compost</li> </ul>	<ul style="list-style-type: none"> <li>• Technical support and training for rearing goats and sheep in slatted houses</li> <li>• Duck and poultry rearing in semi scavenging method</li> <li>• Technical and material support for vermi-compost</li> </ul>	
Water	<ul style="list-style-type: none"> <li>• Installation of deep tube-wells &amp; platforms for tube wells for safe drinking water</li> <li>• Pond re-excavation with PSF</li> <li>• Rainwater harvesting system at household and community levels</li> <li>• Installation of desalination plants (R/O System)</li> </ul>	<ul style="list-style-type: none"> <li>• Installation of deep tube-wells and platforms for tube wells for safe drinking water</li> <li>• Installation of shallow tube-wells and platforms for those for safe drinking water</li> </ul>	<ul style="list-style-type: none"> <li>• Installation of shallow/ semi-deep tube wells with platforms</li> <li>• Re-excavation of ponds</li> <li>• Installation of deep tube wells for irrigation</li> </ul>	
Health education and sanitation	<ul style="list-style-type: none"> <li>• Installation of second generation sanitary latrines to promote safe hygiene practices</li> <li>• Vaccination camps for communities</li> <li>• Installation of environment-friendly cooking stoves</li> </ul>	<ul style="list-style-type: none"> <li>• Installation of second generation sanitary latrines to promote safe hygiene practices</li> <li>• Health camps for communities</li> <li>• Vaccination camps for communities</li> <li>• Installation of environment-friendly cooking stoves</li> <li>• Installation of solar home systems</li> </ul>	<ul style="list-style-type: none"> <li>• Installation of second generation sanitary latrines to promote safe hygiene practices</li> <li>• Vaccination camps for communities</li> <li>• Installation of environment-friendly cooking stoves</li> </ul>	
Capacity building	<ul style="list-style-type: none"> <li>• Formal training</li> <li>• Group discussions</li> <li>• Exposure visits</li> </ul>	<ul style="list-style-type: none"> <li>• Formal training</li> <li>• Group discussions</li> <li>• Exposure visits</li> </ul>	<ul style="list-style-type: none"> <li>• Formal training</li> <li>• Group discussions</li> <li>• Exposure visits</li> </ul>	
Agricultural and special Interventions	<ul style="list-style-type: none"> <li>• Input supply to promote cultivation of salinity-tolerant vegetables</li> </ul>	<ul style="list-style-type: none"> <li>• Promotion of cultivation of flood-tolerant and short duration rice varieties</li> </ul>	<ul style="list-style-type: none"> <li>• Promotion of drought-resilient fodder cultivation</li> </ul>	
Community Mechanism	<ul style="list-style-type: none"> <li>• Group formation (Individual: CCAGs; and Community: activity management committees)</li> <li>• Community adaptation and investment planning</li> <li>• Group meeting</li> <li>• Linking with MFIs, local service providers and local govt. institutions (technical, savings and credit)</li> </ul>	<ul style="list-style-type: none"> <li>• Group formation (Individual: CCAGs; and Community: activity management committees)</li> <li>• Community adaptation and investment planning</li> <li>• Group meeting</li> <li>• Linking with MFIs, local service providers and local govt. institutions (technical, savings and credit)</li> </ul>	<ul style="list-style-type: none"> <li>• Group formation (Individual: CCAGs; and Community: activity management committees)</li> <li>• Community adaptation and investment planning</li> <li>• Group meeting</li> <li>• Linking with MFIs, local service providers and local govt. institutions (technical, savings and credit)</li> </ul>	

Name of indicators	Salinity	Flood	Drought	Total
<b>OUTPUT</b>				
Protected House	<ul style="list-style-type: none"> <li>• Plinths raised (HH)- 5,759</li> <li>• Connecting road repaired (Km.) - 8.2</li> <li>• Homestead gardens (HH) - 5,759</li> <li>• Community grounds raised - 36</li> </ul>	<ul style="list-style-type: none"> <li>• Plinths raised (HH) - 7037</li> <li>• Homestead gardens (HH) - 7037</li> <li>• Flood shelters repaired - 26</li> <li>• Community link roads repaired (km) - 6.0</li> </ul>		<ul style="list-style-type: none"> <li>• Total Coverage: 12796 (HH)</li> </ul>
Livelihood	<ul style="list-style-type: none"> <li>• Slatted houses distributed and technical support provided for goat and sheep rearing (HH) - 3,475</li> <li>• Sheds distributed for rearing duck and poultry in semi scavenging method (HH) – 5,815</li> <li>• Crab fattening (pen/bucket culture) (HH) - 643</li> <li>• Vermi-compost tools and techniques provided (HH) -720</li> </ul>	<ul style="list-style-type: none"> <li>• Slatted houses distributed and technical supports provided for goat and sheep rearing (HH) – 6,029</li> <li>• Sheds distributed for rearing duck and poultry in semi scavenging method (HH) – 1,187</li> <li>• Vermi-compost tools and techniques provided (HH) -650</li> </ul>	<ul style="list-style-type: none"> <li>• Slatted houses distributed and technical supports provided for goat and sheep rearing (HH) – 5,811</li> <li>• Sheds distributed for rearing duck and poultry in semi scavenging method (HH) – 1,930</li> <li>• Vermi-compost tools and techniques provided (HH) -277</li> </ul>	<ul style="list-style-type: none"> <li>• Total Coverage: 24890 (HH)</li> </ul>
Water	<ul style="list-style-type: none"> <li>• Deep tube wells with platforms installed (units) - 403</li> <li>• Ponds re-excavated and PSFs installed - 99</li> <li>• Rain water harvesting system (RHWS) installed at household and community levels – 1,953</li> <li>• Desalination plants (R/O System) installed - 30</li> </ul>	<ul style="list-style-type: none"> <li>• Deep tube wells with platforms installed (units) -246</li> <li>• Shallow tube wells with platforms installed (units) – 1,980</li> <li>• Tube well platforms installed - 887</li> </ul>	<ul style="list-style-type: none"> <li>• Shallow tube-wells with platforms installed (units) - 1437</li> <li>• Platforms installed - 210</li> <li>• Ponds re- excavated - 45</li> <li>• Deep tube well installed for irrigation (units) -2</li> </ul>	<ul style="list-style-type: none"> <li>• Total Installed Tubewell: 4066 (N)</li> <li>• Total Only Platform: 1097 (N)</li> <li>• Total Pond:144 (N)</li> <li>• Desalination Plant: 30 (N)</li> </ul>
Health education and Sanitation	<ul style="list-style-type: none"> <li>• Second generation sanitary latrines installed – 2,260</li> <li>• Community latrines installed - 2</li> <li>• Vaccination camps arranged – 1,111</li> <li>• Environment-friendly cooking stoves installed (HH) – 1,316</li> </ul>	<ul style="list-style-type: none"> <li>• Second generation sanitary latrines installed - 2015</li> <li>• Community latrines installed - 29</li> <li>• Health camps arranged for communities - 481</li> <li>• Vaccination camps completed - 773</li> <li>• Environment-friendly cooking stoves installed (HH) - 3786</li> <li>• Solar home systems installed - 1,225</li> </ul>	<ul style="list-style-type: none"> <li>• Second generation sanitary latrines installed – 2,340</li> <li>• Vaccination camps arranged - 752</li> <li>• Environment-friendly cooking stoves installed (HH) - 7,982</li> </ul>	<ul style="list-style-type: none"> <li>• Total Latrine: 6615 (N)</li> <li>• Total Community Latrine: 31 (N)</li> <li>• Vaccination Camp:2636 (N)</li> <li>• Total ICS: 13084 (N)</li> </ul>
Capacity building	<ul style="list-style-type: none"> <li>• Training completed - 432 batches which covered different IGAs and climate change issue. A total of 11415 project participants got different trainings.</li> <li>• Group meeting covered - 24 topics. More than 14500 number of group meeting was held in last year.</li> <li>• Exposure visits completed - 9 where 227 staff and project participant participated</li> </ul>	<ul style="list-style-type: none"> <li>• Training completed - 343 batches which covered different IGAs and climate change issue. A total of 8539 project participants got different trainings.</li> <li>• Group meeting covered - 24 topics. A total of 15000 number of group meeting was held in last year.</li> <li>• Exposure visits completed -5 where 141 staff and project participant participated</li> </ul>	<ul style="list-style-type: none"> <li>• Training completed - 402 batches which covered different IGAs and climate change issue. A total of 10024 project participants got different trainings.</li> <li>• Group meeting covered - 24 topics. A total of 11000 number of group meeting was held in last year.</li> <li>• Exposure visits completed-8 where 226 staff and project participant participated</li> </ul>	<ul style="list-style-type: none"> <li>• Total training batch:1177 (N)</li> <li>• Group meeting: 40500 in the last year</li> <li>• Exposure visits: 22 (N)</li> </ul>

Name of indicators	Salinity	Flood	Drought	Total
Agricultural and special interventions	<ul style="list-style-type: none"> <li>• Input support to promote salinity-tolerant vegetables (Mugbean, Sunflower) (number of farmers) - 250</li> <li>• Koyel Bird rearing (HH) - 50</li> <li>• Plant Nursery - 1</li> </ul>	<ul style="list-style-type: none"> <li>• Promotion of flood-tolerant and short duration rice varieties (BRRI-52) (number of farmers) - 250</li> <li>• Cage fishing (HH) - 50</li> </ul>	<ul style="list-style-type: none"> <li>• Promotion of drought-resilient fodder cultivation (number of farmers) - 50</li> <li>• Promotion of drought-tolerant and short duration crop varieties (BRRI-56,58,62, BINA-7; BARRI-Musterd-15, BARRI Wheat 24, 26; BARRI Mug6) (number of farmers) - 690</li> <li>• Sheds installed for cow rearing (HH) - 200</li> </ul>	<ul style="list-style-type: none"> <li>• A total number of crops: 12 type</li> </ul>
Community Mechanism	<ul style="list-style-type: none"> <li>• Groups formed (Individual: CCAGs; and Community: activity management committees) – CCAGs 616, Activity Mgt Committees 649</li> <li>• Community adaptation and investment planning completed (HH) - 616</li> <li>• Group meetings held – Bi-monthly</li> <li>• Groups linked with MFIs, local service providers and local govt. institutions (technical, savings and credit)</li> </ul>	<ul style="list-style-type: none"> <li>• Groups formed (Individual: CCAGs; and Community: activity management committees) – CCAGs 629, Activity Mgt Committees 1,413</li> <li>• Community adaptation and investment planning completed (HH) - 629</li> <li>• Group meetings held - Bi-monthly</li> <li>• Groups linked with MFIs, local service providers and local govt. institutions (technical, savings and credit)</li> </ul>	<ul style="list-style-type: none"> <li>• Groups formed (Individual: CCAGs; and Community: activity management committees) – CCAGs 479, Activity Mgt Committees 1,329</li> <li>• Community adaptation and investment planning completed (HH) - 479</li> <li>• Group meetings held - Bi-monthly</li> <li>• Groups linked with MFIs, local service providers and local govt. institutions (technical, savings and credit)</li> </ul>	<ul style="list-style-type: none"> <li>• CCAG: 1724</li> <li>• Activity Mgt Group: 3391</li> </ul>

## OUTCOME

Protected House	<ul style="list-style-type: none"> <li>• 5,759 families are now protected from storm surges and can produce vegetables round the year</li> </ul>	<ul style="list-style-type: none"> <li>• 7,037 families are now protected from floods and can produce vegetables round the year</li> <li>• 26 community grounds will provide shelter to 5,000 people during floods</li> </ul>		Total HH regular coverage: 12796 Community ground may used in disaster/flood: 1000 (HH)
Livelihood	<ul style="list-style-type: none"> <li>• 3,475 families are now capable (space-wise and technically) of rearing more than 35,000 goats and sheep in slatted houses</li> <li>• 5,815 families are now capable (space-wise and technically) of rearing more than 1.0 lac birds in poultry sheds</li> <li>• 643 families are now capable (technically) of fattening crabs</li> <li>• 720 families are now capable of producing vegetables and crops with organic fertilizers</li> </ul>	<ul style="list-style-type: none"> <li>• 6,029 families are now capable (space-wise and technically) of rearing more than 70,000 goats and sheep in slatted houses</li> <li>• 1,187 families are now capable (space-wise and technically) of rearing more than 20,000 birds in poultry sheds</li> <li>• 650 families are now capable of producing vegetables and crops with organic fertilizers</li> </ul>	<ul style="list-style-type: none"> <li>• 5,811 families are now capable (space-wise and technically) of rearing more than 60,000 goats and sheep in slatted houses</li> <li>• 1,930 families are now capable (space-wise and technically) of rearing more than 40,000 birds in poultry sheds</li> <li>• 277 families are now capable of producing vegetables and crops with organic fertilizers</li> </ul>	
Water	<ul style="list-style-type: none"> <li>• At least 10,000 families have access to safe drinking water through deep tube-wells</li> <li>• A total of 403 tube-well platforms with soak wells working for recycling used water, aquifer recharge and irrigation for homestead gardening</li> <li>• 82 PSFs serve sweet water to 4,000 families</li> </ul>	<ul style="list-style-type: none"> <li>• At least 5000 families have access to safe drinking water through deep tube- wells</li> <li>• No less than 10,000 families have access to safe drinking water through shallow tube-wells</li> <li>• A total of 3,113 platforms protecting tube-wells from intrusion of polluted water</li> </ul>	<ul style="list-style-type: none"> <li>• At least 18,000 families have access to safe drinking water through shallow tube-wells</li> <li>• A total of 1,647 tube-well platforms with soak wells working for recycling used water, aquifer recharge and irrigation for homestead gardening</li> </ul>	

Name of indicators	Salinity	Flood	Drought	Total
	<ul style="list-style-type: none"> <li>• 83 pond and canals serve adjacent communities. Two of the canals help 300 farmers in agricultural cultivation during the dry season</li> <li>• Rain water harvesting systems (RHWS) are capable to reserve at least 2.0 million rainwater in a season, which can serve 2,500 families during the dry-season</li> <li>• The desalination plants produced 1.50 lac liters of pure drinking water a day that can serve at least 15,000 families</li> </ul>		<ul style="list-style-type: none"> <li>• Re-excavated ponds provide 1,350 families with water for household uses and small-scale irrigation</li> <li>• Two deep tube-wells allows 195 farmers to irrigate a total of 65-acre land round the year</li> </ul>	
Health, education and sanitation	<ul style="list-style-type: none"> <li>• At least 10,000 members are now using sanitary latrines and are knowledgeable about hygiene practices.</li> <li>• Two community latrines are used by around 100 people daily.</li> <li>• Approximately 4.0 lac poultry and livestock vaccinated over the project period.</li> <li>• Approximately 6,000 people are no more exposed to indoor air pollution due to the installation of improved cooking stoves</li> </ul>	<ul style="list-style-type: none"> <li>• At least 9,000 members are now using sanitary latrines and are knowledgeable about hygiene practices.</li> <li>• 29 community latrines are used by around 3,000 people daily.</li> <li>• Health camps served no less than 20,000 patients over the project period</li> <li>• Approximately 2.0 lac poultry and livestock vaccinated over the project period</li> <li>• Approximately 17,000 people are no more exposed to indoor air pollution due to the installation of improved cooking stoves</li> <li>• At least 1,225 families and 4,500 children are now able to work and read at night due to installation of the solar home systems.</li> </ul>	<ul style="list-style-type: none"> <li>• At least 12,000 project participants are now using sanitary latrines and are knowledgeable about hygiene practices.</li> <li>• Approximately 2.4 lac poultry and livestock vaccinated over the project period</li> <li>• Approximately 35,000 people are no more exposed to indoor air pollution due to the installation of improved cooking stoves.</li> </ul>	
Capacity building	<ul style="list-style-type: none"> <li>• A total of 11415 project participants are now familiar with climate change and technically relatively better understanding on different adaptation options.</li> <li>• Now PIP staff and project participants technical know-how are better to manage different adaptation activities of different climatic risk zone</li> </ul>	<ul style="list-style-type: none"> <li>• A total of 8539 project participants are now got different trainings.</li> <li>• Now PIP staff and project participants technical know-how are better to manage different adaptation activities of different climatic risk zone</li> </ul>	<ul style="list-style-type: none"> <li>• Training completed - 402 batches which covered different IGAs and climate change issue. A total of 10024 project participants got different trainings.</li> <li>• Now PIP staff and project participants technical know-how are better to manage different adaptation activities of different climatic risk zone</li> </ul>	
Agricultural and special interventions	<ul style="list-style-type: none"> <li>• Minimum 250 farmers are cultivating salinity-tolerant crops round the year and 50 households rear Koyel birds, an alternative IGA that has significantly improved livelihoods in the salinity-prone areas</li> </ul>	<ul style="list-style-type: none"> <li>• At least 250 farmers are producing flood-tolerant crops year round the year</li> </ul>	<ul style="list-style-type: none"> <li>• 50 farmers are producing drought-resilient fodders</li> <li>• At least 690 farmers are practicing salinity-tolerant crops round the year and 200 households are rearing cows in an improved method</li> </ul>	
Community mechanism	<ul style="list-style-type: none"> <li>• All project participants are actively involved with 616 CCAGs and 649 activity maintenance committees</li> <li>• A total of Tk 202.91 lac invested by communities to implement project activities</li> <li>• A total of 14,000 meetings were held by the CCAGs</li> </ul>	<ul style="list-style-type: none"> <li>• All project participants are actively involved with 629 CCAGs and 1,413 activity maintenance committees</li> <li>• A total of Tk 268.78 lac invested by communities to implement project activities</li> <li>• A total of 15,000 meetings were held by the CCAGs</li> </ul>	<ul style="list-style-type: none"> <li>• All projects participants are actively involved with 479 CCAGs and 1,329 activity maintenance committees</li> <li>• A total of Tk.142.74 lac invested by communities to implement project activities</li> <li>• A total of 11,000 meetings were held by the CCAGs</li> </ul>	

# References

1. Adger, W.N. (2000) 'Social and ecological resilience; are they related?' *Progress in Human Geography*, 24(3): 347–364.
2. Geis, D. E. (2000) By Design: The disaster resistant and quality of life community. *Natural Hazards Review* 1(3):23.
3. Holling, C. S. (1973) Resilience and Stability of Ecological Systems. *Annual Review of Ecology and Systematics* 4(1):1-23.
4. IPCC., ( 2014) Summary for policymakers. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1-32.
5. Karren V., Alan D., Allison C., and Gooch M., (2012) Assessing community resilience to climate change, Proceedings of the 12th International Coral Reef Symposium, Cairns, Australia, 9-13 July 2012
6. Kirmayer, K. L., Whitley, R., Dandeneau, S. F., and Isaac, C. (2009) Community Resilience: Models, Metaphors and Measures. *Journal of Aboriginal Health* November 2009:62-117.
7. Kulig J. (2000) Community resiliency: the potential for community health nursing theory development. *Public Health Nursing* Volume 17 pp 374-385.
8. Kulig, J. (1996) *Surviving and thriving in the Crowsnest Pass*. University of Lethbridge, Regional Center of Health Promotion and Community Studies, Lethbridge, AB.
9. Kulig, J., and Hanson, L. (1996) Discussion and expansion of the concept of resiliency: Summary of think tank. University of Lethbridge, Regional Center of Health Promotion and Community Studies, Lethbridge, AB
10. Mileti, D. S. (1999) *Disasters by design: A Reassessment of Natural Hazards in the United States*. Joseph Henry Press, Washington D.C.
11. Norris, F.H. Stevens, S.P. Pfefferbaum, B. Wyche, K.F. and Pfefferbaum, R.L. (2008) Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, 41: 127–150.
12. Opstal, D. van (2007) *The Resilient Economy: Integrating Competitiveness and Security*. Council on Competitiveness. [www.tisp.org/index.cfm?pk=download&id=11018&pid=10261](http://www.tisp.org/index.cfm?pk=download&id=11018&pid=10261)
13. Paton, D. and Johnston, D. (2006) *Disaster Resilience: An integrated approach*. Charles C. Thomas Publisher Ltd., Springfield.
14. Timmerman, P. (1981) *Vulnerability, resilience and the collapse of society: a review of models and possible climatic adaptations*. Institute for Environmental Studies, University of Toronto, Canada.
15. UN/ISDR (2002) *Living with risk: a global review of disaster risk reduction initiatives*. Preliminary version prepared as an interagency effort co-ordinated by the ISDR Secretariat, Geneva, Switzerland.
16. Walker, B. Holling, C. S. Carpenter, S. R. and Kinzig, A. (2004) Resilience, adaptability and transformability in social–ecological systems. *Ecology and Society* 9(2): 5. [online] URL: <http://www.ecologyandsociety.org/vol9/iss2/art5>



**Disclaimer**

This book is not a scientific publication. All the contents here have been gathered through field experiences of the project staffs, and thereby, are not intended to challenge any established scientific facts or findings.

**Palli Karma-Sahayak Foundation (PKSF)**

PKSF Bhaban  
E-4/B, Agargaon Administrative Area  
Sher-e-Bangla Nagar, Dhaka-1207, Bangladesh  
Tel: 9140056-59, Fax: 9126244  
Email: [pkssf@pkssf-bd.org](mailto:pkssf@pkssf-bd.org), Website: [www.pkssf-bd.org](http://www.pkssf-bd.org)