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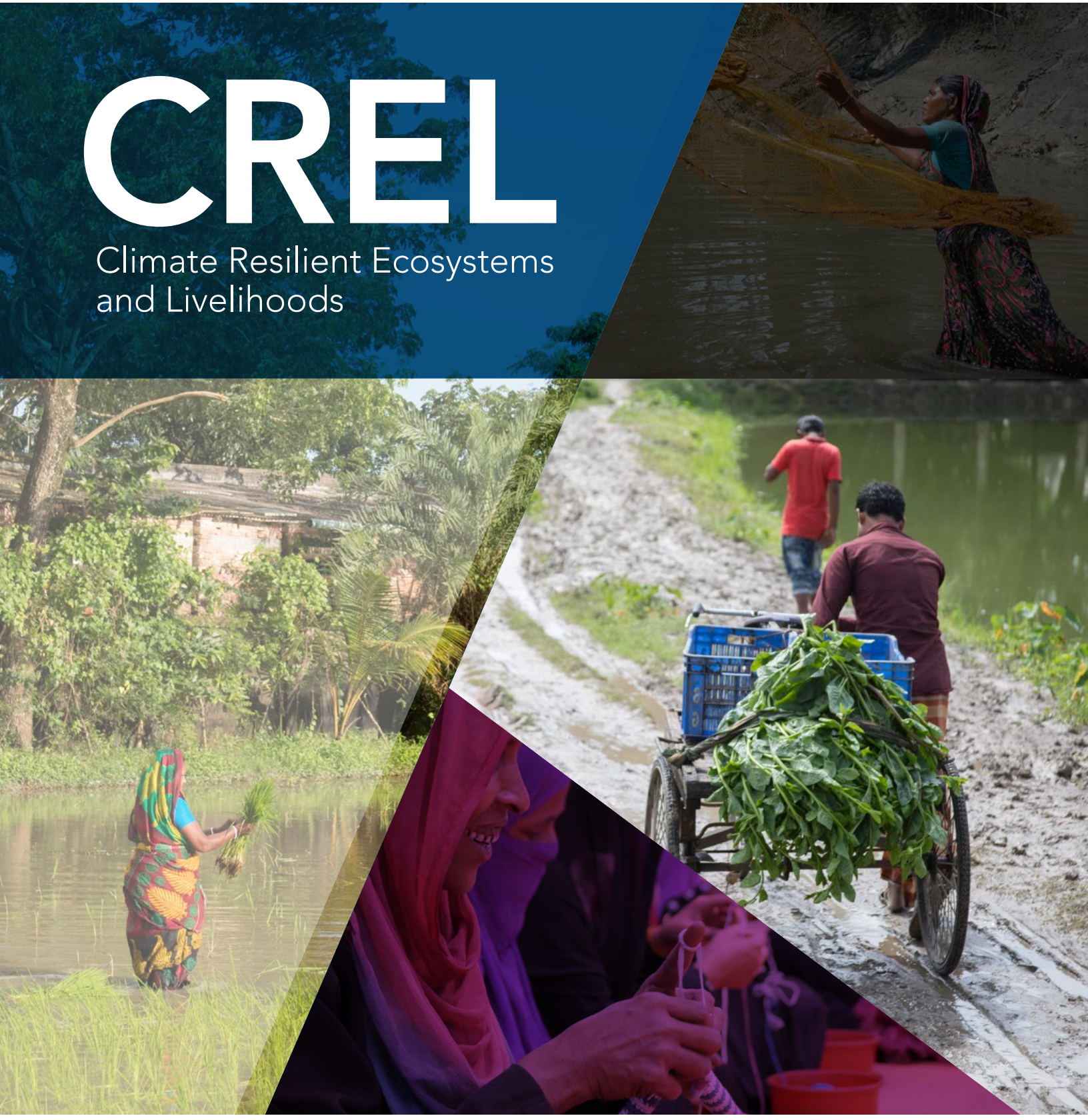
CREL

Climate Resilient Ecosystems and Livelihoods



Department of Environment

CNRS

codec

nacom

BCAS

WorldFish

TETRA TECH

Climate-Resilient Ecosystems and Livelihoods (CREL)

AID-388-A-12-00007

Final Performance Report

2012 –2018

Submitted to
U.S. Agency for International Development
Bangladesh Mission, Dhaka, Bangladesh

Submitted by
Winrock International
2101 Riverfront Drive
Little Rock, AR 72202-1748

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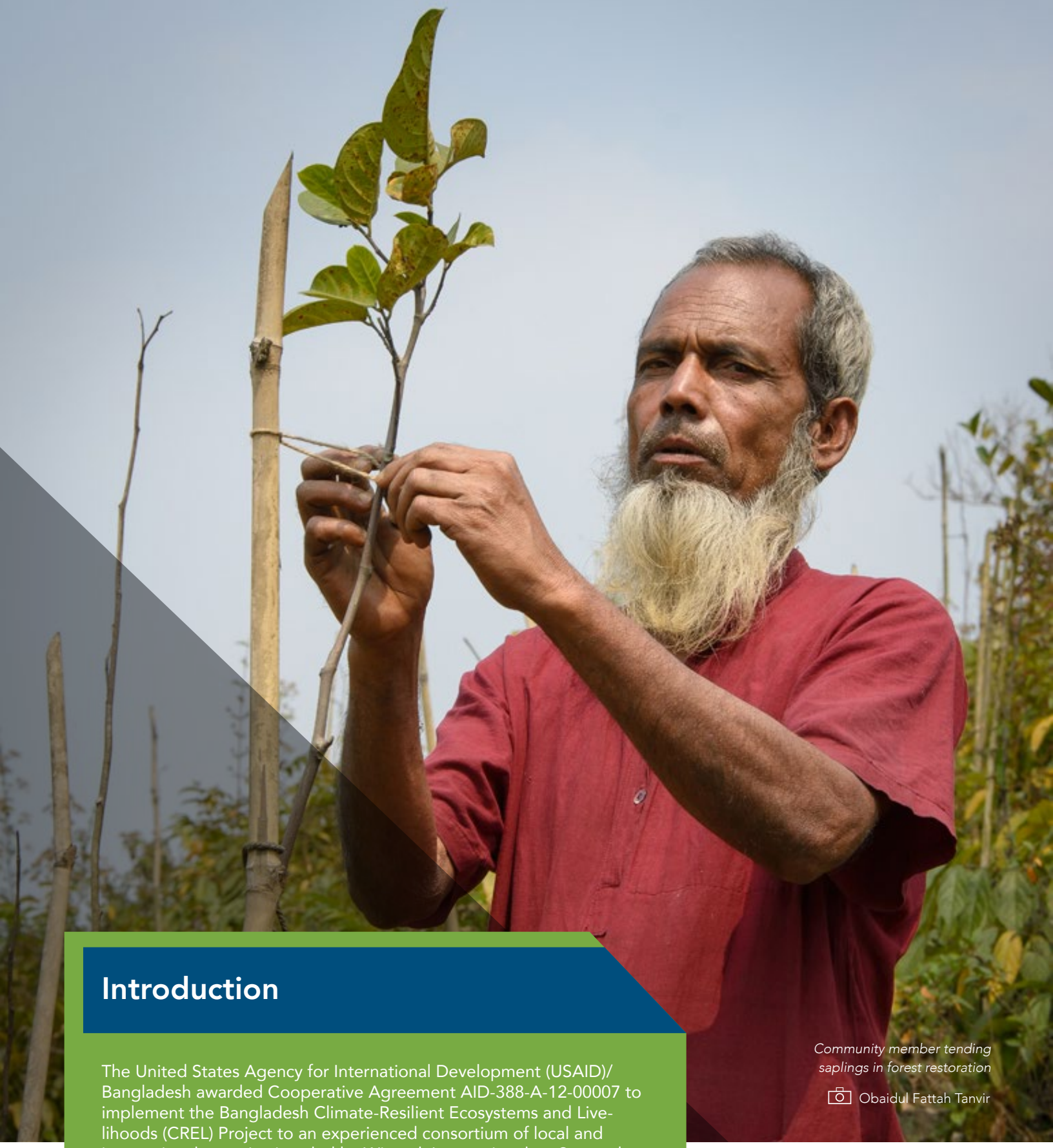


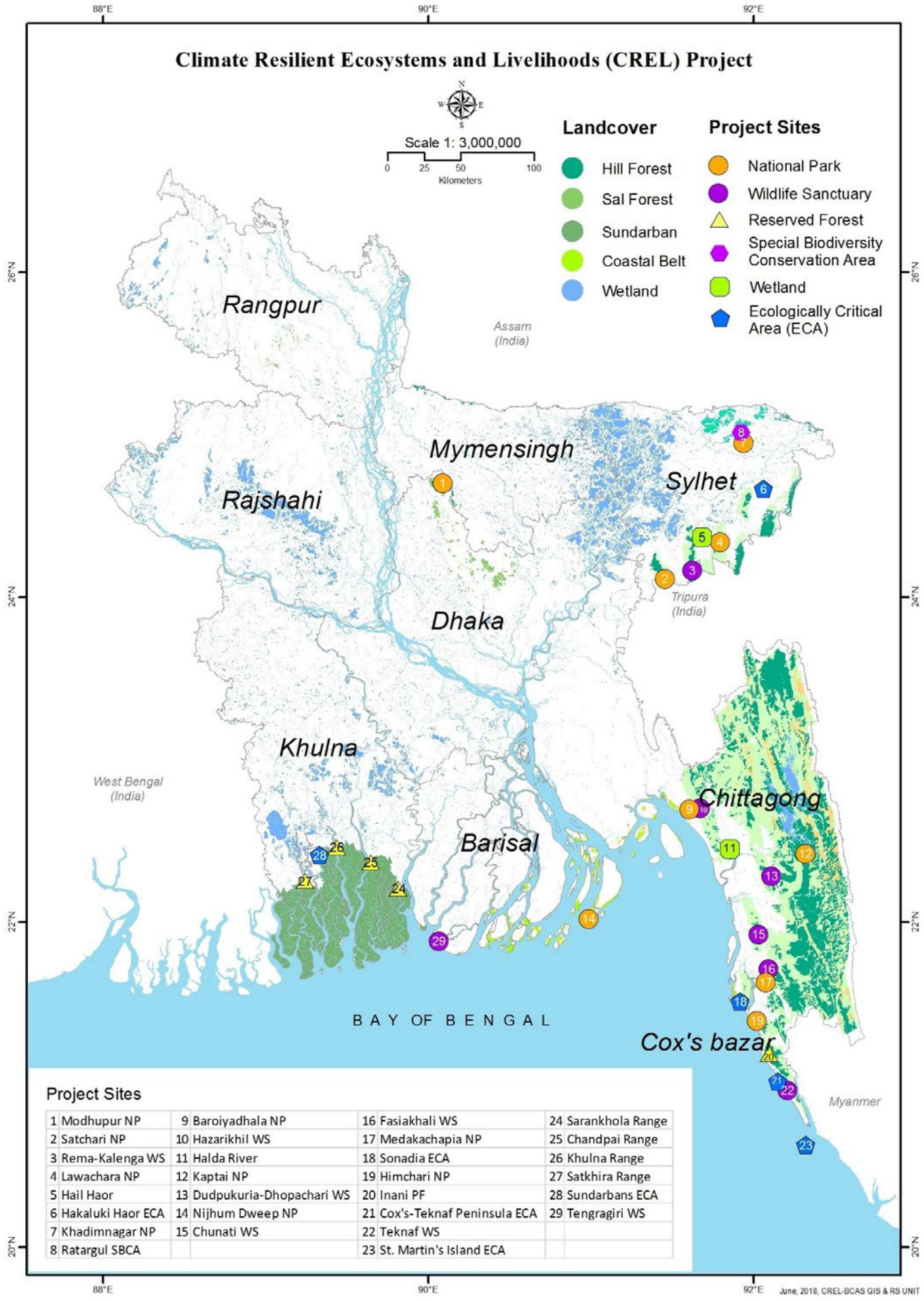
Community member tending saplings in forest restoration

Obaidul Fattah Tanvir

Introduction

The United States Agency for International Development (USAID)/ Bangladesh awarded Cooperative Agreement AID-388-A-12-00007 to implement the Bangladesh Climate-Resilient Ecosystems and Livelihoods (CREL) Project to an experienced consortium of local and international organizations led by Winrock International on September 17, 2012. CREL was originally designed as a five year, $32M project, which was then amended to last an additional quarter, ending December 31, 2017. During the last quarter (December 2017), USAID funded a nine-month extension valued at $4.9M to modify activities focusing on biodiversity, landscape management and wildlife trafficking prevention through September 2018. This final report covers the six years of CREL's work.

FIGURE 1. MAP OF CREL PROJECT SITES



Project Sites

1	Modhupur NP	9	Baroiyadhala NP	16	Fasiakhali WS	24	Sarankhola Range
2	Satchari NP	10	Hazarikhil WS	17	Medakachapia NP	25	Chandpai Range
3	Rema-Kalenga WS	11	Halda River	18	Sonadia ECA	26	Khulna Range
4	Lawachara NP	12	Kaptai NP	19	Himchari NP	27	Satkhira Range
5	Hail Haor	13	Dudpukuria-Dhopachari WS	20	Inani PF	28	Sundarbans ECA
6	Hakaluki Haor ECA	14	Nijhum Dweep NP	21	Cox's-Teknaf Peninsula ECA	29	Tengragiri WS
7	Khadimnagar NP	15	Chunati WS	22	Teknaf WS		
8	Ratargul SBCA			23	St. Martin's Island ECA		

The project builds on the work of three preceding USAID-funded initiatives aimed at establishing and building the capacity of local co-management organizations (CMOs): The Management of Aquatic Ecosystems through Community Husbandry (MACH) project (1998-2007), the Nishorgo Support Project (NSP, 2003-2008), and the Integrated Protected Area Co-management (IPAC) project (2008-2012).

CREL focused on strengthening biodiversity protection and conservation in four ecologically important regions and building community and ecosystem resiliency to the impacts of climate change, while simultaneously improving the capacity and expertise of CMOs, implementing supportive public policies, bolstering community involvement in natural resource management and promoting viable alternative livelihoods less dependent on natural resource extraction. CREL was designed around four inter-related components which made up the Intermediate Results (IRs) of the Results Framework.

The project worked at the national level on policy and enabling capacities and actions, and in four different geographic areas of Bangladesh: southwest (Khulna), southeast (Cox's Bazar and Chittagong), and northeast and central (Sylhet plus Mymensingh) regions (**Figure 1**) to institutionalize co-management approaches to natural resource management and climate resilience. The project supported 45 co-management organizations covering diverse landscapes - the large mangrove forest complex in southwest (SW) Bangladesh; semi-evergreen and deciduous forest ecosystems respectively in northeast (NE) and central Bangladesh (in Sylhet Division and Mymensingh District); tropical evergreen forest from Chittagong to the southeast (SE) tip of Bangladesh at Teknaf; the inland wetland ecosystems within the haor basin in NE Bangladesh in Moulvibazar District; and coastal and marine ecosystems that include smaller islands and coastal areas fringing the Bay of Bengal from Noakhali to Teknaf**.**

This final report provides an executive summary on the project's accomplishments as well as detailed technical reporting on activities, impact, lessons learned and challenges by each IR. Reporting on major cross cutting activities: gender; communications; monitoring, evaluation and learning (MEL); construction; and grants is also provided.

Component 1: Improved governance of landscapes and biodiversity

Component 2: Enhanced capacity of key stakeholders for landscape management and biodiversity conservation

Component 3: Strengthened conservation and protection of critical habitat, natural resources and biodiversity

Component 4: Alternative livelihoods that promote sustainable landscapes and protect biodiversity

Coastal livelihoods depend on vast intertidal ecosystems

Misty Keasler

BOX 1:

CREL Implementing Partners

BANGLADESH

- Bangladesh Centre for Advanced Studies (BCAS)
- Center for Natural Resource Studies (CNRS)
- Community Development Centre (CODEC)
- Nature Conservation Management (NACOM)

INTERNATIONAL

- Winrock International (WI)
- Tetra Tech ARD
- WorldFish

GOVERNMENT OF BANGLADESH

- Ministry of Environment, Forest and Climate Change (MoEFCC)
- Department of Environment (DoE)
- Forest Department (FD)
- Ministry of Fisheries and Livestock (MoFL)
- Department of Fisheries (DoF)
- Ministry of Land (MoL)

Community mangrove nursery for forest restoration

Obaidul Fattah Tanvir

Executive Summary

CREL's overall objective was to help communities better collaborate with local and national governments to balance natural resource management (NRM), biodiversity protection and climate resilience with sustainable economic development. Key to achieving this was the successful scaling up of co-management models to build resilient ecosystems in Protected Areas (PAs), wetlands and Ecologically Critical Areas (ECA), through improved governance of natural resources, national policy and diversified livelihoods of dependent communities.

Although largely an environmental project, CREL achieved significant impact in areas such as organizational development at several levels, monitoring and evaluation (M&E), Women Empowerment, and collaborative learning and adaptation. CREL made notable contributions to address challenges on water, youth, entrepreneurial and financial literacy, and agricultural as part of the project's approach to improve resource management and increase the ability of people to adapt to climate change. CREL also helped to protect a host of globally threatened and endangered species including marine turtles, birds (particularly waterbirds) and mammals such as the Asian Elephant.

Overall, CREL worked directly with 167,013 (female 140,766) people through training, consultation, and meetings. Most of these individuals were involved in multiple trainings. Capacity building focused on both resilient livelihood and enterprise development and sustainable co-management. In total, CREL benefited approximately 362,479 (184,864 female) individuals through various activities that included small grants and small-scale construction activities.

A significant factor in CREL's success is due to the inbuilt collaborative, learning and adaptation processes that reinforced the project design. For example, all the livelihood activities of IR 4 supported the NRM and conservation objectives of IR 3 by reducing people's dependency on forest resources. A summary of notable CREL achievements include:

ENABLING POLICY

The recently approved PA Management Rules 2017 and the ECA Rules 2016 now provide the legal mandate for co-management and specify the roles and responsibilities of CMOs, and the process for revenue collection and sharing. Initiatives have been built with the Ministry of Land (MoL), which is in process of reforming the waterbody leasing policy and CREL supported this with two sets of guidelines for wetland sanctuaries and co-management.

PLANNING FRAMEWORK

The PA Management Plans (14), Co-Management Committee (CMC) Long-term Plans (21) and the CMC Annual Development Plans (ADPs) (25), provide a comprehensive and interconnected set of milestones that layout the long-term strategy for conservation and NRM through co-management in these PAs. This framework is fully approved by the Forest Department (FD) and Ministry of Environment, Forest and Climate Change (MoEFCC) and define what the CMCs will do and contribute through co-management of forest PAs. The ADP is the vehicle whereby CMCs propose activities and levels of funding. The ADPs for Government of Bangladesh (GoB) fiscal year 2018-2019 were submitted in March 2018 and are expected to access expanded shared revenue under the provisions of the PA Management Rules 2017.

CENTRAL LEADERSHIP AND COORDINATION

The FD now fully supports co-management, as evidenced by approval of the PA Management Rules 2017, the various plans and expansion of the Nishorgo Co-Management Network to include local, regional and national representation and functionality. Furthermore, FD now has a dedicated space to promote and coordinate co-management and the Nishorgo Network under FD leadership, and is expanding revenue collection and sharing (mandated by the PA Rules). CREL also developed excellent relationships with Department of Environment (DoE) and MoL, which offer opportunities for future strengthening of co-management in ECAs and wetlands. Both the Ministries of Law, Justice and Parliamentary Affairs (MoLJPA) and Ministry of Finance (MoF) were key endorsers of the PA and ECA Rules.

Mangrove vegetation helps protect vulnerable coastal people from storms

Misty Keasler

EMPOWERED LOCAL IMPLEMENTING PARTNERS

CMOs: CREL worked with 45 forest and wetland CMOs to develop their capacity in five functional areas: Legitimacy, Organizational Functioning, Governance and Inclusiveness, Adaptive Participatory Management and Resource Mobilization (Finances). Based on CMOs' self-assessed annual scorecard (instigated in 2014) and the indicators and targets that were established to measure and verify progress towards sustainability, 35 (79%) of these CMOs now have the capacity to serve as sustainable local implementing partners in future for GoB and donor programs.

CREL worked to ensure the financial sustainability of the CMOs to fund their operational costs and undertook specific activities related to conserving landscapes and biodiversity. Over the life of project (LoP), the 45 CREL-assisted CMOs have achieved the following:

- Eight (18% of the total) of these CMOs are currently receiving a share of revenue generated through entry fees from six PAs and one wetland sanctuary where the community-based organizations (CBO) retain all entry fees for its conservation work. Based on the newly approved PA Rules 2017, CREL helped the FD to develop Guidelines and structure entry fees for 11 additional PAs. A portion of the revenue from these fees is expected to be shared among 15 additional CMOs, bringing the total number of CMOs receiving continuous financial support to 23 (52%).
- Thirty-one (70%) of CMOs have designed and implemented enterprises that have generated a total of $51,500 in net income/profit in the 18 months up to March 2018 which was used to fund their operational costs and re-invested to sustain their enterprises.
- Six (13%) CMOs have received a total of $27,833 in contributions from private companies and have invested this money in agricultural, ecotourism and savings and loan activities that are producing sustainable income for the CMOs.
- Thirty-six (80%) are currently implementing conservation-based activities related to improving landscape management and biodiversity conservation.

Livelihoods and Empowerment: CREL provided training and capacity support for enterprise development to 60,000 households. Of these households, 51,400 reported adopting improved and more resilient technologies and practices in their agriculture related enterprises, and 38,500 households are estimated to have enhanced their incomes with a combined annual increment in incomes of over $5 million. 73% of livelihood beneficiaries were women, and intensive capacity building for financial and entrepreneurial literacy among 8,000 poor women resulted in significant increases in their empowerment. This helped women with reduce workload, improve access to services and credit, increased asset ownership, and increased decisive role over production and marketing.

Conservation and Resilience: CREL supported 824 villages to develop their own adaptation and resilience plans, which informed and are linked with CMO long term plans. CMOs engaged wider communities to reduce the incidence and impacts of hazards (for example forest fire prevention and protection against imminent cyclones). Across the 945,000 hectares of biological significance supported by co-management, CMOs and CREL conducted habitat restoration in 1,700 hectares, and established robust biodiversity monitoring systems on indicator species. Community protected wetland sanctuaries and swamp forests helped increase fish catches and improve livelihoods in two large wetlands; CMOs restored mangroves and coastal vegetation to improve storm resilience; and in terrestrial forest PAs, positive trends in forest bird populations were documented under co-management. Based on a review of globally and nationally threatened species and their presence in CREL-supported biologically significant areas, conservation awareness initiatives were established in all 45 CMOs, targeting a total of 35 threatened and near-threatened species.

INFORMATION BASE

The Nishorgo Co-management Network website was refurbished and populated with a greatly expanded volume of information from all four USAID projects as well as relevant CrelLink databases. The website is now hosted by the FD and will become a key communication tool for the CMOs and other stakeholders and archive for the new Nishorgo Co-Management Network office in the FD.

STRATEGIC PARTNERSHIPS

GoB

CREL worked with the FD and the DoE under the auspices of the MoEFCC to strengthen environmental and natural resource policies and management guidelines for forest PAs and ECAs, promote the development of sustainable co-management planning and organizations, and expand and rehabilitate critical habitats.

CREL also worked with the DoF under the auspices of the MoFL, as well as with the MoL to bring additional wetland areas under co-management and promote community-based protection of these areas.

On policy development, CREL engaged the MoLJPA and the MoF. CREL liaised with a broad range of government personnel, ranging from Ministers and senior government officials to regional/district and local levels. Much of the project's success was based on the wide ranging and effective relationships that CREL established.

US Government Agencies

CREL collaborated with the U.S. Department of Interior International Technical Assistance Program (DoI/ITAP) from early 2014 to support eco-tourism and CMO contributions to co-management and protection of PAs. This support included communication and coordination with stakeholders, logistical support to visiting ITAP staff, backstopping activities of US-based ITAP staff, and technical assistance, including the design and installation of signage for 20 PAs and equipment provision for 100 community patrol groups (CPG) and approximately 1,000 patrol group members. This collaboration augmented CMO capacity to protect ecosystems and to promote and manage tourism, which will increase revenue that can be shared with the CMO in accordance with the new PA Rules.

CREL supported the U.S. Government's interagency Silva carbon Program - the Bangladesh National Forest Inventory, based on standard operating procedures (SOPs) developed by WI's Ecosystem Services Unit.

Other Development Projects

CREL collaborated extensively with several of USAID's Feed the Future (FtF) projects to develop and/or adopt agricultural practices that were climate resilient and more profitable than traditional farming activities and could be conducted on small plots of land (a few hundred square meters or less) typically available to our targeted beneficiaries, and which were financially feasible for farmers to establish.

CREL collaborated extensively with the German Corporation for International Cooperation (GIZ)-funded Sundarbans Management Project during 2017-2018 to organize several regional workshops and organize the National Forestry Co-Management Congress that was held in Dhaka in April 2018. The Congress was sponsored by the FD and brought several hundred participants together to formulate recommendations for the FD to strengthen co-management in the PAs of Bangladesh.

Private Sector

CREL worked with more than 50 private sector organizations leveraging over $470,000 dollars to help ensure that key project initiatives would be sustained after the LoP (for example through support to CMOs or through long-term business linkages with CREL-trained households and groups). Private sector involvement in technology and marketing supported the diversification of livelihood activities into agricultural, handicraft, livestock and poultry production. Private companies also supported CMO initiatives to protect threatened species such as turtles and birds and regeneration of critical forest habitat.

Baikka Beel permanent wetland sanctuary, Hail Haor, northeast

CREL

IR 1: Improved Governance of Natural Resources and Biodiversity

Prior to CREL, other USAID investments such as MACH, NSP and IPAC project began transforming the way ecologically important wetlands and forests are managed by introducing co-management arrangements. This triggered a cultural and policy shift for the GoB, moving away from a top-down approach to protection efforts towards working together with local communities and CMOs to jointly protect, enhance, and improve natural resources and biodiversity while addressing key challenges associated with over use.

CREL assisted the GoB to revise policies and laws; build the capacity of government line agencies and locally elected officials on co-management and climate resiliency; promote citizen engagement in democratic processes by involving community members in CMOs, especially women; and strengthened linkages between CMOs and local governments. Other CREL components further contributed to improved governance (such as strengthening CMOs – IR2) to improve NRM and climate change resiliency. This chapter focuses on activities that directly engaged officials of the GoB with local communities, civil society organizations (CSOs) and other stakeholders.

CREL worked with five Ministries, three Departments, two tiers of civil administration-- Upazila or sub-district and District Administrations-- and one (lower) tier of elected local councils--UPs (see Box 2) across the target ecosystems. The project assisted the different agencies and actors worked together to approve and implement new rules, laws and policies.

BOX 2:

Key GoB Partners

OFFICIAL GOVERNMENT PARTNERS

MoEFCC
MoFL
FD
DoF
DoE

ADDITIONAL PARTNERSHIPS

MoL
MoLJPA
MoF
District Land Administration
District Administrations
Upazilla Administrations
Union Parishads (UPs)

BOX 3:

RESULTS

Improved governance

- 12 policy issues proposed
- 9 adopted
- 4 implemented

Strengthen legal and policy Framework for Co-management

- 17 (12 jolmohals (public water-body) +5 PAs) legally defined public lands assigned for long-term co-management

Increased Demand for better NRM

- 361 requests raised by 102 institutions to higher governance tiers for better NRM.

A. KEY FEATURES OF THE APPROACH

To strengthen the legal and policy framework, CREL supported the GoB to: 1) Strengthen the policy framework; 2) Improve policy implementation; and 3) Build the capacity of government officials on climate change and biodiversity. Figure 2 shows the interrelated aspects of this project.

During the first year of the project, CREL conducted a **Policy Gap Analysis** and identified 14 key policy issues (see Table 1) that needed to be addressed to ensure and sustain the success of co-management, improve resilience, strengthen biodiversity conservation and maintain ecosystem health. Representatives from key government agencies, CMO members and regional experts discussed specific gaps in legal instruments and application of co-management for conservation of PAs and other biodiverse ecosystems through regional project launch events, introductory meetings with Secretaries and other senior officials. CMOs and local administration/department officials identified challenges faced during co-management interventions and recommended areas where CREL could facilitate policy reforms. The analysis concluded that governance was a key constraint and, there was a need for increased equitable involvement of communities in governance on PAs where biodiversity and ecosystems were threatened.

Over the course of the project, CREL worked with the government to analyze, draft, and submit policy reforms that the government could then approve and implement. Table 1 shows the 13 policy issues on promotion and strengthening of co-management, how they were formulated (as guidelines, rules, or actions), and CREL's accomplishment.

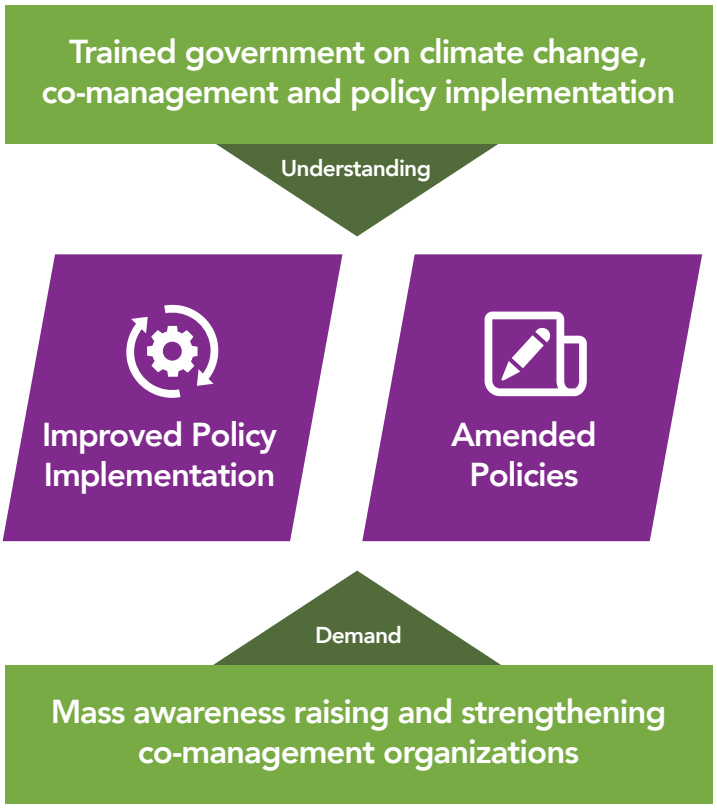


FIG. 2. CREL POLICY ENGAGEMENT

TABLE 1. POLICY FOCAL AREAS, LEAD GOVERNMENT AGENCY AND STATUS, BASED ON SIX DIFFERENT STAGES: ANALYSIS, DRAFTED, SUBMITTED, OFFICIALLY PROPOSED, ADOPTED, AND IMPLEMENTED.

Sl.	Policy Issue	Formulation into policy, regulation, law, guideline, agreement	Status as of June 2018	Analyzed	Drafted	Submitted	Officially Proposed	Approved	Implemented
National									
P1	Wetland leasing policy	Wetland leasing policy	Final draft is ready to present to the Land Minister. Once signed by minister will then go to Cabinet meeting for approval	●	●	●	●	●	
P2	Guidelines for permanent wetland sanctuaries	Guidelines for permanent wetland sanctuaries	Final draft is ready for signing and official circulation by MoL	●	●	●	●		
P3	Guidelines for wetland co-management	Guidelines for wetland co-management	Final draft is ready for signing and official circulation by MoL	●	●	●	●		
P5	ECA policy/rules on co-management for NRM	ECA Management Rules, 2016 (which include Co-management and NRM)	ECA Rules formally adopted September 25, 2016; implementation active from May 2017	●	●	●	●	●	●
P6	Improved revenue sharing for forest PAs	PA Management Rules, 2017 (Regulation)	Officially adopted on November 12th, 2017. Guideline developed for revenue sharing requests. CMC structures being revised when elections/ reformation is due. Guideline on operationalizing the Rules submitted by CREL to FD and under review. Guideline for NTFP revenue sharing prepared and outcome for Bangladesh FY 2018-19 awaited	●	●	●	●	●	
P8	Revised CMC structure in forest PAs			●	●	●	●	●	
P10	Forest PA Rules			●	●	●	●	●	
P11	Non-Timber Forest Product (NTFP) revenue sharing in Sundarbans				●	●	●	●	
Subnational									
P4	Additional permanent wetland sanctuaries	Permanent Wetland Sanctuaries Declared	MoL formally adopted this in October 2018. Although after project close, this was in direct response to project proposals and preparatory work.	●	●	●	●	●	
P7	Declaration of new forest PAs	New Forest PAs Declared	Implemented (December 2016) with designation of Ratargul Special Biodiversity Conservation Area (SBCA)	●	●	●	●	●	●
P9	CMO representation in UP Standing Committees	CMO Representatives in UP standing committees	114 CMO members have representatives in 59 UPs Implemented	●	●	●	●	●	●
P12	Climate change inclusion in Union Development Plans	Climate change inclusion in Union Development Plans	30 UPs included climate change in their development plans Implemented	●	●	●	●	●	●
P13	Designation of Ramsar sites and/or ECAs	Ramsar sites designated	Officially proposed Hakaluki Haor ECA and Nijhum Dwip National Park (NP). Ramsar Information Sheets submitted to DoE	●	●	●	●		

STRENGTHENING LEGAL AND POLICY FRAMEWORK

To strengthen the legal and policy framework, CREL helped GoB to: 1) formulate and update laws, and policies; 2) establish legally defined PAs for wetlands (freshwater and coastal), forests and ECAs, and 3) operationalize relevant NRM rules/guidelines.

Figure 3 shows how CREL bundled the policy focal areas with these three approaches.

These three approaches shown above intersect and complement each other. Laws and policies both formulated and updated by CREL provided an improved legal mandate on how natural resources and PAs are to be managed, clarified responsibilities for policy implementation and policy support structures, including sustainable financing[1]. As co-management operates only in mandated areas, CREL worked with the GoB to declare additional land to be managed through a co-management approach. The following section describes the process to create the guidelines and rules and CREL's work to strengthen policy implementation.

BOX 4:

CREL Builds on a Policy Legacy

In facilitating approval of the PA Rules 2017, CREL built on decades of forest, wetlands and ECA policy efforts. Community-based wetland and fisheries management dates back to the early 1990s, with MoFL. DoE has endeavored to protect important biodiversity habitats and restore degraded ecosystems supported by the Bangladesh Environment Conservation Act 1995, and associated Rules 1997. The FD piloted co-management and began establishing CMOs in selected PAs in 2005, formalizing the Co-Management Order in 2009.

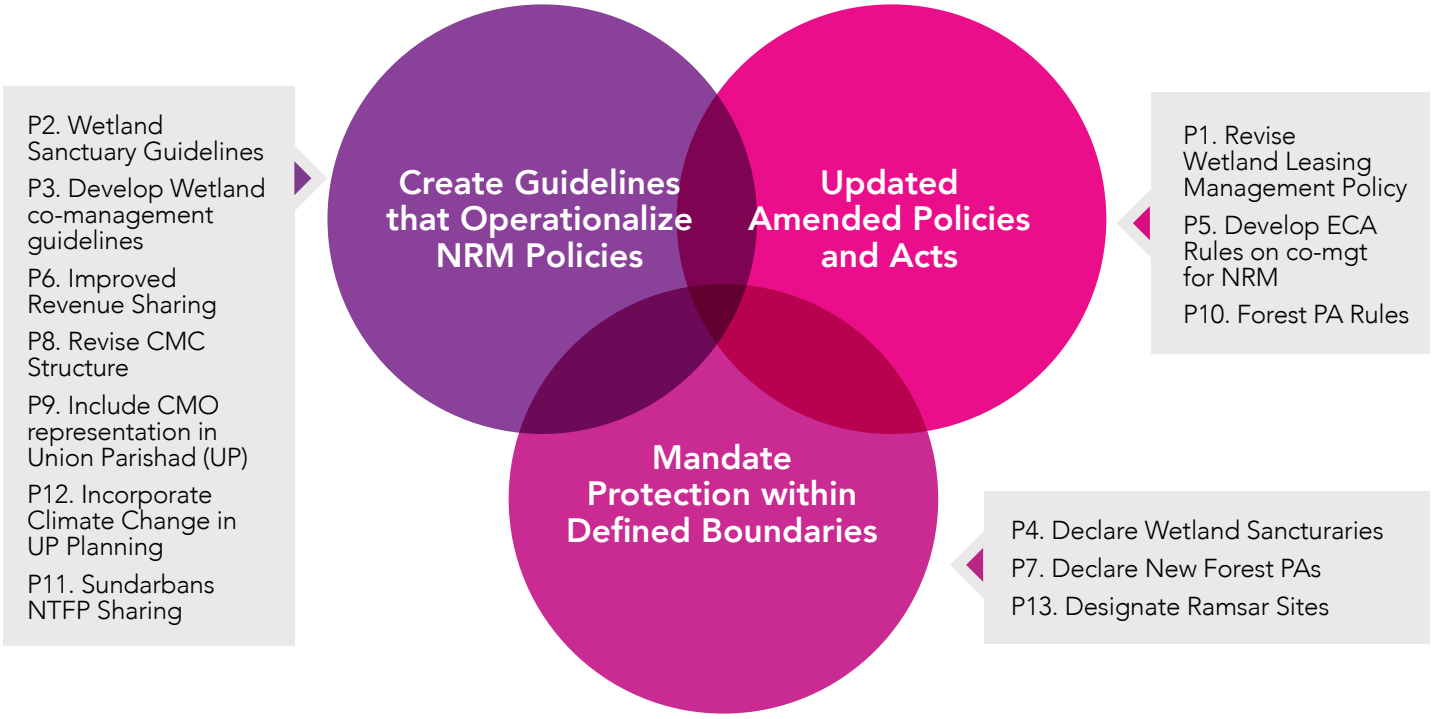


FIGURE 3. CREL POLICY FRAMEWORK

[1] Previously, the mechanism for financing forest PAs focused on government, and only shared entry fee revenue with CMCs on a case by case basis which was not really sustainable until it was legally defined and was included in the national budget. Public waterbodies continue to be a source of government revenue without public sector contributions to conservation of wetlands, CREL, and the wetland working group proposed reducing leases for conservation oriented community organizations to a token fee within the existing structure, and for part of the total lease fee income of government to be used for conservation, but it is unclear if the MoL will include these provisions in the final reform. ECAs already have a central fund.

https://www.usaid.gov/bangladesh/crel-project/module-1
https://www.usaid.gov/partnership-opportunities/ngo/localworks

FIGURE 4. PROCESS ADOPTED BY CREL TO SUPPORT POLICY REFORM

Policy Development Approaches & Tools

Secure: GoB partnership [Technical Assistance Project Proforma (TAPP), Technical Project Proforma (TPP), Memorandum of Understanding (MOU) etc.]

1. Personal Negotiation

- Stakeholder Analysis
- Key actors – GoB, NGO, Donors
- Key positions, negotiators & champions
- Identify sensitive & high impact aspects for GoB buy-in
- Identify GoB personnel with institutional memory of the policy under reform

2. Informal & Formal Sensitization on Subject

- Highlight innovative approaches in CMOs during meetings
- Understand logical arguments of GoB to approve or disregard a policy component
- Meetings with ministries

3. Exposure & Study Visits

- Showcase conservation contribution of communities highlight livelihood support interventions that diversify and divert pressure on Natural Resources (NR)
- Exhibit or models of specific conservation measure with success stories
- Oversee exposure to innovations
  - Engagement of academia- e.g. curricula development, policy relevant research (John D. Rockefeller / JDR process)
- Engage partners

4. Inter-ministerial Meetings

- Host ministry led policy/law reviews
- Involve maximum number of desk officers to sensitize with visits, meetings
- Engage in personal conversations on the policy/law itself
- Identify key ministry & facilitate exclusive review by that ministry

5. Engaging Key GoB Agencies for Policy Review

- Direct one-to-one meeting with key actors
- Facilitate working sessions or establish GoB-based working groups
- Vetting from no-GoB partners
- Secretary's involvement at all stages and steps

6. Continuous Follow Up with Key GoB Actors

- Repeat stage 4 & 5 as appropriate & needed

7. Formal Adoption of Policy Change by GoB

- Rules, guideline or other instrument formally issued & needed

8. Adoption of Policies

- Sensitize implementing agency and co-managers on the change/reform
- Dialogue on specific implementation with potential partners in future
- Identify & link potential partners & stakeholders/beneficiaries with GoB through exclusive sharing of needs, recommendation & suggest carry over activities

9. Further Reform Needed on Specific Policy/Law

- Recommend next measure to improve policy reform
- Identify multiple impacts of reformed/new policy

CREATING GUIDELINES AND RULES

The approaches to create these documents were similar and can be broken down into seven iterative and often overlapping steps. **(see Figure 4)**.

Once policy areas were identified and prioritized, project staff met with national, regional and local government officials, CMO members and other stakeholders individually and through roundtable discussions to track progress over the course of the project. Stakeholders including USAID, GIZ, United Nations Development Program (UNDP), Dutch government, International Union for the Conservation of Nature (IUCN), Building Resources Across Communities (BRAC), ActionAid, the DoF and others involved in fisheries and wetland co-management were engaged through formation of a Wetland Policy Group to follow up on two decades of reforms and challenges (see Jolmohal section below). To build credibility and establish rapport with government partners, CREL regularly coordinated with each agency over the LoP.

CREL worked extensively with relevant ministries and departments to draft the content of rules, laws, guidelines and declarations. As CREL worked across different ecosystems and different land tenures, the project needed to work across ministries to ensure a broad base of political support. For example, wetland issues required the cooperation and buy-in of MoL, MoFL, as well as the local Land Administration and DoF. All policies and guidelines required vetting from the MoLJPA (Legislative Division), and in some cases, the MoF prior to approval. Buy-in from national and field-based department level staff was also key in developing content.

The development of the rules/guidelines or other policy documents was done in collaboration with the GoB and was an iterative process, as was rapport building. CREL organized reviews of draft policies with key GoB agencies, which provided opportunity to improve the policy via revisions, but more importantly, began the process of socializing the policy within the government. The finalized, vetted document was then officially presented to the government and would be considered "officially submitted".

To support GoB agencies in developing a deeper understanding of environmental issues and the challenges in the field to enable them to make changes, it was important to get officials out to visit CREL field sites. Field trips with representatives from different ministries helped develop dialogue with CMCs (forest PAs), Village Conservation Group (VCGs), and Resource Management Organizations (RMOs), further strengthening inter-ministerial relations and educating participants on key policy issues.

CREL demonstrated what co-management was, what it could achieve and how CMOs worked with ministerial secretaries and enabled them to learn first-hand what was needed to ensure co-management sustainability. The work of CMOs on handicrafts, tourism and turtle hatcheries was showcased to the MoLJPA (Legislative Division) and MoF. They interacted with the CMOs and in particular the community groups. They were especially impressed with CPGs whom they saw in Cox's Bazar, Khulna and Chittagong. CREL engaged them in important milestones, for example the Secretary of the Environment and Forests inaugurated the first batch of CPGs in the Sundarbans.

On another occasion the Secretary of Law was taken on a trip. This was an eye-opening experience for him. He became so excited that he turned into a champion for the issue, and revised his schedule to have meetings with the necessary people to facilitate the passing of the rules. In addition to field visits and out of town meetings, CREL also facilitated meetings between the ministerial officials in Dhaka.

On policy approval and adoption, documentation needed to move from the technical department (such as the FD) to the line ministry (such as MoEFCC), and then MoLJPA. Moving the document within and between ministries concerned with the policy required constant follow up. Finally, once the policy had progressed through different steps, the document would be formally issued (gazetted) by the lead ministry to be considered adopted. For projects working on national level policy, it has been important to consider costs associated with the iterative high-level meetings and field trips, which were essential.

PA RULES

The PA Management Rules 2017 provide policy and legal support for the co-management of all forest PAs; formalize the CMCs; strengthen and expand revenue sharing; and provided guidance for PA management. The Rules include:

- Directives for developing management plans for PAs including designation of core zones, buffer zones, landscape zones, and corridors.
- Directives and guidance for formation of the CMCs including the structure and composition

BOX 5:

Major Policy Successes

CREL achieved the formal adoption by GoB of two policies – the PA Rules, the ECA Rules, with a third formally submitted and under process - reform of the Jolmohal Management Policy

(membership) of Co-management General Committee (CMGC), Executive Committee of the General Committee (CMEC), Peoples Forum (PF) and Village Conservation Forum (VCF).

- Scope of work, responsibilities, membership and provisions, election procedure of the members, tenure, meeting, cancellation of membership and related provision and mandates of the CMCs.
- Office and manpower, dissolution of the committees, formation of CPGs.
- Recovery of affected/decaying/destroyed/ encroached forest in PAs, administering forest PAs
- Responsibilities specified of the FD in Co-management.
- Provides for sharing 50% of all revenue earned from PAs with the CMCs, and this can be used to provide incentives for CPGs as well as for other NRM and community development.
- Creation of a central PA fund in the FD that can receive funds from any source for allocation to CMCs to further conservation and community support.

CREL worked intensively on drafting these rules with the FD, which were officially approved in November 2017. CREL assisted the government to begin implementation by developing guidelines on interpretation and application of the rules.

ECA RULES

Several complex ecosystems and sites that are both ecologically important and at risk from degradation and changes in use have been designated as ECAs since 1995, including sites where CREL has worked. For example, Hakaluki Haor in the northeast, coastal ecosystems in Sonadia, the Cox's Bazar- Teknaf peninsula and St. Martin's Island, and the buffer zone inland of the Sundarbans mangrove forest. Although these areas comprise a mixture of privately owned lands and public lands and waters (that may or may not have use rights allocated to groups or individuals), preventing degradation of their ecosystems is the responsibility of DoE. ECAs lacked inter-governmental coordination platforms, sustainable financing, and strong local community representation in ECA committees. To get the ECA Rules formulated and approved, CREL staff worked with the MoEFCC, DoE, local government, and village conservation groups (VCGs). The success of community conservation initiatives supported by CREL and previous projects, such as swamp forest restoration and guarding, turtle hatcheries, and livelihoods development changed the MoL's understanding about the maturity of these groups for future representation in the Upazila ECA committees and, their capacity to independently carry out conservation. A central fund was established with MoF support, which later set an example to replicate similar funding allocation for CMCs in forest PAs. The challenge now for DoE is to activate the different tiers of ECA committees formed under the Rules, given that the ECAs encompass several types of ecosystems, with each ecosystem having a set of overlapping agencies and authorities over their condition and management.

JOLMOHAL MANAGEMENT POLICY REFORM

A joint initiative involving multiple projects, organizations, national NGOs and international research bodies, NGOs and donor agencies, formed a working group, convened initially by GIZ and subsequently by CREL (see Box 6). The Jolmohal Management Policy of 2009, issued by MoL was interpreted and applied to terminate medium term (ten years) user rights for CBOs and maintained a short-term revenue orientation in awarding fishing rights (leases) to fisher cooperatives and individuals. There is ample evidence from multiple projects since 1995 (including the USAID MACH project and others) of the benefits of resource sustainability and fisher rights and livelihoods from community-based co-management. Based on this, a set of detailed changes in the policy was developed by the working group in consultation with CBOs and government agencies, including at a

BOX 6:

Wetland Working Group

CREL was instrumental in forming a Working Group on wetlands and developing a policy amendment work plan. Comprised of GIZ, USAID, ActionAid Bangladesh, IUCN, CNRS, UNDP, Middlesex University and BRAC University, the Working Group mapped out chronological steps for achieving GoB adoption and passage of an amendment to the Jolmohal Management Policy of MoL. The Wetland Biodiversity Rehabilitation Project of GIZ and CREL created a sub-group to analyze lessons learned from 12 past projects for achieving sustainable NRM and securing long-term user rights for CBOs. Additionally, CREL supported wetland co-management policy research (JDR 3rd wetland grant, see grants) which showcased co-management successes over the last decade verses current wetland leasing practice. The results and recommendations all matched the Working Group's reform proposal which was submitted to MoL. This highlighted the benefits of leasing in favor of wise-use and co-management with benefits for local communities, rather than competitive leasing aimed at maximizing short-term revenue collection and patronage from wealthy elites.

stakeholder workshop organized by MoL in January 2017, where that ministry committed to make reforms based on the analysis and proposals presented. Key components of the formally submitted policy reform are:

1. Adoption of sustainable resource management as the guiding policy principle.
2. Bringing flowing rivers under the same system, rather than open access.
3. Reforming Jolmohal management committees at District and sub-district levels to effectively become co-management coordinating bodies by including more representatives of fisher cooperatives and CBOs.
4. Providing for leases at reasonable lease rates per hectare (payment, based on a review) to bona fide community organizations and fisher cooperatives for 30 years with five-year reviews (instead of three years). This is subject to conditions including setting aside part of the waterbody as fish sanctuary and maintaining biophysical characteristics.
5. Allocating 50 percent of government revenue generated from lease payments to wetland conservation, e.g. for permanent sanctuaries and for grants to community organizations.
6. Providing guidelines for co-management and wetland sanctuaries and establishing objective and transparent review processes.

STRENGTHENING POLICY IMPLEMENTATION

CREL worked with relevant government authorities to apply policies, specifically expanding the number of wetland and forest units under co-management and building the capacity of the government to address climate resilience and support of co-management.

a. Expanding Land Units under Co-management.

The CREL project identified additional forest sites that were not yet under co-management, and jolmohals that had been and/or could be leased to community organizations. CREL also identified wetland areas under the protection of communities, for formal recognition by government.

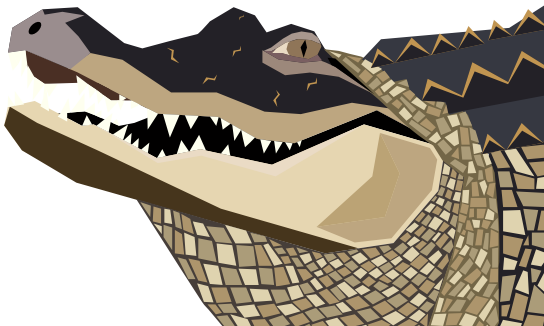
1. New Forestry Co-Management Sites

In addition to strengthening CMOs (described under IR 2), CREL worked to expand the number of PAs under co-management. CREL worked with 28 CMO's, 23 had existing structures established under previously funded USAID programs, 5 CMO's are newly established CMO's under CREL. CREL supported the FD to designate a unique swamp forest with high tourism potential and biological significance as a new PA. Table 2 shows the five forest PAs where co-management was initiated by CREL. The project provided support to sufficiently build the capacity of these new CMOs.

Table 2. New Forestry Co-management Sites

Name of PA	District	Year of declaration	Co-management Committee formation	Area (ha)
Ratargul Special Biodiversity Conservation Area	Sylhet	2016	20 December 2016	204
Nijhum Dweep NP	Noakhali	2001	24 September 2014	16,352
Hazarikhil Wildlife Sanctuary (WS)	Chittagong	2010	29 November 2014	2,908
Baroiyadhala NP	Chittagong	2010	27 December 2015	2,934
Tengragiri WS	Barguna	2010	11 February 2015	4,048

2. Jolmohal Co-management Sites



Previous co-management projects had established wetland CBOs known as RMOs and secured long term leases, which were overseen by Upazila level co-management bodies. CREL worked to reinstate or obtain leases where they had expired for RMOs in Hail Haor, and also for VCGs in Hakaluki Haor ECA, which was a complex and difficult task. The MoL legally owns jolmohals and also other extensive areas of public lands within wetland ecosystems. A jolmohal is

a public (government owned) waterbody where the MoL auctions out short-term (three year) fishing rights to generate government revenue, which as a principal had to be contested for conservation-oriented reform. District and Upazila administrations must agree to and approve reserving jolmohals or public lands for management by CBOs. The local administrators are under pressure to award leases to the highest bidder and/or local elites, who in turn maximize their income, which results in overfishing of these water bodies. CREL worked closely with the DoF, the MoFL, MoL and local land administrators through the activities summarized in Box 6, including consultations, field trips, and overseas study visits. The project helped RMOs advocate for the return of access and leasing rights of these common wetland resources to the local community for management of fishing and aquaculture (see Box 6). Eventually, and through a complex process, 11 jolmohals (out of over 40 proposed) were reserved by MoL for five years for management by designated CBOs (Table 3). Although the number was small, this constituted a major success for the communities and achievement for the CREL project.

Table 3. Waterbodies formally reserved for community management during CREL

Sl	Wetland	Jolmohal	RMO or VCG	Date handed over to RMO	Status	Area (ha)
1.	Hail Haor	Kajura beel, Moulavibazar	Kajura RMO	21 November 2017	Sustainable fishing	0.32
2.	Hail Haor	Jor Mehedi beel, Moulavibazar	Kajura RMO	6 February 2016	Sustainable fishing	1.57
3.	Hail Haor	Lori beel, Moulavibazar	Agari RMO	21 November 2017	Sustainable fishing	0.64
4.	Hail Haor	Balamia beel, Moulavibazar	Agari RMO	6 February 2016	Sustainable fishing	6.07
5.	Hail Haor	Choto kuma beel, Moulavibazar	Ramedia RMO	6 February 2016	Sustainable fishing	0.55
6.	Hakaluki Haor ECA	Gorchikona beel	Halla VCG	5 January 2017	Sustainable fishing	5.95
7.	Hakaluki Haor ECA	Choula beel	Halla VCG	5 January 2017	Sustainable fishing	5.09
8.	Hakaluki Haor ECA	Chander beel and Chander Chepti	Bholar kanda VCG	5 January 2017	Sustainable fishing	9.08
9.	Hakaluki Haor ECA	Polobhanga-Morasonai- O-Chikanuti beel	Bordol VCG (associate Hakaluki Jagoroni VCGs)	5 March 2015	Sanctuary	160.22
10.	Hakaluki Haor ECA	Tolar beel	Noagaon VCG (associate -Hakaluki VCG)	5 March 2015	Sanctuary	25.57
11.	Hakaluki Haor ECA	Goaljur Group Jalmohal	Judishtipur-Badedeuli VCG	4 October 2017	Sustainable fishing	114.99

3. Conservation Areas in Wetlands and ECAs

To formalize and strengthen local wetland conservation initiatives, CREL focused on two types of existing wetland conservation area that had unclear policy recognition – wetland sanctuaries and swamp forest restoration. First, permanent wetland sanctuaries based on jalmohals had previously been declared by MoL, with CBOs managing and protecting them. However, for example in Baikka Beel permanent wetland sanctuary in Hail Haor adjacent plots of khas (public) lands had not been formally included even though they are integral to the sanctuary and were protected by the communities. Moreover, some low-lying adjacent plots of land were open to fishing that targeted concentrations of fish when they disperse from the sanctuary into the larger wetland. To help protect the core area and resources, particularly during the dry season, when these refuge areas became critical to the survival of fish and other fauna, CREL worked with local government to expand this sanctuary by adding 17 plots of public land.

Secondly, in Hakaluki Haor ECA several projects, including

BOX 7:

Box 7: Activism Against Privatization of Commons

In May of 2015, members from eight Hail Haor RMOs, locally elected leaders, respected elders and about 2,000 people (who live adjacent to Hail Haor) jointly rallied against the loss of use-rights and land-grabbing of seasonal wetland commons (khas land areas) for large-scale aquaculture. They created a "human chain" and submitted a memorandum to the Deputy Commissioner (DC) office in Moulvibazar. The memorandum requested that action be taken against encroachment and the reclassification of water bodies from community used and managed wetland areas into large-scale aquaculture enterprises operated by local elites and their business associates. RMOs and villagers in Hail Haor reduced wetland encroachment by supporting the eviction of illegal fish farms and structures in the following months. In September, eight illegal fish farms were removed through collective action, with support from Local Government Institutions.

CREL, have worked with VCGs under DoE initiatives to plant and encourage regeneration of native swamp thicket-forest vegetation on khas land. Although these areas, totaling about 1,320 ha, have been protected by VCGs for a number of years and received backing from local government, there was no long term formal recognition of their conservation status leaving the potential threat of future clearance. CREL worked with MoL to obtain formal recognition of these swamp conservation areas. In 2015 the ministry recognized 24 plots of land as swamp forest protection areas. However, the ministry did not recognize the majority of the many existing restoration areas due to other land tenure claims which remain unresolved and require a lengthy reclassification process for these lands. This highlights the complexity of public land administration in Bangladesh which constrains wetland conservation.

BOX 8:

Implementing the PA rules

CREL supported CMCs in implementing the newly passed PA Management Rules by helping the CMCs comply with their revised composition in line with the Rules, helping CMCs make use of revenue sharing provisions by building kiosks to collect fees from visitors, and promoting citizen engagement in democratic processes by diversifying community membership in CMCs, especially women.

b. Building the Capacity of all Levels of Government.

In addition to developing guidelines, CREL helped operationalize the new policies in strategic ways. CREL enhanced the capacity and understanding of government (national and local) on co-management and climate resiliency policy and practices. CREL helped develop sustainability criteria for CMOs and trained government officials to support the development of the CMOs. CREL also provided training for government officials and helped local UPs to include CMO representatives on their Standing Committees and to budget for climate change interventions that were suggested by the CMOs. Some of these activities are described below under section IR 2 on Enhanced Knowledge and Capacity of Stakeholders.

1. Training Government on Policies, Co-management Climate Change and Biodiversity

Understanding of co-management practices is limited among many government staff and local elected representatives, who often lack the knowledge, tools and confidence on actual policy implementation, especially when it comes to co-management. Different levels of government (local government and departments) also did not know how to include climate resilience issues into their planning process. CREL provided training in both of these areas (see IR2). CREL developed three curricula focusing on legislation, biodiversity conservation, and NRM and climate change. More than 40 trainings were conducted on these topics, building the capacity of 666 government personnel at various levels. By building capacity of CMOs (IR2) and their links with UPs (see below), and through associated communications and awareness activities, the project generated increased demand for improved and more effective NRM (Indicator 4).

National Level: Orientation and capacity building of senior and sub-national level officials took place on a one-on-one level, through formal trainings and visits to CREL field sites and overseas exposure visits. Formal training was limited to three events, and included 52 FD, DoF and DoE officials who completed a certificate course on applied conservation biology, climate change and co-management developed and conducted by BCAS. Site visits and overseas trips are described in IR2 below. These trainings motivated officials on the co-management process and fostered the influence of high-level officials to support reforms. This is a key step before 'official submission' of a policy reform proposal, as concerned line agencies provide feedback and vetting before a policy moves forward towards approval.

Table 4. Summary of Trainings to Government Officials and Elected Representatives on Legislation, Biodiversity Conservation and Climate Change

Regions	Biodiversity Conservation		Institutions and Judiciary		NRM and Climate change		Total
	Female	Male	Female	Male	Female	Male	
Dhaka	5	18			3	43	69
Chittagong		16	7	34	5	49	111
Cox's Bazar		11	1	24	52	196	284
Khulna		4			4	59	67
Sylhet		10	4	30	16	75	135
Total	**5**	**59**	**12**	**88**	**80**	**422**	**666**

Asian openbill storks (Anastomus oscitans) at sunset in Hakaluki Haor

Paul Thompson

Local Level: CREL conducted training for Upazila staff and UPs (elected councilors) in two areas – implementing policies and planning for climate resiliency. In areas where co-management is promoted, the provisions of newly emerging and evolving laws, policies, committees, and orders that support co-management and climate resilience were previously not well understood by local Upazila-level staff and UP members. There are many rules, circulars, and laws that relate to environmental management and NRs. One of the challenges that the IPAC and Nishorgo projects faced in implementing co-management was a lack of support from Upazila officials, because the officials did not understand their role or the current laws and policies, nor did they understand the possible opportunities. CREL developed two similar training modules on policies and regulations relevant to environment, forest and fisheries– one for Upazila officials and one for UP Councils, including the representatives of the CMOs on the UP Standing Committees. The training encompassed laws, policies, institutions and the judiciary; the environment, PAs, NRM, climate change and disaster management; and gender equality. The training used locally generated case studies and hands on approaches and lasted for two days. The training modules emphasized the importance of good governance in the management of forests, wetlands and ECAs, as well as ways of addressing climate-related issues and resilience. In total, CREL trained 597 UP chairpersons, locally elected councilors and Upazila officers.

The project provided training to members of UPs and CMOs on how to use climate change information in their planning. This improved their knowledge, skills and capacity to address issues related to climate change adaptation, climate resilience, and how climate change affects women and men differently. The major topics of the training were: basic climate change concepts and impacts; impact of global warming and climate change in Bangladesh; the role of forests, wetlands and co-management in climate change adaptation and mitigation; the role of collective action and participation in improving NRM and co-management; REDD+ (Reducing Emissions from Deforestation and Degradation) and carbon measurement for biodiversity conservation; wetland and fish ecology for biodiversity conservation; and gender issues in climate change adaption.

2. Working with UP Standing Committees to Include CMO Representatives.

Each UP has 13 mandated standing committees of which some were relevant to CREL initiatives, such as Forest and Environment, Disaster Management, and Fisheries Resources. UPs are active stakeholders in co-management bodies (PA CMCs, Union and Upazila ECA Committees, Upazila Fisheries Resource Conservation and Development Committees) but co-management was not well linked with UP activities, despite community involvement in co-management within local government units.

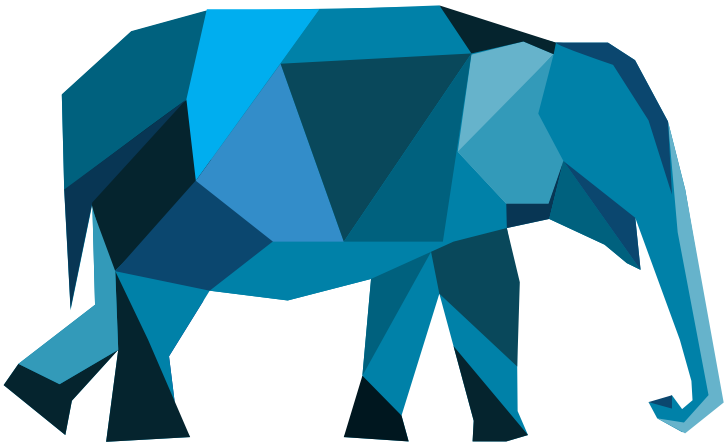
CREL worked with all CMOs to assign members as Standing Committee representatives in 59 UPs. In total, 114 individuals were approved by UP Chairs as CMO representatives. Most placements covered the following areas or issues: environment-forest, disaster management, agriculture and fisheries, women's empowerment. The placements increased the scope for better information sharing in response to threats, conflicts and gender-based violence, and resulted in greater coordination

on initiatives for improving PA conservation, NRM and gender equality. Creating an effective functional relationship between CMOs and UPs expedited the approval of project activities that required UP agreement, such as Vulnerable Group Feeding (VGF) cards and safety net benefits for poor villagers, roadside afforestation, sanitation and hygiene facilities, improved crop seed distribution to poor members, and women's primary health care. The combined result of the above CREL-led initiatives was to increase the number of requests from local institutions to higher tiers of governance for improved and more effective NRM (Indicator 5).

3. Incorporating Climate Change Concerns within UP's Development Plans

CREL drafted guidelines for CMOs and UP representatives on how to gather, process, store, disseminate and use climate data so that community leaders can access and use climate information to plan and implement resilient NRM and livelihood activities. The guidelines help the CMO, UP and Union Disaster Management Committee (UDMC) representatives include climate information in existing services and disseminate this information in practical understandable ways that are relevant to local communities. CREL worked with UPs during annual work-planning and budgeting to help identify options for climate sensitive planning. CREL conducted Participatory Climate Vulnerability Assessments (PCVAs) that led to 824 villages developing adaptation and resilience plans, and successfully advocated for inclusion of interventions to increase resiliency in Upazila annual plans and budgets.

CREL supported 30 UPs to develop a planning framework and activity calendar and conducted training to include climate change interventions in UP annual plans and budgets. Results can be observed in UP assistance for CMOs and the communities they represent on roadside and public place afforestation, sanitation facilities, road and culvert repair, and allocation of seeds and grains for VCF members as part of the safety net programs under UPs. For ECAs in the southeast coastal zone, Upazila parishads (sub-district councils) and their constituent UPs were directly involved in planning and implementation of conservation activities with technical guidance from the local DoE officers. CREL facilitated ECA-level meetings, inter-tier budget meetings and on-the ground conservation piloting activities in Cox's Bazar-Teknaf Peninsula ECA.



Another CREL initiative was to include CMO leaders in UDMC disaster databases so they could be alerted about imminent disasters. CREL submitted the CMO database to the Department of Disaster and Relief through the Comprehensive Disaster Management Program (CDMP). Despite this effort being discontinued when the GoB ended that program, in coastal sites, CMO leaders were incorporated in the network of International Federation of Red Crescent's disaster volunteers and Upazila Disaster Committees. The majority of CMOs have subsequently been active in disseminating hazard warnings – particularly for cyclones, storms and floods in the southeast region.

4. Improving Conservation Law Enforcement

During its final year, having achieved policy changes including the PA Management Rules, CREL placed more emphasis on improving enforcement of this and related laws. The "Spatial Mapping and Monitoring Tool" (SMART), a globally recognized system of monitoring and reporting on illegal resource use and wildlife crime was piloted in Fasiakhali WS by CPGs, the CMC and FD, as a demonstration for future expansion. All CMOs were oriented on strengthening efforts to conserve and protect threatened species found in their areas (see IR3). Communities conducted threat analyses of globally threatened species and identified appropriate conservation actions. CMOs and community groups strengthened their practices in enforcing conservation laws closely with the GoB agencies, for example confiscating and helping rehabilitate and/or release illegally captured wild animals.

B. IMPACT

CREL had significant impacts on the legal and policy framework. Table 1 (above) summarizes the status of CREL policy initiatives. In summary:

- The **PA Management Rules** have a provision that the Government will allocate funds to CMCs based on revenues collected in the previous year. The funds will be passed to the Chief Conservator of Forests (CCF), who will allocate funds to CMCs based on their annual workplan. The CCF holds the authority to provide additional revenue to support the operations of those CMCs that have fewer tourists and income-earning opportunities. The Rules also outline provisions for tourism and NRM-based revenue sharing, setting precedents for benefit-sharing mechanisms with local communities from possible future payment for ecosystem services in forests and ECAs.

- The **ECA Management Rules** created a central fund for VCGs. VCGs can apply to the Upazila ECA Committee for funding. The UP ECA Coordination Committee will coordinate between the Upazila and VCGs to secure the funds. The Rules also increase representation of VCGs in the Upazila ECA committees, enhancing grassroots democratization and direct communication for locally appropriate and acceptable development and implementation of resilient NRM plans.

- **Species conservation** efforts and law enforcement by VCGs has helped leverage funding support for continuation of ECA community services.

- The **MoL** has engaged in debate over wetland conservation and sustainable fishery and wetland resource management, although change has been limited. A reform of the Jolmohol Management Policy has been prepared with MoL and is pending endorsement by higher GoB authorities, along with guidelines to create additional wetland sanctuaries for biodiversity conservation and to sustain fisheries, mainstreaming co-management to empower traditional users of wetlands. Allocation of use rights in nine jolmohols to six CBOs has substantially increased these CBO's sustainability and viability.

- Through engagement with UPs and different levels of government, the CREL project created interest in and facilitated **local demand for better NRM and climate resilience**. In total, 361 requests from CMOs for assistance to improve NRM were documented, of these 115 were acted upon by relevant government agencies.

- A total of 30 **UPs** have included climate resilient NRM actions in their local plans.

- CMOs are active in disseminating hazard preparedness information, raising awareness of the risk of forest fires, and several also disseminate real-time warnings of hazards. In 2017 14 CMOs used loudspeakers to give **warnings** of impending cyclones, flash floods and landslides to an estimated 37,000 households.

C. LESSONS LEARNED

This component was highly complex and challenging (see Challenges below), and the approaches evolved as the CREL team gained experience and lessons from working with different tiers and agencies of the government.

1. Personnel and Relationships

CREL benefited from a diverse team that brought different skills to address multiple challenges. They shared ideas, different perspectives, and their different skills contributed to successes. While some team members had a deep understanding of the government, others were strong on program management.

Key to success was having staff who had access to senior government officials, in particular, the Secretaries. For example, the CREL team included a former Secretary and a former CCF who understood government policy reform processes and were respected and known by the senior officials. This greatly assisted in direct liaison with officials, preparation of documentation for approval, and overall effective coordination of the relationship between the project counterpart government agencies. It is important to hire and designate an appropriate senior liaison lead for each key agency with which a project works.

To secure government buy-in to the project's goals, it was important to demonstrate results of the project by officials to the field, to meet with CMOs and those active on the ground in protecting biodiversity, such as CPGs, and to see real progress, such as the hatching of turtles associated with community turtle conservation efforts. Field visits also took senior officials away from demands on their time in Dhaka, and allowed them to concentrate on project initiatives, to get to know each other and build rapport through shared meals, discussions and other activities.

Building relationships among the senior officials from the different ministries was important to create a shared understanding of the different roles each played and to emphasize the need for collaboration to achieve shared objectives. For example, for finalizing the ECA rules and PA rules, three ministries needed to collaborate: MoEFCC, MoLJPA, and MoF. CREL staff briefed each individually but realized that senior officials of the MoL needed to understand the environmental issues and the MoEFCC needed to understand more legal wording for formulating the rules. CREL brought the decision-making representatives from each of the three Ministries (Secretary, Legislative Division, Joint Secretary, and two senior Assistant Secretaries, MoLJPA; Secretary MoEFCC; and Additional Secretary, Finance Division, MoF) together with the Director of NRM and Project Director DoE (seconded to CREL); and Project Director FD to Cox's Bazaar to discuss in detail the draft ECA Rules and to build stronger personal relationships and joint commitment. In this event, CREL staff had the opportunity to show the officials how CMOs work, engage them in activities, and

discuss how co-management benefits the environment and communities. ***As a result of this, the ECA Rules were developed, corrected and passed within three days.***

2. Repetition, Patience, Time, Passion

Changing policy and government processes is not a linear activity, nor does it happen quickly. It is important for the staff, implementing organization and USAID to recognize this with respect to monitoring impact and tracking progress. The team was creative in identifying milestones to enable effective reporting on progress. Given government transfers and retirements, activities needed to repeat activities for newly posted officials accordingly. While it was always disappointing to put a considerable effort into developing capacity and commitment of an individual and have them leave, often, they were replaced by new staff with even greater commitment and passion for the goals of CREL.

3. Recognize the Importance of Official Agreements as a Foundation and Maintaining Relations with the GoB.

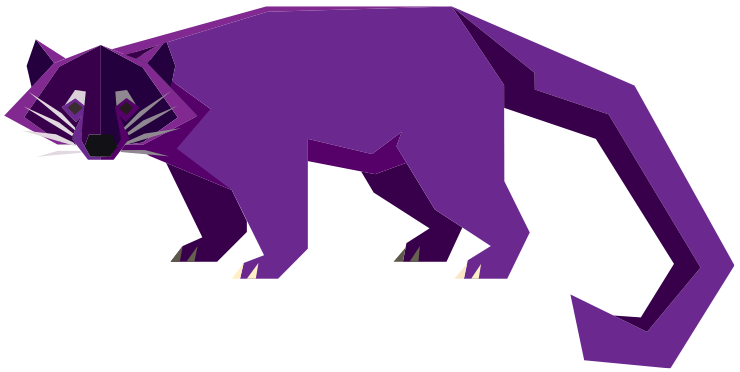
At the beginning of the project, the relationship between CREL and the FD was strained due to un-met promises and lapsed relationships from the last year of IPAC and during the design of CREL. The CCF did not grant staff such as Divisional Forest Officers (DFOs), Assistant Conservators of Forests (ACFs) and rangers, permission to work with CREL staff, so activities to improve the PAs were delayed until the third year. The GoB required the project document – the TPP - which feeds into their departments' plans so they can request matching funds and personnel time. CREL developed three TPPs, one for each partner department. Building goodwill depended on the efforts of many in the CREL team, and the chilly relationship with FD gradually thawed and evolved into a productive and mutually respectful partnership.

USAID signs its Development Objective Agreement (DOAG) at a much higher level than the executing departments, the result of which is that the concerned departments often feel they have been insufficiently consulted regarding activities, approach, results expected and implementing partners. The relevant official agreements with GoB (one or more TPPs) are mandatory for GoB involvement in a donor-supported project that expects to work with GoB). Therefore, these executing agreements should be developed and approval obtained from GoB before a project starts, or a one-year formalization period should be added at the start of a project before full implementation, so that TPP(s) can be processed and approved. The TPP should spell out the major activities that the project intends to complete and the role of government agencies and constitute the authorization for the involve government unit to expend resources in support of a project.

The progress of CREL on wetland policies was limited in comparison with forest PA and ECA policies, and the challenges faced in wetlands (see below) demonstrate the constraints posed by an absence of official agreements and recognition. The MoL was not included in CREL (or previous co-management projects) as a full-fledged partner; as a result, it had no commitment or interest to change its policies and practices regarding jolmohols and wetlands and was reluctant to change how it leased waterbodies. Future interventions for wetland conservation should include MoL as a full-fledged partner that would set targets and expedite securing leases and use rights to wetlands for co-management and conservation. It will also be very difficult to achieve any associated policy change unless MoL is a major partner in any future project. The role of district and sub-district administrations, particularly the DC and Upazila Nirhabi Officers (UNOs), in wetland co-management should also be formally spelled out in the project documents to ensure their active involvement. In wetlands and ECAs there are active CBOs, but co-management forums are less active. To change this situation, district and Upazila level coordination committees should be formed so they can evolve from project stakeholder forums into effective co-management forums. Current MoL interest in obtaining donor support for re-excavation of silted up wetlands in the northeast region could be used as an entry point for co-management and securing use rights for fishing communities, wetland sanctuaries and sustainable resilient management.

4. Recognizing the Importance of Government Staff Outside Dhaka

CREL consulted government staff at all levels of related ministries and departments which helped in the process of policy changes being passed and implemented. For example, it was important for CREL to train DFOs and ACFs on co-management and to review the policies with them, as they are very influential. Likewise, orientation and dialogue with DCs and UNOs was essential for all policy related actions in wetlands. Senior staff rarely decide on any clause or action without a background check that has been done by their field officers. We also found it is important to take a large cross-section of senior management and junior staff into the field and raise policy reform issues in the presence of the community.



View from observation tower, Baikka Beel wetland sanctuary
Paul Thompson

D. CHALLENGES

- When CREL started, it did not have the support of FD which presented a major challenge (see lessons on TPPs). Over time CREL gained the respect of the CCF, but this took time and consequently some activities were delayed.

- Overseas events can be impactful by allowing government officials to learn about co-management and climate resilience from peers in other countries. However, such trips were seen as a reward and the most appropriate candidates were not necessarily selected to attend the events. It is best to attempt to restrict participation in overseas events to staff with specific expertise or responsibilities related to the conference/meeting.

- Frequent changes in government staff, particularly at senior levels, as noted in lesson 2 are a challenge that delayed processes and have the greatest impact where there are no formal agreements in place (such as a TPP) that stipulates designation of supporting roles and responsibilities.

- Even when policy instruments have been formally adopted, there are risks and challenges in the process of interpreting and implementing them. For example, FD has taken up in 2018 a process of developing guidance on how to implement the "PA Rules" which CREL helped to draft. However, the FD is following a consultative process where members of its staff with less commitment to co-management are seeking to ensure that normal GoB procedures are followed, which threatens to dilute and distort the sharing of powers with local communities that is implicit in co-management.

- Mobilizing coordination between stakeholders in wetlands was a challenge because of the lack of any formal role or buy-in from MoL and Civil Administration. A district level committee formed with CREL support was started to improve coordination in wetlands including an ECA in Moulvibazar District, but this did not sustain due to lack of ownership at the district administration level, coupled with frequent changes among senior management positions in the MoL.

Imam Orientation
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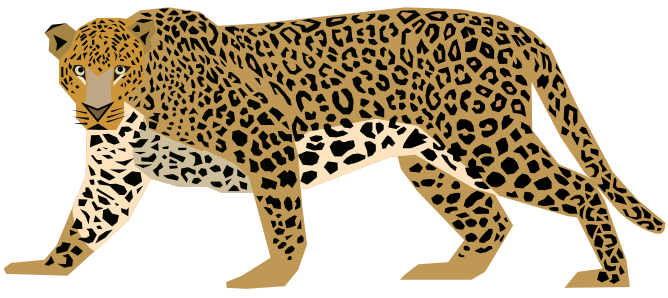
IR 2: Enhanced Knowledge and Capacity of Stakeholders

Building the capacity of people and organizations was a cornerstone of CREL and supported all aspects of project implementation. The project strengthened universities and ministries to village forums, from secretaries in the government to villagers, and with the goal of ensuring effective, equitable and sustainable co-management of protected forests and wetlands in Bangladesh in the context of a climate change. CREL did this through curricula development, formal training programs, training of trainers (ToT), hosting and organizing of domestic and international study tours, hosting of trips to regional and international conferences, facilitating round table discussions and meetings, and spent endless hours with people one-on-one.

Through these efforts, CREL helped to improve governance with a focus on increasing awareness about and implementing policy (IR1); strengthened planning and implementation of climate-resilient natural resources (IR3); and diversified sustainable climate resilient livelihoods (IR4). This section of the report describes activities, outcomes, impact lessons learned and challenges around building the capacity of CMOs, government agencies, universities and NGOs.

- **Developed 42 training modules**
- **Trained 79,751 (female 54,118) people**
- **Conducted 7,586 training courses**
- **Facilitated 40 study tours**
- **79 institutions with improved capacity to address climate change**
- **36 CMOs with improved performance (82%)**
- **5 curricula developed on co-management and climate resilience, and elements adopted by 6 universities**



CREL developed farmer skills in market oriented crops

CREL

A. KEY ACTIVITIES

CREL used different activities to build organizations' and people's capacity. The project reached 80 organizations and 167,013 participants (female 114,766) from village-level stakeholders to ministry-level policy makers. Capacity building efforts included training, ToT, cross visits, university curricula development, strategic dialogues, planning, resource development, M&E, mentored research and behavioral change related to gender. It included training based on previous high-quality curricula when available but also developed new and/or updated curricula. The following table summarizes the capacity building efforts by target group, followed by a detailed discussion.

Table 5. Target Groups and Capacity Building Approaches

Target Group	Topic	Approaches	# of people reached	IR Linkages
CMOs and related groups	• CMO training on: Organizational capacity (Organizational management; Gender equality and leadership); Environmental governance (Adaptive natural resource management; PA governance and conflict mediation; Disaster risk reduction (DRR); Ecological monitoring: Ecotourism; Rules, regulations and laws; Joint patrolling; and Finances (Financial management; Fund raising/resource mobilization) • VCF orientation	• Short Duration Training • Regular Discussions in CMO Meetings • Cross Visits • Posters, flip charts and signs • Climate Change Adaptation Planning • CMO Operational Guide • Development and Presentation of Videos • Training on Resourcing Options and Approaches • Supporting Annual Bird Surveys/Monitoring • Host and Disseminate Study on Local Service Providers (LSPs) • Dialog and Brainstorming on LSP Best Practices • Summarize and Disseminate LSP BP Results	16,962 (female 7,332)	IR3

Target Group	Topic	Approaches	# of people reached	IR Linkages
Community members ("beneficiaries")	• Horticulture Training • Animal Husbandry and Aquaculture Training • Gender Equity Training • Climate Change Adaptation • Ecosystem Conservation • Climate Smart Agriculture Technology	• Long and short duration Training Demonstration Plots • Signs • Handouts • Climate Smart Agriculture Signs • Linking to Local NGO Programs	145,524 (female - 107,089)	IR4 (details and data all in CrelLink)
	Financial and Entrepreneurial Literacy Training	Formal 7-month course	8,055 (female 7,688)	
	Agriculture Service Business Training	LSP System Support	524 (female 125)	
Private Sector	Issues Facing Conservation in Bangladesh Opportunities to Support Conservation	• Orientation to NRM issues • Preparation of PPTs and NRM Support Opportunity Summaries • Co-Development of Videos • Hosting Private Sector Field Trips	667 (female 29)	
Government staff and policy makers	• Climate Change Adaptation and Mitigation • Co-Management of Natural Resources Management (Forest) • Natural Resources Management (Wetlands) • Resourcing NRM Co-Management • Biodiversity, Co-Management and NRM in an International Context	• Hosting Training Programs (short and residential) • Support for Forest Carbon Inventories • Hosting booths in fairs (USAID, Tourism, Gender, Co-Management) • International Study Tours • Hosting Attendance at International Conferences • Support for Celebrating International Days • National Study Tours • Hosting Field Visits • Policy Briefs • Hosting Policy Dialog (Wetlands, Co-Management, Sustainable Resourcing)	3,430 (female 283)	
NGOs (excluding CREL implementing partners)	• Principles of Financial Management • Human Resources Management • USAID Fund Management • Gender	• Long Duration Training • Competency Tests • Provide Orientation of CREL Gender Approaches • Link NGO Programs to CREL Gender Initiatives	94 (female 9)	
Academic Institutions	• University Curricula and Orientation on: · Climate Change · REDD+ · Forest Carbon Measurement · Ecosystem Conservation · Co-Management of Natural Resources • Environmental Education for Schools • JDR • WorldFish (Crab nursery and EcoPond Technologies)	• Consulted with universities on curricula needs • Prepared modular curricula • Shared curricula through PowerPoints in seminars at Universities • Provide Universities with DVD copies of curricula • Support USAID to host curricula on USAID website • Host Field Trips • Host Environmental Days • Provide Students with CREL Materials on NRM • JDR: Review Research Approaches • Provide Feedback to Research Drafts • WorldFish: Provide Feedback on Approaches; Provide Feedback on Draft Guidelines	179 (female 20)	
Tourists	• Environment and Biodiversity Environmental Etiquette • Orientation to National Parks and Reserves	• Pamphlets • Website information • Signboards • Facebook (CMO, NP) • Infrastructure Development in NP	1.7 million (approx.)	Details in communications section
Other stakeholders	• Wetland Policy • Co-Management Approaches to Natural Resources • Environmental Mitigation Approaches • CREL Project Progress	• Hosting Dialog on Wetland Policy • Hosting Dialog on Co-Management of Natural Resources • Facebook/Twitter • Newsletters • Official Field Visit • Briefs • Production of Videos • Presentations in Stakeholder Fora • Quarterly Reports	157 (female 4)	Details in communications section

George Figdor

BOX 10:

CREL worked with many types of community organizations

CMOs is an umbrella term for community organizations and formal co-management bodies responsible for management of **specified areas** of biological significance and/or a related landscape. Within this definition, the term CMC refers only to joint bodies of civil society and the FD that work in PAs (formerly CMCs and councils, these were respectively renamed Co-Management Executive and General Committees under the PA Management Rules 2017). In ECAs CREL worked with community organizations - VCGs- responsible for specific waterbodies or beaches, and with co-management bodies - Union ECA Committees, and Upazila ECA Committees. In wetlands CREL worked with community organizations - RMOs that take responsibility for specific waterbodies and co-management bodies - Upazila Fisheries Resource Conservation and Development Committee (UFRCDC).

B. STRENGTHENED ORGANIZATIONAL CAPACITY OF NRM INSTITUTIONS

CO-MANAGEMENT CAPACITY BUILDING

CREL built the capacity of local organizations through training, mentoring, monitoring, construction and through grants. As capacity increased, organizations were given more responsibility. During the final two years of the project, CREL phased out support with some organizations so they would continue after the project ended.

For co-management to be successful, stakeholders must be clearly convinced that co-management is the most effective approach, and have demonstrated capacity in terms of:

1. A demonstrated ability to manage adaptively (e.g. conserve biodiversity, critical habitats and maintaining area integrity);
2. Ensuring good governance, broad stakeholder inclusion, equity in benefits, leadership and participation (women, poor, government);
3. Formal and informal legitimacy including a recognized legal mandate to govern natural resources;
4. Timely and effective organizational functioning; and
5. Financial viability to carry out its long-term conservation mandate.

CREL used a scorecard framework to measure each CMO's capacity in these five key areas and targeted training to build CMO's capacity in their areas where they were weak. The CMOs had a variety of skills but none of CMOs successfully met many of these criteria at the time CREL begin. To address shortcomings, CREL implemented a program of strategic capacity development activities for CMOs to address each of these five sustainability criteria. These efforts built on each other, were regularly assessed for progress and resulted in significant capacity improvements.

CREL initially identified 40 CMOs that were already established and that had supported co-management efforts for more than a decade, however many of these CMOs were hardly functional and needed substantial capacity support. CREL also established one new PA and four CMCs in PAs where they had previously not existed but where the GoB agreed to establish co-management. CREL's capacity development efforts worked with different types and ages of organization with different varying levels of functionality.

BOX 11:

Ensuring Good Governance in CMOs

To achieve good governance, a forum for local performance review and public accountability is needed. CREL introduced CMOs to a system of "open days" (effectively public audits) on an annual basis, to ensure greater transparency and accountability. On this day the CMO presented its activities and costs, the public was invited to ask questions and review meeting minutes. This approach helps to dispel rumors or inaccurate information that might circulate, and instills a strong sense of responsibility in keeping up-to-date and accurate accounts of finances, meetings, and activities. Although approaches vary by CMO, these events are organized in a way that is fun and festive and provide another platform for attracting CMO and non-CMO community members to discuss NRM and climate change-related issues and opportunities. CMOs included activities such as guided walks, school visits, women-only sessions. CMOs conducted 22 Open Days during the life of the project.

1. CREL's CMO Scorecard

Previous projects made significant contributions to developing co-management in Bangladesh but the majority of the CMOs were very weak and had developed a dependency on donor funding. For example, meetings were often only held when the project organized and funded expenses for them. There was no training for new committee members because of the expectation that a project would always be there to train new members. CREL addressed this by building the capacity of CMOs so that they were organizationally strong, technically competent and financially sustainable. The concept of "good governance" was a key focus of capacity building and new practices introduced by CREL that provided greater transparency were established within CMOs to accomplish this (see Box 11).

CMOs previously lacked clear milestones for measuring progress towards sustainability and effectiveness. To address this, CREL developed a CMO capacity measurement framework (CMO scorecard) based on internationally accepted sustainability standards to annually assess key attributes, criteria and indicators of CMO capacity to be used to monitor strengths and weaknesses. This allowed the program to customize capacity development efforts tailored to specific needs of the CMOs. CREL defined the minimum requirements, that if met, would indicate an organization is likely to sustain after the project ends. The team considered key attributes and developed criteria and indicators. For example, for a CMO to be sustainable, ultimately it must continue to deliver a minimum level of valued services or benefits – in the case of CREL, "protecting and sustaining biologically significant eco-system units and improving the lives of people dependent on those areas". These units provide an important criterion against which they would be measured, with specific indicators used to assess progress. CREL assessed CMOs using 17 *key indicators* grouped under five key *criteria*, all of which are necessary for a CMO to be sustainable. The five areas of sustainability were: legitimacy; organizational capacity; governance and inclusiveness; adaptive management; and resource mobilization. Using 2013 as a baseline, CREL assessed the performance and capacity of 58 CMOs using 11 themes organized under four headings (service delivery, inclusiveness, organizational management and governance of co-management) and supported by 102 indicators. This formed a detailed benchmark, which was then simplified into the subsequent 17 indicator scorecard. Figure 5 show the changes of three CMOs/CBOs over the course of three years and illustrates how, without exception, CMOs increased their capacity; doubling or nearly doubling their score. Annex 2 includes the scorecard, assessment results (2013-2018) of 44 CMOs/CBOs and the field questionnaire.

Figure 5. Sample CMOs/CBOs Sustainability Assessments (2013-2018)

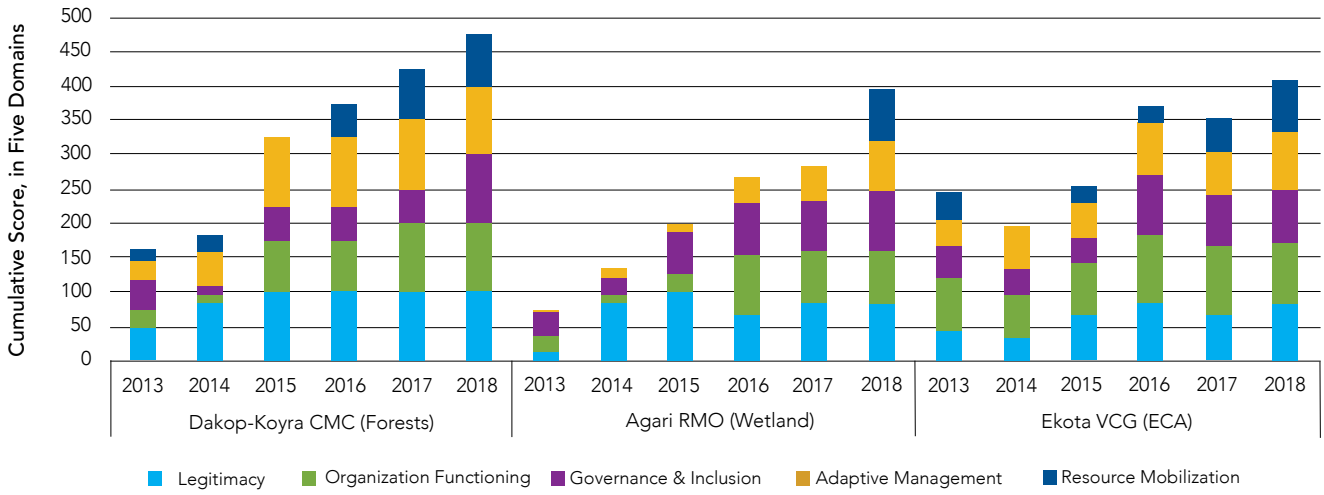


Table 6. CMO Training Summary

Training Topic	Overview of Training	Target Groups	# Trainees	Training hours
Organizational management	Understanding the roles and responsibilities of CMC leadership, meeting requirements, meeting protocols, elections, capacity development needs and processes, monitoring capacity development, and ensuring accountability and transparency.	CMC members	2,833 (female 798)	57,472
Gender equality and leadership	Understand gender issues, how they related to NRM and the specific issues women face in leadership positions in a male-dominated society and organization.	All CMO members; specific targeting of women office bearers	2,839 (female 1,545)	23,144
Financial management (including managing grants)	Building capacity to manage funds, accounting and reporting of expenditures. A focus on the importance of sound financial stewardship to ensure funds were used effectively.	CMO leaders	2,936 (female 552)	22,370
Fund raising/ resource mobilization	Building capacity to write funding proposals, articulate clear relationships between activities and purpose, develop detailed cost and benefit analysis, and negotiate with potential donors.	CMO leaders	262 (female 53)	3,197
Adaptive natural resource management in high biodiversity areas (considering climate change)	Forest and wetland ecosystem management and ecosystem services, climate change, potential impacts of climate change on Bangladesh eco-systems, adaptation and risk management methods.	All CMO members (also VCF level)	23,076 (female 13,701)	142,656
PA governance and conflict mediation	Skills for effective decision-making and mediating conflict, usually with protect areas users.	CMO members	1,318 (female 448)	13,344
Disaster Risk Reduction	Risk reduction and management - floods, fires and drought.	All CMO members (also VCF level)	13,761 (female 8,831)	79,130
Ecological monitoring for biodiversity	Biodiversity indicators as needed for establishing the effectiveness of NR management	Selected CMO members including potential CPG members	437 (female 68)	2,838
Ecotourism (e.g. visitor centers, guides, and entry fees)	The fundamentals of eco-tourisms, expectations of tourists, management of tourism areas, collection and management of fees, local regulations. Depending on the area, specialized ecology training for guides.	CMO members plus guides	480 (female 54)	3,872
Rules, regulations and laws	Orientation on existing laws that provide guidance on the use, restrictions and enforcement of PAs.	CMO members	1,023 (female 187)	13,362
Joint patrolling	Skills training to those responsible for enforcing regulations including conflict resolution and enforcement methods.	CPG members	2,050 (female 393)	13,920

2. Improved CMOs Capacity

CREL staff, together with the CMO leaders, assessed each CMO annually to identify the CMO's weakness and design from these findings, develop an **annual training plan**, and prioritize areas that needed strengthening. As CMOs are managed by elected volunteers, the capacity building process was not linear. Sometimes a strong CMO became weak when new, inexperienced leaders took on roles for which they weren't properly trained. Where possible, CREL developed and adapted training curricula from previous projects. CREL conducted training on specific topics for each CMO that lasted from 8-16 hours and were scheduled at times convenient for the CMC members. In total, CREL conducted 1,158 training events in these 11 topics with the targeted 51,015 CMOs participants for 375,303 hours. Table 6 lists the trainings, audience and purpose.

Training in participatory climate vulnerability analysis

CREL

3. Developing Sustainable Capacity Building Tools

As CMOs are managed by elected volunteers who change on a regular basis, capacity building efforts were continuous over the LoP. In the first two years of CREL, there were requests from advanced CMOs for additional training on topics that had already been covered by CREL and/or previous projects. From this, it was clear that trained CMO members were not providing training or mentoring to newly elected leaders resulting in a continual cycle of dependency on projects to address the capacity needs of these new leaders. To address this challenge, CREL consolidated capacity and leadership development tools, resources and guidelines used to train CMOs (including tools used in previous projects) into a Bangla language Tool Kit (see below), to be used by outgoing members to train new leaders and as a reference for all CMO leaders. The Tool Kit is customized for a range of CMOs: CMCs, VCGs and RMOs. CREL provided orientation on how to use the Tool Kit for all current CMO leaders. The Tool Kit was published in 2017 and 244 copies were distributed to CMOs and 56 copies to local government officials and related technical persons, it was revised to incorporate changes arising from the PA Management Rules 2017 and 300 further copies were distributed in 2018.

In addition to the toolkit, CREL developed operational guidelines for the PF (one per CMC), which are apex bodies of VCFs (see section 10), and Nishorgo Sohayak-NS (Volunteer), established under previous projects, ran the VCFs. CREL also developed a flip chart that NS used to provide training directly to villagers on key issues such as the importance of conservation, climate change resiliency, and gender equity during VCF meetings.

4. Gender and CMOs

CREL helped mainstream gender within CMOs by providing training to CMO members to increase their awareness of gender issues, and by training women to build their skills as leaders. Section 2.2, on Gender describes this work in detail.

5. CMO Long Term Plans

To further secure the future of the CMOs and increase their effectiveness in conservation and their legitimacy, CREL helped each CMO develop long-term plans that provide operational guidelines, activities and budgets for the next ten years. While annual planning is necessary, previous ADPs were not connected to longer term visions and planning processes, nor did the GoB have long-term plans for the PAs they were meant to support. To address this problem, starting in Year 2 CREL began to work with the GoB to develop PA management plans for 16 PAs, as well as wetland/ECA level management plans and plans for wetland sanctuaries (see IR3). In the fourth year CREL helped each CMO to develop long term plans that included a long term environmental vision, goals, activities and budgets for the next five years which were linked to and supported the PA plans. These plans helped to clarify how much money each CMO needed to operate and achieve its annual objectives. Based on the long-term plans, each CMO developed more realistic ADPs having greater detail for activities, costs and responsibilities. Given that one of the greatest challenges to co-management has been the financial sustainability of the CMOs and their work, the long term and annual plans provided a way for them to clearly articulate what kind of support they needed. CREL helped 25 CMCs and eight RMOs develop long-term plans and associated ADPs, this is further explained in IR 3.

6. Strengthening CMO's Financial Sustainability

The greatest challenge facing CMOs is financial sustainability. CREL began by providing limited grants to CMOs to help them operate effectively while at the same time supporting capacity development efforts. Grants were used for meeting costs, staff expenses, office repairs, materials and equipment as well as costs for conservation work including compensation for CPG members and habitat restoration efforts. Beginning in the 3rd year of CREL, a strategic shift in CMO grants from financial support for operational activities to activities directly related to CMO domestic resource mobilization began. To support this effort, CREL identified and piloted creative ways for CMOs to mobilize resources. Not only was this a focus of CREL, but the GoB also recognized this issue and requested CREL to develop a CMO Sustainability and Investment Plan. Grants, for example, were used by CMOs to buy productive assets, rather than to cover operational costs. This section presents activities and impacts of those activities to support CMO sustainability.

GoB stakeholders, including policy makers, increasingly recognize the importance of ensuring that CMOs had the financial resources to support their operations and activities. In Year 4, CREL organized a national dialogue on Sustainable Financing of Co-Management in Bangladesh attended by the Secretary of the MoEFCC and the Director of the USAID Economic Growth Office, chaired by the CCF of Bangladesh FD. Representatives from MoE, MoLJPA, FD, Development Partners (USAID, GIZ, IUCN) the private sector and CMOs from different parts of the country also attended. Soon after the dialogue, the Senior Secretary of MoEFCC requested CREL to draft a "CMO Sustainability and Investment Plan" to address the issue. A draft was developed early in Year 5 and presented to the CCF and Secretary, and other MoEFCC senior officers provided their comments and opinions. Based on this draft, the Senior Secretary of the MoEFCC requested that CREL prepare a CMO Business Plan that would project the return-on-investment from the CMO Sustainability and Investment Plan and submit that to MoEFCC through the FD. The plan identified potential streams of finance that could come from the government, development partners, the private sector and CBOs for sustainable financing of the co-management organizations. Box 13 describes potential revenue

BOX 12:

The PA Rules passed during Y5 have a provision to create a "PA Fund" that allows both government and non-government (e.g. donor) funds to be channeled to CMCs.)

Table 7. Annual visitors' fees collected from CREL-supported PAs and wetland sanctuaries excluding those not reported to CREL

Region	CMO	2013	2014	2015	2016	2017	2018	Total (US$)
Chittagong	Chunati CMC	12	9	17	5	151	318	515
Cox's Bazar	Shilkhali CMC	-	-	-	168	169	17	356
	Teknaf CMC	129	186	368	258	85	31	1,060
	Whykong CMC	-	-	-	-	-	16	16
Khulna*	Chandpai CMC	41,241	90,894	95,959	66,390	99,570	60,493	454,549
	Dacope-Koyra CMC	2,231	87	874	14,046	50,587	26,434	94,263
	Sarankhola CMC	3,834	19,529	15,078	9,245	11,225	4,846	63,760
	Satkhira CMC	4,172	10,928	13,766	7,102	29,839	10,897	76,706
Sylhet	Baragangina RMO**	358	680	1,983	979	1,436	948	6,387
	Khadimnagar CMC	-	-	-	-	-	421	422
	Lawachara NP CMC	9,111	29,289	40,565	32,340	39,601	56,437	207,347
	Rema-Kalenga CMC	-	22	126	153	186	173	664
	Satchari CMC	2,908	11,144	8,740	6,841	9,313	12,504	51,453
Total (US$)		**64,001**	**162,772**	**177,482**	**137,532**	**242,169**	**173,542**	**957,498**

* The Sundarbans entry fees are collected by FD, all of the other entry fees reported here that are collected by CMOs.

** Note the RMO retains 100% of entry fees to Baikka Beel permanent wetland sanctuary for use in maintaining the sanctuary facilities and guarding, this site is not under FD and is a community managed wetland sanctuary.

BOX 13:

Potential Revenue Streams for CMOs

The GoB and its key agencies

- Revenue sharing from forest products, NTFPs and all other sources of income collected from the forest should be shared with the CMCs (provisioned in the PA Management Rules 2017)
- A special budget allocation in the FD's annual budget for CMCs, CPGs and VCFs. GoB has established a fund named PA Management Fund under the jurisdiction of CCF.
- Entry fees collected from visitors to the PAs should be shared with the CMCs. This is an effective way of avoiding uncertainties (the PA Management Rules 2017 already provides for this)
- Projects and/or special allocation from FD/MoEFCC/other ministries for CMCs, in collaboration with NGOs and other ministries/departments. The CMC can develop proposals to secure further funding.
- Easy access, low interest loans from different sources including Bangladesh Bank's Green Fund
- Productive utilization of encroached/fallow/unused and *khas* land in and around PAs by CMCs, by reallocating encroached forest land to local people and engaging them in forest protection, especially in the buffer zone of PAs for income generating activities
- Allocation/grants from local government agencies/departments such as UP. Allocation of money in their ADP for conservation activities that will be carried out by CMCs.
- Access to social forestry benefit: Priority shall be given to the CMC, VCF and CPG members as social forestry participants near PAs.
- Development of infrastructure/facilities and creation of market linkages for promoting ecotourism and access to PAs for ecotourism development, along with the lease of ecotourism sites to CMCs.

Development Partners

- Investment in tourism facilities development and promotion for PAs
- Capacity building and development support to CMCs and relevant stakeholders
- Endowment fund and/or revolving fund for CMCs for long term financial sustainability of CMCs. Providing a one-time grant as an endowment and/or revolving fund with income used for management of PAs
- Inventory of degraded forest lands and lakes either inside the core of PAs or peripheral areas/buffer zone with donor funding to support income generating activity for the CMCs
- Provision of transitional grants to bridge the gap between projects, to ensure continuity of activities.
- Donor directed finance of CMCs from small grants. There are some opportunities globally that offer small grants ($5,000 - $20,000) to CMCs, e.g. the small grants provided by IUCN's Mangroves for the Future (MFF) project.

Private Sector

- Private companies can work with VCF members through the CMCs, wherein CMCs get a certain percentage of the income, such as collection and banks for seeds, ecotourism, etc.
- CMCs can earn money applying improved farming practices and technology from private companies.
- CMCs can play the role of a middleman, by collecting handicrafts produced by VCF members and marketing them. In general CMCs can communicate with the buyers and act as the intermediary between the buyers and producers, by working with private sector/businesses.
- CMCs collaborate with the private sector for ecotourism development

CMCs

- Encroached land can be recovered, rehabilitated and handed over to CMCs for agriculture and aquaculture. CPG members and the local community can farm the land, while the CMCs can obtain a certain percentage of income.
- CMCs should ensure that they receive a percentage of annual income from all investments made (CMCs could invest in CPGs and community members for fish culture in ponds and other suitable spots, poultry and livestock, homestead gardening, fruit orchards, nursery development and handicrafts).
- A levy on eco-tour guides, eco-cottages and other hospitality services by the CMCs.
- CMCs can claim a fee (approved by the government) from the industries/hotels in and around the PAs
- Involvement of CMCs in all development activities within and near the PA.
- Matching funds from local government organizations (e.g. UP) towards CMC's ADP.
- Monthly savings from the CMC members
- Grants and donations from local people.

Financial Management under Grants Program Workshop, May 2018
CREL

streams by source.

7. Revenue Sharing

Most PAs offer tourism attractions which have the potential for charging fees to users. Earlier USAID co-management projects recognized this and under the Nishorgo Support Project sharing of entry fees was piloted. For example, the Sundarbans generates up to Tk 10 million (over US $120,000) per year for the GoB from tourism fees. Based on this, one of CREL's objectives was to introduce an official and effective fee collection system for a larger number of PAs. This required a policy effort (IR1) that included revised language mandating revenue sharing in the PA Management Rules 2017. However, most of the CMOs needed to start collecting fees. Achieving this for forest PAs involved CREL facilitating a lengthy process: CMCs officially requesting permission for fee collection from the FD; the FD requesting the MoF to identify or approve a fee structure (since each CMC/PA has a different fee structure); and physical construction of a fee-collection point (kiosk). To attract visitors, CMCs often needed to improve access and services provided in the PAs as well as the physical condition of the areas (further discussed under IR3). CREL supported each of these stages and three (Khadimnagar, Shilkhali and Whykeong) CMCs began collecting visitors' fees for the first time. Five CMCs (Lawachara, Satchari, Rema-Kalenga, Chunati and Teknaf) were already receiving 50% revenue from visitor fees before CREL started.

In Bangladesh financial year 2018-19, as provide for in the PA Management Rules 2017, 26 CMCs requested the FD for a share of US$ 1.273 million generated in 2017-18 from entry fees and non-wood forest products (including silvicultural operations). This is only for forest PAs and thee potentially available funds include all entry fees and related leases as well as non-timber forest product license fees.

8. Improving PA Tourist Infrastructure

To attract more visitors to some of the PAs, enhance visitor experiences, and increase income generation from entry fees, CREL supported a variety of simple construction projects and repairs within the PAs, as well as in adjacent communities. For example, some of the PAs had student dormitories in disrepair, trails were damaged due to stream erosion and a number of interpretation centers were closed. Through a process of prioritization and negotiation with communities and the FD, CREL provided financial support and refurbished dormitories and interpretation centers, built kiosks for CMOs to enhance entry fee collection, constructed picnic sites and shelters, and repaired footpaths. CREL worked with each CMO to develop operational plans to run and manage the various facilities to ensure they would be functional and bring in resources that could be used to maintain these structures. With these improvements and capacities developed, the FD approved plans to allow CMOs to manage existing dormitories and interpretation centers. Annex 4 lists the construction activities supported by CREL to address resource mobilization capacity of CMOs.

9. CMO Sponsored Enterprises

During Years 4 & 5, CREL worked with CMOs to identify enterprises that could be developed to generate resources as well as provide employment opportunities for some of the more vulnerable CPG members and natural resource extractors to increase their incomes. CREL developed business plans and allowed CMOs to use grant funds for enterprises including rickshaw vans (a pedal-powered bicycle with platform to transport people), easy bikes (battery powered rickshaw vans), tourist boats, small shops, a fishing park where people pay a fee to fish, bicycle rentals, campsites, and obstacle course/zipline recreational facilities. CREL provided business plan training, market linkages (e.g. with tour companies) and training on how to develop and manage the specific investments. Well thought out and financially viable plans were financed by the CREL grants (see grants).

By the end of the project there were 24 CMCs and 7 CBOs were operating enterprise funds/activities that were initiated through grants. This generated a net income of US $68,182 (BDT 5,292,261) for the CMOs from October 2016 through June 2018. In addition, these enterprises provided enhanced incomes for over 1,700 local households. As the enterprises were chosen on their financial soundness, there is the expectation that these activities will continue in the future.

10. Private Sector Funding

During Year 4, CREL facilitated regional dialogue meetings with private sector actors in Chittagong, Cox's Bazar and the Southwest region to explore funding for CMOs to implement their development plans. The FD took the lead for the Chittagong dialogue whereas the DoE led the Southwest dialogue. CMOs of Chittagong Region sent three proposals to three private companies to support specific activities from their ADPs.

During Year 5, CREL was able to make other linkages. BSRM, a well-known private sector company, signed an MOU with Hazarikhil CMC to provide BDT 219,000

to support tree planting and other livelihood activities. During Year 6, BSRM was pleased to see the impact of their earlier contribution and approved an additional BDT 500,000 for Dudpukuria CMC and Chunati CMC in April 2018, however the provision of newly adopted PA Management Rules (2017) prevents the CMCs from directly receiving private finance, rather this is directed to a central fund under the Office of the CCF, and the donor (BSRM) declined to do that.

Through an innovative approach, CREL helped Himchari CMC (Cox's Bazar region) rent out advertising space on 10 signs that promote climate smart agriculture. These signs inform nearby farmers about improved vegetable cultivation, so they could replicate approaches introduced by CREL.

Himchari CMC also hosted an on-site meeting with six potential private sector donors (e.g. hotel owners, tour agencies) to solicit support for conservation efforts, such as providing support to CPGs, expanding tree plantations, and protecting biodiversity through turtle nurseries and bird nest-boxes (see IR 3 for more details). Local hotel owners met with CREL to explore ways they could promote tourism in local PAs. Hotel owners visited PAs and were pleased to see the aesthetic beauty of the forests, and agreed to bring visitors to the sites. This is expected to help CMCs generate more income from entry fees and visitor services. Similarly, Dacope-Koyra CMC in the Southwest region also worked with local private sector companies to explore funding opportunities.

11. Grants Requests to Foundations and Donors

Projects, donors and foundations provide another opportunity to mobilize resources. CREL trained CMOs on how to develop quality proposals and contact potential donors. The intent was to both seek specific financial support for CMO conservation efforts and link CMOs with existing programs that work in and close to CMO areas and could offer programs/opportunities to CMO members. For example, 11 CMCs made a joint proposal for funding, to the Bangladesh Climate Change Trust Fund (BCCTF) in 2017. Information and designs were provided to address questions raised by the trust fund, and a final decision was pending at the end of CREL.

12. Accessing GoB resources

CREL helped CMOs access resources from local government bodies and national level resources, outside the FD. CREL's capacity development efforts for CMO members enabled them to better interact with local government including getting better access to local government funding. Funding often supported improved resiliency of CMO members to the impacts of climate change. CMO members were increasingly appointed or elected to positions on UP standing committees, which helped CMOs further access resources from the govern-

Training on high value crop production in Cox's Bazar

CREL

ment. Over the life of the project, 18 CMOs asked for and received support in kind from UPs, for example to build wells, latrines, restore waterways and prepare areas for tree planting.

In Year 5 CREL organized a three-day training program for selected CMOs on how proposal development to secure resources from the BCCTF. This is fund of $400 million to act against problems caused by climate change, under the MoEFCC. During the training, the participants prepared four individual proposals for forest PAs that target climate change mitigation and adaptation outcomes. With CREL support, these separate proposals were consolidated into a single proposal that was submitted to BCCTF for funding and remains under consideration.

13. Strengthening Networking among CMOs

The potential for influencing policy and maintaining momentum of a new movement can be strongly improved by means of regional and national networking. The Nishorgo Co-Management Network was established in earlier projects as a network of CMOs but had slowly become inactive over time. CREL began a process of reinvigorating regional Nishorgo Networks during Year 3 and looked at ways to ensure continued sustainability. During Years 4 and 5, CREL supported network meetings at the regional level where members reviewed and revised their purpose, constitution, activities.

For the Sundarbans, the regional network was involved in a participatory governance assessment in February 2017. Between November 2017 to March 2018 the Bangladesh FD initiated a participatory process of sharing experiences and lessons learned on co-management in Bangladesh through four regional Nishorgo Network consultations. These involved more than 230 representatives from local communities, civil society, civil administration, and the Bangladesh FD. Based on CMO stakeholders' inputs in these participatory processes, recommendations in five key thematic areas related to co-management were developed covering: (1) Policy mandate; (2) Government support and actions; (3) CMO institutional capacity; (4) Financial sustainability; and (5) Communication and coordination among CMOs and stakeholders.

At the national level, the FD, CREL and the Sundarbans Management Project of GIZ jointly organized a day-long National Co-Management Organizations Congress 2018 (Nishorgo network congress), in Dhaka. The Honorable Minister for MoEFCC, Deputy Minister and Secretary, MoEFCC; Mission Director, USAID Bangladesh; and Deputy Head of Cooperation, German Embassy attended as Chief and Special Guests and shared their perspectives on co-management. A total 227 participants attended the congress to review the achievements of CMOs, discuss the regional network recommendations for strengthening CMOs, exchange of views and experiences, and to interact with the policy makers and development partners. CMO representatives spoke on policy issues, institutional capacity building, government support, coordination and networking, and financial sustainability with real-life examples. The congress adopted key recommendations from the four regional consultations, including: better coordination from GoB agencies for strengthening CMOs, effective implementation of the PA Management Rules 2017, comprehensive support (safety-net and livelihood diversification) for natural resource dependent people within CMO catchments, building capacity of CMO and FD personnel on co-management, and mainstreaming gender with improved representation of women in co-management. The FD has agreed to host the Nishorgo Network website by providing physical office space.

14. CMO Exchange and Cross Visits

CREL used strengthened CMOs as positive examples for other CMO members to learn and be inspired by. CREL facilitated cross-site visits to support the development of nascent CMOs. Moreover, by building relations between CMOs, CREL established links that support networking. Over the LoP, CREL sponsored CMO exchange visits where 167 people visited and met each other. Each of these visits shared knowledge and learning on entry fee management, biophysical interventions, especially Assisted Natural Regeneration (ANR), different livelihood interventions and overall functionality of the CMOs.

15. Strengthening PF Operations, Voice and Accountability

In Forest PAs, the PF are apex bodies of VCF. The PFs form a critical intermediary between VCFs and CMCs to raise common issues with government stakeholders on the management of natural resources. CREL developed operational guidelines for PF meetings, and a flip chart tool kit to provide training directly to villagers (VCF

members) on key issues such as the importance of conservation, climate change resiliency, and gender equity.

During Year 4 CREL oriented all members from 26 PF to ensure they understood the purpose of the forum. The orientation also provided an overview of functions, ways to provide inputs to their respective VCFs, how to orient new members and allocate the CMC budget. The orientations explained the relationship between PFs and CMCs and PF representatives could participate in CMC meetings. A total of 592 (female-274) people were trained on these operational guidelines.

16. Building Capacity of VCF

One of CREL's objectives was to help people plan for climate change, including CMOs and members of the VCFs. During Year 2, CREL developed training curricula in climate change adaption and climate resilient NRM for CMO and VCF members to support climate resilient livelihoods. The content was organized into a flipchart using graphics and key words as a visual tool for engaging groups of people in a conversation on these topics. The capacity building program included sessions on climate change adaptation, climate resilient NRM and gender. CREL also developed a guidebook called for Nishorgo Shahayaks "Discussion topics for VCF meetings" which was referred to in VCF meetings on various issues including climate change, NRM, GBV, dowry and early marriage issues. In 860 villages CREL trained over 66,000 people (74% women) from VCFs and groups associated with the CMOs.

Furthermore, in 257 villages community members were oriented and supported to assess their vulnerability to impacts of climate change and develop plans to strengthen adaptation and reduce potential losses from climatic hazards. This was referred to as a PCVA – see Section IR3 C for more details). The result of each PCVA was an adaptation plan that included concrete documentation of vulnerabilities and climate hazards that was often used by local government to program and budget for investments to improve resiliency to climate change. The PCVA outputs were shared with other neighboring villages (VCFs) which had built capacity using the flipcharts and guidebook, and in total CREL helped 824 villages to produce village adaptation plans. Village-level adaptation priorities were also consolidated in a two-stage process, first for forest "beats" or UPs, and secondly for CMOs to incorporate in their plans.

Participants of a Financial Entrepreneurship and Literacy Center

CREL

CAPACITY BUILDING OF GOVERNMENT INSTITUTIONS (AND UNIVERSITIES)

To ensure that co-management and climate change resilience practices would be accepted and implemented by the government, CREL provided training to various levels of government and also developed curricula for universities and government training centers. Training at the Upazila level and training for government officials to implement policies are described under IR 1.

1. Government Staff Capacity Building

Previous co-management programs orientated GoB stakeholders on the concepts and principles of co-management, but due to periodic transfers within the government, often within a year a new officer would replace him or her and again need training. Furthermore, newly evolving changes in policy, NRM approaches, co-management practices, and climate change knowledge meant that officials needed updated and/or expanded training. CREL built the capacity of government officials through training courses and study tours which took advantage of lessons learned in other Asian countries who struggled with similar natural resources management issues.

2. Certificate Course on Applied Conservation, Climate Change and Policies

To build the capacity of government staff, CREL developed a three-week certificate course for officials within the FD, DoF and DoE and trained 52 officials during Years 3 and 4. The course covered applied conservation biology, climate change including adaption, climate resilient NRM, and co-management. Participants learnt about PA management policies and relevant laws, the content of guidelines prepared by CREL (IR1) on co-management and wetland sanctuaries, and strategic planning and management.

3. Orientation on Sustainable Forest Co-management for Biodiversity Conservation

Senior-Level FD officials, including DFOs, oversee and are involved in co-management of PAs, but are frequently transferred between locations. Many lack understanding of the institutions involved and how they function. To address this, CREL, in collaboration with the FD, arranged a series of workshops on sustainable co-management for biodiversity conservation for 166 (7 female) senior FD officials. Topics included sustainable co-management approaches in forest PAs, sustainable financing for co-management, and socializing strategies for the benefits of co-management and biodiversity conservation. These helped develop a shared understanding and expedited support from DFOs for co-management and CREL activities.

4. Orientation Workshop on Climate Resilient Wetlands and Fisheries Management

Building on guidelines on wetland co-management and wetland sanctuaries, CREL and the DoF organized a two-day orientation workshop in March 2016 in Sreemangal. The 15 participants included District Fisheries Officers, Upazila Fisheries Officers, Assistant Fisheries Officers posted in the primary wetland areas supported by CREL in Moulvibazar District as well as a number from other districts including Hobigonj, Fenchuganj and Sylhet. The orientation workshop covered wetland sanctuary guidelines, co-management guidelines, wetland leasing policy, wetland and fisheries management, and conservation of aquatic biodiversity, including field visits to Baikka Beel permanent sanctuary and Balla Beel in Hail Haor.

5. Study Tours, Exchange Visits and International Conferences

CREL provided government staff with opportunities to learn how other countries address similar natural resource management issues to those facing Bangladesh and to engage in dialog with peers from other countries. Study tours to other countries were effective ways to show government staff the possible impacts and different approaches used for co-management. CREL arranged study tours and/or supported attendance at international conferences to broaden the understanding of GoB officers and garner support for policy change to address climate resilience, wetlands management, fisheries management, forest management, climate change adaptation and co-management approaches.

These study tours strengthened relationships with different officials and between GoB agencies, which helped for example promote passing of the PA Rules. Over the LoP, CREL sponsored 15 study tours for 66 GoB senior officials. Table 8 summarizes these trips, the number of people, destination and purpose.

6. Introducing New Curricula into Universities and GoB Institutions

To ensure that the next generation of conservationists, GoB officials and development workers are prepared to tackle climate change issues and support co-management, CREL expanded and enhanced curricula in universities to include modules on climate change and co-management. During Year 2, CREL held workshops to assess the existing curricula of universities and training institutions. From this assessment, CREL identified 17 potential curricula topics based on the discussions with 30 departments across 16 universities as well as seven GoB training institutions. Further workshops and meetings were organized to get feedback on how these might strengthen their existing syllabi and processes for making curricula changes.

Table 8. CREL-Sponsored Overseas Study Tours.

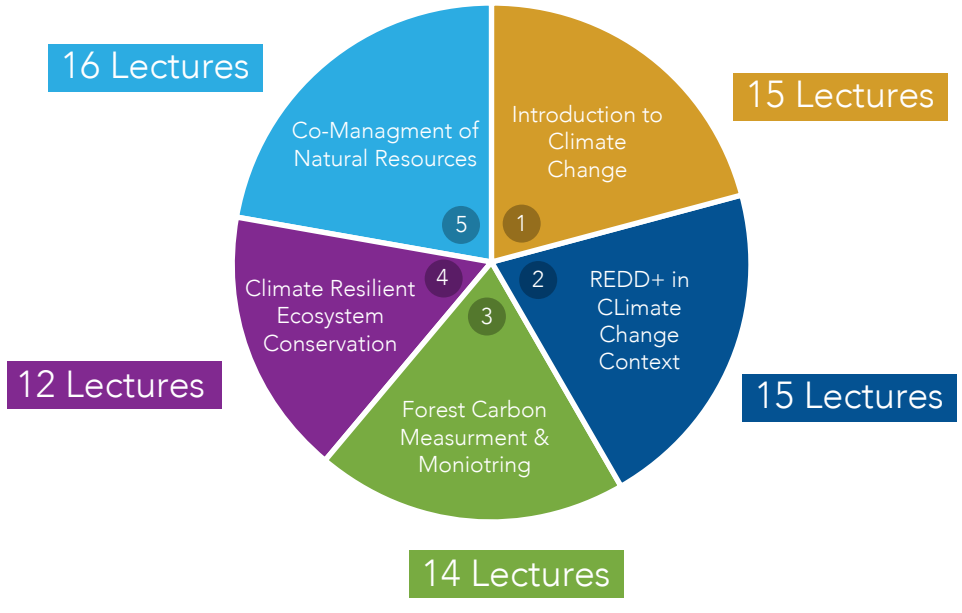
Countries	Year	# of participants	Participants	Purpose
Australia	2014	3	Senior MoEFCC & FD officials	World Parks Congress 2014, Sydney
Bhutan	2014	14	FD, DoE, DoF, MoEF, and MoL	Share and compare experiences on collaborative management.
France	2015	3	Senior FD officials	To attend the Convention of Parties (COP)- 21
Germany	2016	2	Senior DoE officials	Bonn Climate Change Conference, 2016
India	2015 & 2017	12	CMC members - Range and Beat Officers	To learn about forest and PA co-management and biodiversity
Indonesia	2015	13	Senior GoB (MoEFCC, MoL, DF, DoE, DoF) officials	PA Co-Management for Biodiversity Conservation in Forests and Wetlands
Mexico	2016	2	Senior FD & DoE officials	CBD, COP-13
Morocco	2016	2	Senior MoEFCC & DoE officials	COP 22, Marrakech
Nepal	2016	13	CMC and RMO members, Range and Beat Officers	To learn about community based NRM including forests, and PA co-management
Philippines	2016	2	Senior FD officials	To attend the Asia-Pacific Forest Conference
South Africa	2016	4	Senior officials from FD & MoEFCC	To join the CITIES Conference of COP
Thailand	2016	19	MoL, FD, DoF, DoE, Planning Commission.	To learn about participatory wetland and aquatic ecosystem management and policies
Total		**89**		

Based on this, topics were organized into four separate curricula and Bangladeshi experts were contracted to develop detailed course content. Due to the complex and lengthy approval process for curriculum approval, CREL engaged the services of a curriculum specialist to lead and consolidate the materials developed, incorporate additional globally available resources, and construct curricula that were consistent with accepted norms for high level curricula and were supportive of ongoing initiatives of the World Bank for university curriculum reform. This approach offers modular fully prepared curricula, not with the aim of universities adopting these as stand-alone courses, but materials that universities and their faculty can make use of material to strengthen their existing courses and teaching.

The curriculum was referred to as the Bangladesh Climate Resilient Ecosystems Curriculum (BACUM) and the lesson plans were developed into 72 individual PowerPoint presentations. Content from the USAID/Regional Development Mission for Asia (RDMA) funded, *Lowering Emissions in Asia's Forest (LEAF) Project* was incorporated and that curricula format was used as a template for CREL curricula design, which was developed into five major topics/modules, each with a number of lectures:

- Introduction to Climate Change (15 Lectures)
- Climate-Resilient Ecosystem Conservation (12 Lectures)
- Co-management of Natural Resources (16 Lectures)
- REDD+ in Climate Change Context (15 Lectures)
- Forest Carbon Measurement and Monitoring (14 Lectures)

Figure 6. Bangladesh Climate Resilient Ecosystems Curriculum



By the end of Year 4, CREL completed preparing these five modules and began orienting faculty of 15 interested universities. The project's curricula were widely shared with universities, USAID and the GoB through the distribution of USB drives and compact discs. CREL also shared the curricula with the Secretary and other high officials of MoEFCC. CREL provided 400 CDs and 50 USB drives with the full curricula content to 15 university faculty and interested professionals. Further, the materials were incorporated into USAID's website[3] as well as the www.nishorgo.org for download.

Six universities including (BAU, CU, IUB, JUST, KU, SUST) have incorporated topics from BACUM into their teaching. Feedback from the universities on these teaching materials has been positive.

CAPACITY BUILDING FOR NGOS (TRANSITION GRANTS)

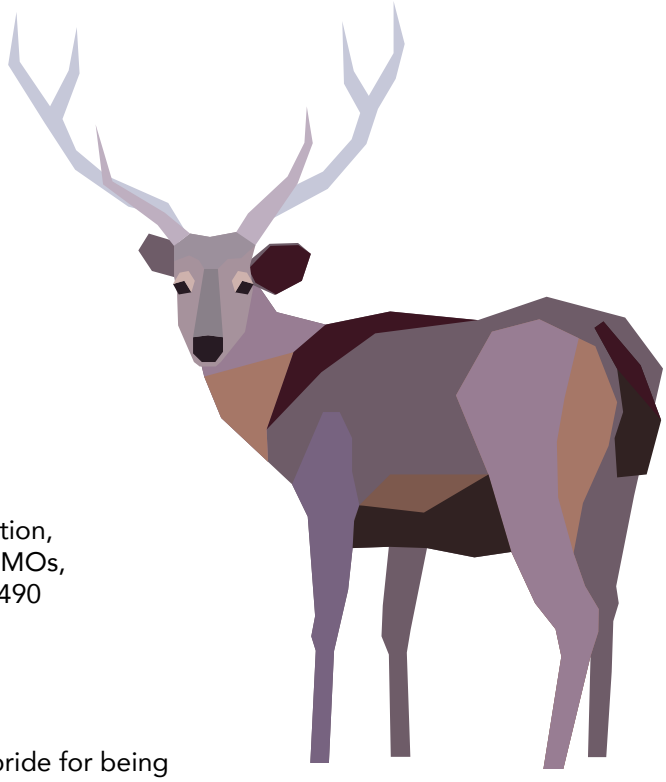
In line with the USAID Forward Initiative, CREL selected and worked with six national NGOs for nine months from late 2014 to mid-2015 to build their capacity to implement USAID grants. CREL requested expressions of interest from qualified NGOs and selected 18 organizations to be assessed using USAID's Organization Capacity Assessment Tool (OCAT). Winrock engaged Capacity Building Services Group to conduct the assessment. Based on this assessment and recommendations, six organizations (including three CREL regional implementing partner NGOs) were selected for inclusion in the Transition Grant training and preparation program: CODEC, CNRS, Friends in Village Development Bangladesh (FIVDB), Institute of Development Affairs (IDEA), NACOM and Young Power in Social Action (YPSA). CREL identified common weaknesses among the NGOs and identified six areas where all the NGOs needed help; the team then designed training modules and conducted training based on these common needs. CREL also worked with each NGO to formulate development plans based on their individual weaknesses. Five training and review modules (Table 9, bold) were developed and conducted for the six NGOs. These modules were developed and led by WI home office staff with support from the CREL grants team in Dhaka. For each of the modules, the participating NGO sent its relevant technical staff and one senior-level manager.

Table 9: CREL Capacity Building Activities for Transition Grant Program Participants

Date	Course/Activity	Module	Days	Lead
22-24 September2014	**Human Resources Policies and Procedures**	Module 1: General HR Outline Practices Module 2: HR Policies and Procedures Outlines	3	Swati Patel – consultant
10-12 November 2014	**Contracts Compliance**	Module 1: Assistance Award Compliance	3	Julieta Varron – WI
8-10 December 2014	**Finance/Administration**	Module 1+2 Module 3	3	Kevin Price –WI
26-27 January 2015	**Introduction to USAID Procurements**	Module 1: Procurement	1	Cindy Langston - WI
18-31 March 2015	**Quick Review of six NGOs with checklists for completed modules.**	By using 4 check list to determine NGOs improvements.	1	January 2015
9 April 2015	**Results shared with Winrock HO & finalized no. of NGOs for next training.**	By summarization of check lists	6	Grants Team
11-13 May 2015	**M&E**	Module 1: M&E 101 Module 2: USAID Indicators	3	Carol Stoney – WI
7-14 June 2015	**Review session on specific topics and preparation for external assessment**	Chart of Accounts, Compliance, other key systems and tools that will be evaluated	5	WI staff CBSG Grants Team
15 June – 27 August 2015	**External Evaluation by CBSG**	USAID OCAT and Non-U.S. Organization Pre-Award Survey Guidelines and Support (NUPAS) assessment tools were used	12	Capacity Building Service Group (CBSG)
30 September 2015	**Final report to USAID**		na	CREL

3 https://www.usaid.gov/bangladesh/crel-project/module-1

Performance of participants was monitored during and between trainings. Winrock provided one-on-one mentoring and consultations to review and improve NGO procedures to comply with USAID requirements. A final capacity assessment of each of the six NGOs using criteria and ranking methods based on USAID's OCAT and NUPAS was implemented at the end of the program to evaluate capacity related to governance, financial management and sustainability. Of the six participating organizations, CODEC, FIVDB, and CNRS achieved scores of at least 3 and were recommended to USAID. Three organizations have applied to USAID for funding under its local works program.



C. IMPACT

The capacity building activities provided knowledge and skills on topics such as climate change, co-management, policy implementation, NRM, finance and operations to more than 170 organizations (93 CMOs, 04 GoB departments, 8 District administrators and 65 UPs) and 12,490 (4,290 women) people.

CMO CAPACITY BUILDING

- People in leadership roles within CMCs gained a sense of pride for being a CMC member – they aren't paid but are proud to serve. Many went on to be elected to UPs.
- There are now democratic, open ballot elections to fill key positions in the CMCs. For example, in Fasiakhali and Medakachapia CMCs in 2017 there was competition between two or more people who stood to be president.
- CREL promoted good governance and empowered poorer/disadvantaged men and women to engage in local NRM governance, not just in locally elected positions, but also by chairing/leading sub-committees and working groups under the CMOs. In 2018 women held decision making roles in 92% of CMCs and 63% of CBOs (compared with 12% of CMCs and 32% of CBOs in 2014), while poor people held similar roles in 85% of CMCs and 95% of CBOs (compared with 37% of CMCs and 58% of CBOs in 2014).
- Women are now office bearers – the PA Management Rules 2017 recommends that 33% of the members of CMCs must be women, and that one of the two CMC Vice-Presidents should be a woman.
- "Open Days" attracted villagers and others, who were not CMO members, to learn how CMOs were managed and about their finances, etc. This has created trust.
- Three members from each of 23 CMOs serve 40 UP Standing Committees, namely, Family Conflict Resolution & Women and Children Affairs UP Standing Committee, Agriculture, Fisheries and Livestock UP Standing Committee and Social Welfare and Disaster Management UP Standing Committee.
- Communities have increased their awareness on climate change and the importance of protecting natural resources and conservation. Local people are less likely to kill wildlife, and more readily report on illegal poaching and illegal tree felling.
- Upazila Administration and FD depend on the support of CMCs to implement forest policies and related laws. For example, several CMCs in 2016-18 were involved in working with FD and Upazila administrations and played a key role in resolving conflicts and enforcing eviction of illegal encroachers within PAs.
- CMO members have demonstrated their ability to properly manage sizeable grants, including holding internal audits and successfully facing external audits.
- CMO members have demonstrated they can communicate with local private concerns to raise funds to implement conservation activities and obtain support to diversify livelihoods of natural resource extractors.
- People are more aware of their rights – for example, the members of VCFs will question CMC members about fund allocation from grants.
- CREL linked CMOs to join the Cyclone Preparation Program, CREL distributed disaster preparation information to CREL beneficiaries and promoted local solutions such as village markings and flags. 14 CMOs were involved in providing hazard warnings to about 37,000 people in local communities in 2017. CMOs have for example disseminated cyclone warnings and made public announcements about the hazards of fire to forests in the dry season.
- CMOs are generating income and paying for some of their operating costs and activities.

GOVERNMENT CAPACITY BUILDING (AND UNIVERSITIES)

- There is increased support of co-management within the government including at higher levels
- Government officials who are part of co-management bodies, such as the member-secretaries of CMCs, are more aware of the importance of gender and women's in role in conservation.
- Increased participation of government in community meetings and trainings.
- There is greater willingness among Government officials to listen to CMOs.
- Local extension agents are more engaged with communities.

NGO CAPACITY BUILDING

Under the framework of USAID's Local Works program[2], three CREL implementing partner NGOs (CODEC, CNRS and NACOM) applied in 2018 for United States Government (USG) funding aiming to sustain support to CMOs and continue to build self-reliance and long-term development of NGO-CMO linkages.

D. LESSONS LEARNED

CMO CAPACITY BUILDING

- It was important to define what a sustainable CMO is in a measurable way, so training efforts could focus on achieving the goal through an adaptive process.
- Each CMC's impact on forest conservation is still at the mercy of the FD. It is important to have the backing of the DFO.
- We assume communities are interested in the project issues, but in fact their members are busy people and often mobilizing people was difficult, until they saw the benefits.
- Forest and wetland resource users tend to be from marginalized or minority groups (women, Hindu, ethnic minorities, etc.) who still face social constraints in standing up to express their needs. Empowering these groups is complex and depends on changing centuries of social norms and attitudes. Capacity building and the financial and entrepreneurial literacy program help (in the case of women, see IR4), but more efforts are needed.
- USAID's Women's Empowerment Project and Noba Jatra adapted CREL's financial entrepreneurial literacy course to empower women and improve livelihoods respectively.

GOVERNMENT CAPACITY BUILDING (AND UNIVERSITIES)

1. Study Tours

- Without exception, the study tours created good will. Relations were created between CMOs and GoB officers which supported the project.
- An expert guide should coordinate and accompany field trips, and government participants should be those assigned to positions impacting co-management either at field or policy level and not whoever is next due to go on a study tour or who is available to travel.

2. University Curriculum Development

- Some of the topics already existed but were embedded in other curricula. Co-Management was new, however.
- Changing curricula within a university takes years, especially in public universities. Professors said, "don't change curricula, give us materials to incorporate". CREL adjusted its approach and developed a modular system with lesson plans and lectures so faculty can now pick and choose material from within the modules.
- When assessing existing curricula, and what was needed, it was important to meet with professors – they make the decisions. We reached out to professors across universities and departments to get their input. This also paves the way to get their buy-in. They will more readily accept new material if they had an input into developing it.
- The modules provided instructors in more interesting ways to teach students, which professors appreciated.
- When rolling out the curricula, it was important to have workshops to introduce the material in person. It gave

2 https://www.usaid.gov/partnership-opportunities/ngo/localworks

faculty an opportunity to learn about it and make connections with CREL staff.
- It was important to package all relevant materials in an easily acceptable format (CDs worked in this case)

NGO CAPACITY BUILDING

- Organizations need one-on-one support in addition to training.
- It is important to have the right people attending – those that make the decisions, and those that do the work.

Guidance book
CREL

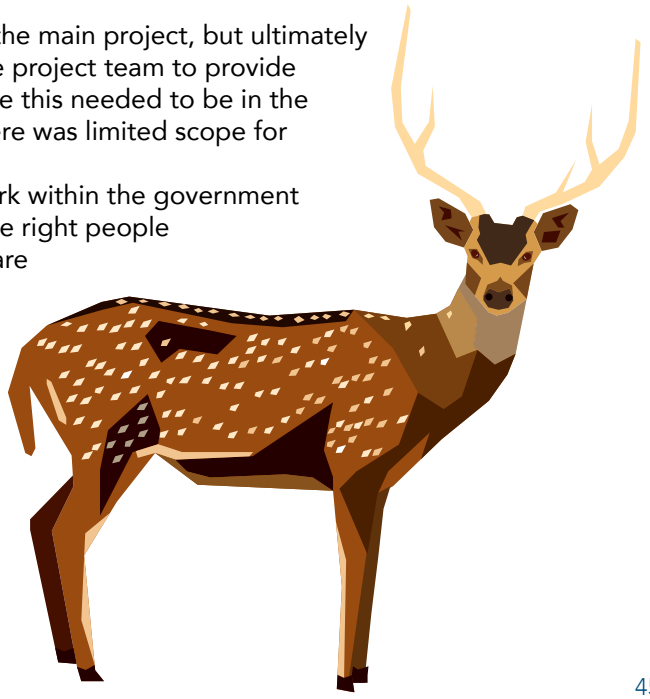
E. CHALLENGES

CMO CAPACITY BUILDING

- Co-management offers a different model of forest management so in some cases, there were awkward relations between government representatives and CMC community members.
- Co-management is a complex approach that needs to mobilize communities, and many government staff lack understanding on local/community social dynamics.
- Communication within the communities tends to be top down. CMCs share information with VCFs, but CMCs don't always listen to what VCFs have to say.

GOVERNMENT CAPACITY BUILDING (AND UNIVERSITIES)

- Staff turnover at both the field and central level in the government agencies meant that capacity building needed to be repeated, or that expected impacts were reduced when officials well-oriented on co-management were transferred elsewhere.
- Curricula development with universities was a side activity to the main project, but ultimately brought together expertise and lessons developed among the project team to provide resources for training future generations of professionals. Since this needed to be in the later stages of the project (to benefit from project lessons) there was limited scope for follow ups to determine use of materials or to refine them.
- Overseas study tours were often seen as more of a benefit/perk within the government culture, rather than a targeted opportunity to learn. Often, the right people are not selected for the right tours (i.e. relevant practitioners are not selected for the tours). As a result, often participants in the study tours were not familiar with the topics or had no influence on the relevant policy, so the impact of these investments was not as great as it could have been.



NGO CAPACITY BUILDING

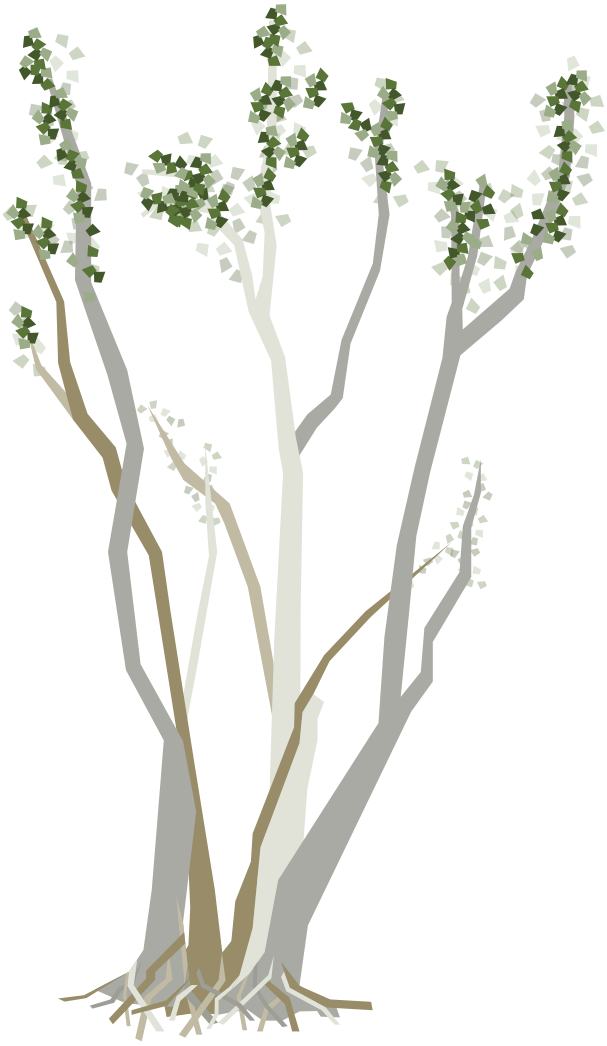
- Staff turnover in the NGOs affects capacity building.
- Changes in USAID policy and its application limited the scope for partner NGOs to obtain direct funding.

Spotted deer (Axis axis) in the Sunderbans
CREL

IR 3: Strengthening Planning and Implementation of Climate Resilient NRM and Adaptation

The goals of CREL were to conserve biodiversity, improve governance, and strengthen ecosystem resilience to climate change. Implicit in these goals was reducing greenhouse gas emissions by restoring the health of damaged ecosystems. High population density in Bangladesh puts pressure on limited natural resources. Yet Bangladesh is home to significant numbers of several globally threatened species such as the Bengal Tiger (Panthera tigris), Asian Elephant (Elephas maximus), Western Hoolock Gibbon (Hoolock hoolock), Spoon-billed Sandpiper (Calidris pygmaea), Indian Skimmer (Rynchops albicollis), and Masked Finfoot (Heliopais personata), and provides important habitat for internationally important numbers of wintering migrant waterbirds. Much of the damage to aquatic, forest and coastal ecosystems which has occurred to date is the direct result of human activities. CREL empowered local communities to protect and restore ecosystems and habitats and to reduce degradation. CREL assisted the GoB and CMOs develop plans to map and manage their resources and restore degraded ecosystems through grants and technical assistance. This chapter describes CREL's work to develop landscape, CMO and village level plans and the activities CREL promoted to conserve natural resources and ecosystems.

A. ECOSYSTEMS OVERVIEW



CREL worked in 31 sites within four ecosystems, including: 1) the Sundarbans, the world's largest **mangrove forest** located in south-west Bangladesh; 2) a number of **terrestrial forest ecosystems** – Sal (*Shorea robusta*) forest in Tangail District and hill semi-evergreen forests in the east of the country in Moulvi Bazar, Habiganj, Sylhet, Chittagong and Cox's Bazar Districts; 3) large **inland wetland ecosystems** within two haor basins in Moulvi Bazar District in north-east Bangladesh; and 4) several discreet **coastal ecosystems** that include islands, adjacent mainland and surrounding coastal waters in Cox's Bazar, Noakhali and Barguna Districts.

SUNDARBANS ECOSYSTEM

The Sundarbans is the largest mangrove forest in the world and is intersected by a complex network of tidal waterways, mudflats and islands of salt-tolerant mangrove forests and lies at the mouth of the Ganges River. The total area of Sundarbans in both Bangladesh and India is estimated at 10,000km^2, the Bangladesh area of reserved forest is over 6,000km^2. The forest covers the moribund delta of the Ganges River and receives freshwater inputs in the wet season largely from the Ganges and Padma Rivers. The area itself gets its name from the large number of Sundari (*Heritiera fomes*) trees in the region. The area is generally free of permanent habitation and almost 70% covered by mangrove forest, the remainder being waterways. This massive area is home to some 300-500 globally endangered Bengal Tigers (Panthera tigris) – one of the largest remaining populations on the planet- of which between 100 and 400 live in the Bangladesh Sundarbans (estimation is complex and debated, with surveys ongoing). Accompanying the Tigers are a plethora of other species including Fishing Cat (*Prionailurus viverrinus*) (globally endangered), Spotted Deer (*Cervus axis*), Masked Finfoot (*Heliopais personata*) (globally endangered), a large diversity of other water birds, Salt-water Crocodile (*Crocodylus porosus*) (considered nationally endangered), and Burmese Python (globally vulnerable). The waters of the Sundarbans hold important populations of the Ganges River Dolphin (*Platanista gangetica*) and Irrawaddy Dolphin (*Orcaella brevirostris*), respectively globally endangered and vulnerable. The Sundarbans are compromised by continued poaching of wildlife, overfishing and harvesting of aquatic species, and extraction of wood and NTFPs. The Sundarbans are also adversely affected by increased siltation and salinity intrusion due to upstream water abstraction, polders and embankments and agricultural activities, and are subject to an increasing number and intensity of tropical storms and cyclones. The Sundarbans receives many tourists who fortunately are confined to relatively small areas and boat routes within the forest. CREL worked with four CMCs and associated villages linked with four forest ranges of the Sundarbans.

TERRESTRIAL FOREST ECOSYSTEMS

The majority of terrestrial forest ecosystems where CREL worked are semi-evergreen tropical hill forests in the eastern part of Bangladesh and include areas that border both India and Myanmar. Within this forest type are mixed tropical evergreen rainforests in the north-east, for example Lawachara NP in the northeast (home to the largest Western Hoolock Gibbon population in Bangladesh), and almost pure stands of tall Garjan (*Dipterocarpus* spp.) forests in for example Medhakachapia NP in the southeast. The degraded but still diverse tropical forests with cane, bamboo, shrubs and climbers in the southeast are home to a considerable population of Asian Elephant and a high diversity of other mammal and bird species. In the Cox's Bazar - Teknaf region these forests also border coastal ecosystems of biological significance. There are a number of national parks and wildlife sanctuaries within these forest ecosystems, however most are secondary forest and very little primary forest remains due to extensive logging, extraction of firewood, and forest conversion to agriculture. In addition, in the central region north of Dhaka on relatively flat land are deciduous forests dominated by Sal, which have been even more heavily degraded by intense human pressure including encroachment for industries and settlements. Many of these PAs have significant tourism activities. CREL worked in 14 PAs with 19 CMCs in these forests, including two in the Sal forest of Modhupur NP, and 17 in tropical hill forests in the northeast and southeast, across six districts.

Baikka Beel permanent wetland sanctuary, Hail Haor, northeast
CREL

FRESHWATER WETLAND ECOSYSTEMS

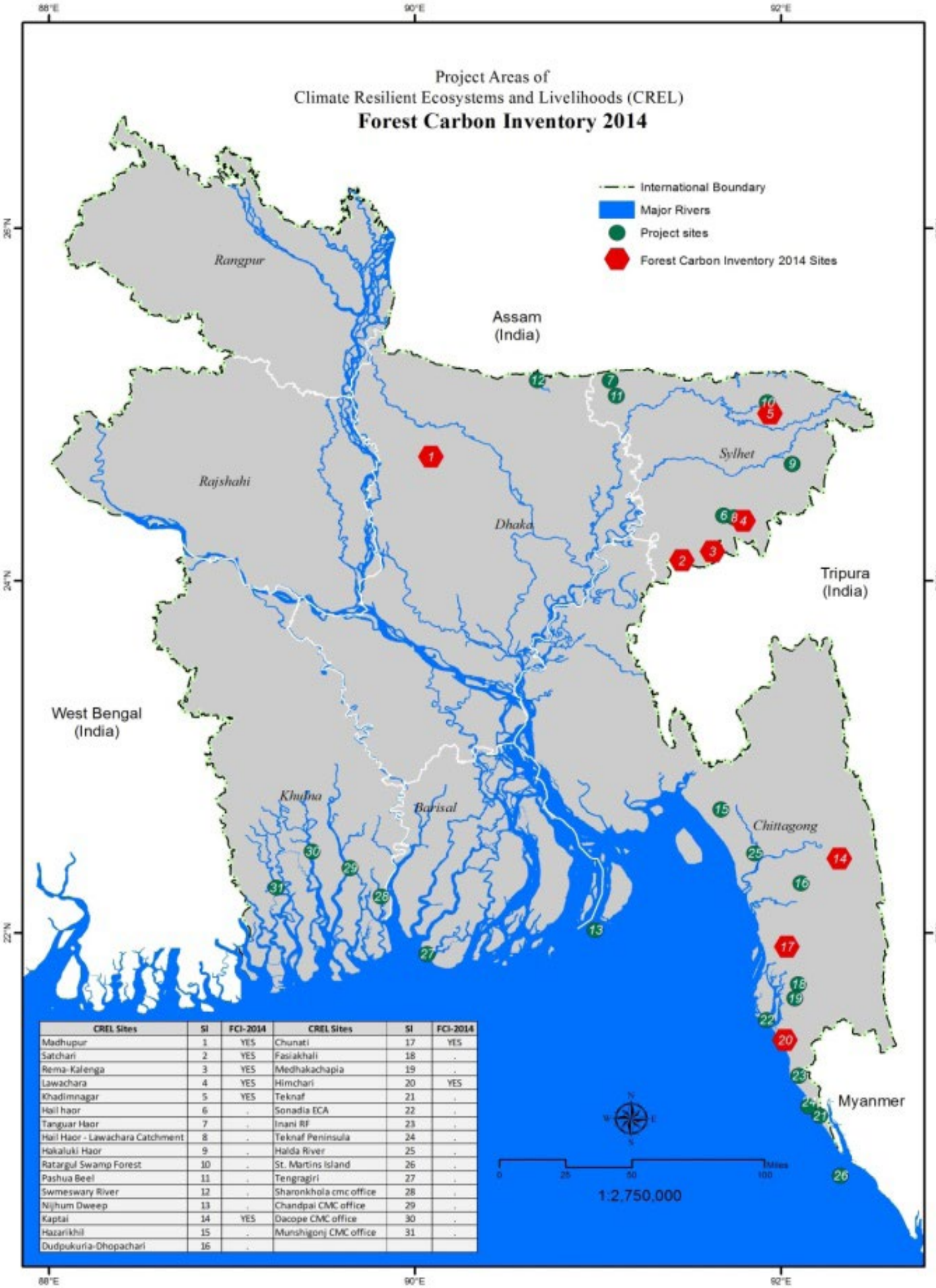
The main wetland ecosystems where CREL worked are part of the larger haor (depressions) basin in northeast Bangladesh. As a whole this area of saucer-shaped shallow depressions covers up to 25,000 square kilometers and comprises of hundreds of individual haors,an ecosystem unique to Bangladesh. During the monsoon the haors fill with rainwater and surface runoff water from rivers and canals, mainly flowing from the nearby hills in India, to become a vast inland sea of water in which the villages appear as raised islands. In the dry season much of the land is cultivated with rice and water and aquatic biodiversity are concentrated in thousands of smaller beels (shallow lowlying lakes). These wetlands are a very important wintering area for waterbirds using the Central Asian Flyway, as well as for resident waterbirds and for migrant birds dependent on reed-swamp thickets. In total 75 migrant waterbird species, 42 resident waterbird species, and 92 other migrant bird species occur in the haors, including for example critically endangered Baer's Pochard (*Aythya baeri*). The haors are also of major importance for a high diversity of freshwater fish (including nationally threatened species), endangered Fishing Cat (*Prionailurus viverrinus)*, and are home to 13 species of freshwater turtles, of which eight are globally threatened. CREL focused efforts on two of the largest haors, both in Moulvi Bazar District and both of which had co-management initiatives from past projects. Hakaluki Haor ECA is the largest haor, covering at least 18,000 ha. Hail Haor covers about 12,000 ha and lacks formal conservation status, although within it lies an important community managed wetland sanctuary ("Baikka Beel"). The haor wetlands are being heavily encroached by agriculture and aquaculture, which changes their characteristics, and are also adversely affected by variations of rainfall and intensity of flooding, as well as by over-exploitation, encouraged by traditional leasing of public waterbodies by the land administration. Tourism is growing modestly, but Hakaluki Haor is relatively remote in comparison to Hail Haor. CREL worked with eight RMOs and five VCGs respectively in Hail and Hakaluki Haors to improve inland freshwater ecosystems and fisheries, protect wetland sanctuaries and restore swamp forest. In addition, Ratargul swamp forest was designated as a PA and co-management was established in the last year of the project. This is one of the few substantial patches of mature swamp forest in Bangladesh, comprising Hijal (*Barringtonia acutangula*) and Koroch *(Millettia pinnata)* – trees adapted to deep flooding, and an ecosystem virtually confined to northeast Bangladesh and Cambodia.

COASTAL ECOSYSTEMS

Coastal ecosystems in Bangladesh (not including the Sundarbans) are dominated by shallow silt laden waters, extensive intertidal mudflats, and deltoid islands or chars, several of which have been planted with mangrove forests. In addition, there are sandy beaches, sand dune systems, and on St Martin's Island the only coral formations in the country. These extensive areas are globally important for wintering waterbirds, particularly shorebirds. Several globally threatened species are present including about 10% of the world population of the critically endangered Spoon-billed Sandpiper (*Calidris pygmaea*), about half of the world population of vulnerable Indian Skimmer (*Rynchops albicollis)*, significant numbers of endangered Spotted Greenshank (*Tringa guttifer)* and endangered Great Knot (*Calidris tenuirostris)*. Other notable species include nesting beaches for marine turtles, particularly the vulnerable Olive Ridley Turtle (*Lepidochelys olivacea)* and endangered Green Turtle (*Chelonia mydas*); as well as cetaceans - Finless Porpoise (*Neophocaena phocaenoides)*, Irrawaddy Dolphin (*Orcaella brevirostris)* and Bottlenose Dolphin (*Tursiops aduncus)*. These areas are all affected by changing salinity and sea levels due to climate change, as well as human interventions – particularly over-harvesting of fish and other aquatic life, grazing pressure, deforestation, and intensive aquaculture (shrimp cultivation). A few areas, such as St. Martin's Island, receive heavy tourist pressure during the dry season. CREL worked in three districts with two CMCs in coastal forest PAs (Nijhum Dwip and Tengragiri) and with three ECAs (Sonadia Island, Cox's Bazar-Teknaf, and St. Martin's Island) involving 40 VCGs, to conserve the biodiversity of coastal ecosystems.

Mudflats and secondary mangroves in Sonadia ECA, Cox's Bazar region, Photo: Sayam U Chowdhury

Figure 7.



CREL Sites	Sl	FCI-2014	CREL Sites	Sl	FCI-2014
Madhupur	1	YES	Chunati	17	YES
Satchari	2	YES	Fasiakhali	18	.
Rema-Kalenga	3	YES	Medhakachapia	19	.
Lawachara	4	YES	Himchari	20	YES
Khadimnagar	5	YES	Teknaf	21	.
Hail haor	6	.	Sonadia ECA	22	.
Tanguar Haor	7	.	Inani RF	23	.
Hail Haor - Lawachara Catchment	8	.	Teknaf Peninsula	24	.
Hakaluki Haor	9	.	Halda River	25	.
Ratargul Swamp Forest	10	.	St. Martins Island	26	.
Pashua Beel	11	.	Tengragiri	27	.
Swmeswary River	12	.	Sharonkhola cmc office	28	.
Nijhum Dweep	13	.	Chandpai CMC office	29	.
Kaptai	14	YES	Dacope CMC office	30	.
Hazarikhil	15	.	Munshigonj CMC office	31	.
Dudpukuria-Dhopachari	16	.			

B. KEY ACTIVITIES

CREL supported ecosystem management, restoration and planning activities in all target ecosystems and let ecosystem-specific activities at the village, CMO, landscape and national levels. The project helped plan and implement climate resilient NRM practices, helped people use climate change information in decision-making and facilitated funding for CMOs, including revenue and entry-fee sharing. Examples of activities include: **planning** (strategy development, PCVAs, and Management Plan preparation); **conservation actions** such as re-afforestation of mangroves to stabilize shorelines, wetland restoration, dune stabilization, forest protection, direct species protection, e.g. marine turtles; and **mapping, monitoring and inventorying** (mapping resource boundaries; developing SOPs for forest inventories; assessments of carbon stock; and monitoring of populations and diversity of birds and fish, see MEL section on page 126). The following sections describe these interventions.

Carbon inventory work in Tengragiri
CREL

C. IMPROVED PLANNING FOR CLIMATE RESILIENT NRM.

CREL assisted the GoB and CMOs to improve NRM and prepare for the impacts of climate change by resource mapping, developing a set of SOPs and helping the FD and CMOs develop long term plans for the PAs and CMOs respectively.

MAPPING, INVENTORIES AND DATABASES

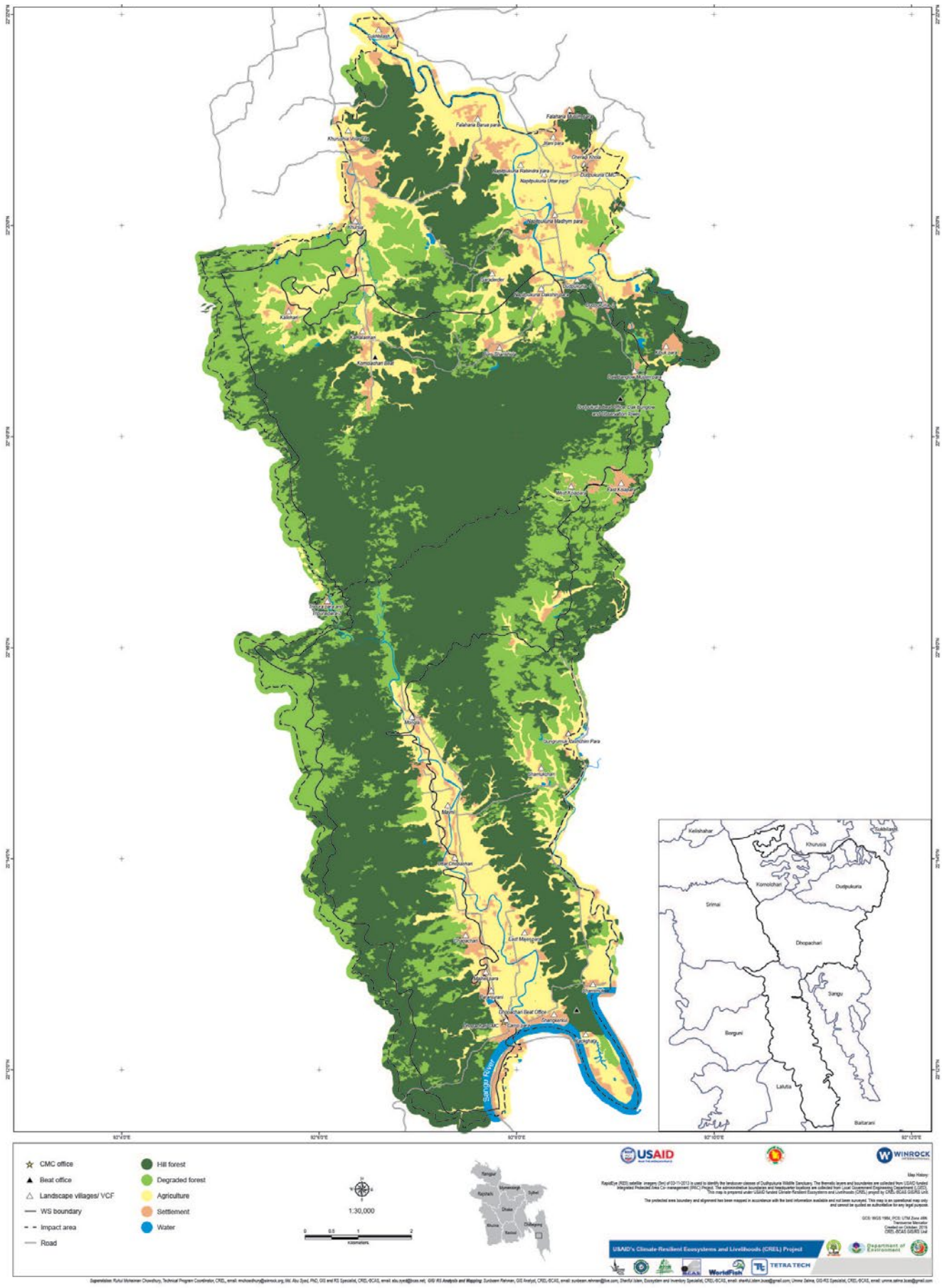
CREL assisted the FD to develop a foundation for planning – developing SOPs for conducting forest inventories; conducted forest carbon inventories in 13 PAs (Figure 7), and mapped forest and other land cover areas by developing Geographic Information Systems (GIS) layers for CREL supported sites (Figure 8). CREL worked closely with the GoB, FD, Food and Agriculture Organization (FAO), and UNDP and ensured these efforts supported the national REDD+ strategy. Baseline maps developed by CREL will allow the FD to measure the change in forest cover over time in CREL supported PAs and their buffer and landscape areas.

CREL worked closely with the FD, facilitating meetings and two workshops related to developing a national REDD+ strategy, emphasizing the importance of an integrated national forest inventory, and developed methodologies that allow Bangladesh to monitor carbon stocks and Greenhouse Gas (GHG) emission from land use change with high accuracy, minimal effort, and maximum potential to achieve GHG reductions. As part of this work Winrock summarized all past inventory results and methods that had been conducted in Bangladesh and coalesced them into a single SOP. Bangladesh can now conduct a national forest inventory that will incorporate past results and move forward with a single simplified method that will be recognized by the international community. The methods identified unique ways to map and monitor forest degradation, which is a major threat to forests in Bangladesh.

With this approach, CREL assisted the FD to conduct forest inventories in thirteen PAs (see Figure 7): Khadimnagar NP, Lawachara NP, Satchari NP, Modhupur NP, Kaptai NP, Himchari NP, Rema-Khalenga WS, Chunati WS, Hazarikhil WS, Bariadala WS, Nijhum Dweep WS, Tengragiri WS and Ratargul Special Biodiversity PA. These inventories contributed to the landscape and CMO management plans and will help CREL and the FD to measure changes in biophysical conditions. CREL's SOPs and PA forest inventories directly informed and influenced the subsequent national REDD+ inventories and initiatives of GoB and UNDP-FAO and support national REDD+ readiness.

CREL established a comprehensive geo-database for target landscapes. USAID-Geocenter helped with access to USG high resolution imagery (1-2 m resolution) archives, which represented significant savings. As part of this work, the CREL team developed a spatial boundary, delineating areas where co-management supported by the project had a direct influence (core areas) and surrounding regions where the project had an indirect influence (buffer and landscape boundaries). CREL utilized existing data sets to establish efficient methods for developing

Figure 8. Dudpukuria–Dhopachari Wildlife Sanctuary
Showing Impact Areas of Dudpukuria CMC and Dhopachari CMC



land cover maps for integration with existing Bangladesh land cover maps. For the influence areas defined, CREL developed land cover maps using remote sensing to map areas of forest, shrub land, cropland and urban areas. Existing spatial layers for political boundaries, infrastructure, topography, hydrology, land use, climate change, and more were compiled. These layers were used to assess patterns of land use change, risk for biophysical change and natural disasters, and other landscape level analyses. This informed establishment of robust baselines for future assessment of medium-long term natural resource and biophysical change at all sites.

These land cover maps can be used to fine-tune estimates of reduced GHG emissions from PAs and were used to identify areas that were most at risk from deforestation. This guided where CREL activities would be most effective at stopping deforestation and forest degradation.

Further details and a list of maps/GIS layers that have been generated by CREL and shared with the concerned GoB departments are provided in the MEL section and the CREL Report on Geo-Spatial Database and Products (July 2017).

D. NRM STRATEGY DEVELOPMENT

CREL worked with the FD, DoE, DoF, CMOs, local government including local land administration, concerned government agencies, and communities to develop ten-year management plans to protect and restore resilient natural resources. This was done at multiple levels including PA or ECA plans (including the landscape around the PA) and CMO management plans. These plans laid out long-term visions that coalesced stakeholders around agreed goals and prioritized activities and provide guidance for all stakeholders involved in resource management use in PAs, ECAs and adjacent landscapes.

FOREST PA

In the Sundarbans, terrestrial forest ecosystems and forest PAs in coastal ecosystems, CREL has filled gaps and updated and improved the quality of planning. Prior to CREL some forest PAs had management plans (such as the Sundarbans Integrated Management Plan), but the others did not or their plan had expired. After review with the FD, responsibilities for supporting development of management plans were agreed between CREL and other development partners. CREL initiated preparation of management plans for the forest PAs it had been assigned responsibility for and collaborated with other projects where they took a lead in this endeavor. Consultants were hired to work with the FD to develop PA plans and to conduct extensive consultations with CMCs and other stakeholders. The plans outline preferred management strategies and operations, investments for biophysical improvements and strategies to address negative impacts of climate change. The Management Plans

Life in the Sunderbans
CREL

outline objectives, appropriate actions and responsibilities for stakeholders (the FD, co-management bodies) for: protection, restoration to improve ecosystem productivity, biodiversity conservation, climate resilience and adaptation activities, resource substitution options for community members, non-extractive uses (e.g. ecotourism), and where appropriate, arrangements for sustainable resource use and zoning. They also confirm co-management provisions for participation and representation of all stakeholders, including women and minority community members in decision making, and summarize monitoring approaches and responsibilities.

Plans were developed through a participatory process with inputs from the FD, from the local administration, and from different stakeholders in local communities. The consultants incorporated findings of PCVAs (see below) in the plans. These plans describe the resources to be managed based on multiple uses and include a breakdown of responsibilities and outline a schedule of activities by year for ten years.

The Forest PA management plans prepared through CREL cover: Khadimnagar NP, Chunati WS, Fashiakhali WS, Himchari NP, Rema-Khalenga WS, Satchari NP, Lawachara NP, Modhupur NP, Kaptai NP, Medakacchapia NP, Tengragiri NP, Ratargul Special Biodiversity Area,

and Sundarbans East WS. In addition, CREL provided inputs to management plans prepared under other projects for Nijhum Dwip NP and Dudpukuria-Dopachara WS.

WETLAND LANDSCAPE AREA PLANS

Prior to CREL, some biologically significant areas in freshwater and coastal ecosystems including ECAs had outdated plans (such as Sonadia ECA), while others (such as the two haors) lacked any landscape level plans at all. CREL prepared two haor level plans, including their respective landscapes, and worked with VCGs and RMOs to develop two wetland sanctuary management plans, one within each of the two haors. Consultants were hired to work with the DoE and DoF to develop the wetland landscape plans and conducted extensive consultations with CMOs and other stakeholders. The plans and activities within them are comparable to those explained for forest PAs, and outline responsibilities for stakeholders (the respective government agency, co-management bodies and community-based organizations – ECA committees, VCGs and RMOs).

Plans were developed through a participatory process with inputs from the relevant lead government agencies (DoE for ECAs, DoF for Hail Haor) but with inputs from a wider range of relevant government agencies, from local administration, and from stakeholders in the local communities. The consultants incorporated findings of PCVAs (see below) in the plans and describe the resources to be managed based on multiple uses. The wetland landscape plans prepared cover Hail Haor and Hakaluki Haor. They include a breakdown of responsibilities and outline scheduling of activities by year for ten years.

CO-MANAGEMENT PLANS (ALSO DISCUSSED UNDER IR2)

Building on the development of PA and wetland landscape plans, in Y4 and Y5 CREL helped each CMO develop a ten-year plan which supported the PA or wetland management plan. These plans gave each CMO a strategy/vision for the future, clarified responsibilities and priorities, and increased the sustainability of the CMOs (CMCs, RMOs, and VCGs). These plans provide CMOs with a strategy, planned activities, as well as a budget of activity costs. Details of the CMO planning are provided in IR2 as part of the capacity building activities. With detailed CMO plans and budgets, potential funding sources (government, donors) could identify and fund specific aspects of the plans.

In several cases, two CMCs support one PA. The CMCs needed to prioritize activities and their plans serve as a subset of these larger PA plans. In addition, CMC Long-term Plans explicitly set out their organizational management and fundraising needs. As the Sundarbans mangrove forest already had a well-developed integrated plan adopted by the FD, here the emphasis for CREL was to help the four CMCs develop long-term plans in complement to the overall Sundarbans plan.

Likewise, within freshwater wetlands and coastal ECAs, the VCG and RMO plans describe investments for biophysical improvements, and how to address climate vulnerability within the CBO's working area. This included seasonally flooded lands and areas that lie adjacent to waterbodies and swamp forests managed by these communities and which influence their overall biophysical condition. The long-term plans set out practical rules for communities to maintain sustainable harvests, conserve sanctuaries, and restore ecosystem productivity. These plans also set out their organizational and financial management systems and also draw upon PCVAs (see below).

Co-management Committee meeting at Kaptai NP

CREL

4. CMO ADPS

Each CMO's long term plan includes a budget broken down by year. These are reviewed annually by the CMOs adjusted accordingly to develop ADPs, which identify key activities for the year along with a budget and resourcing plan. These plans comprise the targets and agreement of the CMOs on what resources they expect to secure for implementation of desired actions. With these budgets, CMOs can more easily leverage government resources, whereby respective government partners include allocations for the CMOs in their annual budgets. The ADPs also allow CMOs to request other priorities to be directly addressed by other government agencies, non-government and pri-

BOX 14:

Steps undertaken by local community in PCVA

1. Facilitators reviewed maps, identified communities and met with senior leaders of the community to obtain their endorsement of the process.
2. Identified the resource base and the location of hazards in through Transect Walks and drawing resource and hazards map.
3. Prioritized the severity of hazards through a trend analysis matrix/table based on votes cast.
4. Prepared hazard and livelihood calendars for the Bangla year to identify links between hazards and livelihoods, including climate stresses (e.g. temperature rise, changes in rainfall / seasonal patterns) and natural disasters (flood, cyclones and drought).
5. Developed vulnerability matrix identifying the most affected sectors (livelihoods, natural resources, and others) by scoring against identified hazards.
6. Identified coping strategies for vulnerable groups (farmers, fishers, landless, forest resource users, women); formulated an adaption plan and prepared an adaption map through Focus Group Discussions (FGD) and Key Informant Interviews (KII).
7. PCVA findings were validated in stakeholder workshops involving community participants and representatives from the relevant tiers and bodies involved in co-management, as well as the local government council (UP).
8. Adaptation plans were consolidated upwards in forest PAs at the Beat level, and outwards from the selected PCVA villages to other nearby villages based on the PCVA findings.

Maintaining swamp forest saplings in Hakaluki Haor
CREL

vate sector sources. The ADPs are developed based on the CMO long term plans and informed by existing PA management plans/ wetland landscape plans. Over the course of CREL an improvement in CMO planning has been observed such that the CMOs now develop ADPs themselves that are realistic and are able to achieve their objectives and exceed their targets.

E. PARTICIPATORY CLIMATE VULNERABILITY ASSESSMENT

CREL supported communities living adjacent to wetlands and protected forest areas to identify key climatic hazards and associated climate risks and vulnerabilities faced by poor, women and marginalized groups. This process worked with VCF in forest PAs, with VCGs in ECAs and with the RMOs in Hail Haor. CREL developed a systematic and participatory process for stakeholders to engage in assessing potential challenges associated with climate change, and the creation of plans that were shared with other branches of government for action and support.

CREL partner, BCAS, designed the PCVA approach then trained project staff in the four regions in PCVA methods and tools. The PCVA teams included local people, project staff and climate scientists.

There were four key stages of preparing the PCVA: 1) data collection and orientation; 2) participatory research and field work with village stakeholders; 3) participatory analysis of risks and vulnerabilities; and 4) development of a local adaptation and mitigation plan. The detailed steps are summarized in Box 14. These plans included immediate activities and actions for the longer term (see Box 15). The plans were shared with CMOs and government agencies for consideration and inclusion in their plans. The PCVA findings helped in the development of PA management plans and CMO long-term plans, and pooled local resources and local knowledge in the implementation of adaptation options in forest, wetlands, agriculture, water, health, and infrastructure development. The findings also helped build local capacity and institutional linkages to support the initiatives of CMOs for climate change adaptation.

The findings of the PCVAs were consolidated at the forest beat/union level through multi-stakeholder consultations involving representatives from government agencies (the FD, DoF, Department of Livestock Services, Department of Cooperatives and Department of Public Health Engineering); local government (UP chairman and members); and local communities (VCFs, CMCs and other community members). These stakeholders validated the representative village PCVAs, generalized these to the villages across the respective beat/union, and finalized the list of threats/challenges and possible adaptation options to maintain ecosystem functionality and livelihoods in the face of a variable and changing climate.

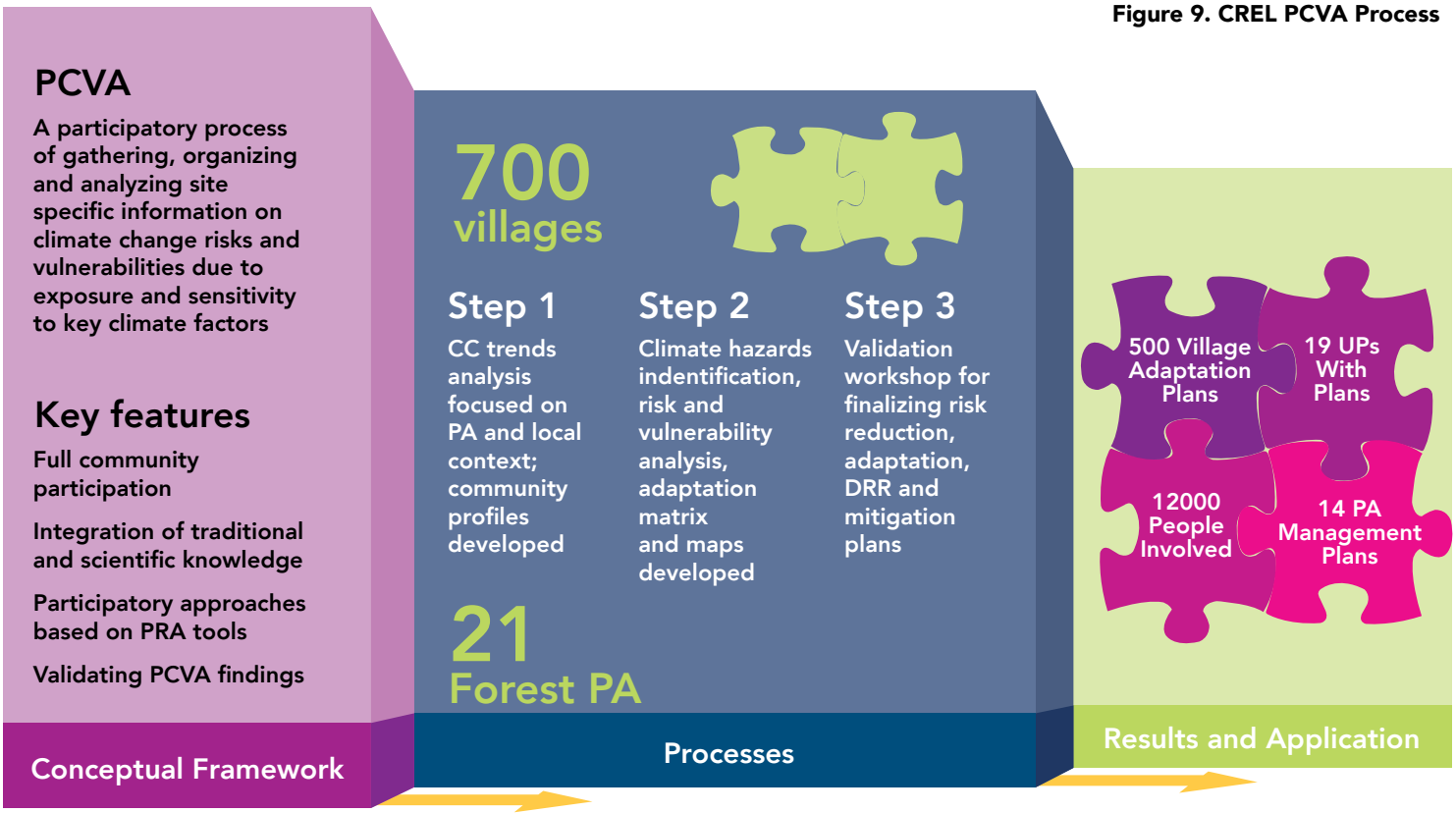
As a result, 824 villages now have their own adaptation plans, averaging in each case 3-4 priority adaptation actions, including individual actions that farmers have started to adopt, and collective actions or public investments which the CMOs are working to facilitate through links with government agencies. In addition, CMOs, particularly in coastal areas, have become pro-active in disseminating hazard information and warnings across the communities they serve and represent – for example all of the CMCs in Cox's Bazar region disseminated warnings of the approach of Cyclone Roano in 2016 covering 188 villages inhabited by approximately 28,000 households by using loudspeakers.

BOX 15:

Example of a village adaptation plan

The adaptation plan prepared by Barodayle village adjacent to Teknaf WS built on a PCVA covering this village and adjacent areas. It includes 25 actions - some are immediate such as ensuring everyone takes shelter during cyclones in the primary school (already designed to provide shelter) or sharing information on drought resilient crops. Other actions will take years to implement or provide benefits, such as mobilizing resources for a health complex, build a flood protection embankment, or plant trees to stabilize denuded hills.

Figure 9. CREL PCVA Process



F. IMPROVED BIOPHYSICAL CONDITIONS

Many of the protected forests and wetlands are degraded and no longer pristine. Parts have been converted to agricultural land, and over-harvesting of trees and aquatic natural resources has been widespread. To reverse this trend, CREL worked with the FD, DoF, DoE, and CMOs to restore areas of forest and wetlands, strengthen community-based habitat protection, and support community-based species conservation efforts. Habitat restoration and protection were undertaken through several processes. CREL responded to CMO proposals by providing construction support to deepen and improve dry season water retention in designated wetland sanctuaries in Hakaluki Haor; to provide shelters for patrol groups (see Construction Section); direct in-kind support through partners (for restoration of swamp, mangrove and terrestrial forest); and grants to CMOs (who contributed substantially to community patrols and ANR costs). Over life of project there was a transition from direct project support for investments to providing grants to CMOs so that they could lead efforts. There was also a reduction in the proportion of ongoing conservation costs covered by grants, with CMO contributions increasing in parallel. The long-term plans provide a mandate for continued protection and expansion of habitat restoration, utilizing returns from enterprises and soliciting funds from government and other sources.

Tree planting in non-forest public and private lands complemented livelihood resilience activities and produced fuel and timber to reduce pressure on PAs. CREL also worked with the FD and communities to support regeneration and restoration within PAs.

Oliver Ridley Turtle hatchlings from a turtle hatchery setting off for the ocean, Cox's Bazar region

CREL

SUNDARBANS MANGROVES

CREL supported mangrove restoration and expansion in coastal sites bordering the Sundarbans, helping plant over 450,000 seedlings in just over 400 ha of land. Here erosion, tropical storm damage and overharvesting have reduced mangrove forest area, and restoration was planned to protect crop and village areas just outside the reserved forest and within the ECA.

BOX 16:

Assisted Natural Regeneration

Pathorkhali Village Conservation Forum planted and restored mangroves and Nipa palm in 4.7 ha. The villagers value this area as a sanctuary for fish and crabs, and for protecting them from waves and storm surges. Other material benefits include – harvesting of Nipa palm to thatch the local mosque, which also contributes to a revolving fund. As Ms Varoti Rani Bishawash, VCF member, says: "These trees are my life; I never let a single seeding be destroyed."

TERRESTRIAL FORESTS

CREL supported ANR which was found to be practical and cost effective. Under ANR, degraded land is planted with a modest number of native tree species and, most importantly, is protected from grazing animals and people. Once the land is protected, other native trees start to naturally regenerate. In total CREL supported planting of 415,175 tree seedlings as part of ANR on over 600 hectares of formerly denuded PA lands.

CREL also supported planting of 1,013,838 seedlings/ saplings on 261 ha of land along roadsides, homesteads and on government and educational institution grounds. This increased total tree cover and biomass, helping mitigate against climate change and providing communities with access to wood and wood products.

To halt degradation, forests must be protected from fires and guarded against illegal logging. CREL strengthened and expanded CPG systems whereby community groups, overseen and coordinated by the CMCs, are responsible for regular joint patrols with FD personnel within and adjacent to PA lands. These patrol groups were particularly important for protecting newly planted, regenerating and more vulnerable forests. CREL trained CMCs to continue working with over 1,600 people (members of 99 CPGs in 17 sites). Resources for CPG allowances increasingly came from CMC incomes from their enterprise activities (initiated with grants from CREL) and were also supported from other receipts of CMCs (government allocations, private sector donors). Participation of CPG is voluntary, but they do receive honoraria as well as uniforms, relevant equipment and access to livelihood enterprise initiatives. CREL also built the capacity of CMOs to mobilize resources (further discussed in IR2) to ensure they could continue supporting the costs of patrol groups after the project ended.

CREL used participatory planning processes to reforest areas outside of FD lands. In consultation with CMC and VCF members, other stakeholders and experts, CREL identified possible reforestation sites and appropriate species to plant. Only native species were prioritized based on climate, site conditions, environmental needs, social and economic conditions, and FD recommendations. In locations such as roadsides CREL helped CMCs establish benefit-sharing agreements, new tree-owning groups, landowning agencies, and UPs. The CMOs mobilized community groups to plant trees. To meet the high demand for seedlings, CREL assisted CMO members to establish 36 commercial tree nurseries, these were able to earn income from growing and selling tree seedlings.

IMPROVING AND CONSERVING FRESHWATER WETLANDS

The natural sedimentation processes, exacerbated by climate change, deforestation and increased water use by agriculture, has reduced the amount of water in the wetlands of northeast Bangladesh during the dry season. Year-round water is essential to maintain all aquatic life, including fish. In Hakaluki Haor, where several VCGs have responsibility for protecting wetland sanctuaries, CREL worked with communities to increase water depth and flow by re-excavating natural channels and beels and built bunds to retain water in the dry season. Construction was a challenge in the short window of suitable time during the dry season. To further support these sanctuaries, CREL supported the VCGs in marking and guarding the sanctuaries.

Cotton Pygmy-goose hatchlings in nest box at Baikka Beel, Hail Haor

Malay Sarker

In addition to the improving beels and establishing fish sanctuaries, CREL helped CMOs access and operate public waterbodies so that those could be managed on a sustainable harvest basis. CREL also supported the restoration of swampland forests. Significant areas of the haors were cov-

BOX 17

Restoring Trees

Mangrove afforestation.
CREL worked with four CMCs bordering the Sundarbans to plant mangroves. Mangroves play a significant role in reducing erosion and storm damage for coastal communities, especially during cyclones and storm surges. They provide critical habitat for many aquatic species, upon which many livelihoods depend, as well as timber and fuelwood. CREL supported planting of 565,000 mangrove seedlings on 512 hectares. Species included: Kakra (Bruguiera gymnorrhiza), Bine (Avicenia officinalis), Sundori (Heritiera fomes), Keora (Sonneratia apetala), and Golpata (Nipa fruticans).

Terrestrial forests.
CREL promoted natural regeneration within PAs. Fashiakhali WS and Medakacchapia NP are home to ecologically valuable native trees but are severely degraded due to harvesting of large trees for lumber and cutting of smaller trees and saplings for firewood. As a result, natural regeneration is poor. CREL worked with the FD and communities to sow Garjan (Dipterocarpus turbinatus) seeds in the forest and protect natural germination and seedling growth. In total 297,680 seeds of Garjan and Dhakijam (Syzygium spp.) were sown covering 450 hectares, which were protected by CPGs. These saplings will help secure a long-term future for these forests, which are important for Bangladesh's Asian Elephant population, increase carbon storage, reduce soil erosion, and restore the ecology and aesthetic beauty of the forests.

Swamp forests.
These once extensive flood-adapted forests, unique to the haors of northeast Bangladesh, are largely lost with only fragments remaining. CREL supported the planting of Hijal (Barringtonia acutangula) and Koroch (Millettia pinnata) in 112 ha of swamp forest, mostly in Hakaluki Haor, helping to both expand and connect areas of existing swamp forest. This was complemented by pressure on policy makers to formalize swamp forests as conservation areas (see IR 1)

Dune Stabilization.
CREL worked with VCGs on Sonadia Island ECA in the southeast to plant vegetation along dunes backing beaches to secure the buildup of sand and sediment, important to maintain the integrity of the island. CREL helped plant 20 hectares, with 562,000 seedlings of Nishinda (Vitex negundo) and Dholkolmi (Ipomoea carnea).

Roadside trees.
Roadside tree planting is an established practice in Bangladesh where the government and communities share the benefits of the timber/products. The trees stabilize the slopes of road embankments and provide shade, branches provide fuel for cooking, and after 10-20 years are harvested for timber. This provides income to many actors along the wood value chain. CREL helped communities plant 65,740 seedlings along 65 km of road. The major species planted were: Sil Koroi (Albizia spp), Chickrashi (Chukrasia tabularis), Kadam (Anthocephalus chinensis), Mehogani (Switenia mehagoni), Jam (Syzygium spp), Kanthal (Artocarpus heterophyllus), Neem (Azadirachta indica), Amloki (Emblica belerica), Arjun (Terminalia arjuna), Shonalu (Cassia fistula), Jarul (Lagerstromia speciosa), Chikrashi (Chukrasia tabularis), and Jackfruit (Artocarpus hetophyllus).

Homestead agroforestry.
CREL promoted homestead agroforestry to increase resilience to climate change, reduce erosion, increase household income, improve nutrition (fruit), and provide timber and fuelwood. CREL supported the planting of 304,764 saplings. Species planted included: Mango (Mangifera indica), Neem (Azadirachta indica), Jam (Syzygium spp), Jackfruit (Artocarpus heterophyllus), Guava (Psidium guava), Coconut (Cocos nuciferaofficinalis), Horitoki (Terminalia chebula), Bohera (Terminalia), Arjun (Terminalia arjuna), Jalpai (Eleocarpus longifolia), Mehogani (Switenia mehagoni), Lichi (Litchi chinensis), Chalta (Dillenia indica), Kamranga (Averrhoa carambola), Amropali (Mangifera indica), and Jambura (Citrus maxima).

Institutional plantations.
CREL fostered partnerships between CMOs and local schools, mosques and other institutions to plant trees on their land to provide shade, timber and fuelwood. A total of 68,940 saplings were planted on 28 ha. The main species were: Sil Koroi (Albizia spp), Chickrashi (Chukrasia tabularis), Kadam (Anthocephalus chinensis), Jam (Syzygium spp), Kanthal (Artocarpus heterophyllus), Mehogoni (Switenia mehagoni), Amloki (Emblica officinalis), Horitaki (Terminalia chebula), Bohera (Terminalia belerica), Jarul (Lagerstroemia speciosa), Arjun (Terminalia arjuna), Lotkon (Bixa orella), Guava (Psidium guava), Neem (Azadirachta indica), Chambol (Albizia richardiana), Chalta (Dillenia indica), and Jalpai (Eleocarpus longifolia).

Tree nurseries.
CREL helped CPG members establish 36 tree nurseries to meet the demand for quality tree saplings for the above initiatives, and to generate income for poor CPG members. A total of 280,000 seedlings were raised in CREL supported nurseries. The nurseries also supply seedlings to other projects, government department and home garden planters. The seedlings were mainly Chickrashi (Chukrasia tabularis), Arjun (Terminalia arjuna), Neem (Azadirachta indica), Bohera (Terminalia belerica), Horitoki (Terminalia belerica), Amloki (Emblica officinalis), Jolpai (Eleocarpus longifolia), Amra (Spondias pinnata), Mahagoni (Switenia mehagoni), Gorjan (Dipterocarpus spp), and Papaya (Carica papaya).

BOX 18:

Marine Turtle Conservation

CREL supported VSGs to establish five turtle hatcheries, providing a PA for marine turtle eggs to hatch and be released to the ocean unharmed. VCG members scouted beaches in the morning, particularly in the approach to a full moon (when more turtles nest), to find evidence of turtles coming out of the ocean to lay eggs. Hatcheries minimize the risk of eggs being destroyed by dogs and other scavengers, and from predators when they emerge from nests. During the life of CREL over 25,000 baby turtles successfully hatched and returned to the sea (81% of eggs collected hatched).

ered with swamp forests in the historic past but the area had drastically reduced over time. To re-establish swamp forests, CREL worked with VCGs in Hakaluki Haor ECA to protect natural regeneration and to replant the two species of native swamp forest trees to expand and link swamp forest remnants together, improving conditions on some 110 ha of wetland.

Several species conservation initiatives were taken by CMOs in wetlands. Baragangina RMO operated nest boxes for Cotton Pygmy-goose (Nettapus coromandelianus) in Baikka Beel wetland sanctuary, with 21 out of 30 boxes occupied (7 successful) in 2015 and 13 of 30 boxes occupied (11 successful) in 2016. Several took up additional awareness and practical conservation measures targeting globally threatened species – for example small freshwater turtle sanctuaries in Hail Haor, and reducing disturbance and persecution of diving ducks in Hakaluki Haor.

IMPROVING AND CONSERVING COASTAL WETLANDS

In the coastal zone CREL worked with CMOs, FD and DoF to establish local fish sanctuaries within or adjacent to two PAs (Nijhum Dweep and Tengragiri) where fish would be safe from exploitation and able to spawn – an approach not previously tried in coastal creeks. In total 33 ha of sanctuaries were either established or improved.

Five sites (VCGs) in Cox's Bazar region operated marine turtle nest protection and hatcheries, collecting a total of 30,900 eggs and releasing just over 25,000 hatchlings during 2014-17 (see Box 18). In the final year of the project additional efforts were made with the concerned CMOs for protecting threatened shorebird and Indian Skimmer roosting sites in coastal islands – in Nijhum Dwip NP and in Sonadia ECA.

1. Monitoring and Species Conservation

These conservation efforts were supported by activities to improve forest, wetland and fisheries policy and are described in IR1, and they were supported by CMO strengthening described in IR 2. Monitoring undertaken by CREL directly (forest inventories, fish catches and landings) and in collaboration with Bangladesh bird club (Bbc) (indicator resident forest birds; waterbird censuses) was used to assess trends over several years (since this formed part of a longer-term monitoring program in several sites), and in other (new) sites provides a baseline to assess changes and co-management impacts in future. Several species conservation initiatives in the last project year, as well as generally raising awareness of wildlife laws against for example persecution of small carnivores, directly addressed challenges identified through monitoring in earlier years.

Table 10 (at the end of this chapter) summarizes the engagement of CMOs in different types of ecosystem restoration and protection activities, monitoring data on presence of threatened, flagship species selected by CMOs, and threatened species that were targeted in awareness raising activities. Almost all CMOs were directly engaged in these conservation activities, although customizing actions to local pressures and the needs of threatened species will continue over time.

G. SECURING FUNDING AND ENTRY FEE SHARING

As part of the strategy to ensure improved planning and improvement of biodiverse landscapes, CREL helped CMOS secure funding to implement their plans and activities. Given this is so central to the CMOs capacity building, it is described in Section B under IR 2.

H. IMPACT

SUNDARBANS

CREL introduced ANR to the FD, who applied this practice in other areas outside CREL target areas due to its success and low cost. ANR was also used to restore wetlands (see below) and mangrove forests, with considerable success.

BOX 19:

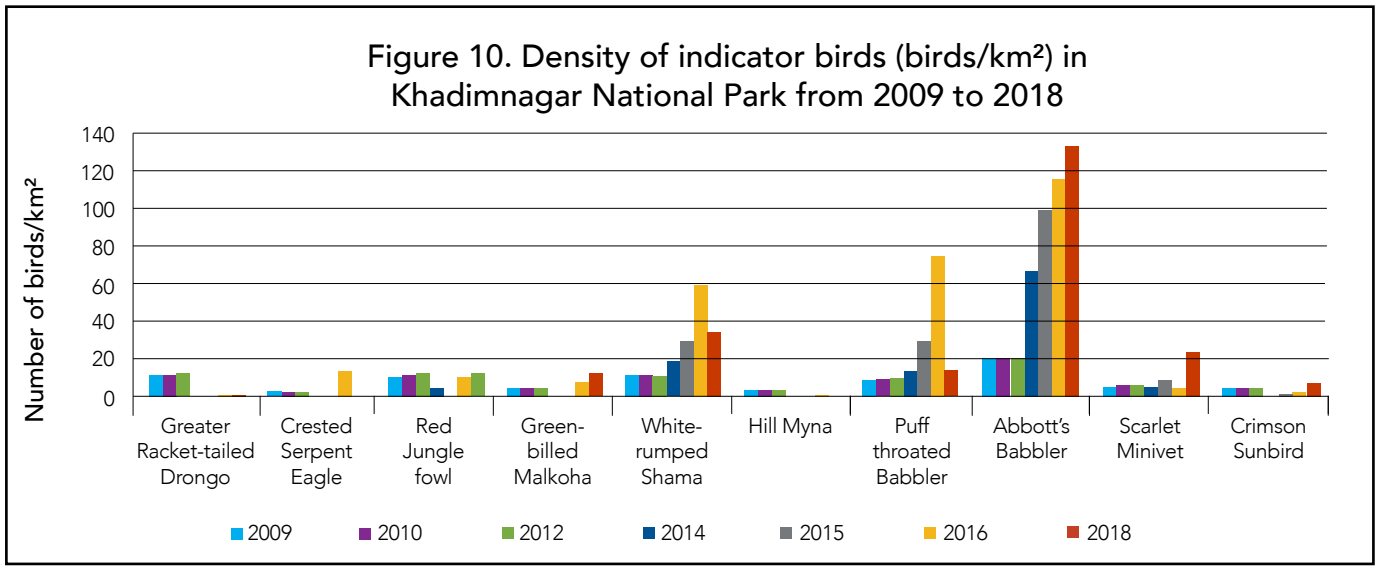
JDR Study Estimates Ecosystem Value of the Sundarbans

Tourism/cultural services:
US$53.18 million/year

Storm protection services:
US$485.29 million/cyclone/ year

Provisioning services:
US$145.20 million/year. [1 USD=BDT.68.74, 2007]

Total economic value:
US$683.67 million annually (0.35% of GDP).



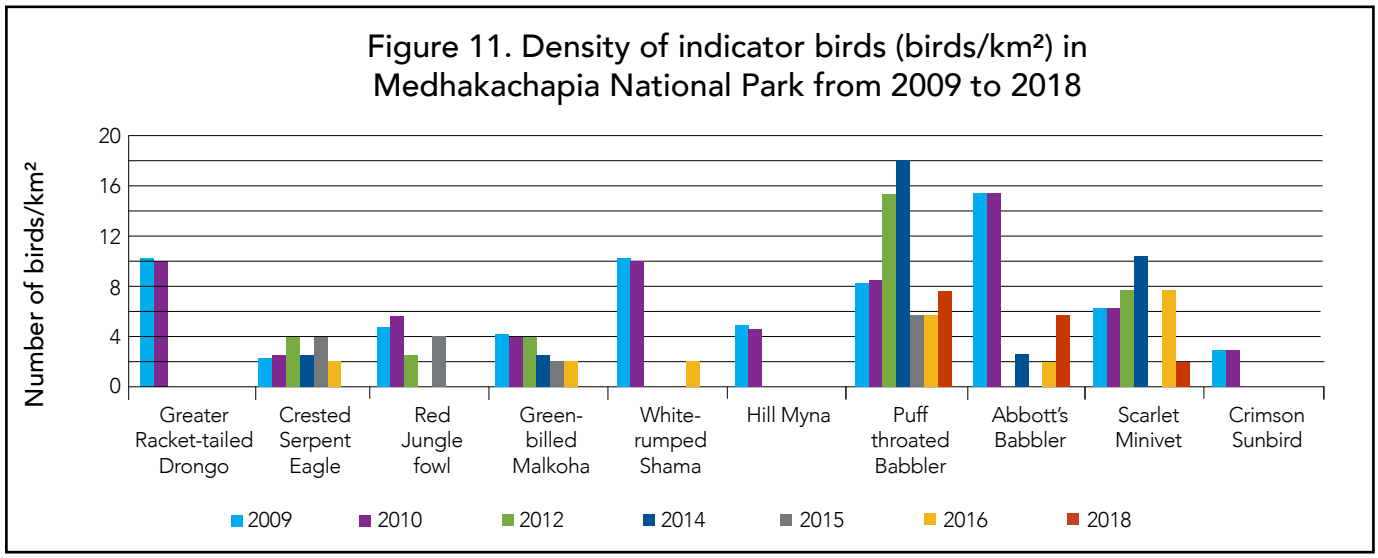


Table 10. Medium term percentage change per annum in population densities of indicator species, averaged across species according to main forest strata they use.

PA	Years	Undergrowth/ ground	Mid-level	Canopy
Chunati	13 year	-0.5	0.4	-7.7
Kaptai	9 year	0.5	6.5	-1.3
Fasiakhali	9 year	5.4	-4.6	0.5
Medhacachapia	9 year	-7.2	-10.2	-6.8
Teknaf	13 year	-0.1	-7.4	-7.7
Lawachara	13 year	3.7	-2.1	-3.8
Satchari	13 year	21.5	-1.7	12.3
Rema-Kalenga	13 year	8.9	4.5	10.0
Khadimnagar	9 year	31.6	6.8	2.6
Modhupur	9 year	11.3	10.4	-10.2

Note: 13 or 9 year is the number of years between the first and last survey used in calculation

Trees planted around Gabwea Island provide protection from erosion and storms for the island

Misty Keasler

Mangrove forests are exposed to grazing and harvesting during low tides but are submerged during high tides. CREL supported fencing and engaged CMO members to protect newly planted and naturally emerging saplings. As the JDR 3RD Scholars showed (see box 19) and the grants section for more detail), restoring mangroves has multiple benefits – It stabilizes the shore, provides habitat for aquatic species including fish, shrimp and crabs that are important sources of livelihood for the communities living adjacent to the Sundarbans, and provides protection from storms.

TERRESTRIAL FOREST

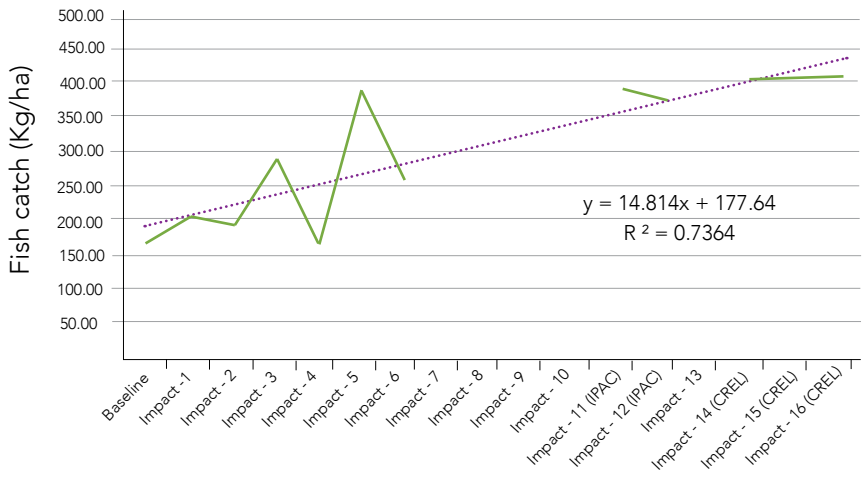
Across these forests CPGs are expected to have the greatest impact and have developed into an appreciated component of conserving PA forests among FD and CMCs. Assessing the impact of forest conservation and co-management is challenging and will require decades to track whether forest recovers fully in former degraded areas. In addition to remote sensing and forest inventories, which provide baselines against which long-term changes can be measured, CREL continued and expanded past initiatives to monitor populations of selected resident forest birds as indicators of forest health. Trends in indicator species were averaged for two periods: a) since monitoring started for ten PAs with nine or 13 years of data, and b) for a four-year period during CREL for 14 PAs, the data covered species indicative of undergrowth, mid-level and canopy strata. In four sites (Modhupur NP, Satchari NP, Rema-Kalenga WS and Khadimnagar NP), in the north-east and north-central regions, there were positive trends and in Rema-Kalenga WS and Khadimnagar NP there were increases for all three forest strata.

However, indicator birds species of all three strata on average declined in Medhakachapia NP and Teknaf WS forest conditions have worsened. The situation in Medhakachapia NP is of great concern as seven species, including undergrowth, mid-level and canopy species decreased greatly (by more than 67% over a nine-year period) and no indicator species increased. At Teknaf WS, four species (of mid-level and canopy) decreased greatly, and only one species increased slightly. The longer-term data are consistent with continued loss of canopy species associated with large (old) trees important for fruit eating species and for hole nesting birds in six out of ten sites.

Considering the period of CREL support for co-management, in five of the 14 sites indicator species on average increased in all three forest strata since 2014 (Duddpukuria-Dhopachari WS, Hazarikhil WS, Fashiakhali WS, Lawachara NP and Rema-Kalenga WS), suggesting recovery of understory and effective protection of taller trees during this period (Table 10). Four sites (Chunati WS, Kaptai NP, Inani reserve forest, and Teknaf WS) showed

similar short-term trends of loss of canopy species while undergrowth and mid-level species increased, indicating degradation of overall forest structure but regrowth of shrub layers. Hence to some extent co-management and associated protection and conservation have had more positive impacts during CREL (interpreted as being more effective than previously) but this did not help in some sites, where there was also previous loss of forest strata which continued to negatively impact bird populations for example in Himchari NP (under severe human pressure), Medhakachapia NP which has lost mid-level birds and Mohdhupur NP which has lost canopy birds.

Figure 12: Fish catch trend in in Hail Haor

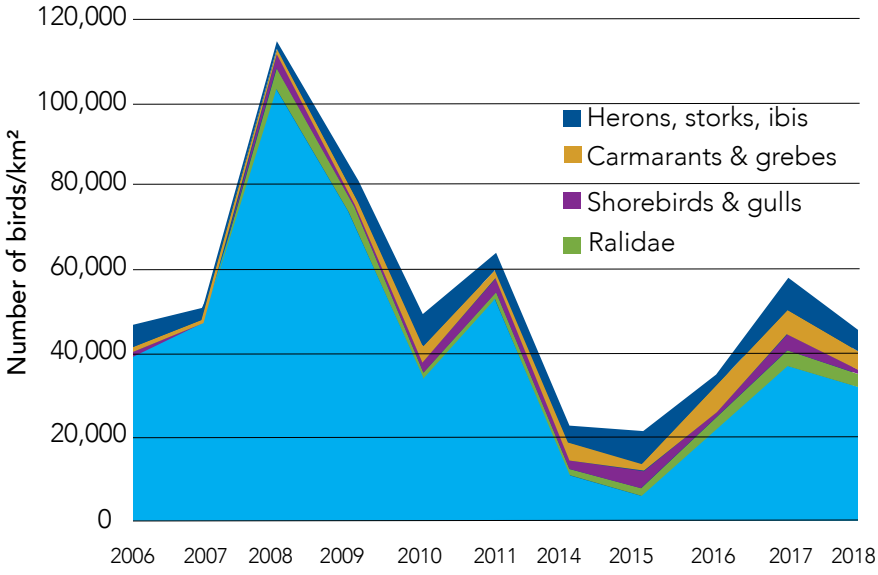


(Baseline: 1999-2000, Impact-1: 2000-01; Impact-2: 2001-02; Impact-3: 2002-03; Impact-4: 2003-04; Impact-5: 2004-05; Impact-6: 2005-06 during MACH; Impact-11: 2010-11; Impact-12: 2011-12 during IPAC; Impact 14: 2013-14; Impact 15: 2014-15; Impact 16: 2015-16 during CREL).

FRESHWATER WETLANDS

CREL saw a 90% survival rate of planted swamp tree seedlings because of community support through the VCGs, and effective guarding, which has also helped natural swamp thicket vegetation regenerate free of grazing and cutting pressure. These areas have been found to be important for scarce wintering swamp dependent birds, for endangered Fishing Cat, and during the monsoon when they provide important foraging areas for fish.

Figure 13: Total waterbirds in Hakaluki Haor in mid winter surveys 2006 - 2018



Fish catch monitoring in Hail Haor confirmed continued high catches averaging 400 kg/ha over three years of monitoring (slightly above catches in 2011-12). However species diversity declined in this period, perhaps a result of conversion of open wetland areas to aquaculture and the loss of waterbodies that had been managed sustainably to lessees who are now overexploiting. In Hakaluki Haor fish catches in sample areas increased from 171 kg/ha in 2013-14 to 277 kg/ha in 2015-16 suggesting positive impacts from the set of beels protected as sanctuaries and swamp forest regeneration within the haor. Waterbird surveys confirmed the continued success of Baikka Beel sanctuary – within three years of its original establishment and protection by Baragangina RMO, waterbirds returned in numbers to the sanctuary and it continues to host a high species diversity and population of wintering waterbirds, which reached a peak of over 10,000 in 2014 and 2017. In Hakaluki Haor waterbird numbers remain internationally important, recovering from a low of about 20,000 in 2014 and 2015 to 58,000 in 2017 and 45,000 in 2018.

Figure 14: Shorebird population trends for Sonadia, 2009-2018

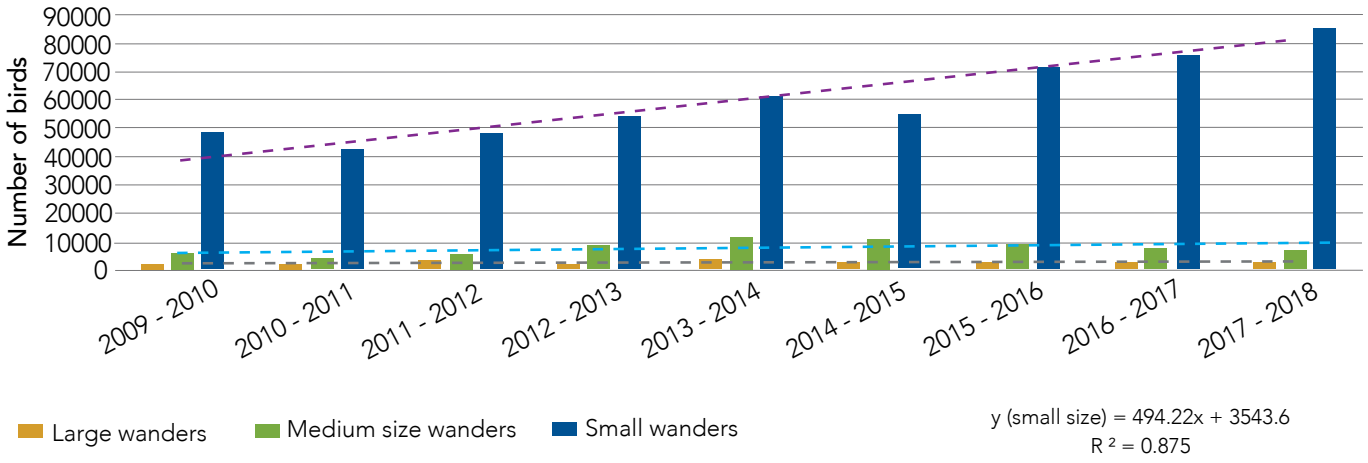
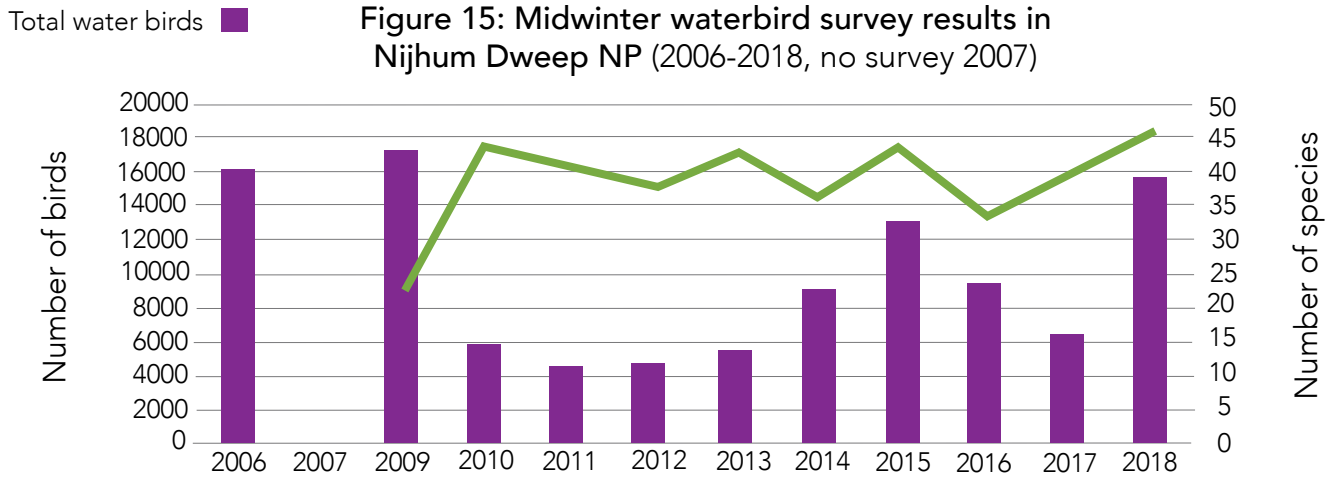


Figure 15: Midwinter waterbird survey results in Nijhum Dweep NP (2006-2018, no survey 2007)



COASTAL ECOSYSTEMS

In Nijhum Dweep NP, after early declines, waterbird numbers reached a peak of over 15,000 in 2018. In Sonadia ECA, waterbirds (mostly smaller species), continued a linear increase between winter 2011, reaching a peak of almost 9,500 in 2017-18. Monitoring showed stable numbers of 20-25 Spoon-billed Sandpipers wintering each year, including the return of tagged birds in successive winters after their migration to and from far north-east Siberia.

WIDER IMPACTS

CREL made significant contributions to REDD+ development in Bangladesh. CREL produced an SOP for the FD which incorporated field data into the national forest inventory.

The development of a GIS database was critical for the identification and prioritization of sites where CREL could effectively implement different activities to combat deforestation in target PAs. This database is unique in Bangladesh, synthesizing remote-sensing layers on bio-physical conditions, as well as social and community data related to climate vulnerability. The database also serves as a basis for future resilience planning by presenting local community's own perceptions of risks.

I. LESSONS LEARNED

Co-management and the natural resource base will be sustained if people benefit, own or have a stake in the use and conservation of natural resources, particularly if they have secure use rights.

The greatest potential for short and medium-term benefits for local communities from conserving and restoring biologically significant ecosystems lie in freshwater wetlands. Even coastal ecosystems, which have mostly been heavily over-fished and degraded, and can recover within a few years to achieve win-win outcomes for biodiversity and livelihoods, provided government ensures security of tenure and user rights.

Wetland sanctuaries, including fish sanctuaries, are a simple and cost-effective conservation measure. However, restoration through re-excavation of freshwater wetlands in the haor basin is challenging to organize and complete within a narrow window of three months of the dry season. Swamp forest-thicket restoration enhances wildlife and fishery resources but remains at risk from unclear tenure.

Mangrove restoration was the most cost-effective forest restoration approach, and growth of seedlings was rapid. It offers important benefits in terms of protection from tidal surges and cyclones.

Degradation is the largest threat to Bangladesh's remaining forests and significant efforts need to be made to alleviate the pressure on forests by providing alternative sources of biomass for local communities for fodder, fuel and construction. There were some benefits from planting trees, for example fuelwood, but the demand for fuel remains. Attempts to limit demand through promotion of improved cookstoves had limited benefit. Planting bamboo to produce biomass quickly and reduce pressure on forest was tested and shows potential. There is an opportunity for Bangladesh to plant more bamboo and wood lots that would both sequester carbon from the atmosphere and meet local community needs, provided these do not replace native biodiverse forests, and are developed on areas of negligible existing ecological value.

PCVA mobilized grass-roots participation in planning and integrated scientific analysis of climate trends, but requires sufficient time and a clear plan of how it will be used and lead to a hierarchy of realistic plans from village to PA. While government agencies have a focus and requirement for externally prepared elaborate management plans, we found this was an over-long process leading to large documents in English which are rarely used. CREL added a participatory process to develop simple, ten-year plans at the CMO level, which was appreciated by communities and government but would have had greater impact earlier in the project.

Easier access to high resolution satellite imagery allows for better and more frequent inventories of biophysical

condition of forests. Bangladesh has sufficient technical capacity to take advantage of these resources in developing long-term space-based monitoring for vulnerable social-ecological systems.

CREL demonstrated how local communities can make a large contribution by developing strategies for climate resilience through participatory mapping with local subject matter experts, GPS operation, and monitoring using widely available tablet-based software.

J. CHALLENGES

During the first few years of the project, the lack of an agreed set of TPP limited the scope of activities and CREL was unable to support activities in PAs with FD. Hence in the initial years activities focused on improving adjacent landscapes. As the project proceeded, and the TPP was finalized, CREL was able to work both within the communities and in the PAs on forest restoration and tree planting efforts.

REDD+ and other forms of climate financing, represent an opportunity to support forest conservation in many countries. However, given the remaining natural forest cover in Bangladesh outside of the Sundarbans, and the large amount of social benefit currently gained by communities by forest exploitation, Bangladesh is a relatively low priority for the international community in funding climate finance. While there is great need to support increased climate resilience, it would be difficult to market a credible national scale land-based GHG mitigation strategy that would appeal to donors.

In the Cox's Bazar – Teknaf region, the large-scale influx of Rohingya refugees in the second half of 2017 has dramatically added to already severe stresses on remaining forests. Refugee camps have been established on forest land in PAs and their buffer areas, and the demand for firewood for cooking is elevating existing demand and intrusions in the PAs. These are challenges that are beyond the scope of co-management bodies to address and threaten to undermine any achievements by CMCs in this area, as well as threatening the adjacent ECA.

More generally there is the challenge of finding effective ways of meeting demand for cooking fuel without degrading forests. In some of the most threatened, degraded and encroached PAs in the southeast region this may not be possible without the GoB reclassifying denuded parts of PAs to allow for fuel biomass production. In the other regions, programs to expand biomass production in private lands, for example with mangroves in shrimp farms or bamboo in tea estates, may be appropriate.

ANR shows considerable potential and is a practical way to bring FD and communities together, but it will take many years to restore forest and should not divert attention away from protecting existing mid-level and canopy trees. Clear, consistent planning is needed but can be compromised, for example when FD introduced social forestry with exotic trees inside Chunati WS, without a clear zonation plan or preference for native trees inside a PA.

Livelihood support was a major component of CREL (IR4) and has helped to diversify and expand the livelihoods of households living next to biologically significant areas. However, the direct impact on NR conservation remains unclear –often women have benefited and become more economically empowered, but men from the same households continue to extract NR, having no other opportunities, maintaining their gender roles in local culture, and not wishing to be dependent on women. There is scope for CMOs to make a clearer connection between livelihood support and reducing NR extraction – for example by signing agreements with livelihood beneficiaries so that continued support is dependent on compliance with laws and management plans on PAs, fish sanctuaries and wildlife conservation.

A major challenge recognized by CREL, CMOs and FD is the long-term sustainability of CPGs, as patrol members need sufficient incentive to continue their vital and often hazardous work. A mixed approach offers some future scope for optimism: targeted enterprise development can be facilitated by CMOs making use of other development agency opportunities, while under the forest co-management guidelines there is scope for FD to allocate funds for CPGs.

CREL focused largely on NR management, planning and habitat/ ecosystem protection and restoration. Some initiatives were taken for individual species, but in 2017 efforts were made to identify the presence of globally threatened species in target sites and to develop with respective CMOs understanding and actions to reduce local threats to these species. This is consistent with the relevant CMO long term plans and is possible because with stronger capacity of the CMOs. However, this will require more time and access to advice for CMOs to strengthen species conservation.

Potential areas for NRM initiatives by CMOs in future include:

- Stronger coordination of conservation and sustainable use in large wetlands (haors) between local administration, government agencies and CBOs;
- Strengthening species conservation actions involving CMOs for globally and nationally threatened species in biologically significant sites and their landscapes;
- Helping CMOs sustain by securing diverse sources of funds to support NRM and conservation;
- Active and informed management of tourism in PAs, encouraging where it will bring advantages, and regulating where it causes ecological damage.

Indian Spinach produced through integrated farming in the Khulna area, Bangladesh.

Misty Keasler

IR 4: Improved and Diversified Livelihoods that are Environmentally Sustainable and Resilient to Climate Change

As described under IR3, Bangladesh has a range of ecosystems that are significant for biodiversity, including forests, freshwater systems and coastal wetlands. To protect these ecosystems the GoB declared a number of PAs in forests and ECAs in wetlands and coastal ecosystems, as well as sanctuaries protected by local communities. Bangladesh's population of approximately 1,300 people per km2 puts high pressure on natural resources, leading to loss and degradation of unique biodiverse ecosystems. Much of the forest and wetland loss and degradation is due to pressures from surrounding communities who convert land to agriculture, extract firewood, timber and NTFPs from forests, and drain and overfish wetlands. Restricted access and use of resources from PAs, sanctuaries, and ECAs threatens the livelihoods of the typically poor households who are dependent for their subsistence livelihoods. CREL helped divert and diversify livelihoods to improve the income and well-being of 72,476 resource-dependent rural households, benefiting 362,479 people.

BOX 20:

IR4 Primary Results

Promoted environment-friendly, climate-resilient, sustainable livelihood options.

Increased income of more than 72,000 households from livelihood activities.

51,463 farmers adopted improved (resilient) technologies.

Almost 60% of 7,688 women Financial Entrepreneurial Literacy Center graduates increased their empowerment compared with before the course.

Smallholder farmers have improved access to climate information through various orientations.

Improved skilled based income generating through off-farm activity and linked with private sectors.

Approximately 7M USD leveraged funding through partnership development and CSR initiatives

CREL's approach was to integrate income generating activities that were climate resilient and for which there were growing local and national markets. The project strengthened people's ability to withstand future climate changes and diversify and improve their livelihoods through environmentally sound alternative means. CREL provided training in entrepreneurial literacy and specific livelihood skills (predominately in the agriculture sector), and linked people to markets, credit and other resources. These opportunities secured alternative incomes and, with targeted messaging on conservation, reduced pressure on natural resources. For example, CREL supported ecotourism, agriculture and small enterprises as alternatives to extracting natural resources. By developing non-extractive livelihoods, people were encouraged to move from difficult and destructive livelihoods to opportunities that increase incomes while reducing dependence on forests and wetlands. A study based on the third socio-economic survey (2015) by Innovision Pvt. Ltd, revealed that the time spent on natural resources extraction by CREL beneficiaries reduced by 15% (from 99 to 84 days per household per year), natural resource dependency reduced more in case of horticulture beneficiaries and least among poultry producers. Notably poor women, many of whom collected shrimp post-larvae from the borders of the Sundarbans, obtained regular contract work making soft toys for Pebble and achieved monthly average incomes of Tk. 2,000. In coordination with CMOs, the project targeted villages and individuals who were highly dependent on collecting natural resources, people who tended to be very poor and live in areas that are highly prone to natural disasters and the effects of climate change.

Many of the people targeted lacked a complete formal education. CREL introduced a proven entrepreneurial literacy course to help 8,055 participants (95% women) who lacked a formal education to gain a basic foundational understanding of how to calculate for example revenue, profit, and interest, as well as to develop other business skills.

In total CREL provided livelihood training through 4,154 training courses/events, attended by 87,976 participants (female 64,414). This includes enterprises that required more than one training event and/or refresher trainings, and a few cases where participants took up more than one enterprise (mainly Pebble Child workers), in total 60,175 (female 44,302) unique individuals received livelihood trainings.

Table 11: Numbers of Participants Trained in Livelihood Enterprises by sector, over the life of the project

Region	Chittagong		Cox's Bazar		Khulna		Sylhet		All Region		Total
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	
Horticulture	2,298	4,227	7,165	3,080	11,458	1,798	2,255	2,521	23,176	11,626	34,802
Aquaculture	60	1,472		15	21,551	4,124	828	1,234	22,439	6,845	29,284
Livestock&Poultry	2,286	1,166	1,889	405	5,656	645	3,673	1,775	13,504	3,991	17,495
Handicrafts	688	15	1,504	49	1,571	6	569	1	4,332	71	4,403
Misc. Enterprises	496	522	125	135	299	262	43	110	963	1,029	1,992
Total	**5,828**	**7,402**	**10,683**	**3,684**	**40,535**	**6,835**	**7,368**	**5,641**	**64,414**	**23,562**	**87,976**

Table 12: Numbers of unique households Trained in Livelihood Enterprises by sector, over the life of the project

Region	Chittagong		Cox's Bazar		Khulna		Sylhet		All Region		
Sex	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Total
Aquaculture	56	1,067		3	13,522	2,505	510	813	14,088	4,388	18,476
Handicrafts	515	7	1,207	41	449	2	374		2,545	50	2,595
Horticulture	1,046	2,368	5,519	2,244	7,731	1,107	1,870	2,113	16,166	7,832	23,998
Livestock & Poultry	1,818	901	1,693	251	4,634	559	3,168	1,593	11,313	3,304	14,617
Misc. Enterprises[3]	78	119	93	69	18	72	1	39	190	299	489
Total of Beneficiary ID	3,513	4,462	8,512	2,608	26,354	4,245	5,923	4,558	44,302	15,873	60,175

3 Including mobile servicing, small trade, organic dry fish process, hotel management, pickle making.

BOX 21:

CREL used a holistic value chain approach to improve livelihoods to ensure success and promote sustainability:

- Identified resource dependent users (target participants)
- Conducted market analysis to identify climate resilient livelihoods for participants and markets
- Offered entrepreneurial literacy for those with limited education
- Provided hands-on skills training
- Identified and trained LSPs to support market linkages
- Linked participants to markets and strengthened input supply chains, allowing farmers to access quality seeds and inputs.
- Strengthened producer networks within subsectors.
- Linked participants to finance.
- Enhanced employment and incomes through CMO-run enterprises
- Developed partnerships and linkages with key actors, such as projects, micro finance programs, eco-tourism service providers and private sector companies.

Woman in a loan saving group that received training in aquaculture. She raises fish, cows, chickens and a variety of vegetables at her homestead in Khulna, Bangladesh.

Misty Keasler

A. KEY ACTIVITIES

During Year 1, CREL identified value chains, participants and developed training curricula. During Years 2-5, the project provided training and capacity building support to enable participants to improve their resilience and livelihoods (*see Figure 16*), while in Year 6 gaps were filled through focused targeting of poachers and CPG members.

Livelihood diversification is a development objective (DO4) of USAID Bangladesh – responsiveness to climate change, with a development hypothesis of "*Improved management of natural resources alongside livelihood diversification, climate risk management and enhanced capacity for low emissions development will address adaptation and mitigation of Global Climate Change (GCC), while providing sustainable economic benefits and clean energy resources for Bangladesh.*" While climate variability and scarcity of natural resources constrain the well-being of PA landscape populations, conservation initiatives that ensure diversified livelihoods can relieve this constraint and enable support for conservation within PAs and sustainable use of natural resources. Based on past experiences in Bangladesh, CREL adopted a value chain approach coupled with skills transfer, facilitation of access to finance and markets, promotion of improved farming practices and development of LSPs for the communities living in and around biologically significant areas.

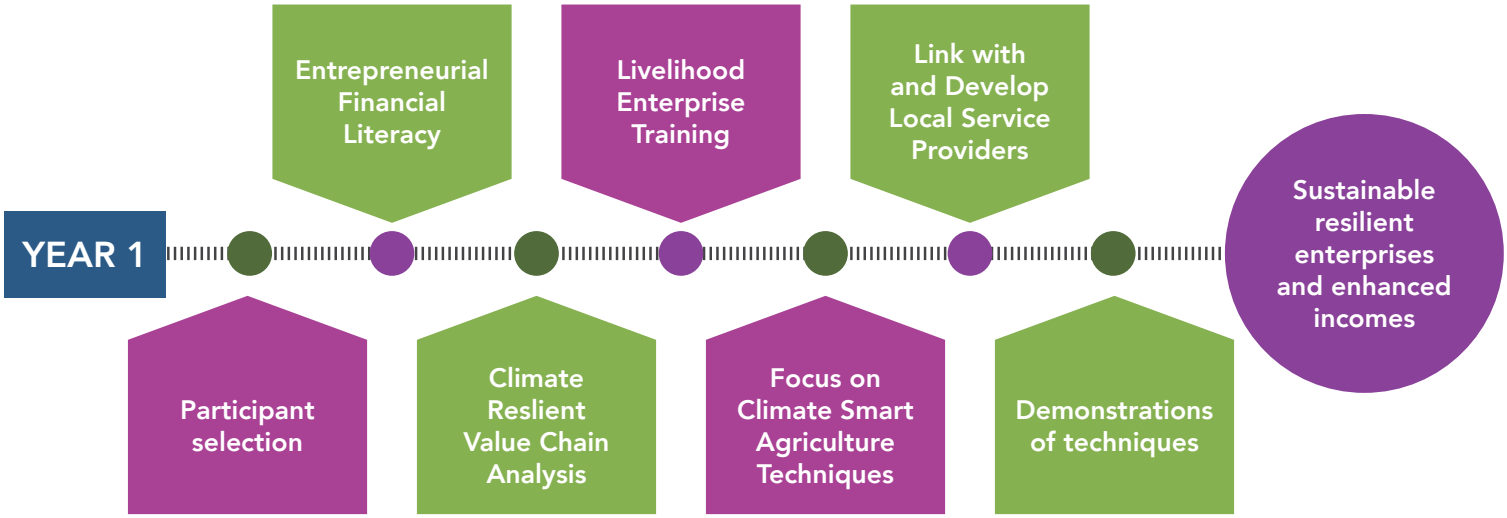
BOX 22:

Financial Entrepreneurial Topics

The Financial Entrepreneurial Literacy Center – a six month course for CREL beneficiaries, covered the following topics: literacy, signing your name, numeracy, basic math, record keeping, basic accounting, life skills and entrepreneurship, business planning, health, nutrition, importance of biodiversity, wetlands, fisheries, disaster management, risk reduction, business development, gender equality and women's rights.

Communities living in PA landscapes are characterized by high levels of poverty with many landless households, households are largely forest dependent, these locations are home to ethnic minorities, household size is larger than average, many households lack reliable income sources, and a high proportion of the population are vulnerable. CREL developed community profiles for each PA landscape through focus group discussions and interviews. These documented literacy, economic status, infrastructure, operating environment, market structure, status of natural resource dependency, and engagement in commercial activities.

Fig. 16. Main elements and linkages in the livelihood component (IR4)



B. PARTICIPANT SELECTION

CREL used a participatory approach working with communities living around the selected wetland, coastal and forest conservation sites to identify poor, resource dependent families during years one and two of the project. CREL engaged with communities, FD and CMOs to identify resource dependent people based on defined criteria. Through Years 2- 6, a total of 60,175 households received at least one type of livelihood intervention, including skills training, entrepreneurship literacy training, access to finance, or improved access to markets.

C. ENTREPRENEURIAL LITERACY

Since the project targeted disadvantaged groups in remote areas, it was important to build the capacity of the most marginalized – those who had limited or no education. Winrock had demonstrated success in Nepal in developing an entrepreneurial literacy program that provided undereducated individuals the opportunity to develop skills in reading writing, math and business skills and adapted this to Bangladesh.

Class in Financial Entrepreneurial and Literacy Center, northeast region

Paul Thompson

CREL partnered with Friends in Village Development Bangladesh (FIVDB) during Year 1 to develop the curricula and piloted the course in 18 Financial Entrepreneurial and Literacy Centers (FELC), training 336 VCF members. Based on feedback, the course was adjusted and finalized. In Year two, FIVDB conducted 8 four-day foundation trainings on two primers for literacy facilitators (Sayahaks, one per FELC). This ensured that the FELC teachers understood the course content and developed their teaching skills. The FELC topics are shown in Box 22.

CREL regional partners and CMOs continued subsequent FELCs (395) across 26 CREL sites with a total of 8,055 people (7,688 women) graduating from the FELCs. Courses continued for two hours each day for six days a week over a 7-month period. All graduates of the financial literacy course also attended livelihood enterprise training. Table 13 shows the number of people trained in the FELCs.

Table 13. FELC Training

		Y2		Y3		Y4		Y5				
Region	**# FELCs (female %)**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**All Female**	**All Male**	**Total**
Chittagong	47 (80.1%)	71	29	167	53	181	39	333	66	752	187	939
Cox's Bazar	88 (99.7%)	58	-	698	5	560	-	389	-	1,705	5	1,710
Khulna	215 (99.5%)	20	-	1,574	20	1,421	1	1,129	-	4,144	21	4,165
Sylhet	63 (87.6%)	98	-	634	99	215	55	140	-	1,087	154	1,241
All region	413 (95.4%)	247	29	3,073	177	2,377	95	1,991	66	7,688	367	8,055

Surveys of one in four women FELC participants and their husbands or other senior men were conducted when they enrolled and after graduation. The survey of 1,268 couples used a modified version of USAID's Women's Empowerment in Agriculture Index. This revealed a reduction in the proportion of women disempowered (from 86% to 72%), and statistically significant increases in empowerment for women in all four CREL regions, to the extent that women largely caught up with men in these households. Almost 60% of women FELC graduates increased their empowerment, with areas of improvement including access to services and credit, gaining more leisure time and reducing heavy workloads. Developing skills in record keeping helped these women understand profit-loss in their enterprises and helped them calculate interest payments against loans taken from local micro-finance institutions. The skills and confidence developed through the FELC have enhanced the status accorded to women within their households and helped them to link with service providers where accessible.

BOX 23:

FELC graduate - Bulbul Jannath Juli, Fashiakhali, Cox's Bazar District

After graduating from the FELC she received training and support from her CMC to develop enterprises. She now operates a beauty parlor and a sewing school. She explained that women previously had to accept what NGOs and merchants told them regarding loans and sales, but after attending the FELC they can keep accounts, question calculations, and can ensure that they get a fair deal.

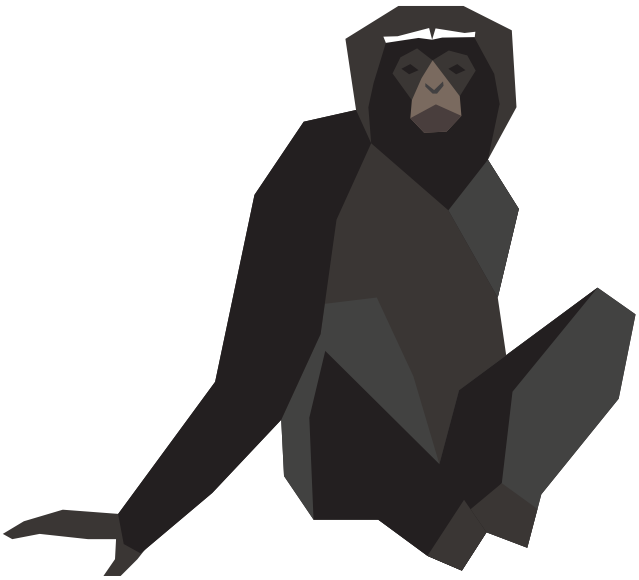
D. CLIMATE RESILIENT VALUE CHAIN ANALYSIS

CREL conducted regional value chain assessments to identify products with a growing market and develop strategies and interventions to ensure sustainable livelihoods for the beneficiaries and reduce pressure on natural resources. The study was conducted using USAID guideline for value chain analysis (https://www.microlinks.org/using-value-chain-development-wiki) in two phases i) identification of potential value chains (at least three in each region), and ii) in-depth analysis of these value chains. Unlike traditional value chain assessments, CREL did not focus solely on markets but first looked at potential opportunities by looking at beneficiary capabilities and community locations. This ensured that livelihood trainings would be feasible for those locations. Although agriculture is important, other opportunities were explored for those who had no land or access to water. Through Innovision, the project trained staff on how to conduct value chain assessments and fully understood the approach. *Box 24* shows key attributes that staff explored during the analysis.

The assessments identified participants' gaps in knowledge affecting existing production systems and limitations on those systems. When assessing value chains, we added a gender lens to ensure women would be interested and able to participate.

E. AGRICULTURAL LIVELIHOOD TRAININGS

CREL adapted or created curricula and materials, trained staff, who, in turn, trained participants and reinforced messages with demonstration plots and signs. The following section describes the main categories of training related to livelihoods/enterprise development.



A FELC recipient with a cow she purchased after receiving financial and entrepreneurial literacy training.

Misty Keasler

BOX 24.

Key Attributes of the Value Chain Analysis

For Agriculture related enterprises:

- What beneficiaries could do
- Markets and road access
- Buyers
- Inputs
- Weather and water access
- Land type and soil quality
- Lead farmers to be trained as local service providers
- Climate resiliency

For other livelihoods:

- Access
- Demand/market for service/product
- Skills of targeted participants
- Interest of participants
- Capital requirements
- Buyers
- Climate resiliency

For all cases staff also looked at

- Sources and terms of available credit
- Other projects working in this area
- Could women engage?

Table 14: Main livelihood training modules published by CREL

Training Manual/Module	Date, developed	Remarks
1. Flip charts	August 2014	Day-long orientation on general concepts on climate change adaptation and mitigation;
2. Training Module on Climate Resilient Livelihoods in Agriculture	Nov 2014	One day orientation for farmers and focused on climate change adaptation in Agriculture
3. Training Module on Climate Resilient Livelihoods and Vegetables Cultivation	December 2014	Day-long orientation on high value vegetable cultivation, with demonstration plots and subsequent on-site mentoring
4. Training Manual on Climate-Resilient Livelihoods and Fish Culture	March 2015	Day-long orientation on pond preparation, use of lime and organic manure, selecting & stocking fingerlings, supplementary feeding, harvesting, along with Demo pond and subsequent extension services
5. Training Module on Eco Guide Development	August 2014	Off-farm livelihoods for local youths
6. Program Guide: Savings and Loan Group (SLG)	April 2014	One-day hands-on orientation and subsequent monitoring
7. Training Materials for Poultry, Duck production	March 2015	Resource persons from Department of Livestock Services provided information with hands-on orientation
8. Training Materials for Turkey production	October 2016	Resource persons from Department of Livestock Services provided extension services with hands-on orientation
9. Training Materials for livestock rearing	March 2015	Resource persons from Department of Livestock Services provided information with hands-on orientation
10. Training Materials for handicraft	March 2015	Technical experts from various companies, e.g. HBPS (Pebble) and local facilitated hands-on orientation with materials
11. Training Module on Betel leaf processing and packaging	October 2014	For local youth job placement initiative
12. Training Module on Hand embroidery	October 2014	Month-long orientation for local youth job placement
13. Training Module on Hotel Management	October 2014	Month-long orientation for local youth job placement
14. Training Module on Mobile servicing	October 2014	Month-long orientation for local youth job placement
15. Training Module on preparing Organic Dry Fish	October 2014	Month-long orientation for local youth job placement
16. Training Module on Pickle making	October 2014	Month-long orientation for local youth job placement
17. Training Module on Sales and Marketing Training	October 2014	Month-long orientation for local youth job placement

CLIMATE SMART AGRICULTURE

CREL promoted climate smart agriculture production tied to markets to improve resiliency of marginalized people. Many CREL target areas are vulnerable to floods, drought, storm surges, and cyclones, so livelihoods promoted needed to be resilient to extreme weather-related risks. In coordination with Youth Training Center Sylhet and local government officers, CREL developed the training modules noted in Table 14, where the fish culture manual covered carp polyculture and mono-sex tilapia and developed materials on poultry rearing. CREL introduced innovative techniques to help farmers increase productivity and adapt to climate hazards and stresses. In agriculture five principles were followed (Fig 17) of which four stressed climate resilience and climate smart approaches.

BOX 25:

CREL Innovations:

Sack method – Fill old fertilizer or grain sacks with soil and plant vegetables in these bags, which can be moved to lift the whole plant a few feet off the ground during floods.

Tower method – Create a raised garden by constructing a bamboo 'bin" which raises plants 3-4 feet off the ground.

Vermiculture – farming worms to convert household and farm waste into compost.

Betel leaf supports - Replace kochi and boroj plants (cut from the forests) with bamboo stakes and shade coverings for betel leaf cultivation.

Figure 17: Five principles of climate smart agriculture

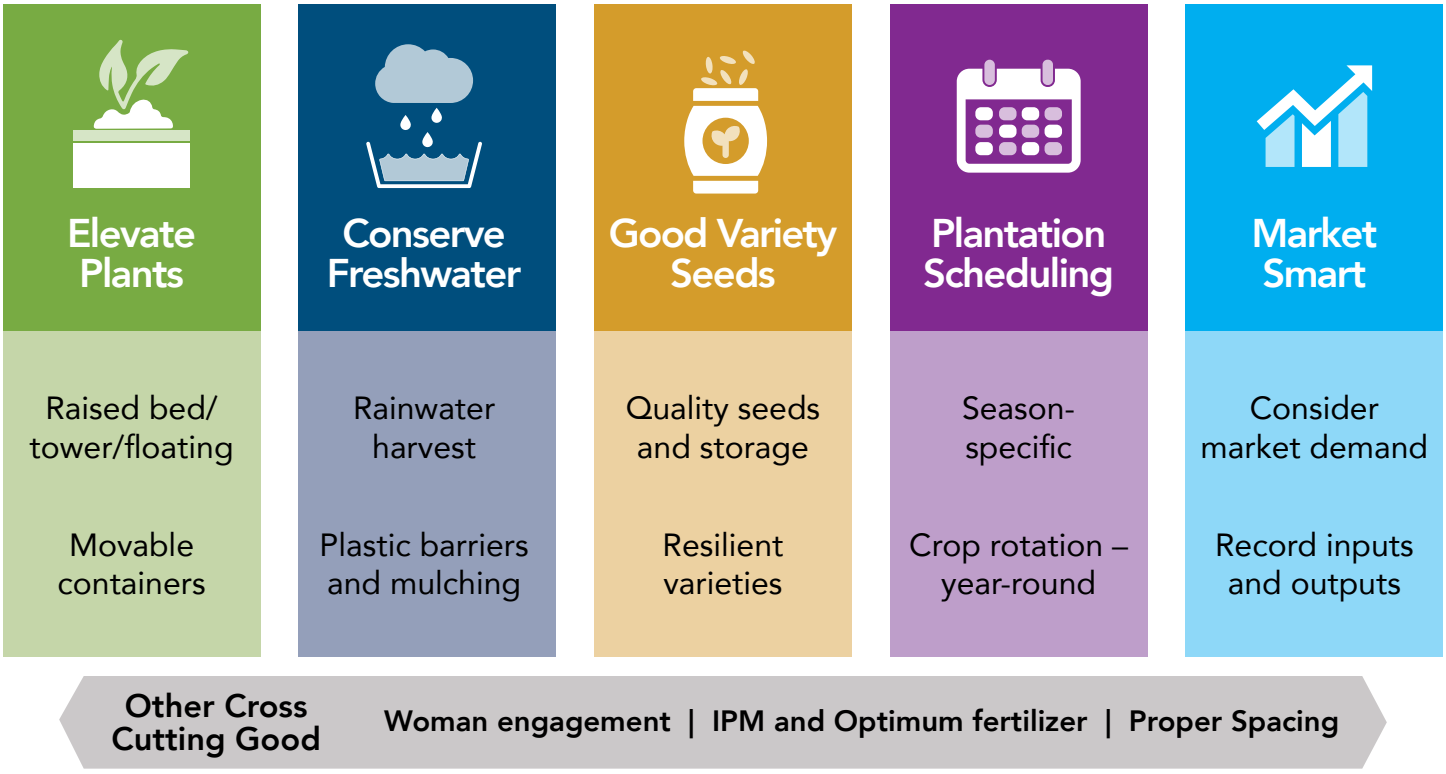


Table 15:

10 IMPROVED AGRICULTURAL PRACTICES

Elevate Plants	Conserve Fresh Water	Improved Seed Varieties	Good Agricultural Practices
Moveable bags/ sacks for vegetables	Mulch to conserve moisture	High value seeds	Proper spacing
Tower/raised beds for vegetables to avoid flood damage	Preserve and reuse rainwater	Saline and disease tolerant varieties	Optimum fertilizer application
	Plastic barriers to prevent flooding and drought		Biological pest control

These ten approaches were conveyed through trainings as well as on signs installed in a sequential way to reinforce messages. Table 16 shows traditional farmer practices and specific interventions CREL promoted to support climate smart agriculture.

Table 16: Selected Improved Technical Practices in Horticulture/Agriculture

Issue	Previous practices		Improved technologies introduced by CREL			
Rice varieties	Traditional		Salt tolerant	Drought tolerant	Water logging tolerant	
Type of seed grown	Local variety	Pest resistant variety	High yielding variety	Hybrid variety		
Soil Management	Chemical fertilizer		Compost/ cow dung/ poultry litter	Green manure	Crop rotation/ grow crop good for soil	Mix crop residue into soil
Cropping layout	One crop in a plot		Relay crop	Multiple crops in a plot in separate blocks	Mixed crops (no separate blocks or line)	Intercrops (multiple crops in separate line)
Other practices			Raised bed	Plastic sheet house	Net house	
Pest management	Didn't do anything	Chemical pesticide	Organic pesticide	Pest resilient seed	Sex pheromone	
Profit Maximizing Strategy	Store produce until price is better	Grow crops with high sale price	Early cultivation	Plant same crop on different dates for series of harvests		

Over the life of project, CREL worked with 51,463 farmers who cultivated high value agriculture products, adopted improved or climate smart technologies and management practices.

AQUACULTURE

Fish farming offers opportunity for high value returns from limited land and is one of the few production systems possible in saline and waterlogged lands adjoining the Sundarbans in southwest Bangladesh. CREL focused on techniques that would enhance productivity but were environmentally benign, and that were suitable for owners of small ponds and households that leased ponds. These livelihood initiatives focused in the southwest region and in the low-lying floodplains of the northeast region. To improve pond management, practices promoted through training of beneficiaries included:

Aquaculture training

- Clear stocking strategies with appropriate densities of fish (either carp polyculture, carp and tilapia / tilapia monoculture);
- Application of lime in pond preparation;
- Ponds fertilization;
- Bi-weekly sample catches to determine feeding quantity; and
- Supplementary feeding of 3-10% of the biomass.

POULTRY

For households lacking access to land or water resources, CREL identified scope to improve traditional subsistence poultry rearing to develop commercial operations, making use of seasonal wetland resources as a source of food for ducks. To develop commercial poultry production, the main practices promoted by CREL included:

- Rearing improved varieties of chicken or duck;
- Providing supplementary balanced feed;
- Vaccinating birds (for ducks against duck plague, fowl cholera and fowl pox at 4-6 months; for chickens with Ranikhet, Gambro and fowl pox at 4 to 8 weeks); and
- Providing suitable sufficiently large and secure sheds (1.5 ft sq per hen and 2 ft sq per duck).

LSPs

Farmers who are new to raising high value crops do not always remember to plant them, or face challenges finding inputs (particularly quality fingerlings for aquaculture). CREL identified lead farmers and built their capacity to become LSPs to support local farmers beyond the LoP. In total, CREL trained 524 people as LSPs (Table 17), of these 278 LSPs (53%) were sustaining service-based enterprises in the last year of CREL (Table 18). They were

trained in both technical and business development skills to work with farmers and producers, and in some cases to act as middlemen supporting handicraft enterprises. Each LSP serves up to 200 farmers including CREL supported and non-CREL farmers. These skills provided immediate benefits to the LSPs in terms of administrative efficiency and sustainability, and ultimately benefit the target farmers who are better served and advised.

Table 17. LSPs Trained by Location and Sector

Regions	Agriculture	Aquaculture	Handicraft	Livestock	Total
Chittagong	63	17	1	20	101
Cox's Bazar	57		4		61
Khulna	129	128	3	2	262
Sylhet	39	28		33	100
Total	**288**	**173**	**8**	**55**	**524**

Table 18. Successful LSPs at the end of the Project

Regions	Agriculture	Aquaculture	Handicraft	Livestock	Total
Chittagong	20	7		10	37
Cox's Bazar	20		3		23
Khulna	71	66	2		139
Sylhet	30	23		26	79
Total	**141**	**96**	**5**	**36**	**278**

CREL organized a series of day-long workshops with project staff, partners, private sector, and local and international NGOs to link LSPs to CMOs and the private sector. Private sector actors such as seed companies, input suppliers and compost buyers attended and expressed their interest to work together. CREL subsequently followed up with the private companies to support these LSPs, while LSPs continue to support producers.

During Year 5, CREL collaborated with a British NGO, United Purpose (formerly known as Concern Universal), to review the successes, challenges and lessons associated with LSPs. The outcome of this collaborative learning exercise was a document titled "*Local Agriculture Sector Service Providers in Bangladesh: Roadmap to Successful Support Practices*" (see Figure 18) identifying best practices and processes to develop successful LSPs. This document was shared with other organizations (*see Annex 3*) so they could replicate and scale up the approach to improve sustainability of livelihood activities. In addition to the book, CREL developed a video documentary on the success cases of LSPs, https://www.youtube.com/watch?v=GeeRTR-0SwUE .

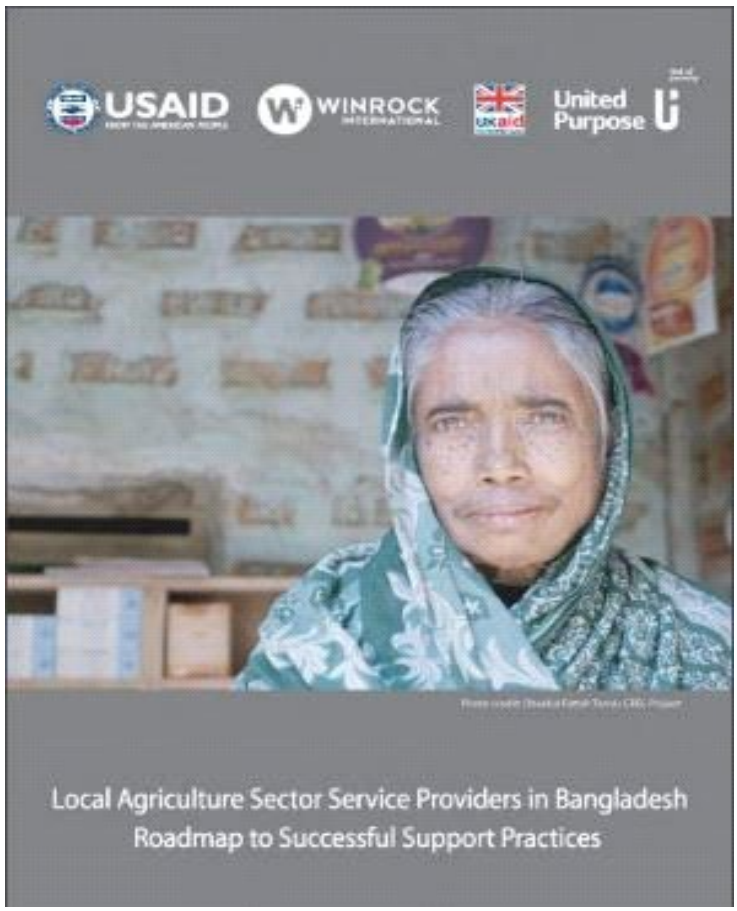


Fig. 18 Final report developed by CREL in collaboration with United Purpose

The many ponds offered scope for enhancing livelihoods.

CREL

DEMONSTRATION SITES AND SIGNS

To reinforce training, CREL worked with LSPs and other farmers to showcase new techniques on demonstration plots. The sites were selected to expose large numbers of people to the technology. One or more signboards accompanied each demonstration plot and explained how to apply the new technology and why it was important. During Year 3, CREL implemented a new type of demonstration, encouraging people to plant high-value fruit trees inside family homestead plots. During Year 4, CREL promoted climate smart agriculture techniques (see Figure 17). Over the LoP, CREL supported 59 Climate Smart Agriculture (CSA) demonstration plots with 10 signboards, one for each type of message, beside each CSA plot; as well as 428 other demonstration plots, mainly on commercial homestead gardening. (Table 19).

Intensive horticulture

CREL

Signboards promoting CSA

CREL

Table 19. Demonstration Plots and Signs by Topic and Region

Region	CSA	Commercial Home Gardening	Vermi-compost	Poultry	Total
Chittagong	10	181	20	30	241
Cox's Bazar	18	197			215
Khulna	15				15
Sylhet	16				16
Total	**59**	**378**	**20**	**30**	**487**

F. NON-AGRICULTURAL TRAINING

In addition to agriculture, CREL helped forest dependent households with little or no access to land or water to build skills and develop non-agricultural enterprises. CREL developed linkages so that beneficiaries trained in these enterprises could enter buy-back arrangements with companies or traders or start their own enterprise. Table 20 shows some of the non-agriculture areas that CREL provided training on and the numbers of people trained over the LoP.

Table 20. Total Number of Non-agriculture Livelihood Beneficiaries

Trades	Female	Male	Total
Toy making (Pebble Child)	3,900	-	3,900
Cap making	996	209	1,205
Eco-tourism	26	152	178
Handicrafts	473	130	603
Small business	21	53	74
Total	**5,416**	**544**	**5,960**

Note: Pebble Child beneficiaries are not included in total and are not a separate set of beneficiaries, most were also involved in climate smart agriculture, horticulture, poultry or aquaculture.

TOY MAKING WITH PEBBLE CHILD

CREL facilitated an agreement to train women from resource-dependent households in handicraft production with Hathay Bunano Proshikhon Society (HBPS), a socially aware private company, which under the Pebble Child brand produces high-quality soft toys – 100% of which are exported. These crocheted rattles and toys retail for $8-$30 (range of product items: 150 items) in the USA and are exported to more than 37 countries around the world. CREL partnered with HBPS to train a total of 3,900 disadvantaged natural resource-using women. The women received training, raw materials from HBPS and fixed wages from HBPS. This out-sourcing provided the women with a new income-generating activity that they can do from home on a regular basis. Over the LoP, women who had received training earned more than BDT 13.02 million (USD 0.163 million). In addition, Hathay Bunano and their network of donors and buyers have leveraged more than BDT. 1,258,000 (USD 15,727) to finance renovation of a community-owned nature interpretation center, a documentary ("Knitting the future") and preschools in four communities, providing more than 100 children with basic education.

Women making handicrafts for Pebble Child

Misty Keasler

PRAYER CAPS

CREL connected 996 women and 209 men in Cox's Bazar region to contractors who sell prayer caps. Participants received training and are now producing high-quality prayer caps, for both the domestic and international markets. Each cap sells for BDT 50-100. It takes one or two days to make one cap, depending on the hours a participant has available.

SOUVENIRS AND HANDICRAFTS

Through an MOU with Community Based Tourism (CBT), affiliated with Bangladesh Parjatan Corporation, CBT trained 120 women to produce handicrafts for an eco-resort where the handicrafts are sold. CBT is also helping promote tourist visits to the resort.

NURSERY BUSINESSES

Given that most CMOs became involved in planting trees for environmental protection, to restore habitat and/or to generate economic benefits, there is large demand for saplings. CREL provided training and support for 36 households to establish tree nurseries. These nurseries raised more than 373,900 seedlings of 18 varieties of fruit and timber trees for project related interventions. These nursery businesses have continued to operate after this initial period and supply seedlings to FD as well as other development partners, for afforestation and also sales of seedlings to local people.

G. ECOTOURISM

Ecotourism provides people with incentives to conserve biodiverse ecosystems. Working throughout the value chain, CREL worked with established tourism companies, promoted CREL sites at national forums such as tourism fairs, developed the capacity of local people to become guides, and helped develop local enterprises in conjunction with CMOs to attract visitors. CREL made investments to provide basic visitor facilities (small scale construction, see section F). CREL also supported the U.S. Forest Service (USFS)-DoI team in planning support for eco-tourism development in Cox's Bazar and north-east regions, ensured coordination with CMCs and CREL initiatives, and worked to produce high quality signage for visitors for all of the forest PAs. Grants to several CMOs were also used to develop CMO-enterprises based directly or indirectly on tourism. These enterprises offer both income for CMOs and employment for former resource users.

PROMOTING RESPONSIBLE TOURISM

Ecotourism is a nascent sector in Bangladesh, so CREL worked with groups such as Travel Planners, a private tour operator, that introduced a tourist-oriented bus service from Cox's Bazar to Teknaf via Shilkhali to increase visitor access to this PA (where CREL also improved visitor facilities and helped establish entry fee collection). CREL promoted ecotourism in PAs at the Asian Tourism Fair in 2014 and 2015, which was attended by 35,000 visitors. The Bangladesh Tourism Minister handed over an MOU promoting tourism between CREL and Community Based Tourism Bangladesh during the inauguration. CREL also developed a portal as part of the Nishorgo Network website (www.nishorgo.org) with useful visitor information and links to ecotourism enterprises for all CREL supported sites.

Eco Cottage
CREL

TRAINING ECO-GUIDES

CREL developed a Nature Tourism Strategy for Chittagong and Cox's Bazar. CREL conducted eco-guide training for local youths in Chittagong and Cox's Bazar, and entry-fee management training for CMO members. In total there are now 150 eco-guides active across 14 PAs in four regions.

VISITOR FACILITIES

Previous projects and the government had established facilities such as dormitories, kiosks, interpretive centers, and meeting rooms in some of the PAs, but in many cases, these had not been well maintained and fell into disrepair. Other PAs had little or no basic visitor infrastructure. Over half of CREL's construction activities were to restore or create visitor facilities as diverse as trail renovation, bridges, basic shelters, ticket kiosks, and interpretive centers. In total, CREL helped 18 CMOs build or repair 85 tourism related structures over the life of the project, plus a further 40 multi-use structures (at an additional seven sites) several of which, for example bridges are used by visitors (see Construction section). Some of these facilities, such as trails, are "public goods", but many (such as dormitories and picnic sites) were to be operated under agreement with FD as CMC enterprises. To ensure these facilities would fall into disrepair, CREL helped CMCs develop business and management plans to implement, maintain and run the facilities. Sites with notable initiatives to develop tourist facilities include Khadimnagar NP (northeast region), Hazarikhil NP (Chittagong region), and Teknaf WS (Cox's Bazar region).

BOX 26:

Camping

Two adjacent PAs and CMCs (Baroiyadhala NP and Hazarikhil WS) have established tourism enterprises based on camping – a novel initiative in Bangladesh. Using CREL guidelines they rent out tents inclusive of blanket, light, charger and fan. Each tent is supported by a tourist guide and a CPG guard. These two persons remain with the campers until they leave the PA. The tent rental fee received is divided into three equal portions: a third goes to the CMC, a third is used for maintenance and a third for the guide and guard. Campers also pay additional fees for guided trekking. The guide also provides meals at fixed rates.

ESTABLISHING CMO TOURISM ENTERPRISES

Increasing numbers of affluent urban youth seeking adventure and to connect with nature have created new opportunities for CMOs. During Year 5, CREL identified ecotourism-related enterprises that could generate revenue to support CMCs while providing employment and income for heavy forest users and CPG members. CREL helped to develop business plans for these enterprises and CMOs used grant funds for capital expenditures. CREL also provided training in enterprises operation. CREL helped CMCs establish camping sites (with tents), bicycle, kayak and boat rentals, guiding, tree adventure (rope courses), and food services. By the end of project, CREL had helped CMOs establish adventure enterprises in four sites (Medakachapia NP, Khadimnagar NP, Satchari NP, and Hazarikhil WS) and camping enterprises in six sites (Baroiyadhala NP, Hazarikhil WS, Khadimnagar NP, Sonadia Island ECA, Nijhum Dweep NP, and Chandpai CMC), these enterprises provide livelihoods to over 100 people.

H. LINKING PARTICIPANTS TO FINANCIAL RESOURCES

CREL provided business and entrepreneurial skills but did not directly subsidize participants starting enterprises. Rather, CREL linked participants to existing micro-credit opportunities, helped establish savings and loan groups, and helped CMOs access capital to develop revolving funds.

FINANCIAL RESOURCE MAPPING

CREL identified existing local credit opportunities for livelihood participants. CREL encouraged partners such as CNRS and CODEC, who offered seasonal microfinance to work with CREL beneficiaries so they could access loans to buy necessary inputs and tools. The financial literacy course (see above) taught participants how to calculate income and profit and how to fill out loan applications. CREL also linked participants with other projects that supplied them with credit.

Additionally, CREL helped CMOs set up revolving funds using finance from a private sector company, BSRM, who contributed BDT 219,000 (USD 2,737) to Hazarikhil CMC, to test if the CMC could manage a revolving fund which benefitted borrowers with very low interest rates. The profit (interest) goes to the CMC account to support other activities focused on conservation. The CMC made this intervention a success in the frame of a private CSR contribution supporting conservation as well as community well-being. However, a subsequent grant from BSRM was discouraged and cancelled because the PA Management Rules 2017 prohibit CMCs from directly accepting funds from the private sector, and instead require private sector donors to deposit funds into the government account.

SLGs

CREL developed SLGs promoting access to finance. CREL worked with NGO Tarango, who trained 60 CREL staff during Year 2 on how to form SLG. Tarango developed a ToT curriculum and modules on how to operate and manage SLGs. CREL staff then worked with 50 village conservation forums (1,555 members) to form 69 SLGs. The SLGs help the savers building their own small reserves through revolving funds, strengthening their financial resilience.

Table 21: SLGs Formed and Linked with Co-management and Enterprise Development

Region	# SLGs	Savers		
		Female	Male	Total
Chittagong	6	62	58	120
Cox's bazar	19	470	8	478
Khulna	44	896	61	957
Total	69	1,428	127	1,555

Savings and Loans Group orientation in Southeast Region

CREL

Rural households often do not have access to save with formal banks or even as part of NGO-led micro-finance, so the SLG mechanism helps beneficiaries make savings. It also helps finance livelihood interventions, as loans from the group can be taken easily, with minimal formalities. SLGs operate like a "Community Bank", although there is no permanent structure they function as an entry point for linking enterprises and villagers with conservation messages for forest users. The SLGs are all female (except for one male SLG), completely self-managed and have proved to be highly disciplined with over 95% attendance in meetings, 100% loan recovery, and no loan defaults recorded. The total group income/dividend is distributed among the members at the end of each year in accordance with individual shares. There remains a high local demand for forming more SLGs based on these successes.

I. LEVERAGING RESOURCES AND COLLABORATION

Over the LoP, CREL leveraged resources valued at more than USD 7.2 million from different sources (table 22) to support CREL beneficiaries. Resources came in the form of training, grants and services from project partners, government, donors, foundations and other projects; cash grants and in-kind donations from private sector companies; and contributions of time and resources from CMOs. Overall these contributions helped enhance the sustainability of co-management and bridged the gap between the development initiative and the private sector. Besides these, some in-kind support from local government addressed local needs and demands of CMOs as a result of vulnerability analysis and CMO planning, for example improving roads or providing tube wells.

Table 22: Sources of Leverage and Donations

Source of leverage funds	Value in BDT	Value in USD
Donor Funded Project	18,261,031	237,156
GoB	39,887,467	518,019
Private sector	36,284,148	471,223
Cost-share: NGO partners	335,996,847	4,346,907
Cost-share: CMOs (CMCs and CBOs)	124,411,720	1,615,737
Total	**554,841,213**	**7,189,041**

Over the LoP, CREL established collaborations through 20 MOUs with different organizations, donors and funders. For example, CREL worked with Industrial Development Leasing Company (IDLC), a non-banking financial institute and negotiated a partnership agreement to provide Corporate Social Responsibility funding for CREL livelihood participants.

J. IMPACT

FELCS

As noted above, baseline and impact interview surveys of 1,268 female FELC graduates and men from the same households provide statistically robust evidence on changes in women's empowerment using a modification of the Women's Empowerment in Agriculture Index (WEAI). Women's empowerment increased significantly in all four CREL regions, indicating a positive impact of financial literacy courses. Prior to enrolling in FELCs women were significantly less empowered than men in their households (paired t-test, $p<0.001$), but after graduating from the FELC there was no significant difference in empowerment between women and men. Most women reported changes that equate to increases in their empowerment, particularly in reduced workload, improved access to financial services and credit, increased asset ownership, increased role in production and marketing decisions, and increased role in asset disposal decisions.

Fig 19 shows the percentage of women changing from disempowered to empowered for each component of Five Dimensions of Empowerment index between baseline and impact surveys.

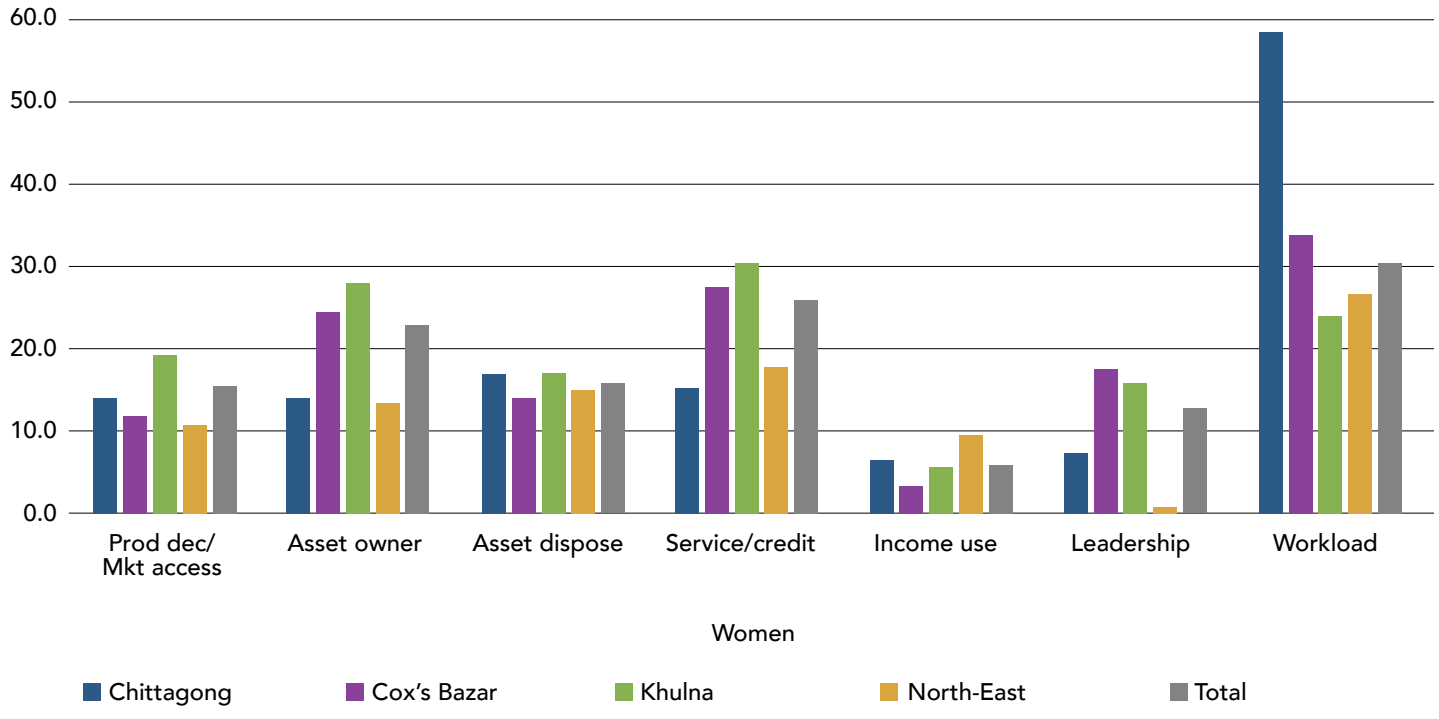
ADOPTION OF IMPROVED TECHNOLOGIES

Over the LoP, 51,463 people applied improved technologies or management practices after receiving training and support provided by CREL, the majority of which (38,230) were women (Table 23). Three quarters of technology adoption originated from women receiving training from CREL, but the gender breakdown of technology adopters differed considerably between regions: from 86% women in the southwest and 74% women in Cox's Bazar region to 54% women in the northeast and only 41% women in Chittagong. On average farmers adopted four or more technology elements according to the enterprise they received training in. The majority of fish farmers adopted all improved aquaculture technologies, whereas in other sectors farmers adopted some of the technologies offered – such as using compost, raised beds, and changing cropping systems. Although raising medium and large livestock was not a major element of the enterprises and value chains promoted by CREL, it was encouraged in some sites, mainly in Chittagong region, so for completeness this is included in Table 23.

Children learn early to handle boats in the Sundarbans ECA

Misty Keasler

Figure 19: Percentage of women changing from disempowered to empowered for each component of Five Dimensions of Empowerment index between baseline and impact surveys



IMPROVED LIVELIHOODS AND REDUCED NATURAL RESOURCE DEPENDENCE

Value-chain strengthening and enterprise development activities were designed to result in profitable enterprises and increase incomes for beneficiary households, while reducing pressure on natural resources. Impact surveys estimated the impacts of enterprise training and related support, which focused on the four main categories of enterprise: agriculture/ horticulture, aquaculture, poultry (chickens and ducks) and handicrafts. Training was carried out on a rolling program, so impact surveys were defined for specific periods (four over the LoP) for sampling. Random samples were drawn for each enterprise and survey period and were stratified to represent geographic regions and gender breakdown of participants. Baseline and impact surveys were completed for each household documenting the returns on livelihood activities, and involvement and incomes from extracting natural resources respectively for 12 months before and after training. Of 55,518 unique beneficiaries, 2,424 of these households were surveyed (baseline and impact surveys) (Table 24)

Table 24 Beneficiaries (trainees) and Sample Survey Effort

Enterprise	Beneficiary population by round				All round (N)	Sample households by round				All round (n)
	1	2	3	4		1	2	3	4	
Aquaculture	15,237	-	6,676	2,292	24,205	187	-	128	69	384
Handicrafts	-	-	1,192	1,689	2,881	-	-	205	190	395
Horticulture	3,964	6,469	4,630	3,700	18,763	157	352	265	221	995
Poultry/Duck/ Livestock	-	6,146	2,225	1,298	9,669	-	195	268	187	650
All trade	19,201	12,615	14,723	8,979	55,518	344	547	866	667	2,424

The number of households achieving an increase in income over baseline for their respective enterprise was calculated, including households that took up a new enterprise and the majority that enhanced existing livelihood or subsistence activities. Values of gross margins or "net returns" were calculated based on detailed interview surveys, valuing own consumption at local sale prices and calculating contribution to household income after deducting all cash costs incurred in the enterprise. Overall, 60% of households achieved higher incomes in their first year (Table 25). The most successful enterprise, was aquaculture with 73% of people trained earning higher incomes. Horticulture trainees improved incomes by 55% - although this was lower than expected due to crop price variability and a steep learning process during initial cropping cycles.

Table 25 Estimated Number of Households Benefited from Enterprise Development (Combining all rounds)

Enterprises	Number of sample households with improved income					Estimated total households with improved income				
	Chit-tagong	Cox's Bazar	Khulna	Sylhet	All Region (n)	Chit-tagong	Cox's Bazar	Khulna	Sylhet	All Region
Aquaculture	27		221	32	280	674		11,807	1,086	13,566
Handicrafts	39	75	93	31	238	196	774	338	252	1,560
Horticulture	101	125	187	154	567	1,682	3,466	7,217	2,183	14,548
Poultry/Duck/Livestock	85	77	100	97	359	1,384	891	4,188	2,418	8,881
Total	**252**	**277**	**601**	**314**	**1444**	**3,935**	**5,130**	**23,550**	**5,938**	**38,554**

Aquaculture and horticulture averaged the most profitable enterprises, more than doubling incremental returns (average additional net income) compared to poultry/livestock and handicrafts (Table 26). Variations between regions in returns for a given enterprise are affected by environmental factors, local weather conditions in the survey years, and by variability relative to smaller sample size where there were fewer participants for a given region / enterprise combination. 60% of CREL beneficiary households earnt an additional BDT 10,500 (approx. US$ 130) in their first year of enhanced enterprise operation, totaling overall incremental increased incomes of BDT 408 million (approx. US$ 5 million). This is expected to continue after the LoP.

Table 26: Estimated Value of Benefits from Livelihood Enterprise Training

Enterprise	Mean change in net return (Tk/household)					Total estimated economic benefit in 1st year after training (Tk mill)				
	Chit-tagong	Cox's Bazar	Khulna	Sylhet	All Region	Chit-tagong	Cox's Bazar	Khulna	Sylhet	All Region
Aquaculture	44,760	-	10,564	24,542	15,459	30.16	-	124.72	26.64	209.71
Handicrafts	3,455	10,272	3,717	7,342	6,212	0.68	7.95	1.26	1.85	9.69
Horticulture	23,433	16,201	4,629	13,735	13,003	39.42	56.15	33.41	29.98	189.16
Poultry/Duck/ Livestock	4,546	4,102	6,743	7,677	5,909	6.29	3.65	28.24	18.56	52.47
Total	**16,256**	**11,232**	**7,022**	**12,334**	**10,596**	**63.97**	**57.62**	**165.36**	**73.24**	**408.51**

Dependence on natural resources (collection effort on wild natural resources from forests and wetlands) was expected to reduce as households concentrated on enhanced enterprises supported by CREL. This did occur to a limited extent. 78% of beneficiary households were involved in collecting wild natural resources before CREL support, and although few gave up completely, on average in their first impact year collection effort (days collecting natural resources) reduced by 7% (Table 27). Impact was greater for forest-related products (fodder, timber), while fishing effort, a predominantly male economic activity, was little changed.

Table 27 Engagement of beneficiary households in wild natural resource collection

Type of NR collected	% households involved		Baseline (days/year/ household)			Impact (days/year/ household)			% change in effort
	Baseline	Impact	Women	Men	Combined	Women	Men	Combined	
Fodder	5.39	5.05	1.5	5.8	7.3	1.1	4.8	5.9	-18.06
Fuelwood	26.94	25.25	6.6	18.1	24.7	5.0	16.2	21.2	-14.22
Honey	1.01	1.01	0.0	0.7	0.7	0.0	0.5	0.5	-29.82
Other	0.79	0.67	0.0	0.5	0.6	0.0	0.5	0.5	-15.16
Plant (food or medicine)	0.45	1.23	0.0	0.6	0.6	0.2	0.4	0.6	-1.53
Animals	5.95	6.29	0.7	6.5	7.2	0.8	6.7	7.5	4.39
Shrimp PL	16.72	15.26	3.2	10.5	13.6	3.1	9.7	12.8	-6.36
Fishing	21.10	22.00	0.2	24.4	24.6	0.2	24.2	24.4	-0.84
Any NR collection	78.34	76.77	12.1	67.2	79.3	10.3	63.1	73.4	-7.44

Strawberry cultivation

Obaidul Fattah Tanvir

K. LESSONS LEARNED

- Linking farmers to private sector stakeholders was important to help farmers optimize the LSP, establish market linkages and improve technology transfer to farmers.
- The use of field days provided an important forum for government extension officers to transfer knowledge to farmers on cultivation best practices and improved technologies.
- Integrating aquaculture with poultry and vegetation in short rotations enabled farmers to efficiently use minimal amounts of land.
- Greater emphasis is needed to coordinate between CMOs and government on planning for managing tourism, based on cost-effectiveness, sustainable operations and maintenance. This includes construction, enterprise development, leasing of facilities to CPG/PF/CMO members, training tourism service providers and designating areas. Responsible tourism should be treated as a distinct initiative rather than a livelihood sub-component.
- Typical market-based value chain approaches are not suitable for PA landscapes where natural resource extractors often do not own farmland, where financial institutions are few, and where there is high illiteracy. Complementary approaches such as capacity building on literacy are also necessary.
- Livelihood support should be targeted towards natural resource extractors such as poachers and linked with commitments to change practices and occupation over the LoP.
- FELCs helped women to meet to a considerable extent the WEAI empowerment criteria.
- Impact surveys should take place preferably at least one year after FELC graduation.
- Projects should assess the extent to which skills and capacities developed in FELCs have a medium and long-term, continued impact on women's empowerment.
- WEAI is a useful approach/tool to assess the empowerment of women in rural households involved in co-management, although requires some modification to fit local contexts.

L. CHALLENGES

- CREL targeted a high number of livelihood beneficiaries, reflecting the significant pressure on small PAs from many surrounding households. This resulted in a broadly spread approach which limited contact time between trainers and livelihood experts and participants. This limited scope to follow up with trainees, both regarding capacity development and technology adoption.
- The focus on women for livelihood enterprise development had positive impacts in terms of empowerment of women, but to some extent compromised the target of reducing natural resource extraction. Although poor women do collect natural resources, most of the pressure is from men, who were less involved in enterprises supported by CREL. A more balanced approach is needed to achieve both conservation and livelihood-empowerment objectives.
- Some training recipients had little access to land and could not take up crop/horticulture or aquaculture-based enterprises.
- Supporting climate resilient improved technologies across multiple value chains requires sufficient numbers of trainers and facilitators with technical expertise. CREL had to spread resources so the number of specialists and their level of expertise was less than ideal.


George Figdor

Gender and CREL

Female community patrol group guarding forest in Teknaf WS, Cox's Bazar

Obaidul Fattah Tanvir

GENDER APPROACH

CONTEXT AND GENDER STRATEGY

Ensuring gender equality and women's empowerment was a key area of focus to ensure the highest environmental and socio-economic impacts. Staff included a full-time Gender Expert and short-term US-based gender expert who developed and implementing a gender strategy and approach to enhance the capacity of staff, government partners, CMOs and villagers to be more gender aware, gender responsive and ensure equality.

CREL's Gender Strategy (see Box 27), which was integrated into the annual workplan, established mutually reinforcing objectives that: (1) provided guidance for implementing activities that were gender-responsive and equitable, and (2) ensured a gender-sensitive work environment for all staff and beneficiaries. To measure the effectiveness of one of the key activities under the Strategy (FELC) a "gender scorecard" was developed that monitored key areas of change. CREL also developed Participatory Gender Need Assessment (PGNA) tools which included a structure for focus group discussions, formats for key informant interviews and CMO gender assessments. Staff were trained to conduct this assessment at all levels.

BOX 27:

CREL's Gender Strategy's objective was to facilitate the equitable engagement of women and men to (1) reduce unsustainable extraction and dependence on natural resources (in forests, wetlands, and ecologically critical areas); (2) increase knowledge and resilience in response to climate change (adaptation and mitigation); and (3) strengthen joint decision-making and female empowerment in households through financial literacy training and increased incomes.

It provided practical guidance to improve overall results through a gender-balanced approach that is mutually-supportive and gender-transformative. The strategy emphasized the importance of applying a "whole household" gender lens by working together with women and men to encourage support for and uptake of climate-resilient alternative income generation and planning in NRM, and to sensitize men and women beneficiaries in ways that improve communication and shared decision-making, shared division of labor, and women's empowerment.

GENDER SCORECARD STUDY ON GENDER EQUALITY AND WOMEN'S EMPOWERMENT

To measure changes in equality and empowerment, baseline and impact surveys were conducted using a gender scorecard with a sample of women and their husbands (or senior men in their household) before and after attending FELCs. This covered 261 FELCs, with in total 1,268 couples interviewed. The survey and analysis (reported in the impact section) adapted USAID's WEAI. See Table 28 for more detail on the domains and how this was operationalized considering the context of ecosystem co-management (right most column).

Table 28. Domains of Empowerment in WEAI and as adapted by CREL

WEAI Domain	WEAI Indicator	CREL definition of Indicator
Strengthened decision-making by women agriculture/ non-agriculture Production	Input in productive decisions	Sole or joint decision-making over food and cash crop farming
	Autonomy in production/ active participation in whole productive cycle/ system without influencing by others	Sole or joint decision-making over sale of agricultural (including livestock) or handicraft products
Increased ownership and decision making over productive resources	Ownership of assets	Sole or joint ownership of major household assets/productive assets
	Purchase, sale, or transfer of assets	Sole or joint decision-making over disposal of land, ponds, livestock or other assets
	Access to and decision on credit/grants/demo/extension service etc.	Access to credit or agricultural services
Improved women's control over income	Control over use of income	Sole or joint control over spending for different purposes
Increased leadership by women	Group member	*Not used as almost all respondents would qualify*
	Holding leadership position	Whether the respondent is a member of an executive committee, or a member of CMC or PF
Improved time use by women	Workload	If reported leisure time plus 8 hours (sleep) was less than 13.5 hours
	Leisure	*Not used survey did not investigate satisfaction*

Note: The domains of empowerment or rather disempowerment are defined in research by IFPRI (International Food and Policy Research Institute) to develop the WEAI for USAID

GENDER FOCAL PERSONS

Gender focal persons were selected in each region and site and in each CMO who met with the project the Gender Specialist periodically to monitor progress on implementing the Gender Strategy and share ongoing opportunities and challenges. For example, they discussed strategies to increase participation of women and leadership roles

in CMOs as well as how to build self-confidence for women leaders.
The gender focal points also led spouse meetings, supported gender action plans, and linked private sector, GoB and NGOs at the regional and UP levels to CREL gender initiatives to ensure sustainability. Furthermore, they advised and reviewed all CMO multi-year and annual development plans (see Section IR2) to ensure that they were gender sensitive, reflected the priorities of women and men of different social status, and included initiatives to address gender-based constraints and needs.

A. ACTIVITIES SUPPORTING WOMEN'S EMPOWERMENT

INCREASING AWARENESS AND WOMEN'S EMPOWERMENT THROUGH WORKSHOPS AND MATERIALS

Training materials and modules for the different audiences (Table 29) and guides were developed to continue gender strengthening after the project ended. This included a short film on equitable engagement of men and women in the governance of NRM and adaptation to climate change and incorporating gender issues into the flip charts used in NRM and climate change training for VCF members. Workshop-based training was also developed to enhance the capacity and acceptance of women as leaders in CMOs (see later sub-section on leadership training).

Table 29. Materials Developed to Support Implementation of the Gender Strategy.

Type	Audience
Modules/Manuals on:	
1. Gender Approach (Brief gender mainstreaming strategy)	ToT to CREL staff who then imparted training and guidance to mainstreaming/integration of gender in CMOs.
2. Gender Opportunity and Action Learning (update/Revised Gender strategy)	ToT to CREL staff who mainstreamed gender in all CREL activities in all components including CMOs.
3. Gender Orientation workshop/training Manual	CREL staff – Increased gender sensitivity and helped them integrate gender issues and dimension at different levels: personal, inter-personal, institutional and societal
4. Training Manual on Gender Mainstreaming in NRM and CC adaptation (CMOs members)	ToT to CREL staff who then imparted training to CMO members including GOB officials and PF/VCF members for building competencies of CREL supported organizations, to better mainstreamed gender considerations in all spheres, structures and activities of their institutions and to achieve equal opportunities and a gender balance in their organizations.
5. Facilitator's Note on Some Key Gender Concept and Constraints, Harmful Effects and Solution	Orientation to Nishorgo Sahayak who discussed these points in VCF meetings to change behavior and end gender constraints and harmful effects within the wider communities and within households.
6. Facilitators hand note on Self-Confidence building workshop/ training	TOT to CREL staff who imparted workshop training for newly appointed women leaders
7. Guide note for VCF spouse meeting	Orientation of CREL staff who facilitated meetings with VCF member spouses
8. Hand note on gender mainstreaming in NRM & CC adaptation training session for Applied Conservation Biology (ACB) training.	Gender Specialist imparted training (National level) to the GOB officials
Posters on:	
1. Gender Equity and Diversity in the Workplace	Winrock/CREL staff and Partners
2. CMO's Gender Action Plan for gender equality and women empowerment within the CMO, communities & households	CMOs
3. Sticker to incorporate & addressed gender issues throughout the technical Flip- Chart	Mainly VCFs members and other stakeholders

Training CREL staff was also a necessary step for implementing the gender strategy and assessing the status of gender equality and women's empowerment in project communities. Over the LoP CREL facilitated 16 workshops (four subjects in each of four regions), as well as one orientation of 40 Dhaka-based staff (see Table 30).

Table 30. Number of CREL staff trained on gender issues

Name of workshop	Men	Women	Total
Gender brown bag session for CREL HQ staff	29	11	40
Gender Orientation Workshop on conceptual framework, gender approach, analyzing own work using gender lens, process of GNA and gender integration	158	41	199
Workshop on Gender strategy (Gender Opportunities and Action Learning)	156	41	197
ToT on Gender mainstreaming in NRM and CC adaptation (for GoB and NGOs) and Organizational leadership & management	158	40	198
ToT on facilitation of spouse meetings and building self-confidence training	158	41	199

Gender training rolled out to a variety of stakeholders, including local government representatives, focusing on the importance of female representation in UP standing committees to ensure a more balanced and holistic understanding of priorities, constraints, and opportunities for improving NRM and climate change adaptation. Other key trainings included: (1) gender balance in access to and control over benefits from CMO resources, opportunities, and services; (2) reducing gender based violence (GBV) and seeking solutions (counseling and social services) to mitigate the impact; (3) enhancing knowledge and capacity to enable women and girls to realize their rights, determine their life outcomes, and influence decision-making in households, communities and society; and (4) preparing Gender Action Plans to promote gender equality and women's empowerment and reduce GBV in all CMO activities. Table **31 a and b** summarizes the gender related trainings conducted between year 2-4.

Table 31 a. Types of People trained by Year in Gender Mainstreaming in NRM and Climate Change Adaptation

Body	Year 2	Year 3	Year 4	Total
CREL Staff	239 (52 women)	0	0	239 (52 women
GoB	0	26 (5 women)	26 (1 woman)	52 (6 women)
CMOs (includes some GOB staff in CMCs)	315 (119 women)	525 (women 208)	158 (64 women)	998 (391 women)
NSs	0	748 (294 women)	0	748 (294 women)
VCF Members	0	7,085 (5616 women)	45,22 (2440 women)	11,607 (8056 women)
Total	395 (140 women)	8,384 (6123 women)	4,706 (2,505 women)	13,485 (8,768 women)

Table 31 b. Number of People trained by Year by Region in Gender Mainstreaming in NRM and Climate Change Adaptation

Region	Year 2	Year 3	Year 4	Total
Khulna	74 (16 women)	2247 (1899 women)	20 (5 women)	2341 (1920 women)
Sylhet	167 (54 women)	3361 (2584 women	112 (47 women)	3640 (2685 women)
Chittagong	113 (42 women)	1090 (588 women	0	1203 (630 women)
Cox's Bazar	140 (47 women)	900 (753 women)	26 (12 women)	1066 (812 women)
Total	494 (159 women)	7598 (5824 women)	158 (64 women)	8250 (6047 women)

Woman vaccinates chicken

Obaidul Fattah Tanvir

GENDER AND CMO LEADERSHIP

Additional "Gender Mainstreaming Training in Leadership and Organizational Management for CMOs" trainings were implemented where participants learned about leadership and importance of female leadership and equity and gender balance in NRM. These were designed to build self-confidence among newly appointed women leaders in CMOs and in PFs including VCF office bearers and CMO Gender Focal persons. CMOs and CBOs were trained in all four regions, reaching 366 individuals (209 men and 157 women) (Table 32).

As a result of these trainings, women leaders were more confident to meet with local government and to claim their rights, were increasingly recognized, and took responsible positions in their CMOs and associated activities (see increase in women in executive bodies and decision-making roles).

This was exemplified by six new women CMC office bearers in Cox's Bazar. After receiving training, they worked with other leaders in their CMCs to plan gender inclusive activities and presented their experiences at a press conference where they articulated stories of their struggle for dignity, empowerment and leadership.

Table 32. Gender Mainstreaming Training in Leadership and Organizational Management:

Region	No. of leaders trained			% of Women participants
	Men	Women	Total	
Cox's Bazar	34	45	79	57.0
Chittagong	52	30	82	36.6
Sylhet	103	63	167	37.7
Khulna	20	19	39	48.7
Total	**209**	**157**	**366**	**42.9**

Table 33. Training to Build Self-confidence of Women CMO Leaders

Region	Number of training events	Persons trained		
		Male	Female	Total
Khulna	6	0	150	150
Sylhet	4	12	89	101
Chittagong	13	14	344	358
Cox's Bazar	1	0	40	40
Total	24	26	623	649

WHOLE HOUSEHOLD APPROACH

While the project was effective in increasing women's economic empowerment and participation, these gains are not sustainable without concurrent efforts to change behavior and end gender-based constraints, violence and inequality. CREL initiated this long-term transformational change in society through a whole-household approach that included the sensitization of both spouses in meetings that included 15 -20 families. Table 34 shows the meetings conducted by year by region.

Table 34. Number of Spouse Meetings by Year by Region

Region	Year 4		Year 5		Total	
	# of Meetings	Persons (women)	# of Meetings	Persons (women)	# of Meetings	Persons (women)
Khulna	48	1440 (720)	48	1440(720)	96	2880 (1440)
Sylhet	1	24 (2)	22	246 (132)	23	270 (144)
Chittagong	66	3048 (1724)	26	981 (517)	92	4029 (2241)
Cox's Bazar	30	2442 (1426)	22	1094(586)	52	3536 (2012)
Total	145	6954 (3882)	118	3761(1955)	263	10715 (5837)

CROSS-VISITS FOR WOMEN CMO LEADERS

CREL organized 25 cross-visits (inter-regional visits) for 244 CMO leaders (including 58 women) where they learned about other CREL-supported successful livelihoods and FELC activities. Visiting these CMOs, communities, and women involved in successful economic empowerment, shared decision-making, and equal division of labor efforts, provided an opportunity to learn from and be inspired.

LINKING CMOS TO GOVERNMENT AND NON-GOVERNMENT RESOURCES

To continue to support CMOs and their members after CREL ends, the project sponsored several meetings to link CMOs and their members with opportunities to access ongoing NGO and government programs supporting micro credit, health and other services.

Women at Financial Entrepreneurial and Literacy Center.
CREL

B. IMPACTS

CREL's "gender approach" mainstreamed gender and more equitably engaged women and men in livelihood activities and resource management institutions. Hence many of the "gender impacts" are reflected in the achievements and impacts under IR2, 3 and 4. This section highlights two of the most notable areas where CREL empowered women: the role of women in co-management institutions, and empowerment of individual women through enterprises and financial literacy.

ROLE OF WOMEN IN CMOS

In forest PAs, the co-management structure (as discussed in IR2) is multi-tier, and successive government orders and rules establishing CMCs have laid out a minimum number of women members at different tiers. The status of women's participation at the various tiers as of June 2018 is shown in Table 35. Gender representation follows a pyramid structure consistent across all regions and representation of women is highest in Cox's Bazar region. Across all tiers, women's participation can be considered substantial, even at the CMC general body/council and executive body/committee where 20% of members are women. Though the percent-

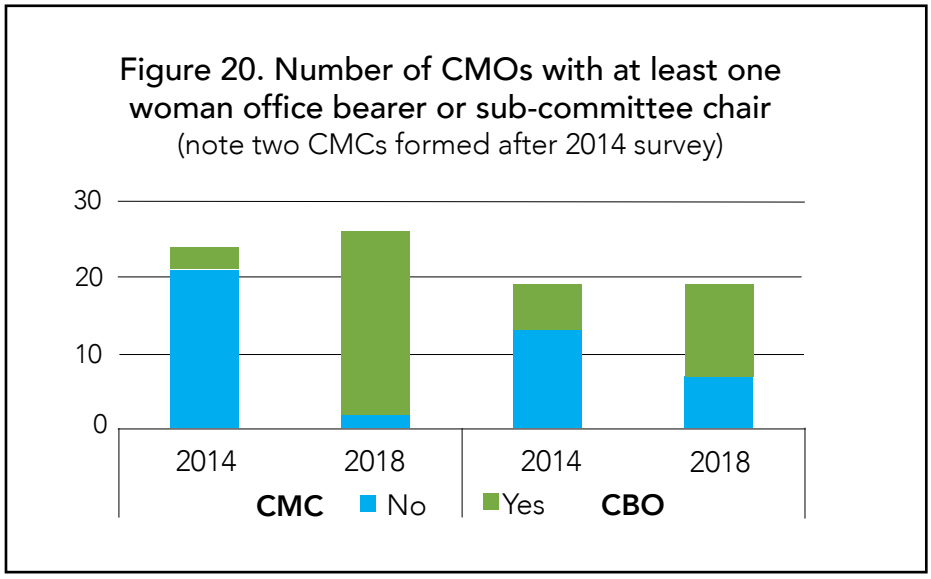
age of women participating at these higher tiers seems small, it can be considered an achievement considering these are co-management bodies where a significant number of members come from local government, FD and other government agencies, or are traditional leaders and local opinion leaders which are roles typically overwhelmingly dominated by men.

Table 35. Women members representation in forest co-management institutions, in June 2018.

Region	Percent of Women in VCF	Percent of Women as VCFs office bearers	Percent of Women in PF	Percent of Women as PFs executive	Percent of Women in CM -Council	Percent of Women in CM -Committee	No. of women office bearers in CM - committee
Cox's Bazar	79	73	52	52	28	20	6
Chittagong	55	53	48	46	21	18	2
Khulna	56	47	50	37	20	18	0
Sylhet	57	50	44	42	21	18	4
All	62	56	49	44	23	19	12

Through CREL activities, men and women CMO members and GoB officials have a better understanding of the importance of equitable participation in decision making and demonstrated a commitment to achieving the objectives of the gender mainstreaming. For example, one Gender Focal Person was selected to address women's concerns to ensure gender integration in CMC, PF, VCF, VCG and RMO activities. Also, all CREL's GoB stakeholders pledged to provide full support to women, and to increase economic opportunities for women within their jurisdiction.

Capacity building and CMO leadership development trainings also resulted in a dramatic change in the decision-making role of women in CMOs during the project (Fig 21), especially in the CMCs. In 2014 hardly any CMCs had women in a decision-making position but by 2018 women held such positions in 92% of CMCs. Although few women hold the main CMC office bearer positions, by 2018 women chaired project implementation committees or other sub-committees in many CMCs. The role of women also increased substantially in the wetland and ECA CBOs, but not to the same extent in part due to a smaller pool of capable women, combatting traditional viewpoints (male views of leadership), and fewer opportunities (e.g., less funding so fewer sub-committees to supervise activities).



ENTERPRISES, FINANCIAL LITERACY AND EMPOWERMENT

More than 75% of livelihood enterprise participants supported by CREL were women, and some enterprises (i.e., Pebble buyback, tailoring, and cap making) were exclusively targeted at women (see IR4 for details). This demonstrably increased women's economic empowerment. The FELC approach was found to enhance women's empowerment, and by adapting the WEAI approach, CREL was able to quantify and statistically test the impact of the FELCs on women's empowerment (see impacts of FELC under IR4, and methods summarized earlier in this section), revealing a reduction in the proportion of women disempowered (from 86% to 72%).

Developing skills in record keeping helped women understand profit-loss in their enterprises and calculate interest payments against loans taken from local micro-finance institutions. Skills and confidence developed through the FELC also enhanced status accorded to women within their households and helped them to link with service providers.

OTHER IMPACTS

By mainstreaming gender, many activities and components of CREL improved the capacities and lives of women. Examples detailed elsewhere in this report include:

- Of the 44,302 households that achieved increased income from CREL-supported enterprise development, 59.7% of the enterprise leaders were women
- 70% of persons identified as more resilient to climate change were women.
- Of those using climate information in their decision making because of CREL, 59% are women.
- 4,600 households received subsidies to adopt improved cook stoves, which primarily benefits the health of women who cook.
- Construction support for pond sand filters and tubewells is estimated to benefit about 5,000 households, reducing the workload of at least 5,000 women who are traditionally responsible for collecting water for domestic use.
- CREL communication products were gender sensitive – events and publications, newsletters, flip charts, posters, and short films all incorporated positive female role models.
- The gender team helped CREL beneficiaries access resources such as finance and government services (see box 28).

BOX 28.

CREL Beneficiaries Gain access to Financial and GoB Resources

A.K. Khan Foundation provides health support and loans to women in 16,000 fisher households in Hazarikhil, Chittagong region.

Deep Unnoyan Shangstha, an NGO in Nijhum Dweep provides maternal health, skill development training and other livelihood support.

BRAC provides legal aid support for women experiencing GBV around Satchari NP.

Surjer Hasi Clinic provides maternal health care services in the Sylhet region.

Department of Youth Development of the GoB provides skill development training for men and women in Sylhet and Chittagong.

The Social Welfare and Women Affairs Departments provide technical support and engage CMO and VCF members, especially women, in trainings such as mobile phone servicing, fish culture, poultry rearing and tailoring.

C. LESSONS LEARNED

CREL had a profound impact on women for a variety of reasons. The project had a strong Gender Technical Team, including a fulltime, experienced gender expert who was very active in the field. Under her leadership, project offices and staff developed a gender sensitive environment for employees and within their work. In addition, the project we had strong tools and inputs. Component mangers and partners viewed their project activities through a gender lens. The monitoring, evaluation and learning (MEL) plan involved the systemized collection, storage and reporting of all relevant indicator data disaggregated by sex. The gender focal persons approach produced champions in the field that reinforce and mainstream gender issues among CMOs and government.

There are also some qualifying lessons, which limit the appropriateness of gender equity or targeting women. The financial literacy and enterprise development support focused on women, but much NR extraction from forests and wetlands is undertaken by men and empowering and enhancing the livelihoods of women does not tend to reduce over-harvesting or illicit NR extraction by men. Also, aiming for gender equity in co-management may be a long-term ideal, but ignores not only traditional gender differences in NR extraction but also the existing numbers of women in government positions (both elected and staff/officers). Transforming attitudes of local government and officials towards gender is a more appropriate target for time-bound projects than increasing numbers of women in government.

D. CHALLENGES

The key challenges were associated with culture and habits of many people at all levels. The natural resources sector at all levels is male-dominated, reflecting Bangladeshi society as a whole. Even though staff, government and participants can engage mentally in the inequity of the social structure, gender issues can often be overlooked. Further, it is difficult to recruit qualified women as staff resulting in a gender imbalance in staffing. Once hired, travel was a challenge for some and, unfortunately, male counterparts did not provide the correct support at the right times to ensure a productive and safe working environment for women staff, and in some cases, resisted efforts to ensure gender mainstreaming across all project activities.

Communications and Outreach

Welcome sign installed at Satchari National Park.

CREL

OBJECTIVES

CREL developed a Communications and Outreach strategy for conveying project objectives and approaches to stakeholders. At the core of CREL's communications and outreach activities were two primary messages:

1. Effective co-management of Bangladesh's natural resources supports climate-resilient ecosystem management and provides improved livelihood opportunities that allow beneficiaries to adapt to climate change.

2. The ability of people to respond to climate impacts—their resilience—depends upon the health and resilience of the environment.

The following sections show a summary of the CREL's communications and outreach activities during its implementation.

BOX 29:

TARGET AUDIENCE

Through stakeholder mapping, CREL's communication and outreach strategy identified key stakeholders and designed tools and activities to reach them. These included:

- GoB, MoE
- Population living in PAs or Co-Management areas and neighboring urban areas
- Academia
- Media
- Private Sector
- General Public
- Financial Institutions

Earth Day tree planting activities near Satchari NP

CREL

A. KEY ACTIVITIES

CREL's communication activities followed the methods and tools detailed in the communications strategy. These activities are organized below according to their relevance to CREL's IRs. Communications played a major role supporting two aspects of IR1: (1) encouraging demand for biodiversity conservation and climate resilience and (2) informing policy stakeholders on co-management achievement and issues. Similarly, for IR3 communications support involved signage and interpretive displays for PAs, and information materials on threatened species.

B. MEDIA ENGAGEMENT

CREL's media engagement resulted in more than 1,200 features including articles and news coverage. This helped CREL raise awareness among the communities and gain support from the government agencies for policy reform. CREL regularly organized site visits to PAs for journalists from regional and national media to help journalists understand CREL activities and develop a neutral narrative for communities and the policy makers, which in turn helped change practices and public opinion.

Capacity building for journalists was another successful initiative. Four orientation workshops for journalists working in the environment sector were held, involving prominent academics from Department of Journalism as the facilitators. These workshops covered climatic issues, conservation practices, and the co-management approach for conservation and NRM. CREL also worked with several television stations to develop feature stories and talk shows involving USAID officials, high level government officials, and community members addressing important issues related to CREL activities.

C. SCHOOL BASED AWARENESS EVENTS

CREL engaged high school students living adjacent to PAs and wetlands/ECAs with the goal of orienting future leaders on conservation concepts and techniques and to pass these messages on to their family. Information was also presented through pictorial presentations and games and students participated in question and answer sessions about local natural resources and biodiversity.

D. YOUTH ENGAGEMENT

The project involved youth them in conservation initiatives and trainings, detailed below.

Green Run events engaged the PA community youth through educational games and activities around the forest about conservation efforts. More than 3,000 community members (female 687) from three regions took part in various runs.

Forest Camp events focused on connecting urban youth with youth around PAs to exchange knowledge about natural resources. Fifteen students (female 6) from BRAC University participated in a three-day Forest Camp at Rema-Kalenga Wildlife Sanctuary. The photos taken by participating youth were later exhibited at the Asian Tourism Fair in Dhaka where they were viewed by approximately 3,050 (female 1,050) attendees.

Jungle Walks introduced youth and university students to nature to bolster engagement in conservation and biodiversity. College-aged youth around PAs visited the forests where local forest officials briefed them on the ecosystem and biodiversity. They also participated in group discussions on how they can support CREL's conservation initiatives and pledged to do so. CREL organized 18 Jungle Walks in four regions where 1,247 youth (603 female) participated.

Radio Journalism training was organized to build skills in communicating natural resources conservation, disseminating information on climate resilience, and expose youth to careers in journalism. Seventy-three (73) youth (19 female) from Khulna and Teknaf were selected for the training where they learned to develop scripts for broadcasting, conduct interviews, record and edit, and convey messages about conservation, improved agriculture and how to be climate resilient. After completing the training, they worked with radio staff to produce 72, 30-minute radio segments, which reached an audience of over 60,000.

E. MISCELLANEOUS COMMUNICATIONS PRODUCTS

The CREL communications team developed a wide range of information and promotional materials, including information sheets, booklets, pamphlets, desk and wall calendars posters, stickers, infographics, and videos, as well as crop calendars and inputs to manuals.

Catering to the specific needs and demands, CREL developed 11 posters on threatened species for use by CMOs and partner agencies to promote targeted conservation. CREL also produced 16 CMC profiles for fund-raising efforts and to inform stakeholders about their activities and the ecological value of PAs. In addition, CREL promoted PAs as tourist destinations for local and regional tourists, producing trail and tourist information brochures.

Rather than a project website[3], the Nishorgo Co-management Network website (http://nishorgo.org/) was refurbished and populated information from CREL and relevant CrelLink databases. The website is now hosted by the FD and will become a key communication tool and archive for the new Nishorgo Co-Management Network office in the FD.

To demonstrate CREL activities and achievements, 18 videos were produced, now available on a YouTube channel[4] and the Nishorgo Website. CREL also produced 40 high-quality human-interest stories highlighting project achievements, some of which were featured in USAID newsletters, on the USAID/Bangladesh website and in WI newsletters and social media circulated around the globe. CREL also published a monthly project newsletter that was distributed to more than 300 readers including USAID staff, government officials, development partners and academics.

SIGNAGE

In support of CREL's primary mandate of conservation of natural resources and biodiversity, a series of signs were created to promote, inform and educate local communities and visitors on the importance of high biodiversity sites, co-management arrangements, and approaches to climate resilient ecosystems in the PAs. Most of these signs were developed to support activities IR3 and IR4, though a few supported messaging for gender and women's empowerment.

CREL collaborated with USAID and the United States' DoI's National Park Service to develop durable signage displaying information about conservation areas and basic instructions to visitors[5]. More than 50 signs were also installed in 20 PAs, as well as wetlands and ECAs and two nature interpretive centers in the northeast region (Lawachara and Satchari NPs). In addition, more than 500 signs were developed to inform and promote improved and climate-smart farming practices among the farmers living around natural resources.

SOCIAL MEDIA

The CREL communications team heavily used social media to promote project activities and outcomes, and these posts were regularly featured on USAID, WI and Co-management social media pages. The image library of project activities with more than 20,000 images helped CREL Facebook posts stand out on social media, helping to cultivate a substantial following. On an average, these posts were liked by over 1,000 Facebook users.

3 Per discussions with the USAID/Bangladesh mission, a dedicated project website was not deemed appropriate.

4 https://www.youtube.com/channel/UCNOmCUKn406T80LTXczvsGg

5 They also explain USAID's role in developing the signs and PAs.

Social media was also extensively used to connect with more than 100,000 youth outside CREL areas and trained key members of CMCs on using social media to engage stakeholders[6].

PUBLIC AWARENESS THROUGH SPECIAL OBSERVATION DAYS

Special observation days related to environment, natural resources, conservation, biodiversity, and women empowerment provided CREL opportunities to engage stakeholders. These included World Wetlands Day February 2; International Day of Forests March 21; Co-Management Day March 23; Global Earth Day April 22; International Day for Biological Diversity May 22; World Environment Day June 5; and International Rural Woman's Day October 8.

CREL collaborated with CMOs and GoB agencies to organize outreach events on these observation days, including rallies, art and quiz competitions, forest conservation debates, natural resources conservation instructions distribution, tree plantations, etc. More than 150,000 people, including members of CMOs, local government officials and field administration representatives, media, women and youth were engaged directly or indirectly. CREL also supported and participated each year in Tree Fair and Fish Week events in Dhaka organized by FD and DoF, respectively.

VISITS

CREL actively sought opportunities to present achievements to and connect senior USG and GoB officials with field level stakeholders. As a result, the US Ambassador to Bangladesh, USAID/Bangladesh Mission Directors, GoB officials from the MoEFCC, FD, DoE and DoF, MoL-JPA, MoL, and other district officials were given tours of PAs, ecotourism sites, met with CMOs, and attended CREL exhibitions.

MASS AWARENESS

Several mass awareness meetings with stakeholders from different communities were organized by CREL where project objectives, strategies and achievements were presented. Mass awareness meetings were also held with influential religious leaders (54 Muslim Imams and Hindu Purohits) to share messages about the importance of biodiversity, NRM and conservation, with the expectation that these leaders will relay this information to their communities during their religious events.

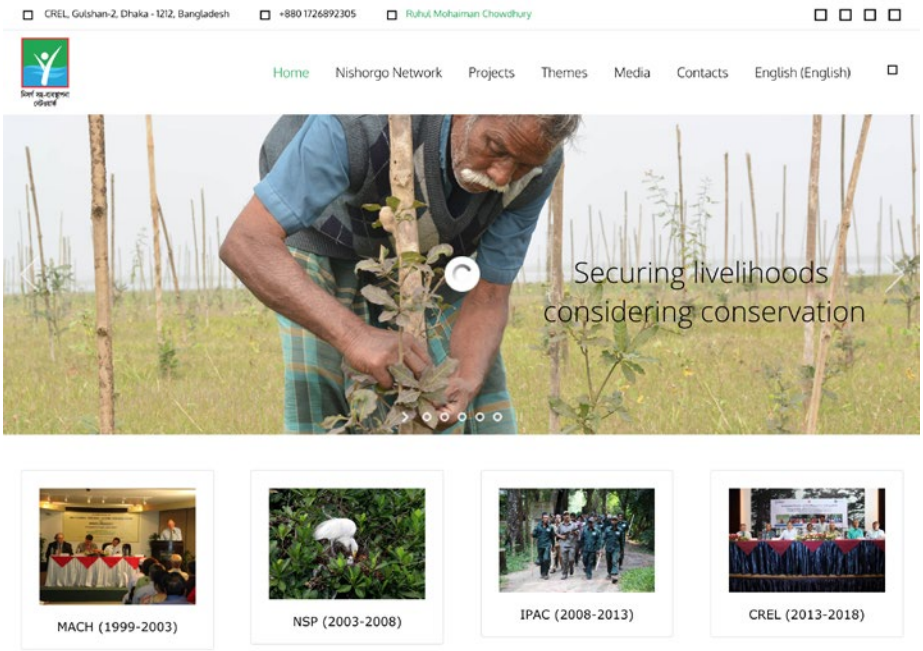
Interactive Popular Theater (IPTs) was another platform used for mass awareness and CREL organized 19 IPTs in four regions with 20,000 attendees (50% female).

6 See the co-management in Bangladesh Facebook page for examples.

Imam orientation in August 2014.
CREL

F. IMPACTS

Communications activities played a pivotal role in disseminating CREL objectives, support material and information, as well as achievements and impacts to target audiences and the wider public. Field visits, media coverage, and all other project communications activities helped advance the promotion of CMOs, PAs, and resilient livelihoods in Bangladesh. CREL's posts and videos were regularly featured on social media and generated substantial interest and requests for additional information. The success of CREL's communication approach and strategy was recognized by USAID implementing partners who wished to replicate successful actions and requested presentations at two separate events.



Homepage of nishorgo.org

CREL's communications and outreach successes were also recognized by the Bangladesh FD who sought to engage the CREL communications team to learn about how to better involve the public in program implementation. The communications team also worked closely with other GoB ministries and departments to implement communications and outreach efforts in their own programs, transferring all CREL program communications materials, tools and templates to these local departments, CMOs and local partners. The material is also uploaded to the Nishorgo Website.

Furthermore, while youth engagement and school-based awareness programs organized by CREL were welcomed by the educational institutions, they now they organize their own awareness programs and celebrate special observation days.

G. CHALLENGES

CREL was considered a flagship project for the environment sector in Bangladesh and there was substantial interest from various government ministries. This resulted in urgent requests requiring CREL had to divert resources, occasionally limiting the ability of CREL staff to meet their communications program targets. Nevertheless, all program communications targets were ultimately met.

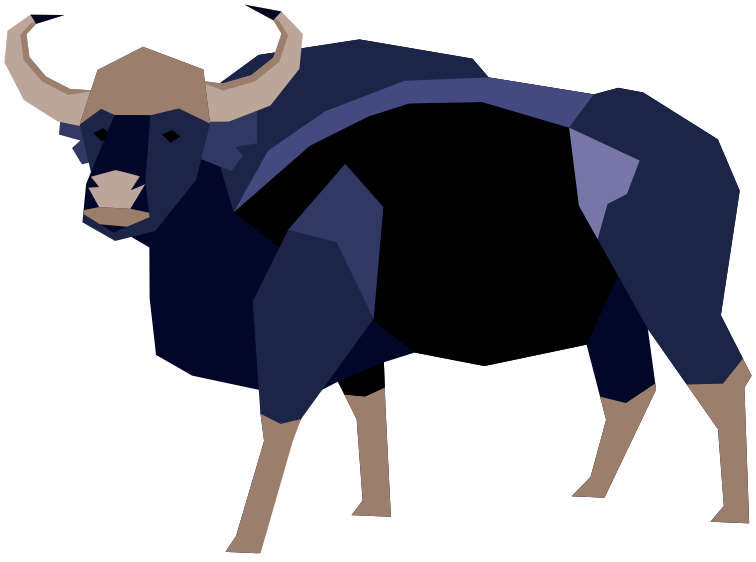
Another challenge was that the CREL communications team had no in-house design team and thus worked with a third-party vendor which occasionally introduced challenges in meeting tight deadlines for activities and events. As CREL had no project-specific website, there were also challenges in communicating with journalists and media.

In addition, almost all CREL sites were in remote areas, presenting logical challenges due to weather and security risks.

H. LESSONS LEARNED

Communication and outreach is a critical part of effectively connecting with stakeholders and policy makers. There was no scope to facilitate the full development of communications capacities of co-management stakeholders, CMOs (which have very limited connectivity or information technology and social media skills), or partner government agencies. Future programs should consider a special focus and budget for building such capacity.

CREL was a very fluid project requiring regular adjustments and updates. Much like the MEL plan, it was necessary to adjust the CREL communication strategy accordingly and this expectation should be integrated into annual work planning.



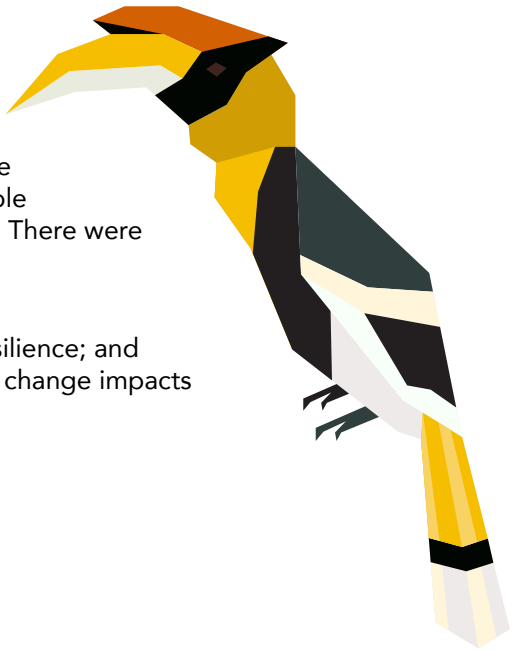
Vegetables produced by livelihood beneficiary

Misty Keasler

Grants

The main component of the CREL grants program aimed to empower CMOs to sustain co-management and their activities supporting conservation and resilient livelihoods. Four rounds of CMO grants moved from support and building operational capacity to introducing and funding strategies to make the CMOs financially sustainable. Having demonstrated their ability to apply for, manage and use funds properly, CMOs are better placed to receive funds directly from other international and national donor agencies. Additionally, the grant component built the capacity of researchers to undertake policy research, and of NGOs to meet USAID requirements and standards for receiving direct funding.

A. OBJECTIVES AND COMPONENTS



The grants program was designed to support all CREL IRs but had a focus on improving the capacity of national bodies - NGOs and research organizations, and strengthening the capacity and sustainability of CMOs. As noted under IR2, at the local level CREL worked with CMOs, such as CMCs in forest PAs; CBOs responsible for specific areas of biological significance; RMOs in wetlands and VCGs in ECAs. There were three broad objectives of the grants program:

1) build the capacity of both local and national organizations;
2) fund targeted interventions to improve ecosystems or climate change resilience; and
3) sponsor research to improve understanding and inform policy on climate change impacts and NRM.

To achieve these objectives, three types of grant were provided:

1) Capacity Building Small Grants for CMOs,
2) JDR3 Research Grants,
3) Transition Grants for NGO Capacity Building.

B. SMALL GRANTS FOR CAPACITY BUILDING OF CMOS

Over the LoP, CREL awarded and managed four rounds of grants to 41 CMOs, worth USD 1,402,575 (BDT. 109,786,682) through 137 grant agreements from June 2014 - June 2018 (Table 36). These CMOs included 24 CMCs plus four related PFs in forest PAs; and 12 CBOs (three RMOs and nine VCGs). The small grants helped the CMOs to develop their organizational capacity, particularly financial sustainability, through implementing elements of their ADPs. These elements included targeted activities to promote/implement biodiversity conservation, develop enterprises including ones related to eco-tourism, and strengthen administration.

The objectives of the grants changed over time. In Round 1, CREL covered all operational costs for grantees, which included employing accounts-administration assistants, CMOs' regular meetings, awareness raising activities, payment of utilities and other administrative costs, CPG/wetland guarding, awareness raising programs, rallies to observe significant days such as World Wetland Day and Earth Day, and for plantations. During Rounds 2 to 4, the grants program increasingly emphasized implementing CMO plans, phasing out support for operational costs, and increasing support to establish CMO enterprises that could generate regular income flows to cover operational costs.

Table 36: Breakdown of Small Grants Issued by Year

Rounds	Duration	Grant Amount (BDT.)	Grant Amount (USD)	No of # Agreements	No of Grantees	Sites / PAs	CMC & PF	RMO and VCG
1	July '14 –Oct '15	34,024,405	444,763	29	29	13	23	6
2	April '16- April '17	41,256,322	528,927	46	31	17	23	8
3	May '17-Sept '17	9,987,250	128,042	29	29	18	24	5
4	Feb '18-Jun '18	24,518,705	300,843	33	33	19	24	9
Total		**109,786,682**	**$1,399,575**	**137**	**41**	**20**	**29**	**12**

C. GRANT MANAGEMENT

To manage the grants program, CREL developed a grants manual with the assistance of WI's home office which was approved by USAID on March 28, 2013. The manual described the activities, procedures, and processes to administer the CREL Grants Program in a transparent and consistent manner. The manual was revised twice, in May 15, 2013 and October 05, 2015 (Annex 1). All CREL grants were managed based on the approved grants manual. All grantees were also trained to use the grants manual as a guide.

To manage each round of grants, a sequence of four steps was followed (consistent with the grants manual). Figure 21 lays out the steps graphically:

1. Pre-award: Issued request for applications (RFA), completed sub-recipient assessment questionnaire, conducted due diligence;
2. Review: Proposals evaluated by the grants review committee, compiled document submission by the grantees;
3. Approval: Developed sub-award package, completed approval process, awarded grant;
4. Post-award: Conducted training and orientation on grants and financial management, monitored grant supported activities, collected due reports, issued funds, and completed inventory disposition process by transferring non-expendable equipment and assets procured under grants to grantees, thereby completing each round of grants.

This process was managed and monitored by a grants team working with Site and Regional Teams.

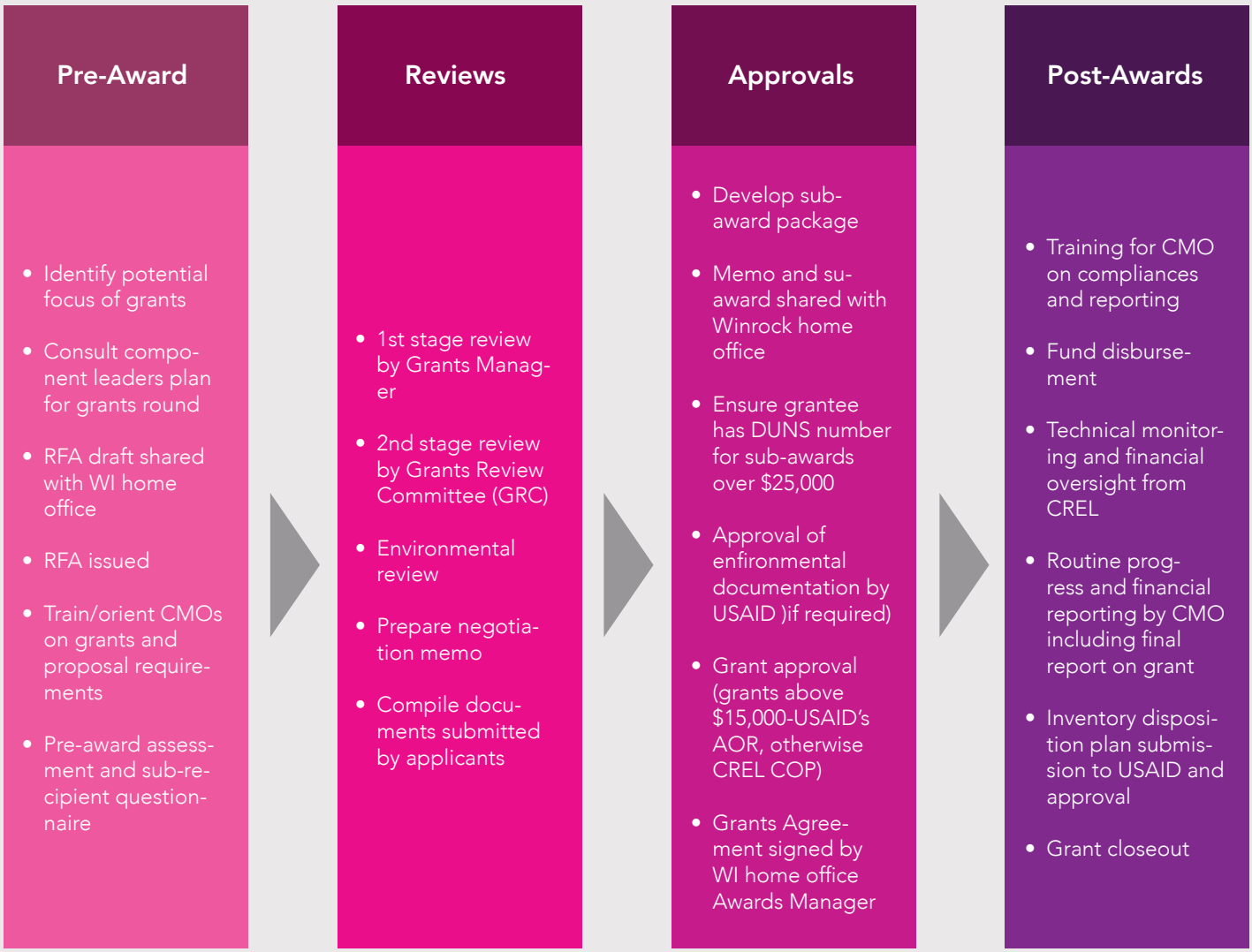


Figure 21: Management Process for CMO Grants

Out of 41 grantees, 21 had not previously received a grant (Table 37), including five newly formed institutions during CREL that received grants for the first time, and others formed during IPAC that received grants for the first time since they were established.

Table 37: Past Experience of CMOs in Managing Grants

Ecosystems	1st time with CREL	Grant before CREL	Total
ECA	9		9
Forest	12	17	29
Wetland		3	3
Total	**21**	**20**	**41**

D. MAJOR OUTCOMES

The grants team worked closely with the technical teams to ensure the grants were used to achieve priorities agreed in the CMO annual and long-term plans. Grants funds were complemented by training from CREL staff to build the CMOs' administrative, operational, technical and financial skills. As the objectives of the grant program changed during CREL, the focus shifted to helping CMOs deliver services that in earlier project years had been provided directly by CREL, for example CMOs started to conduct trainings and operate FELCs; and over LoP the emphasis increasingly moved to using grants to develop sustainable CMO enterprises.

As a result of the CREL grants program, the CMOs now have office facilities, experience following grant and financial management guidelines, bank accounts in the CMO names, financial records, experience facing external audits, and the necessary capacity to run and maintain their operations.

Through CREL grants, CMOs were able to implement their plans through site-specific activities to protect landscapes and improve habitat to conserve biodiversity and threatened species (as stated in IR3). Grants were used to restore wildlife habitat by guarding swamp forest and mangrove regeneration and terrestrial forest ANR and actions to protect threatened species. Through grants, CMOs protected 145 ha of regenerating forest and swamp habitat, planted 200 ha with 338,377 trees, undertook surveys, installed signs, made bird nest boxes, and subsidized 549 improved cook stoves.

In addition to training provided directly by CREL and detailed in sections IR2 and IR4, the CMOs funded and conducted 163 training events using grant funds. Six topics were covered involving over 3,000 trainees, mainly in grant management, but also nine training events in conservation, eco-tourism and handicrafts (Table 38).

Table 38: Trainings Conducted Under Grants Program (2013-2018)

Training/Refreshers Theme	Region	# of Trainings/ Refreshers	# of Trainees			Total Training Hours	Category of Trainees
			Female	Male	Total		
Grants and Financial Management	All regions and Dhaka	70	258	977	1,235	8,566	CMO members, GoB, Other beneficiaries
Pre-Grants	All regions	56	110	712	822	6,520	CMO members, GoB, Other beneficiaries
Project (grant) Inception	All regions	28	214	738	952	5,314	CMO members, GoB, Other beneficiaries
Biodiversity Conservation	Chittagong	2	12	50	62	294	CMO members, GoB, Other beneficiaries
Eco-tourism management	Northeast	5	3	158	161	553	CMO members, Other beneficiaries
Handicrafts	Northeast	2	15		15	1,720	Beneficiaries
Total		**163**	**612**	**2,635**	**3,247**	**22,967**	

Following the success of the FELC program of CREL (see IR4), some CMOs decided to use grant funds to replicate this. CMOs themselves completed 34 FELCs where 680 women gained the knowledge, confidence and skills to manage and maintain financial records.

CMOs used grant funds to host different types of meetings including with FD, to oversee CPGs, Project Implementation Committee meetings, and meetings with potential donors. The CMOs also used grant funds for events to raise public understanding of conservation and co-management, for example on international days such as World Wetland Day and Earth Day.

To help them become sustainable organizations, CREL provided training and technical assistance for the CMOs so that they could use grants to establish CMO enterprises. These enterprises provide regular incomes for CMOs (which receive a percentage of profits or a rent/lease amount for use of CMO assets) and provide employment opportunities for CPG members and/or other targeted beneficiaries (such as former hunters and poachers). The enterprises include transport (motorized three-wheelers), eco-tourism (tree adventure obstacle courses, paddle boats, tourist shops), livestock (cattle) farming, aquaculture in public waterbodies, and miscellaneous small enterprises.

In addition to supporting CMO enterprises, CMOs also used grant funds to support 31 climate smart agriculture demon-

strations. The demonstrations showed how famers could enhance their efficiency and resilience by using new varieties, organic fertilizer, integrated pest management and other improved practices (in line with technologies promoted under IR4). These demonstration plots also enhanced the income of target households and reduced their dependency on natural resources.

Examples of different types of activities supported by the grants program


Financial Entrepreneur and Literacy Center


Eco-Tourism Camping enterprise


Assisted Natural Regeneration


Community Patrol Group

E. IMPACT

CREL conducted an impact assessment of the small grants program in 2018 with a focus on how the grants program contributed to building the capacity of CMOs in technical areas of biodiversity conservation and enterprises/livelihoods, based on a sample of ten CMOs. The assessment found that the objectives and goals of the grants program under CREL were met with positive impacts. Most CMOs reported positive impacts for habitat and wildlife based on community patrols and guarding, such as reductions in forest fires, regeneration of trees, and increased elephant sightings. Enterprise development for future sustainability of CMO conservation activities was generally successful, particularly renting out/ hire purchase arrangements for three-wheeler vehicles and for boats in the haors, and support for miscellaneous small enterprises. Tourism related enterprises showed promising results but had not been operating for long enough to determine their rates of return. Attempts at group -based aquaculture in low lying areas/ponds had not been successful due to poor water retention and limited periods for fish to grow. Some outcomes of CREL's grants program are summarized further below.

If CMO enterprises continue they should help CMOs to cover the costs of operational and functional activities and key services. In total, CMOs earned US$ 68,182 (BDT 5,292,261) net income from October 2016 through June 2018 from all CMO enterprises (Table 39). The net income after reinvestment was used to support ADP activities for NRM and biodiversity conservation (IR3).

During the same period, CMOs reinvested USD $110,694 (BDT. 8,634,140) using their existing capital as well as generated net income, into new enterprises that will provide services for tourists and additional jobs for community members (Table 32). Reinvestment in similar enterprises is expected to be as profitable as the enterprises so far which have gener-

ated reinvestment funds and income for operational use, and so will feed more funds back into the CMOs. In addition, these CMO-enterprises benefit approximately 1,730 households with improved and alternative livelihoods.

Table 39: Net Income Available for Operating Costs from CMOs' Enterprises (October 2016 to June 2018)

Region	Net Income (BDT.)	Net Income (USD)	Beneficiaries No.
Cox's Bazar	614,527	$ 7,935	308
Chittagong	544,737	$ 7,035	446
Khulna	2,579,561	$ 33,168	432
Northeast	1,553,436	$ 20,044	544
Total	**5,292,261**	**$ 68,182**	**1,730**

Table 40: Reinvestment Status by Region under CMOs' Income Generating Activities and Enterprises (October 2016 to June 2018)

Region	Total Re-investment		Total Net Income	
	In BDT.	In USD	In BDT.	In USD
Cox's Bazar	2,739,000	$ 35,115	176,661	$ 2,265
Chittagong	3,022,440	$ 38,749	140,700	$ 1,804
Khulna	2,542,700	$ 32,599	223,357	$ 2,864
Northeast	330,000	$ 4,231	85,625	$ 1,097
Total	**8,634,140**	**$ 110,694**	**626,343**	**$ 8,030**

Of the above mentioned CMO enterprises, 15 CMOs developed 45 eco-tourism operations/ enterprises (camping, zipline, eco-tourist boat, tourist shop, food corner, eco-fishing park) that generated a net income of USD $14,951 (BDT. 1,170,268) in the same period. These eco-tourism enterprises have improved and diversified livelihoods for 31 targeted households (Table 41).

Table 41: Net Return Status from CMOs Eco-Tourism Enterprises (October 2016 to June 2018)

Region	No. of CMOs	No. of Enterprises	Net Income		No. of Beneficiaries
			In BDT.	In USD	
Cox's Bazar	1	2	305,666	$ 3,919	2
Chittagong	3	7	68,022	$ 872	5
Khulna	3	15	39,724	$ 8,183	14
Northeast	8	21	155,136	$ 1,977	10
Total	**15**	**45**	**568,548**	**$14,951**	**31**

CMOs contributed services valued at US$385,444 (BDT. 29,744,869) towards implementing CREL activities in conservation through cost sharing by covering part of the costs associated with forest/wetland guarding allowances, awareness programs, operational costs, meetings, and awareness events.

JDR 3RD RESEARCH GRANTS

CREL teamed with Winrock's JDR 3rd Scholars Program to commission two cutting-edge applied research projects with a direct mandate to inform national policies while building the capacity of researchers. The CREL/JDR 3rd Mangrove Valuation team produced an estimate of the value of Sundarbans mangrove areas in providing protection from tropical storms, sustaining the livelihoods of 500,000 local residents, and generating tourism revenues.

While previous valuation studies relied on proxy indicators, the CREL/JDR 3rd team conducted 900 household surveys and interviewed tour operators to produce a more accurate estimate of value. The research team estimated the economic value of tourism/ cultural services, storm protection services and provisioning services, which stood at US $53.18 million, US $485.29 million and US $145.20 million respectively, totaling US $683.67 million annually (0.35% of GDP). In addition, the research findings revealed a grim picture of the Sundarban's biomass and carbon stocks because of increased deforestation. The team presented their results directly to the Bangladesh FD to inform an upcoming revision of Bangladesh's PA Rules.

Another team — the CREL/JDR 3rd Wetland Co-Management research team — compared the distribution of benefits in wetlands that were co-managed by communities versus wetlands where communities were not included in the management regime. The key results from this research were that:

- Government policies should recognize and prioritize equitable co-management of wetlands.
- Specific guidelines are needed that provide greater clarity on best practice resource management strategies, access, users rights and distribution of benefits.
- Mechanisms are needed to ensure greater transparency, accountability and inclusiveness in decision making, particularly on lease allocation by the Jalmohal Management Committees.

The team presented their results directly to the DoF and wetland co-management stakeholders, to inform a review of current wetland leasing practices and distribution of benefits from conservation-based management.

In March 2018, more than 30 researchers convened at the University of Chittagong for a training on Using Research Results to Inform Policy. Overseas Development Institute of London designed and delivered the training, which was funded by WI's JDR 3rd Scholars Program. The training was jointly hosted by CREL and the University of Chittagong Institute of Forestry and Environmental Sciences. Participants included CREL/JDR 3rd research grant recipients and grant applicants, as well as faculty from the University of Chittagong, Dhaka University, and Rajshahi University.

Table 42: A Summary of CREL-JDR 3rd Research Grants

Categories	Lead Principal Researcher	Total Grant Value (USD)	Grant Duration	Completion Status
Forest	Dr. A. H.M. Raihan Sarker	$49,910	August 2014-June 2017	Completed
Wetland	Mr. Hafijul Islam Khan	$32,865	October 2015-January 2017	Completed
Total		**$ 82,775**		

TRANSITION GRANTS FOR NGO CAPACITY BUILDING

As detailed further in IR2 section C, under the USAID forward initiative, CREL built the capacity of Bangladeshi organizations to receive direct USAID funding. During Year 3, CREL conducted a series of trainings and reviewed the capacity of the organizations for implementing and managing external projects. The trainings and topics were structured and assessed using criteria and ranking methods based on USAID's OCAT and NUPAS tools. The bulk of the training was prepared and led by specialists from WI offices in the U.S. with support from the Dhaka-based grants program team.

Trainers and the participants of the HR training module

CREL

After the completion of the training, Winrock re-engaged Capacity Building Services Group to assess changes in organizational capacity using two separate but interrelated indices:

(i) the overall average capacity risk score had to be at least 3 on a 4-point ranking scale; and

(ii) the capacity risk rankings in the individual areas of Governance, Financial Management and Sustainability had to be at least 3 on a 4-point ranking scale.

Of the six participating organizations, CODEC (3.27), FIVDB (3.23) and CNRS (3.18) achieved scores of at least 3 in both indices, while YPSA (2.68), NACOM (2.45) and IDEA (2.23) did not. Based on this assessment and results, CREL presented a report to USAID noting that CODEC, FIVDB and CNRS met the minimum criteria used to evaluate the organizations as potential recipients of up to $625,000 in annual direct funding from USAID. Their capacity and risk levels fell within the acceptable range established by the OCAT and NUPAS assessment tools. WI submitted a final report to USAID in September 2015 in accordance with the agreement and the objectives of USAID Forward.

F. LESSONS LEARNED AND CHALLENGES

CREL grants (small grants for CMOs, transition grants and JDR) brought significant results in the process of co-management through building grass-root capacity, technical skills and advising policy. The main challenges and lessons learned for grants program are:

- Despite training and mentoring, CMOs and local NGOs were not able to retain permanent skilled staff who could prepare proposals and manage funds from donors.
- CMOs have office facilities, guidelines, bank accounts, financial records, external audit reports, good relations with the GoB and CREL's implementing partners but, without access to regular guidance and back-up support for a few more years (especially for more recently formed CMOs), it will be difficult for CMOs to continue their conservation activities and manage their enterprises.
- A lack of continuity in personnel at the CMO, local NGO and GoB level is likely to erode capacity building efforts undertaken by CREL. It is still unclear whether the CMO toolkit will be utilized by outgoing personnel to orient incoming participants and office bearers. This is a likely source of disruption and degradation of co-management.
- CMO enterprises are making limited but important contributions to livelihood diversification for households that were exploiting natural resources.
- Timely release of grant funds is important, especially as some enterprises are seasonal (e.g. tourism season, aquaculture, cattle fattening). Some grant activity delays were caused by unavailability, delayed approvals or coordination of GoB personnel with the CMOs and vice versa.
- At the start of the CREL program, allocating a fixed amount of grant funds to each CMO would have been very helpful as a sustainability fund. Although USAID rules did not allow providing endowments or revolving funds, these are the types of funds that are most needed to ensure sustainability of CMOs.
- Limited infrastructure (i.e. computer, internet access, etc.) and skilled manpower prevents CMOs and local NGOs from operating at their full potential and may hinder their ability to identify future funding opportunities.
- Feasibility studies for enterprises need to take account of local conditions and provide for some flexibility to adjust the use of grants according to local demand and opportunities.
- The ability of CMOs to recover rent/lease payments for use of enterprise assets when there is no project backing is untested.
- Nature based recreational facilities offer great potential but need to be advertised properly to attract more visitors (to generate more income to be used for conservation), and need to be carefully planned considering the safety and security of flora and fauna and the primary objective of conserving ecosystems.
- Local NGOs made significant progress in establishing internal policies, procedures and plans to position themselves for future USAID funding.

Pond Sand Filter providing potable water in saline area of Munshiganj, Satkhira

Parvin Sultana

Small Scale Construction

CREL received approval from USAID for small scale construction activities in Protected Areas, wetlands and ECAs where it worked, based on agreed procedures for standardized types of construction, provided these responded to local demand, were well designed, documented, justified and endorsed by the respective government agency as well as the requesting CMO. Out of many requests and proposals received from CMOs, in total 237 small scale construction activities valued at $1,319,149 were implemented between February 2015 and June 2018. None of the small-scale construction activities exceeded $20,000 in cost. A detailed table of these activities can be found in Annex 4: Small Scale Construction Activities.

A. CONSTRUCTION PROCUREMENT, VENDORS AND OVERSIGHT

CREL ensured that all work was of the highest quality and met construction best practices and standards throughout, from designs that met safety standards to high quality and durable materials, locally sourced whenever possible. Quality control was assured by having a local design and construction quality control and quality assurance partner, Module, involved at all stages of construction. During the design stage, a close review of all tender and design documents was conducted by a CREL review team, in coordination with the construction management team. All designs met, as appropriate, the current approved standards for the Department of Public Health Engineering (DPHE) and/or Local Government Engineering Department (LGED). All small-scale construction work was conducted by local construction firms who went through a detailed procurement and evaluation process, compliant with USAID and local government procurement procedures.

In addition to providing construction quality control and assurance, Module reviewed all construction solicitation, designs and scopes. Module monitored and reported on the progress of construction and conducted final quality assurance checks prior to handing over the completed structures to the relevant co-management stakeholder (e.g. FD, CMC, RMO or VCG).

CREL used standard quality assurance and safety checklists and protocols. During the implementation of the small-scale construction activities, quality control was ensured through a series of steps and requirements, including:

- Following a construction safety plan.
- Reviewing all project designs through an independent engineering firm, Module, engaged by CREL for quality assurance, compliance and environmental impact standards.
- On site compressive strength tests for concrete and compaction tests for backfilling.
- Quality tests according to standards set for each material upon delivery to the site, and prior to use.
- Documenting and reporting each construction activity, including measurement and approval of work on site according to local regulations.
- Substantial handover of the site in accordance with drawings and technical specifications to ensure each site was constructed according to beneficiary/end-user needs.
- Conducting inspections at handover to ensure high standards of workmanship and use of high quality, local materials where available.

B. REDUCING IMPACT AND ENSURING SUSTAINABILITY OF SMALL SCALE CONSTRUCTION ACTIVITIES

In finalizing selection of construction works with partner CMOs, CREL prioritized smaller scale works and construction materials that would minimize and simplify maintenance requirements and reduce the need for new construction, for example the rehabilitation of existing buildings or their conversion to serve priority uses. This practice contributed to preserving underdeveloped or undeveloped sites (minimizing new construction in PAs for example), while providing basic infrastructure needed to enhance visitor experiences and generate funds to cover CMO costs. In the case of renovation or conversion of facilities belonging to FD this depended on agreements that CMCs would be able to use and operate those structures and where appropriate charge fees from users, and that the CMO had an operation plan for the facility.

In general works were prioritized that would: improve visitor experiences and directly or indirectly generate visitor entry fees or support visitor related enterprises and services; enable CMOs to function better (and potentially serve community needs and generate some income); directly address, in a climate resilient way, a community level need (e.g. domestic water supply in the face of salinity); or directly restore ecosystems that generate benefits for local people and an income for CMOs (e.g. fish sanctuaries which enhance catches in adjacent areas from which CBOs can collect fishing fees).

C. STANDARD ENVIRONMENTAL CONDITIONS FOR SMALL SCALE CONSTRUCTION ACTIVITIES

All the *Standard Environmental Conditions* developed by USAID's Europe and Eurasia Bureau to ensure that small-scale construction activities do not result in significant adverse environmental impact were applied and were the basis of the CREL Environmental Management and Mitigation Plan. As adherence to these conditions was required as a condition of small-scale construction contracts, no significant adverse environmental impact arose from activity implementation. CREL was aware that these *Standard Environmental Conditions* are generic in nature, and that additional potentially significant adverse environmental impacts may be associated with small-scale construction activities. It was CREL's responsibility to monitor construction and to ensure that significant adverse environmental impacts did not result from these programs. Measures taken were both practical and appropriate and are further elaborated in the EMMP, and reflected the nature of activities undertaken by CREL in Bangladesh within the local context.

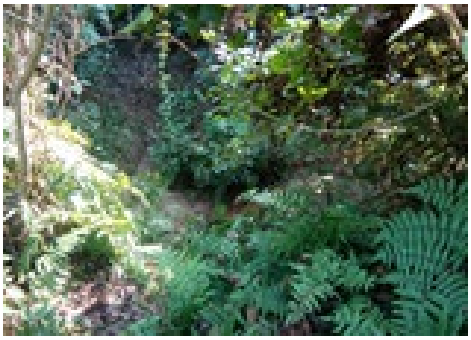
CREL implemented 11 types of construction activities corresponding with USAID environmental compliance activity construction types (compliant with Reg. 216 and

ADS 204.5.4), for each of which CREL developed an Environmental Mitigation and Monitoring Plan. Further information on specific types of construction activities can be found in Annex 4.

D. ACHIEVEMENTS

The 237 completed construction activities shown in Table X were commissioned for 31 CMOs in 18 sites and mostly were built /implemented in rounds 2 and 3. Construction particularly focused on forest PAs in the Cox's Bazar region plus a few in the Chittagong region that had limited tourist infrastructure but are accessible and have high potential for increased levels of environmentally sensitive tourism. By comparison, facilities in some PAs in the north-east had already been developed and visitor numbers were already substantial, and infrastructure for visitors was less appropriate in the southwest where tourism is largely boat-based. Details of these construction activities can be found in Annex 4. Examples of the works are shown in the selection of photographs, as far as possible showing before and after construction conditions for a range of the main construction types.

Examples of Small Scale Construction (before and after images)

Construction Type and Site	Before	After
Bridge. Hazarikhil CMC, Hazarikhil WS, Chittagong		
Tourist Center Renovation. Dokhola CMC, Modhupur NP, Central		
Office Renovation. Khadimnagar CMC, Khadimnagar NP, Northeast		

Construction Type and Site	Before	After
Visitor Round Shed. Chandpai CMC, Sundarbans, Southwest		
Tourist Center Renovation. Dokhola CMC, Modhupur NP, Central		
Patrol Shed. Dacope-Koyra CMC, Sundarbans, Southwest		
Boat landing ghat (jetty). Dacope-Koyra CMC, Sundarbans, Southwest		

Construction Type and Site	Before	After
Resting Bench. Shilkhali CMC, Teknaf WS, Cox's Bazar.		
Multipurpose Cyclone Shelter Renovation. Himchari CMC, Himchari NP, Cox's Bazar		

Patrol Shed
CREL

Construction Type and Site	
Tube well- 01. Whykong CMC, Teknaf WS, Cox's Bazar	
Pond Sand Filter, Satkhira CMC, Sundarbans, southwest	
Walking trail with steps, Hazarikhil WS, Chittagong	
Wetland restoration earthworks, Kaiyer Kona Beel sanctuary, Halla VCG, Hakaluki Haor, northeast	

Baikka Beel wetland sanctuary, Hail Haor

George Figdor

E. IMPACTS

General observations from co-management partners, impact data (where available from other components of CREL), and an independent review on construction impacts based on consultations with a sample of ten CMOs are the sources for the following impact findings:

TOURISM:

- Khadimnagar NP illustrates how visitor numbers and entry fee receipts can increase once ticket counters and basic facilities are constructed and FD agreement on CMOs collecting visitor fees are in place. There were only 1,390 visitors in the whole of 2017, but almost the same number (1,238) of people visited in the first three months of 2018 indicating a rapid growth in visitor numbers as facilities and attractions became better known, as a result twice as much was earned in entry fees in three months of 2018 compared with the same months in 2017.
- Construction has provided safe and modern facilities for tourists and tour guides, instead of inadequate, temporary or run-down shelters, picnic sites and dormitories which posed a threat of decay and dereliction. For example, in Hazarikhil WS toilets and tubewells are important to a new enterprise of a paid camp site for visitors as well as benefiting local people.
- Tour guides and CMCs can now accommodate more visitors, with improved access to previously difficult to reach areas within Pas.

NATURE RESOURCE MANAGEMENT:

- Although it took three dry seasons to complete wetland earthworks in Akota VCGs area in Hakaluki Haor, the VCG reported that connecting the two beel sanctuaries and greater water retention because of the submersible embankment has had positive impacts on fish and other aquatic life, providing benefits for biodiversity and fisher incomes in adjacent waterbodies. Earthworks in three locations have contributed to the increase in overall fish catches in Hakaluki Haor reported under IR3, although there are several other contributing factors. Based on fish catch monitoring the total fish production of Hakaluki Haor was estimated to have increased from 3,144 tons in 2013-14 to 5,092 tons in 2015-16. Taking a constant 2016 seller's fish price and considering the three years there was an additional Tk 478 million (US$ 6.1 million) of fish caught from the haor in the second and third years compared with the first year.
- Patrol sheds have improved conditions for the CPGs and are regularly used resulting in more effective patrolling (CMCs report better attendance and happier patrols members).

OTHER:

- CMOs reported that they meet more regularly and/or meetings are better attended after construction or renovation and conversion of buildings for their own use.
- Hundreds of people are collecting water from Pond Sand Filters built by CREL - local people benefit from better drinking water and from selling water to more distant villages.

F. LESSONS LEARNED AND RECOMMENDATIONS

The Bangladesh Forest Department, CMOs and local communities were pleased with the outcome of small scale construction activities. In particular, the pond excavation work and associated pond sand filters in Munshiganj in the southwest region, CMO offices, and round sheds for tourists/CPGs received a great deal of appreciation from CMOs and government. The installation of tubewells in Cox's Bazar region was also greatly appreci-

ated by the local communities and the CMOs given that the groundwater layer is deep and large stones make boring work extremely difficult in the region, although several attempts at boring tubewells had to be abandoned because of these challenges.

Below is a list of lessons learned and recommendations for future small-scale construction in support of biodiversity conservation in Bangladesh:

PLANNING AND AWARDING CONTRACTS:

- GOB's expectations for managing construction works related funds should be clearly identified prior to the start of work and any differences between USAID and GOB expectations or requirements resolved.
- GOB departments should have updated and available GOB rates for various types of construction work.
- There should be more proactive involvement of relevant government departments early in the process. With their buy-in and support, prompt site selection, access to sites and handover of land could help expedite implementation.
- Ensure involvement of the local communities affected or benefiting from the small-scale construction. Their buy in and participation is key for the success and sustainability of the activities. Restrictions on use of USAID funds meant that CMOs could not directly manage small scale construction funded through CREL, which limited this expected aspect of capacity building and the role of CMOs in overseeing construction and learning how to adopt best practices such as construction quality or environmental mitigation.
- Frequent changes in the specification of works requested were made by the CMOs or endorsing government agency, which complicated both design and implementation, so clearer planning and negotiation of works with all stakeholders is needed in terms of purposes, appropriate feasible locations, and cost-effective specifications.
- Initially approval processes of plans for individual construction works, many of which were similar but in different locations, resulted in a bottleneck of requests to USAID, by 2015 a more streamlined approach was developed with a generic approval of detailed specifications for the 11 types of construction and based on verification of implementation of the Environmental Mitigation and Monitoring Plan.

TIMING, WEATHER AND WETLANDS:

- Earth work needs to be planned early and have a timely start considering the short dry season when construction is possible, but when done well has rapid positive impacts in wetlands.
- Baseline data on water accumulation in various regions was often only for a few recent years which was not sufficient to make resilient designs.
- The design, approval, bidding, contracting process requires a much earlier start than the typical time (November) when monsoon water levels drop in deeply flooded wetlands, this means that plans and designs need to be made in the previous dry season so that contractors can start very promptly in the following dry season, and also that there should be a supervised and fast tracked approval process for modifications based on any change in dry season ground and water conditions between the design dry season and the following implementation dry season.

IMPLEMENTATION:

- Develop a security plan and involve CMOs to actively monitor the construction sites and material. Regular field visits, by the representatives of the beneficiaries (CMOs) typically through a "project implementation sub-committee") to monitor, inspect and evaluate construction activities is key to producing good quality construction. This needs to be coordinated with any third part quality assurance group, and with the organization contracting works where that differs from the CMO.
- Avoid additional or new work on activities already approved and ongoing.
- Ensure the mobilization of appropriate staff and workers needed to conduct and complete the activities on time.

INFRASTRUCTURE USE:

- Despite these benefits, several CMOs have yet to earn from facilities constructed due to poor visitor numbers (a lack of linked up promotion of facilities) or a lack of clear responsibilities and arrangements for operation of facilities. In general these are best operated on a lease type arrangement to entrepreneurial persons associated with co-management (e.g. CPG members or CMO members).
- There need to be clear agreements on the use and maintenance responsibilities for infrastructure and facilities that are developed specifying who will do what.

CREL CONSTRUCTION ACTIVITY TYPES AND ENVIRONMENTAL CONDITIONS

CREL implemented 11 types of construction activities corresponding with USAID environmental compliance activity construction types (compliant with Reg. 216 and ADS 204.5.4), for each of which CREL developed an Environmental Mitigation and Monitoring Plan. The 11 types of construction activities include:

1. **Type 1: Repairs and maintenance** (buildings, bridges, filters etc.)**.** These included periodic and routine repairs and maintenance of buildings (including painting, replacement of fixtures, upgrading electricity and plumbing) and routine maintenance of trails, foot bridges, access routes, parking lots and boat landing stages.

2. **Type II: Small building construction.** Buildings that did not require foundations but could include independent reinforced concrete pillars embedded in the ground. These included patrol sheds, ticket counters, tourist shops, picnic sheds, resting shelters, etc.

3. **Type III: Building construction involving foundations, reinforced concrete** (but not more than two stories). These included CMO offices; student dormitories and nature interpretation centers; and any buildings otherwise in category 2 but which required foundations and reinforced concrete support.

4. **Type IV: Suspended structures.** Structures which are suspended in air over water or land and intended for walking: trail/foot bridges, pond docks, and observation decks.

5. **Type V: Erosion retention walls.** These were most often built in association with other structures, to protect them from gullying associated with rapid monsoon rainwater runoff, and where excavation or fill work resulted in the potential for soil erosion.

6. **Type VI: Parking lots, roads and trails.** These were built to facilitate visits on foot in protected areas, including access tracks and places to park vehicles so that visitors could continue on foot. In the case of parking lots and access tracks they were made from durable fill materials including brick but were not made from asphalt or concrete; in the case of trails these were of earth with baton steps and handrails on steeper slopes.

7. **Type VII: Water storage.** Including concrete cisterns and overhead water tanks for domestic use and to supply visitors.

8. **Type VIII: Pond-water sand filters.** Water treatment facilities to provide a safer source of domestic water in areas of the southwest affected by high surface water and ground water salinity.

9. **Type IX: Earthworks to restore or improve wetland ecosystems - ponds, re-excavation of channels and submersible dikes/embankments.** Deepening silted up natural channels and waterbodies, and building low earthen bunds at strategic low points were intended to increase water retention in wetland sanctuaries and thereby improve ecosystem functioning. Pond re-excavation helped store water for treatment and use via pond sand filters.

10. **Type X: Domestic water tubewell installation.** These were installed for domestic water use including providing potable water for CMOs, visitors and local communities.

11. **Type XI: Latrine and sewerage systems.** This included septic tanks and leach fields. These were built to ensure that human waste materials are effectively managed to reduce the potential for environmental contamination.

Because of the exceptionally diverse physical conditions under which a wide range of CREL construction activities took place, the following ***20 Standard Environmental Conditions*** were followed "as practicable and appropriate" for all categories of construction as defined by USAID (compliant with Reg. 216 and ADS 204.5.4):

1. Document and photograph pre-construction and post- construction conditions where significant environmental impacts had the potential to occur and considered during the formulation of construction plans.

2. Avoid building structures in sensitive areas such as wetlands except as specifically designed for improved ecosystem functioning (e.g. habitat improvements).

3. Install temporary erosion control and sediment retention measures if there is danger of runoff during construction phase. During construction, controls will be used to prevent erosion. This will be done by applying mulch and/or physical traps such as wooden fences or brick berms downslope of areas here erosion might occur. Soil compaction (manually with hand temper at 1 ft. layers) are necessary to reduce the risk of erosion. As part of erosion prevention, construction work that requires excavation or fill will only be done during dry seasons.

4. Following construction, native vegetation will be planted/grown/assisted (saplings, grass carpeting, thicket-plant-cuttings, reeds, etc.) at newly constructed embankments, excavated areas, trails and roadways or areas where the soil was disturbed.

5. Avoid subsidence and building stabilization problems through adequate foundation excavation, fill placement and borrow pit management. Fill should be well mixed to avoid pockets of segregated materials, use well-graded materials, and be compacted using hand tools on wetted soil.

6. Water pipes (i.e. Galvanized Iron-Zinc coated) that contain materials which cause corrosion and make the water acidic (because of the presence of lead and cadmium) should not be used if a regular water testing program is not in place. In general, Chlorinate-polyvinyl-chloride (cPVC) pipes will be used.

7. Only seasoned wood (not treated by coal tar or other potentially carcinogenic/toxic chemicals that can leach into the ground) that is grown in a sustainable manner and not extracted from PA forests is acceptable for use.

8. Build tanks or other separators for silt-laden material prior to allowing significant outflow into watercourses. Seal or remove abandoned drains to minimize water contamination.

9. Include plans for segregating gravel and quarry materials by quality and grade for possible future uses. Where appropriate, include reseeding or re-vegetation to reduce soil erosion, prevent gullying and minimize visual impacts.

10. Employ strategies to protect trees, watercourses, other plant or animal species or habitats and important historical and archaeological features to ensure the least possible impact on the local area. Develop specific procedures for storing topsoil, and for phased closure and reshaping and restoration of the pit when extraction has been completed.

11. Renovate the landscape in construction sites in a way that is appropriate to local conditions as much as is practical. Backfill and/or restore borrow areas and quarries before abandonment unless alternative uses for those sites are planned; recover and replant topsoil and plants as practicable; discuss with local communities the option of retaining quarry pits as water collection ponds to cultivate fish, water cattle, irrigate crops or for similar uses.

12. Manage motor and non-motor vehicles and other construction activity to minimize noise, traffic disruption and dust. Minimize disruption to the normal activities of the construction area by establishing and adhering to construction timetables. Post construction timetables and traffic diversion schedules at the project site if needed.

13. Employ techniques to minimize dust and vapor emissions as practicable (e.g., road speed limits, air extraction equipment, scaffolding covers, road spray).

14. Ban vehicle maintenance that can result in the contamination of construction sites by grease, oil and fuels. Place solvents, lubricants, oils, and other semi-hazardous and hazardous liquids over a lined area with appropriate secondary containment in order to contain spillage. Test the integrity of bulk storage tanks and drums, and secure valves on oil and fuel supplies. Build appropriate containment structures around bulk storage tanks and materials stores to prevent spillage entering watercourses.

15. Handle, store, use and process branded materials in accordance with manufacturer's instructions and recommendations. Remove waste materials from site and dispose in appropriate, designated local disposal areas. Minimize burning of waste materials.

16. Avoid banned chemicals (e.g., PCBs in electric transformers; paint, primers, varnishes, stains, sealant and glazing formulations that contain lead); minimize the use of solvent-based paints, or replace with water-based materials where possible; and avoid the use of asbestos in products particularly in cement, paper; board, sealant and glazing formulations; piping; roofing material; or other materials.

17. Introduce measures to control and minimize the volume of waste on site. Segregate waste which can be salvaged, re-used or recycled for CREL construction activities or community use. Recycle wastewater to the extent practicable.

18. Build collection channels leading to oil and/or silt traps, particularly around areas used for vehicle washing or fueling. Avoid pollution of waterways with stockpiled construction materials and cover stockpiled construction materials, as practicable. Prevent runoff of potentially contaminated water into borrow pits. Minimize the disturbance of, and reduce the spread of, ground contaminants.

19. Bury waste if it cannot be recycled or removed from site it. Ensure it is down-gradient from drinking water sources such as wells; avoid areas of high water tables; avoid areas where underlying geology makes contamination of groundwater is likely; and line with impermeable material such as clay or plastic if necessary.

20. Develop and implement appropriate human health and worker safety measures during construction. Provide workers with appropriate safety equipment; take safety precautions to 6 protect workers and others from injury by flying or falling rock, heavy objects and/or slope failures and; explore off-site accommodation for crew; keep camp size to a minimum; provide temporary latrines for sanitation at the construction site if needed; and provide for the safe disposal of grey water from or places for bathing and washing. Issues of disease transmission and prohibiting the use of untreated water for human consumption, bathing, and clothes washing should be highlighted with workforce and surrounding community. Strictly enforce national child labor laws.

Monitoring, Evaluation and Learning

George Figdor

A. RESULTS FRAMEWORK AND INDICATORS

The development hypothesis of USAID set for Development Objective 4 (DO4) is *"Improved management of natural resources alongside livelihood diversification, climate risk management and enhanced capacity for low emissions development will address adaptation and mitigation of GCC, while providing sustainable economic benefits and clean energy resources for Bangladesh."* Accordingly, the CREL project addressed part of this hypothesis through a specific **theory of change:** "*If community and government capacity for collaborative NRM is enhanced and complemented by support for responsible, equitable, climate-resilient economic growth in the same landscape areas, then this will contribute to achieving USAID's DO4 results*".

To determine progress towards achieving the changes described in this theory of change, the project adopted a MEL Plan as a strategic tool consistent with ADS 203.3.4, for monitoring the performance and reporting on the progress or achievement of its target results. The MEL Plan of the project was initially developed and approved by USAID/Bangladesh on April 21, 2013, with subsequent revisions approved on April 7, 2015, October 31, 2016, and April 5, 2017. As a living document, USAID approved the most recent version of the MEL Plan on March 5, 2018 with significant revisions aligned with changes in focus for the extension (sixth year) of the project. From the initial MEL plan to the fifth year of the project (FY2017) the project used 19 indicators (including eight "F-indicators") aligned with the initial Results Framework (Figure 22). During the extension period (FY2018) the revised Results Framework (Figure 23) focused on biodiversity conservation with 14 indicators (including ten "F-indicators").

The MEL team gave constant support to technical teams managing IRs/components, implementing NGOs, and USAID in monitoring, reporting and guiding project implementation to achieve indicator targets and strengthening co-management. CREL's MEL team supported setting baseline levels and monitoring to measure and benchmark progress, in accordance with the USAID-approved MEL framework. Specific MEL activities and responsibilities are included in this report, including the web-based CrelLink database, customized surveys and monitoring, and GIS and mapping. Findings from MEL on the impacts of CREL are incorporated in the relevant sections of this report.

<table>
<tr><th colspan="6">CREL Results Framework</th></tr>
<tr><td colspan="6">CREL Objective: Increased Responsiveness and Resilience to Climate Change in Vulnerable Biologically Diverse Environments
Indicators: EG. 13-6, EG. 11-6</td></tr>
<tr><td colspan="2">IR 1: Improved Governance of Natural Resources and Biodiversity
Indicators: EG. 13-3, EG.11-3</td><td colspan="2">IR 3: Strengthened Implementation of Climate Resilient NRM
Indicators: EG.10.2-2, C6</td><td colspan="2">IR 4: Improved Livelihoods that are Environmentally Sustainable and Resilient to Climate Change
Indicators: EG 10.2-3</td></tr>
<tr><td>Sub-IR 1.1
Strengthened Legal and Policy Framework for Co-Management</td><td>Sub-IR 1.2
Increase Demand for better NRM</td><td>Sub-IR 3.1
Increased Sustainable Financing of CMOs</td><td>Sub-IR 3.2
Improved Planning for Climate Resilient NRM</td><td>Sub-IR 4.1
Increased Investment in Eco-friendly Enterprises</td><td>Sub-IR 4.2
Increased Adoption of Environmentally Sustainable and Climate Resilient Livelihoods</td></tr>
<tr><td>Indicators:
C1</td><td>Indicators:
C2, EG. 10.2-4</td><td>Indicators:
C7, C8</td><td>Indicators:
C9</td><td>Indicators:
C10</td><td>Indicators:
C11</td></tr>
<tr><td colspan="6">IR 2: Enhanced Capacity of Key Stakeholders
Indicators: C3, C4</td></tr>
<tr><td colspan="2">Sub-IR 2.1
Improved Knowledge and Skills of NRM Stakeholders</td><td colspan="4">Sub-IR 2.2
Strengthened Organizational Capacity of NRM Institutions</td></tr>
<tr><td colspan="2">Indicators:
EG. 11-1</td><td colspan="4">Indicators:
EG. 11-2, C5</td></tr>
</table>

Figure 22: CREL Results Framework (2013-2017)

CREL Livelihood beneficiaries

Obaidul Fattah Tanvir

CREL Results Framework Year 6: January to September 2018					
CREL Objective: Increased Resilience of Vulnerable Biologically Diverse Environments					
IR1: Improved governance of landscapes and biodiversity		**R3: Strengthened conservation and protection of critical habitats, natural resources and biodiversity**		**IR4: Promote sustainable landscapes and biodiversity providing alternate livelihoods**	
Sub-IR 1.1 **Strengthened legal and policy frameworks for governance and protection of habitats and biodiversity**	**Sub-IR 1.2** **Strengthened implementation of co-management and conservation instruments**	**Sub-IR 3.1** **Improved implementation of plans for PA management**	**Sub-IR 3.2** **More community-led initiatives for habitat and biodiversity protection**	**Sub-IR 4.1** **Increased adoption of environmentally sustainable livelihoods**	**Sub-IR 4.2** **Expanded eco-tourism for livelihoods and conservation**
Indicators: EG. 13-3 EG.10.2-5 (New)	Indicators: EG.10.2-6 (new) C1	Indicators: EG. 13-6 EG. 10.2-2	Indicators: EG. 10.2-1 C4 (New)	Indicators: EG 10.2-3	Indicators: C5 (New)
IR 2: Enhanced capacity of key stakeholders for landscape management and biodiversity conservation					
Sub-IR 2.1 **Increased functional capabilities of new, developing and reformed CMOs**		**Sub-IR 2.2** **Increased technical knowledge of co-management stakeholders in landscape and biodiversity management and protection**		**Sub-IR 2.3** **Increased revenue for CMOs**	
Indicators: GNDR-8 (new) C2 and C6 (new)		Indicators: EG.10.2-4		Indicators: C3 (Revised)	

Figure 23: CREL Results Framework (FY2018)

In the RFA several indicators were specified. Following award, USAID and CREL staff engaged in series of dialogues and the Results Framework and associated indicators (Figure 22) were finalized. In subsequent years the team made adjustments to definitions including adjustments aligning to USAID updates to standard indicators. During the final extension year CREL adjusted the indicators and results framework (Figure 23) to align with the revised project focus and goals. Table 43 details the indicators considered in the RFA and the indicators used during years 1-5 and year 6 of the project.

Table 43: CREL Performance Indicator List *(Proposed and actually adopted)*

Sl	Indicator number	Indicator name	Years used	Data maintained in	Data sources	Remarks
	EG. 13-6	GHG emissions, estimated in metric tons of CO2e, reduced, sequestered and/or avoided through sustainable landscape activities supported by USG assistance	1-6	USAID's Agriculture, Forestry, Other Land Use (AFOLU) Calculator	PA Area, Assessments, checklist for AFOLU inputs	
	EG. 11-6	Number of people using climate information or implementing risk reducing actions to improve resilience to climate change as supported USG assistance	1-5	MS Excel	Survey for risk reducing practices, and Community adaptation plans for climate change info use	
		Number of stakeholders with improved capacity to address climate change issues as a result of USG assistance.				RFA, May 2012, interpreted as EG. 11-6
	F4.8.2-28	Number of laws, policies, officially proposed, adopted, or implemented as supported by USG assistance	1-4	MS Excel	GoB documents	
	EG. 13-3	Number of laws, policies, regulations or standards addressing sustainable landscapes formally proposed, adopted, or implemented as supported by USG assistance	5-6	MS Excel	GoB documents	RFA, May 2012
	EG.11-3	Number of laws, policies, regulations, or standards addressing climate change adaptation formally proposed, adopted, or implemented as supported by USG assistance.	5	MS Excel	GoB documents	RFA, May 2012
	EG. 10-2-5	Number of laws, policies, or regulations that address biodiversity conservation and/or other environmental themes officially proposed, adopted or implemented as a result of USG assistance	5-6	MS Excel	GoB documents	
	EG.10.2-6	Number of people that apply improved conservation law enforcement practices, as a result of USG assistance	6	MS Excel	Field reports	
	C1	Number of legally defined public land units assigned long-term for co-management	1-5	CrelLink	Official Documents	
	C2	Number of requests raised by institutions to higher governance tiers for better NRM.	1-5	CrelLink	Field reports	
		Number of people receiving USG-supported training in environmental law, enforcement, public participation, and cleaner production policies, strategies, skills, and techniques				RFA, May 2012; replaced by EG.10.2-4
		Number of people receiving USG-supported training in NRM and/or biodiversity conservation				RFA, May 2012
		Number of person hours of training in NRM and/or biodiversity conservation supported by USG assistance	1-4	CrelLink	Training events	RFA, May 2012; replaced by EG.10.2-4
	EG. 10.2-4	Number of people trained in sustainable NRM and/or biodiversity conservation as a result of USG assistance	5-6	CrelLink	Training events	
	C3	Number of training modules and curricula developed to promote co-management and climate resilience	1-5	CrelLink	Reports	
	C4	Number of stakeholders using climate information in their decision making.	1-5	MS Excel	Community adaptation plans and other events	

SI	Indicator number	Indicator name	Years used	Data maintained in	Data sources	Remarks
	EG. 11-2	Number of institutions with improved capacity to address climate change risks supported by USG assistance	1-5	MS Excel	Surveys	RFA, May 2012
	C5	Number of co-management units with improved performance	1-6	MS Excel	CMOs scorecard assessments	
		Person hours of training completed in climate change supported by USG assistance				RFA, May 2012; replaced by EG. 11-1
	EG. 11-1	Number of people trained in climate change adaptation supported by USG assistance	1-5	CrelLink	Training events	
	EG.10.2-2	Number of hectares (ha.) of biological significance and/or natural resources under improved NRM as a result of USG assistance	1-6	MS Excel	Government statistics and CMOs functioning	
	C6 and EG. 10.2-1 in year 6	Number of hectares (ha.) of biological significance and/or natural resources showing improved biophysical condition as a result of USG assistance	1-5/6	CrelLink	Field reports	
	C7	Funding leveraged from public and private sources contributing to improved NRM	1-5	CrelLink	Field reports	
	C8	Number of CMOs realizing improved revenue collection and/or sharing	1-5	MS Excel	Field reports	
	Custom (revised)	Number of CMOs with increased revenue compared with previous year	6	MS Excel	Field reports	Adjustment of C8
	C9	Number of villages implementing actions to sustain and/or enhance resilience of their NR base	1-5	MS Excel	Field reports	
	Custom (new)	Number of globally threatened species targeted by community conservation actions	6	Reports	Field reports	
	EG 10.2-3	Number of people with increased economic benefits derived from sustainable NRM and conservation as a result of USG assistance.	1-6	MS Excel	CrelLink data and sample survey results	
	C10	Additional market revenue generated from PAs and landscapes as a result of USG assistance	1-5	MS Excel	CrelLink data and Survey results	
	C11	Number of farmers and others who have applied improved technologies or management practices	1-5	MS Excel	Survey results	
	Custom (new)	Number of eco-tourism initiatives that will support livelihoods and enhance or do no harm to biodiversity conservation	6	Reports	Field reports	
	GNDR-8	Number of persons trained with USG assistance to advance outcomes consistent with gender equality or female empowerment through their roles in public or private sector institutions or organizations	6	CrelLink	Training reports	
	Custom (new)	Number of people reached by psycho-social counselling services to reduce GBV.	6	CrelLink	Event reports	

B. ACTIVITIES, DATA SETS AND PRODUCTS

BASELINES FOR PROJECT INDICATORS

In most instances, the CREL project set the baseline for its indicators as zero. Basic beneficiary baseline information on household members, livelihoods and natural resource use was captured when the target households enlisted in the project activities. CREL also utilized socio-economic surveys of sample households and/or respondents to capture more detailed data on enterprise returns, natural resource use, and climate-smart agricultural technologies in a baseline year and following intervention to assess impact. For CMOs, CREL adopted a scorecard with 17 pre-defined indicators under five themes of sustainability (explained and reported in IR2). CREL used the first year of assessment or 2013 (whichever was later) as the baseline, since previous assessments of CMOs under past USAID supported projects used slightly different criteria and were not comparable.

Indicator EG. 10.2-1, *Number of hectares (ha.) of biological significance and/or natural resources showing improved biophysical condition as a result of USG assistance* illustrates the complexity of CREL's indicators and demonstrates how CREL developed baseline and trend data. In addition to documenting the actual area of physical interventions (such as tree planting), CREL supported the following:

- Baseline forest inventories covering a full set of parameters needed to estimate carbon storage in a set of plots sampled based on GIS analysis (examples of outputs are shown under IR3).
- Near-annual surveys of resident indicator bird species in selected forest PAs covering selected transects in four months, continuing and expanding on surveys under previous USAID supported projects.
- Annual censuses of waterbirds in wetland sites continuing time-series started under other projects and initiatives.
- Fish catch or landing monitoring using weekly/daily sample surveys throughout 2-3 years in coastal and freshwater wetland sites providing a baseline in sites new to co-management, and adding to a time series in other sites that was used to determine changes and the associated areas and value of impacts.
- Satellite-based land cover mapping to provide a robust baseline, particularly for forest extent to be used after 10-15 years to determine changes in forest extent, since yearly or project-level changes in land cover are negligible.

C. MEL DATABASE SYSTEM

To manage data from a variety of sources, CREL utilized a web-based interactive system (Figure 24), CrelLink (www.crellinkbd.org), that enabled rapid reporting on project activities and indicators from field locations. The information flow and data quality checks are shown in (Figure 25). CREL engaged a local software development firm, DivineIT Ltd, to develop the database and interface based on successful systems developed by Winrock in Nepal. CrelLink maximized the usability, accessibility, and security of CREL's project data in a dependable, cost-effective package. To maximize the availability of project data for donors and partners, CREL made CrelLink available to designees from USAID, GoB partners and implementing partners in addition to the component leads and MEL staff. DivineIT Ltd. developed the system using a structured query language (SQL) database and Hypertext Preprocessor (PHP) for the front end. CrelLink was administered by the CREL MEL team and had a total of 320 users who had instant access for data entry, queries, and real-time reporting on project progress. Table 44 summarizes the status of CrelLink data at the project close.

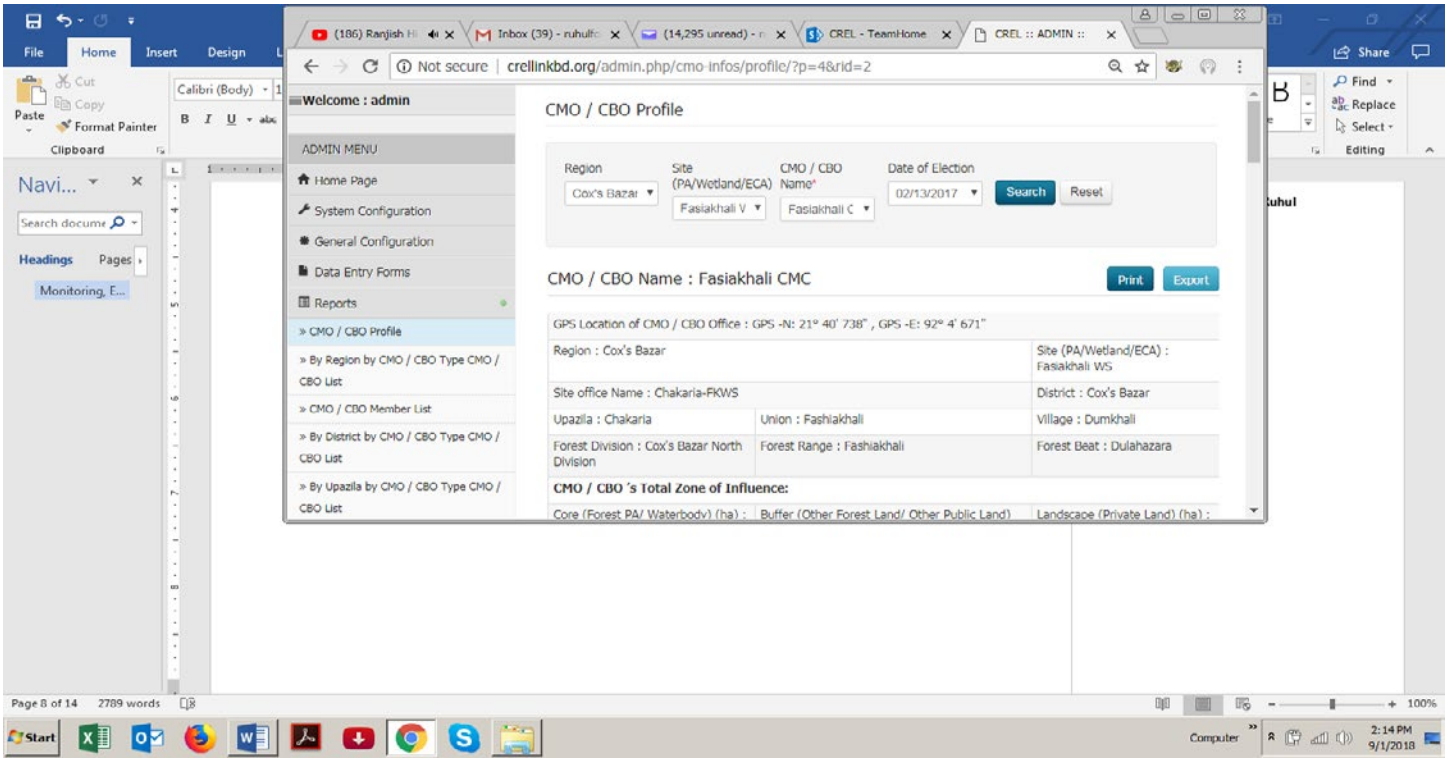


Figure 24: Snapshot of CrelLink Interface

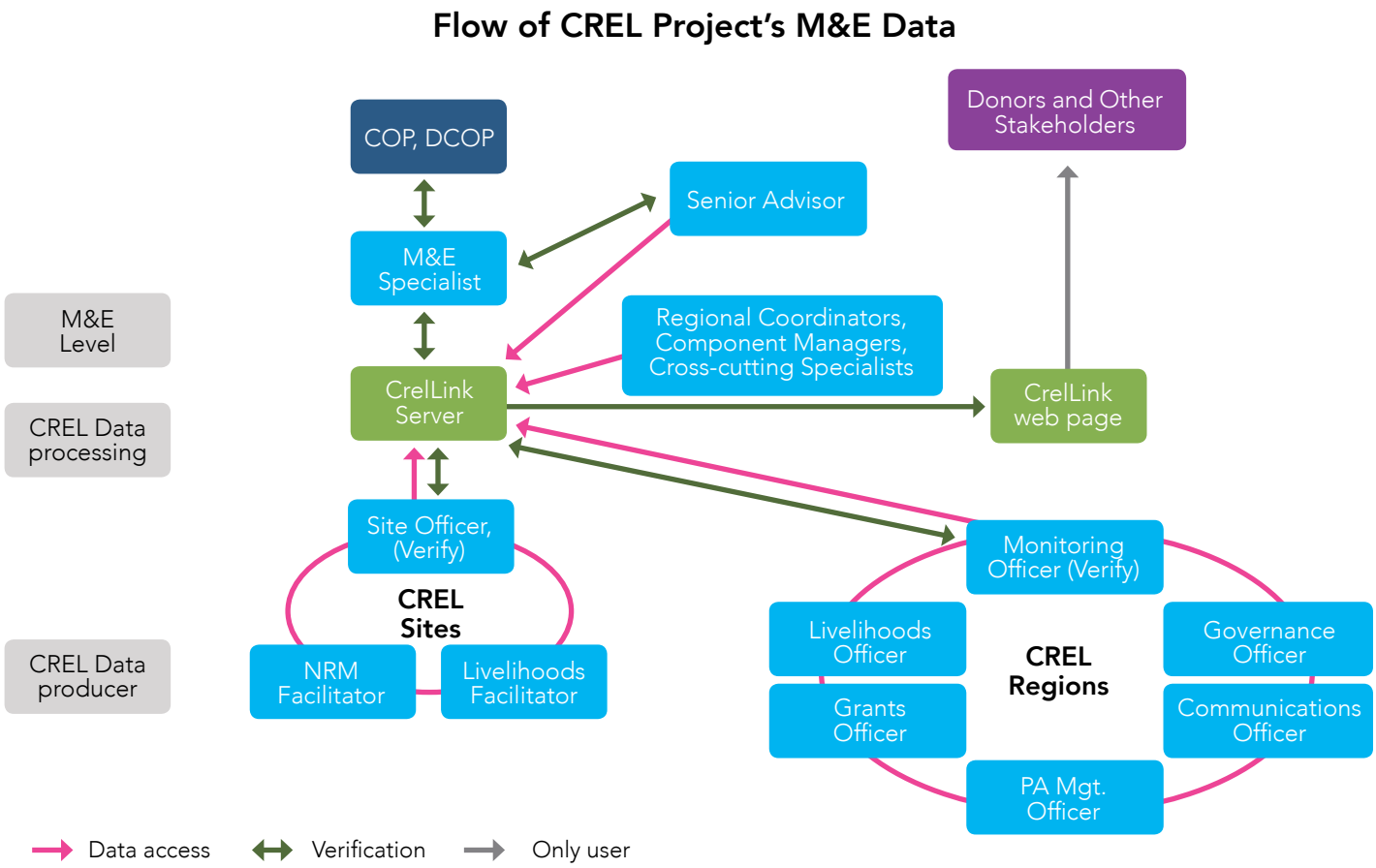


Figure 25. Information flows and responsibilities in the CrelLink system

Table 44: Summary of CrelLink status and selected types of data held as of September 2018

Aspects	Information
CrelLink Interface	PHP – frontend; MySQL – backend database
Development	During Apr-Sept 2013
Operational	Oct 2013 – Sept 2018
Users	314
CMOs (CMCs and CBOs)	150
Landscape villages	1000
Landscape population	87,400
Enlisted beneficiaries	71,950
Improved farming practice adopters	51,463
Number of training events documented	7,586
Number of participant-training event combinations	170,145 (male 53,062; female 117,083)
Number of NRM demands from grassroot CMOs	360
Biophysical interventions	495 (covering 2,190 ha
Number of grassroot discussions documented	23,980

When appropriate, data collected from the field through CrelLink was linked to geospatial data for better visualization, efficient reporting, and immediate analysis (Figure 26). Overall this online web-based system ensured instant access to submit and view data simultaneously from multiple locations; and provided maximum value for donors, partners, and project leadership in terms of efficiency and timeliness. For specialized biophysical and socio-economic data, the relevant datasets were maintained separately, including sample surveys of livelihood beneficiaries, sample surveys of financial literacy trainees, fish catch monitoring, technology adoption surveys and census, annual assessments of CMOs, and data from forest and waterbird monitoring.

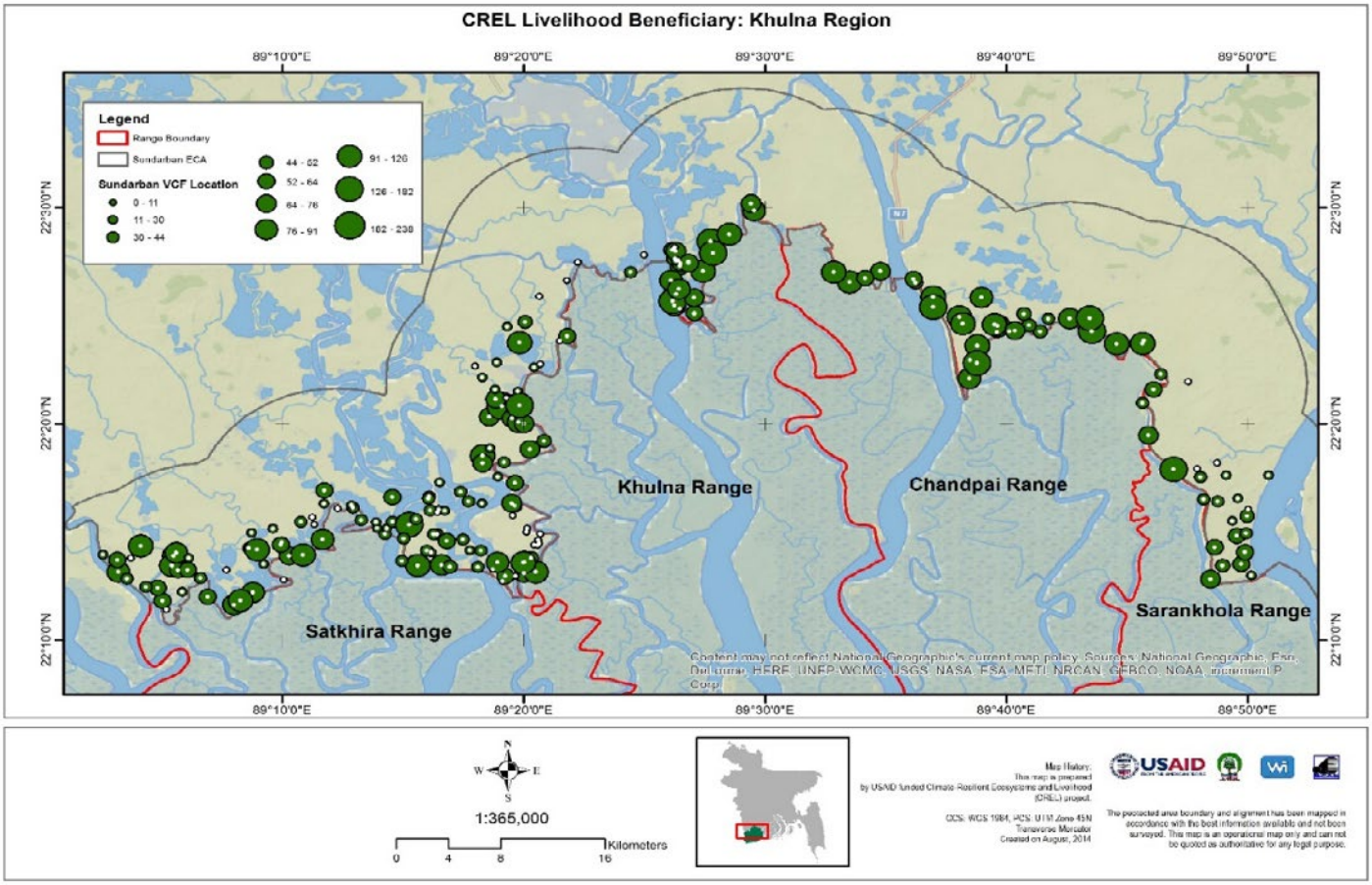


Figure 26: Linking CrelLink and GIS for spatial display of beneficiary distribution

D. APPLICATION OF GIS AND REMOTE SENSING

The MEL team supported project implementation by using GIS and Remote Sensing technology to develop land cover mapping, climate change vulnerability and adaptation assessments, developing maps and data (e.g. landcover) for use in PA management plans, and other thematic maps ranging from site-level to national level. The land cover maps were developed for CREL sites using RapidEye satellite imagery from 2013-2014 to provide a biophysical baseline of biologically significant sites for future reference. In addition to a baseline, analysis of past imagery from other sources (Landsat) was undertaken using land cover classifications to show past trends and forest loss as a guide for management decisions and to highlight the challenges faced by co-management stakeholders (see Figure 27 for an example).

BOX 27:

GIS and Remote Sensing Products

CREL delivered the following products to the respective GoB agencies, CMOs, and regional teams of CREL:

- Landcover statistics and maps: 26 sites
- Climate vulnerability and adaptation maps: 30 maps
- PA maps for signage*: 20 sites
- Forest inventory maps: 13
- Thematic maps: 12

* Printed on heavy duty signs and installed in the PAs in collaboration with a separate US Department of Interior project and the CREL communications team

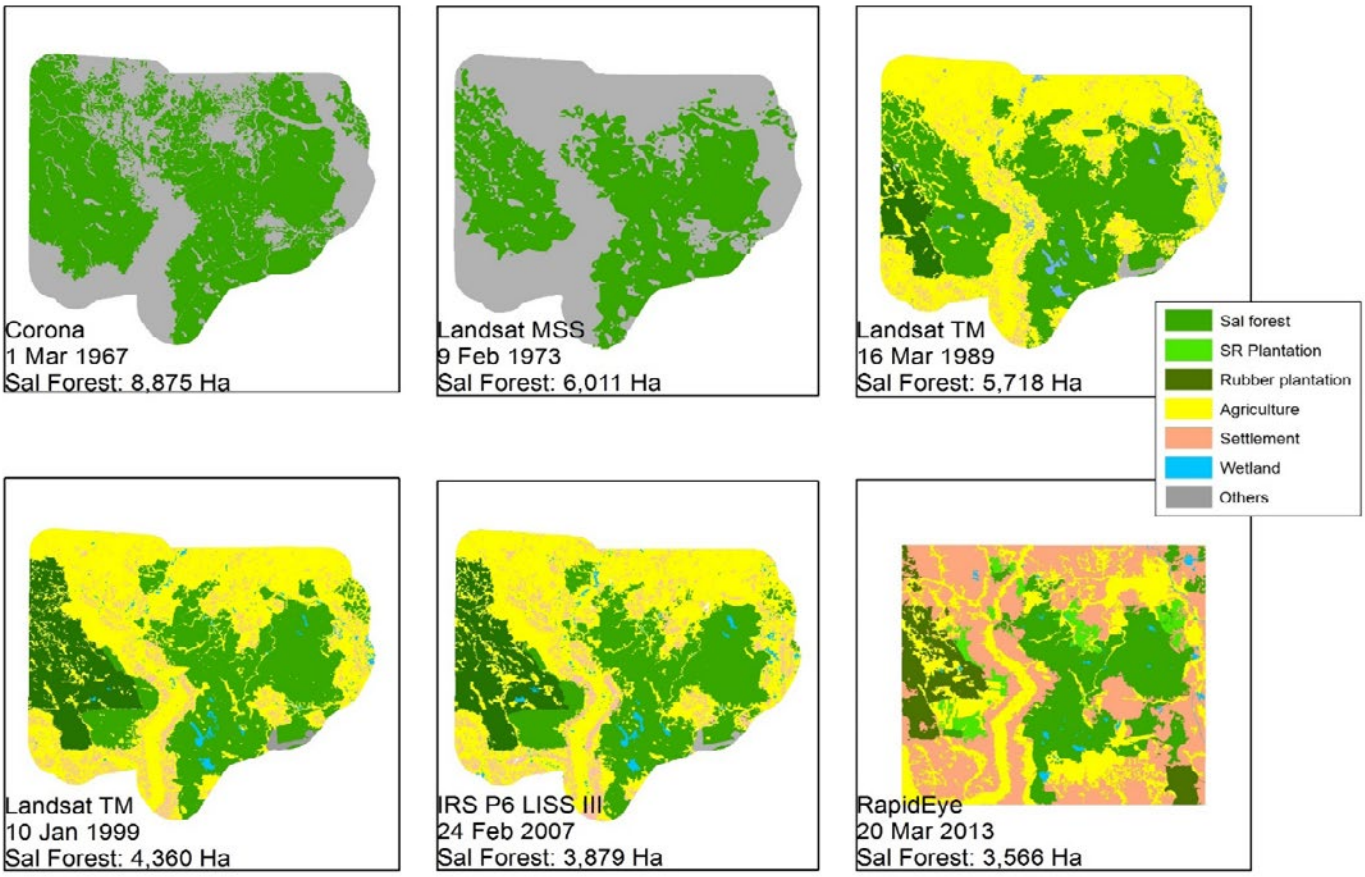
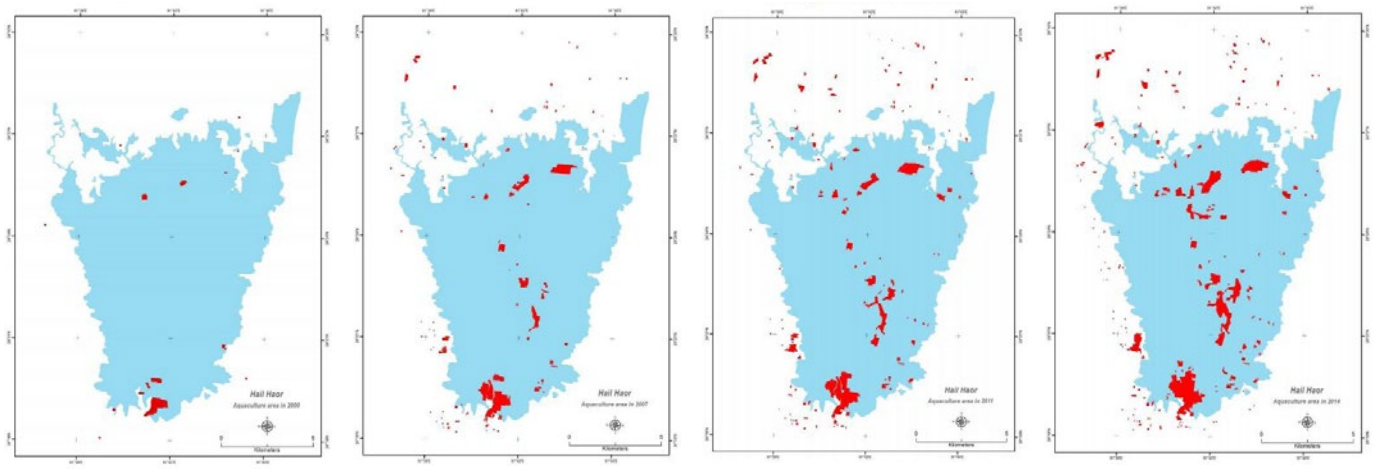


Figure 27: Land cover trend analysis of Modhupur National Park 1967 - 2013

Other customized and thematic outputs included intervention mapping, mapping climate vulnerability and adaptation options identified in PCVAs, and mapping special issues, such as the conversion of wetland commons to privatized aquaculture in Hail Haor (Figure 28) to inform estimation of total fish catches from the wetland and inform local dialogue and mass movements against conversion (illegal and legal) of public and private lands to aquaculture by companies and investors (see section A/box in IR1) .



Aquaculture 101 ha | Aquaculture 400.11 ha | Aquaculture 607.03 ha | Aquaculture 863.66 ha

Figure 28: Expansion of aquaculture (red) in Hail Haor wetland (maximum water extent – blue), 2000 - 2014

CREL also engaged in community mapping using Google Earth base maps to define the impact or landscape area of communities using or impacting on PAs (see Figure 29 for an example). Feedback from CMOs informed CREL that initial attempts to define landscape areas by using a GIS buffer tool and specifying a five kilometer buffer around PA core boundaries did not give useful results. Local communities within this line might not impact the PAs and other villages

further away could impact PAs, while local people and government agencies use physical features to define this zone. The CREL team worked with the CMOs and VCF representatives using GPS and hard copies of Google Earth base maps to finalize maps of landscape areas they subsequently used in preparing plans and then implementing activities (see IR3). These maps were a major input to IR3 including PA and CMO plan development.

Figure 29: Community mapped zone of influence (pink boundary) around Ratargul SBCA (red, showing also freshwater swamp forest – dark shade within red line).

E. SPECIALIZED STUDIES

CREL commissioned or conducted a series of specialized studies as part of MEL to generate biological, biophysical, and socio-economic data. Technical reports on these studies were produced and findings were shared with stakeholders and USAID, and are available in the web portal, nishorgo.org (see data availability section for further details).

Impacts of Forest PA Co-management on Resident Birds.

CREL contracted the Bbc to conduct yearly resident forest bird surveys in 15 PAs (surveyed since Nishorgo Support Project (NSP): Lawachara NP, Satchari NP, Rema-Kalenga WS, Chunati WS and Teknaf WS; surveyed since IPAC: Kaptai NP, Fashiakhali WS, Medakacchapia NP, Modhupur NP and Khadimnagar NP; added by CREL: Inani Reserved Forest, Himchari NP, Dudpukuria-Dhopachari WS, Hazarikhil WS, and Baroiyardhala NP). This involved counts of 10-11 indicator bird species selected to represent three forest strata for each site. Surveys covered two to six transects in each of four months during the nesting season (March-July), and resulted in population density estimates. During the CREL period indicator species for low, middle and canopy strata increased in Dudpukuria-Dhopachari WS, Hazarikhil WS, Fashiakhali WS, Lawachara NP and Rema-Kalenga WS; while over longer periods of co-management birds of the three strata increased in Modhupur NP, Satchari NP, Rema-Kalenga WS and Khadimnagar NP. All of these eight sites show positive trends related to forest condition. However, birds of all three strata declined in Medakachapia NP and Teknaf WS while Himchari NP lost middle and canopy species. Despite ecosystem management measures in these three PAs in Cox's Bazar, they are currently experiencing long-term human pressure that has been exacerbated by a recent influx of refugees in 2017 that is likely impacting the resident bird population density.

Impacts of Wetland Conservation and Co-management on Waterbirds.

CREL collaborated with Bbc in its annual counts of wintering waterbirds, which form part of the Asian Waterbird Census, sponsoring surveys in some sites and years, and benefiting from sharing of data collected with other

support in other years. The four sites surveyed all have data series extending for several years before CREL and comprise the sites of greatest international importance for waterbirds under CREL: Hakaluki Haor and Baikka Beel in the northeastern freshwater wetlands and Nijhum Dwip NPO and Sonadia ECA in the coast. This showed that Baikka Beel continued to host high numbers and diversity of species, but with fluctuations. Nine globally threatened species including endangered Pallas's Fish Eagle use this site. Waterbird numbers recovered in Hakaluki Haor during 2016-18 from a low in 2014 and 2015, but were above 20,000 in each year surveyed, six species increased significantly, and nine globally threatened species use the site including critically endangered Baer's Pochard. In Sonadia ECA from 2010-11 onwards shorebird numbers show a strong upward trend, it is an important wintering site for three globally threatened species, including 5% of the world's critically endangered Spoon-billed Sandpiper. Waterbird numbers fluctuate between years in Nijhum Dwip NP but peaked at 28,000 in March 2015. Four globally threatened species winter here, including up to 43% of the world's vulnerable Indian Skimmer.

Impacts of Wetland Conservation and Co-management on Fisheries.

CREL partner WorldFish worked with three NGOs to conduct detailed monitoring of fish catches in four project areas: three freshwater wetlands: Hail Haor (six sample areas), Hakaluki Haor (nine sample areas), and Ratargul SBCA (one sample area); and Sundarbans (four sample areas). CREL also monitored fish landing centers in four coastal sites (Sundarbans, Tengragiri, Nijhum Dwip and Sonadia). Monitoring covered one to three years and involved recording on sample days spread across each month the fishing effort (person-days or unit-days observed using each type of fishing gear) and fish catches/landings by species for sample fishing units stratified by each type of fishing gear. This data was used to generate a baseline value and, where possible, identify trends in fishing effort, fish catch per unit effort, catch per unit area (for freshwater wetlands), species diversity and catch composition. Findings included: a small increase in already high (restored) fish catches in Hail Haor valued at Tk 14.5 million ($US 0.18 million) per year more than during the IPAC project; a 62% increase in catches in Hakaluki Haor over three years showing an incremental return of almost 2,000 ton/year valued at over Tk 200 million ($US 2.5 million) per year; concern over declining larger carnivorous fish in the large Sundarbans ecosystem; a highly diverse fishery in Tengragiri which it is hoped will be more sustainable with a newly established sanctuary; and a low diversity fishery around Nijhum Dwip that is dominated by variable Hilsha catches.

Forest Condition in 13 PAs.

CREL project developed a SoP and conducted, in collaboration with FD and forestry students, a forest inventory coupled with satellite-based land cover mapping in 13 forest PAs Forest inventory provided data for a biophysical baseline and also provided information for PA management plans. The PAs inventoried in 2014 are Khadimnagar NP, Lawachara NP, Satchari NP, Rema-Kalenga WS, Modhupur NP, Kaptai NP, Chunati WS and Himchari NP. In 2015, Baroiyadhala NP, Hazarikhil WS, Nijhim Dweep NP, Tengragiri WS and Ratargul SBCA are covered. Among these PAs Khadimnagar NP, Lawachara NP, Satchari NP, Kaptai NP, Chunati WS, Baroiyadhala NP, Himchari NP, Hazarikhil WS are tropical evergreen forests, Nijhum Dweep NP and Tengragiri WS are mangrove forests, and Ratargul SBCA is freshwater swamp forest. Within this purview, the total core reserved forests and biologically significant area of these 13 PAs is 53,808 ha and CREL-supported CMOs' zone of influence[7] area covers approximately 101,000 ha including village lands. A total of 590 concentric sample plots were surveyed revealing biophysical forest data, including number of seedlings/ha, saplings/ha, and live trees/ha. This data serves as indicators or measures of natural regeneration as well as quantifying tree size classes and overall forest growth. The analysis found that Rema-Kalenga WS harbors the highest number of natural tree seedlings as well as mature live trees. Additionally, the mean CO_2 stocks at different PAs were estimated. CREL observed that the carbon CO_2 stock (Mg/ha), from plant pools varied from 29 to 371 Mg/ha among the PAs with the highest in Rema-Kalenga WS and the lowest at Baroiyadhala NP. CREL estimated species diversity at different PAs using Shannon's diversity index (H') based on identified number of species at each PA and the Menhinicks' species richness index (D). The forest inventories in 2014 and 2015 in conjunction with satellite based (RapidEye 2013) land cover mapping provided a biophysical baseline of these PAs.

CPGs - Activities, Impacts and Sustainability.

An externally commissioned rigorous study was conducted in 2017 to review the contributions and sustainability of about 1,600 volunteers organized into community-based joint forest patrolling under the co-management approach. Discussions with 24 CPGs and FD officers in 16 PAs found considerable variation in duty burdens from intensively patrolled smaller areas to more extensive support for larger PAs. The study revealed that active involvement of community members in joint forest patrolling through CPGs has improved conservation of PAs – for example each CPG confiscated illegally harvested forest products on average 19 times in the 12 months before the survey, two-thirds removed domestic animals from forest, and half were involved in fighting one or more forest fires in that period. However, considering the time spent on patrols, late hours and dangers from armed poachers, CPG members stressed the need for continued incentives necessary to sustain CPGs and achieve their full potential. Incentives could include daily allowances, equipment for patrolling, help to set up small businesses and public recognition of their volunteer work.

Capacity and Sustainability of CMOs.

The CREL MEL team undertook a detailed review of existing CMO capacity in 2013, and from this developed a set of sustainability criteria for the CMOs (CMCs and CBOs) with 17 criteria organized in five themes (legitimacy, organizational functioning, governance and inclusivity, adaptive management and resource mobilization). CREL conducted yearly participatory assessments with the participation with CMO leaders and local officials covering 45 CMOs at approximately 12-month intervals during 2014-2018. The results are shown in IR2. By 2018, 35 of the 45 CMOs attained a capacity level that will sustain their operation beyond the close of CREL, of these 23 have been at this level for three or more years.

Assessment of Institutional Capacities in Climate Change Adaptation.

CREL aimed to build capacity of CMOs (CMCs and CBOs), Local Government Initiative (LGI) (UPs) and the local offices/units of government agencies (FD, DoE, DoF), including understanding of climate change and ability to plan to adapt. Out of 80 institutions/organizations surveyed, government agencies already had some capacity and improved slightly, while CMOs and UPs made substantial progress from a very low level at the beginning of CREL. There still remains considerable scope for building further capacity.

Women's Empowerment through Financial Literacy Education.

As explained under IR4 and the cross-cutting gender component, a focus of CREL was strengthening the role of women in co-management and economic empowerment of women through livelihood enterprise development. To support this CREL adopted a 7-month long FELCs program (see IR4) to develop basic numeracy, literacy and financial management skills of disadvantaged and illiterate women in CREL working areas, 8,055 women graduated from FELCs. As detailed in the gender section and under IR4, the FELC teachers supported by CREL staff completed questionnaires for women and men from a sample of FELC learners before and after attending the seven-month course, covering the majority of FELC centers. The survey covered 1,268 couples and found that there were statistically significant increases in empowerment of women relative to men, based on methods adjusted from the WEAI quantifying the five domains of empowerment - production, resources, income, leadership, and time/leisure.

F. DATA QUALITY ASSESSMENT (DQA) AND EVALUATIONS

As a contractual obligation, the project participated in yearly data quality assessments by USAID. From 2014 onwards, USAID contracted Accelerating Capacity for Monitoring and Evaluation (ACME) to undertake these assessments. CREL staff in project headquarters and the regional and site offices facilitated successful DQAs with USAID and ACME. Additionally, CREL worked intensively with ACME in developing INSIGHT – an automated MS Access-based interface for all USAID's Activities under DO4, and demonstrated CrelLink to a larger group of stakeholders in USAID and its projects and CREL's application of GIS and Remote Sensing for area-based monitoring indicators across the mission's activities.

USAID and ACME conducted a mid-term evaluation[8] of the CREL project in 2014 finding that:

- CREL had integrated learning from past USAID biodiversity activities (MACH, NSP and IPAC) to strengthen local governance structures for natural resources management. Evaluation teams found that the CREL program had effectively built on these experiences, and the CREL program added a specific climate resilience and adaptation lens on the USAID CBNRM program and substantially expanded the livelihoods activities that date back to MACH and NSP.
- The extent that training and capacity building activities result in strengthened organizational capacity of NRM institutions. Reviewing training data for more than 56,000 people in climate resilient awareness and practices, more than 1,000 government officials in co-management theory and practice, and series of training workshops, seminars, courses, presentations, study tours and field demonstrations; the evaluation team remarked that CREL's training accomplishments had been impressive. However, the evaluation team observed that CREL had not effectively monitored its training for livelihood beneficiaries. Subsequently, the MEL team conducted socio-economic survey of livelihood beneficiaries and measured their income increase as well as reduced dependency on natural resources. Additionally, CREL conducted CMOs' annual scorecard and institutional climate change capacity, NGOs' capacity assessment (under transition grants) and women empowerment scorecard assessments. How livelihood development activities achieved a direct and measurable impact on the protection of natural resources in PAs. The evaluation team affirmed that CREL livelihoods activities were responsive to beneficiaries' needs, incorporated a value chain approach and provided need-based skills and knowledge transfer. The Income Generating Activities (IGAs) were having a positive effect on income for beneficiaries, whether they are used as a primary or supplementary source of income. This was substantiated by the survey of beneficiaries (conducted independently by the mid-term evaluation team), which showed that their income had increased by an average of 42% above what they earned prior to CREL's launch.
- CREL's multidimensional integrated approach combining NRM, alternative livelihoods, and climate resilience; and experience of integrating women and other vulnerable populations. The

evaluation teams found that there was a predominance of women in all CREL livelihood activities, but they are not the primary resource extractors. In fact, CREL adopted the household approach for building resiliency.

- CREL's engagement with national level GoB partners in building government ownership of the co-management approach and strengthening the legal and policy framework for co-management. The evaluation team remarked that USAID and GoB internal processes collided over CREL project authorizing documentation and resulted in the FD pulling back from full participation in CREL, significantly delaying CREL implementation in PAs and undermining FD ownership of the co-management approach. Since the resolution of this problem, the FD showed increasing engagement with CREL. While a similar problem existed with the DoF and DoE, they chose to continue collaboration. CREL undertook intensive efforts to obtain GoB approval of three DPP and eventually ensured a significant buy-in from GoB agencies (FD, DoE and DoF) and successfully completed the project. Additionally, CREL worked with MoL, MoF, and MoL which resulted in GoB adoption of the ECA Rules 2016 and PA Management Rules 2017 as well as allocation of wetlands to concerned CMOs. Identify the opportunities to enhance and strengthen programmatic effectiveness to meet project targets/objectives and ensure sustainability. The evaluation team affirmed that CREL had achieved a turnaround of USAID's support to co-management in Bangladesh. The team proposed six interrelated areas for adjustments including policy development, CMO funding, sustainability of livelihoods program, capacity building and training, and communications. Accordingly, the project made intensive efforts with policy makers to institutionalize CMO financial sustainability, which resulted in the adoption of the ECA Rules 2016 and PA Management Rules 2017. CREL also enabled value chain based focused enterprises for beneficiaries with adequate market linkages through development of local service providers. CREL's communications component added several activities, e.g. engagement of youths and media, as well as hundreds of outreach events focusing on conservation of important but vulnerable ecosystems in the country.

G. SUMMARY OF DATA AND RESULT AVAILABILITY/ARCHIVING

- Biophysical proxy indicators (birds, fish catch) monitoring data:
    - Data and trends for resident indicator bird species for 15 forest PAs for variable numbers of years (CREL four years for all 15 PAs, but also including data from NSP and IPAC for five PAs and from IPAC for five PAs) – Technical report and data archived at WI and Bbc;
    - Annual censuses (complete counts) of wintering waterbirds by species in four sites throughout CREL period and for previous years according to data availability shared by Bbc– Technical reports are shared to USAID and WI; and
    - Fish catch and fish landing data from monthly monitoring for variable periods (one to four years during CREL), for eight freshwater and coastal wetland sites – Technical report and detailed data archive at WI and CNRS.
- Socio-economic survey data of 2,730 sample households randomly selected from a population of 55,518 beneficiary households of the CREL livelihoods program, at four times across 20 project working areas. Sample stratified by enterprise (trade) the respondent was trained in, by region, and by sex. For each sample household data covers one-year baseline (prior to engaging with CREL livelihoods program) and the subsequent impact year (12 months) – data archive at WI.
- Forest inventory data from 13 forest PAs surveyed in 2014 and 2015 – two reports plus SoP, archived at WI and data shared with RIMS, FD.
- CMO institutional sustainability scorecards based on annual participatory assessments for each year 2013-2018 (see Annex 2 for summary). A separate report on the extensive 2013 baseline was prepared and a technical report summarizes changes from 2013 to 2018.
- CrelLink data archive of project beneficiaries, training, biophysical interventions, CMO basic information, entry fees collected from visitors in selected sites (nine), regular meetings, and communication and outreach events – archived at www.nishorgo.org (restricted access for registered users up to the closure of CREL).
- The web portal Nishorgo.org also hosts co-management archives comprising technical resources such as reports from USAID's MACH (1998-2008), NSP (2003-2008), IPAC (2008-2012) and CREL (2013-2018) projects.

H. IMPACTS

The primary use and impact of the MEL system and associated data and findings was to improve project delivery and management under the respective IRs. The evidence of impacts reported for each IR and cross-cutting project components was a product of MEL activities. In addition CREL's MEL approach and particularly CrelLink had additional impacts. Overall the MEL framework of the project contributed the following additional impacts:

- As a flagship project of USAID and having developed an exhaustive system for managing large

project-level data sets covering a diverse set of performance indicators, CREL led the MEL working group for DO4, with USAID's ACME Activity, and facilitated development of INSIGHT – a web enabled PPR reporting platform.
- CREL advised and assisted USAID' Bengal Tiger Conservation Activity (BAGH) activity and Enhanced Coastal Fisheries in Bangladesh (ECOFISH^{BD}) in framing its MEL plan.
- CREL shared outputs and concepts of its web-based database (CrelLink) and GIS/ Remote Sensory (RS) outputs with other USAID projects in various occasions.
- CREL's knowledge and experience was shared with other WI NRM projects and the MEL team provided guidance to other WI MEL staff on DQAs.
- The SoP developed for the CREL supported forest inventory (covering 13 PAs) was developed with and then used by Bangladesh FD and FAO of the UN, while developing the National Forest Inventory framework.

I. LESSONS LEARNED AND CHALLENGES

- CREL's web-based monitoring data management for the project proved cost effective and effective in ensuring data quality. Real-time monitoring data is useful in decision-making for project implementation as well as providing information to USAID. However, real-time data entry at field offices needs to be included in workload allocations and required functioning computers with internet access, which is a regular challenge for more remote working areas.
- Biophysical changes are difficult to detect over a 5-year project. For some indicators and sites where pre-existing co-management was already established, the project benefited from longer time-series of data. However, there is still a gap in determining biophysical impact where co-management is newly established. Setting a robust baseline is critical for in future measuring medium term (decadal) changes.
    - In forests, a robust biophysical baseline using a combination of resident (indicator) birds, forest inventory, and land cover classification of high-resolution imagery was useful.
    - In wetlands impacts may occur over a five-year period, and fish catch and waterbird surveys have the scope to measure such changes. These need to be set up quickly for there to be management interventions that could have an impact. CREL faced challenges in securing waterbodies for community fishery management (IR1) in wetlands, and in coastal sites new forest co-management institutions took time to realize that fishery management was a key issue that the existing CMC structure did not address, limiting the scope for impacts.
- Community patrol groups and CMC representatives now have some skills on participatory monitoring of ecological and social issues; but a stronger buy-in from FD is critical for continued functioning.
- CREL invested significantly in surveys and monitoring but results and implications for local management decisions in subsequent years were not always available when plans were revised or were not utilized at all. It is important to formalize a timely process of producing outputs from monitoring studies and for sharing them with the relevant CMOs in their executive meetings as well as with teams facilitating respective sites.
- Use of GIS and remote sensing in setting biophysical baselines was found to be very effective, although high-resolution satellite imagery (e.g. RapidEye) is costly. Data sharing protocols amongst development projects (e.g. USAID GeoCenter) and GoB agencies (e.g. Space Research and Remote Sensing Organization (SPARRSO), Survey of Bangladesh) might pave the way for cost effective wider availability and use of remote sensing/GIS data.
- A number of tools and methods were developed for assessments (e.g. CMO sustainability assessment scorecard, women's empowerment scorecard, institutional capacity assessment framework, etc.) that are available for future applications.
- For some indicators, regular annual monitoring is preferable (CMO assessments, water and forest birds), but this is unlikely to continue without project funding – there remains a challenge of mainstreaming monitoring and assessment within co-management as part of community and government commitments to learning and undertaking adaptive co-management.

Conclusion

Medhakachapia NP, Cox's Bazar region

Obaidul Fattah Tanvir

Between 2012 – 2018 CREL laid the foundation for effective co-management and organizational capacity that can be scaled-up to achieve measurable results related to environmentally, socially and economically sustainable landscapes and biodiversity in Bangladesh. This provides an opportunity for USAID and other development partners on which to capitalize and accelerate the trajectory of successful conservation achieved by CREL and previous project investments. This could be done by expanding CMO-led conservation activities, capitalizing on the current enthusiasm and commitment of the FD to co-management outcomes, networking and leveraging the capacity of local organizations and mobilizing local resources. The overall result would continue USAID's participation as an active player and contributor to expanded conservation of landscapes and biodiversity in Bangladesh and help with the design of any major new activity in the context of current knowledge and collaboration with the relevant GoB line agencies and associated projects.

USAID has been investing in and promoting co-management and the capacity of local organizations to support site-based landscape and biodiversity management, conservation and protection activities since 1998. With the conclusion of CREL in September 2018, this 20-year investment has yielded a broad and solid foundation for locally led co-management, with several crucial interlinked implementation platforms now functional:

Legal mandate:

The recently approved PA Management Rules 2017 and the ECA Rules provide the legal mandate for co-management and specify the roles and responsibilities of CMOs and the requirement for revenue collection and sharing. There remains scope to strengthen and formalize co-management in wetlands. While a foundation has been demonstrated and precedents set (for example for wetland sanctuaries and community-based management), further progress will depend on initiatives where MoL is a formal partner. This would encourage GoB ownership (as has taken place with FD and DoE) and would facilitate processes that are ongoing in the MoL to approve reform of the waterbody leasing policy and two sets of guidelines for wetland sanctuaries and co-management.

Planning framework:

The PA Management Plans (14), CMO Long-term Plans, CMO Annual Development Plans, the CMO Sustainability and Investment Plan, and the CMO Business Plan provide a comprehensive and interconnected set of documents that lay out the long-term strategy for NRM including the contribution of co-management. This framework of plans is fully approved by the FD and MoEFCC and defines the CMOs' role and contribution to co-management of forest PAs. The ADP is the vehicle whereby CMOs propose activities and levels of funding for each GoB fiscal year. A similar set of plans was developed with stakeholders for two large wetlands in the northeast region (haor-level plans as well as CBO-level plans), but without a single agency responsible for these complex wetland landscapes, operationalizing the haor-level plans will depend on further initiatives with MoL and other ministries and departments.

Central leadership and coordination:

The FD fully supports co-management. This is evidenced by the approval of the PA Rules; the expansion of the Nishorgo Network to include local, regional and national representation and functionality; the allocation of a space in the FD dedicated to promoting and coordinating co-management; the Nishorgo Network under FD leadership; and the FD's effort to expand revenue collection and sharing (mandated by the PA Rules). Furthermore, both the MoL, MoLJPA and MoF were key endorsers of the PA and ECA Rules. The greatest future opportunity to build on this foundation lies in ECAs and wetlands. Here conservation and restoration of ecosystems offers great returns, both for global conservation priorities and for local livelihoods dependent on fish and other wetland resources. However, multiple government agencies will need to buy in for co-management to be fully effective.

Empowered local implementing partners:

Local NGOs: CREL's three local implementing partners (CODEC, CNRS and NACOM) participated in the transition grants program, and two were subsequently assessed by USAID. As partners to CREL, they also benefited from on-the-job training by Winrock staff in USG administration and management processes and requirements.

CMOs: CREL builds on the work of three preceding USAID-funded initiatives aimed at establishing and building the capacity of local CMOs: The MACH project, the NSP, and IPAC project. The first three initiatives established 39 CMOs, of these CREL worked with 29. In total CREL built the capacity of 45 CMOs (5 newly formed under CREL and 40 established before CREL, including 11 not supported previously by USAID), of which 26 are considered to have the capacity to sustain financially, provided they do not face unforeseen threats. Moving away from dependency on natural resources, the sustainable CMOs are currently implementing conservation-based activities related to landscapes and biodiversity, and have started to attract private sector funding, implement tourism-based enterprises.

CREL has worked with 45 forest and wetland CMOs to develop their capacity in five functional areas: Legitimacy, Organizational Functioning, Governance and Inclusiveness, Adaptive Participatory Management and Resource Mobilization (Finances). Based on the CREL-designed annual scorecard self-assessments (instigated in 2014), 35 (79%) of these CMOs now have the capacity to

serve as local implementing partners in future GoB and donor programs.

CREL helped CMOs to ensure their financial sustainability to fund operational costs and undertake specific activities related to conserving landscapes and biodiversity. Over the life of project, the 45 CREL-assisted CMOs have achieved the following:

- Eight (18%) CMOs are currently receiving a share of the revenue generated through entry fees from 4 PAs, and one wetland sanctuary (where the CBO retains all entry fees for its conservation work. Based on the newly approved PA Rules 2017, CREL helped the FD develop Guidelines and structure entry fees for 11 additional PAs, to be shared among 15 additional CMOs, bringing the total number of CMOs to 23 (52%).
- Thirty-one (70%) of CMOs have designed and implemented enterprises that have generated a total of $51,500 in net income/profit which is being used to fund operational costs and re-invest to sustain their enterprises.
- Six (13%) CMOs have received a total of $27,833 in contributions from private companies and have invested this money in agricultural, ecotourism and savings and loan activities that are generating income on a sustainable basis for CMOs.
- Thirty-six (80%) CMOs are currently implementing conservation-based activities related to landscapes management and biodiversity conservation.

Although GoB policies formalizing co-management now exist, the challenge remains of how these will be interpreted; for example funds may not be released directly to CMOs, and entry fees and revenue sharing are yet to be established for several PAs. Nineteen (19) CMOs are still in need of continued investment to establish sustainable flows of funds for their operational costs. Although 36 of these CMOs have taken up conservation measures for species and/or ecosystems, there is much more scope for all CMOs to take actions to conserve landscapes, biodiversity and threatened wildlife, and to reduce human pressure on ecosystems. This would build on USAID's investment and would ensure that all existing CMO's become self-reliant in delivering conservation and sustainable livelihoods.

Information base: The Nishorgo Co-management Network website has been refurbished and populated with a greatly expanded volume of information from all four USAID projects and relevant CrelLink databases. The website is now hosted by the FD and is a key communication tool and archive for the new Nishorgo Co-Management Network office in the FD.

In summary, these platforms, the demonstrated desire of the FD to lead and promote co-management and the engagement, enthusiasm and desire of local organizations to become involved lay a greatly expanded foundation and opportunity to implement the conservation objectives and results that USAID has supported for two decades, and in particular those related to landscapes and biodiversity. Notable opportunities for building on this platform include: promoting local initiatives for nature and habitat conservation; strengthening and diversifying funding for conservation and development through CMOs; and building engagement on co-management among agencies impacting on wetland and coastal ecosystems.

A. KEY RESULTS OF CREL FOR LANDSCAPES AND BIODIVERSITY

Key results for Economic Growth (EG) Landscape and Biodiversity indicators achieved by CREL at the end of Year 6 (through FY 2018), and which could be expanded upon during FY 2019 include:

Landscapes

- 6 laws, policies, regulations or standards addressing sustainable landscapes officially proposed, adopted, or implemented, as supported by USG assistance.
- 1,515,000 metric tons of GHG emissions, estimated in metric tons of CO2 equivalent, reduced, sequestered, or avoided through sustainable landscapes activities supported by USG assistance.
- Over 51,000 households adopting more resilient technologies in agriculture related enterprises.
- 363,000 people (50% women) with increased economic benefits derived from sustainable NRM and conservation as a result of USG assistance.

Biodiversity

- 7 laws, policies, or regulations that address biodiversity conservation and/or other environmental themes officially proposed, adopted or implemented as a result of USG assistance.
- 500 people applying improved conservation law enforcement practices, as a result of USG assistance.
- 15,600 people (50% women) trained in sustainable natural resources management and/or biodiversity conservation as a result of USG assistance.
- 945,000 hectares of biological significance and/or natural resources under improved NRM as a result of USG assistance
- 1,740 hectares of biological significance and/or natural resources showing improved biophysical condition as a result of USG assistance

B. FOUNDATION FOR FUTURE SUPPORT AND DEVELOPMENT

1) CREL has established a foundation of polices, increased governmental and organizational capacity, coordinated planning and sustainable co-management upon which USAID and other donor-funded initiatives can build or launch new initiatives.

2) Future USAID initiatives including a Local Works Program can be implemented through our NGO partners, drawing upon the training, experience and organizational strengthening gained through their involvement and contributions to the CREL project.

3) Most CMOs are now sustainably empowered and supported by a reinvigorated Nishorgo Network. They are poised to serve as activity implementing partners and could do so through future grants that could be managed by an experienced implementing partner. Also, the CMCs are structured in a manner that will allow GoB involvement in the oversight of grant-funded technical activities, as well as third-party auditing and accounting of funds given to the CMCs.

4) A highly productive relationship has been established with the FD, which should fast-track agreement on future GoB-USAID joint initiatives in NRM, rehabilitation, protection of biodiversity, and community-based livelihood and conservation initiatives.

5) In ECAs and wetlands (freshwater and coastal) there is great scope for building GoB support based on successes of CMOs, existing Rules and completion of policy reforms. The challenge of multiple overlapping agencies can be addressed by developing further buy-in and ownership of co-management within key agencies (MoL and DoE) through projects or activities where each agency has formal, assigned responsibilities. This would enable similar upscaling to that achieved among forest PAs.

6) CREL has developed the capacity of CMOs that should support MoEFCC/FD use of the new World Bank project funds in a manner that will help support co-management efforts including the Nishorgo Network office and implementation of activities agreed in different tiers of plans (PA management plans, long-term CMC plans, ADPs). One approach would be to enable and support implementation of the Sustainability and Investment and Business Plans that CREL/USAID helped CMCs and FD jointly develop.

7) USAID can capitalize on cost and time efficiencies by utilizing the technical, logistical and administrative/financial platforms that have been put in place by CREL.

Annexes

Misty Keasler

ANNEX 1 – ABBREVIATIONS & ACRONYMS

ACF	Assistant Conservator of Forests
ACME	Accelerating Capacity for Monitoring and Evaluation
ADP	Annual Development Plan
AFOLU	Agriculture, Forestry, Other Land Use
ANR	Assisted Natural Regeneration
BACUM	Bangladesh Climate Resilient Ecosystems Curriculum
BAGH	Bengal Tiger Conservation Activity
Bbc	Bangladesh bird club
BCAS	Bangladesh Center for Advanced Studies
BCCTF	Bangladesh Climate Change Trust Fund
BDT	Bangladesh Taka
BO	Beat Officer (Forest Department)
BSRM	Bangladesh Steel Re-Rolling Mills
CBAECA	Community-based Adaptation in Ecologically Critical Areas
CBO	Community-based Organization
CBSG	Capacity Building Service Group
CBT	Community Based Tourism
CCF	Chief Conservator of Forests
CDMP	Comprehensive Disaster Management Program
CMC	Co-Management Committee/Council
CMEC	Executive Committee of the General Committee
CMGC	Co-management General Committee
CMO	Co-Management Organization
CNRS	Center for Natural Resource Studies
CODEC	Community Development Centre
COMACON	Conference on the Co-Management of Natural Resources
COP	Chief of Party
CPG	Community Patrol Group

CREL	Climate-Resilient Ecosystems and Livelihoods
CRPARP	Climate Resilient Participatory Afforestation and Reforestation Project
CSO	Civil Society Organization
DC	Deputy Commissioner
DCOP	Deputy Chief of Party
DFO	Divisional Forest Officer (Forest Department)
DMIC	Disaster Management Information Centers
DOAG	Development Objective Agreement
DoE	Department of Environment
DoF	Department of Fisheries
DoI	Department of Interior, USA
DRR	Disaster Risk Reduction
DQA	Data Quality Assessment
ECA	Ecologically Critical Areas
ECOFISHBD	Enhanced Coastal Fisheries in Bangladesh
EG	Economic Growth
F2F	Farmer to Farmer (USAID Project)
FAO	Food and Agriculture Organization
FD	Forest Department
FELC	Financial Entrepreneurship and Literacy Center
FG	Forest Guard (Forest Department)
FIVDB	Friends in Village Development Bangladesh
FtF	Feed the Future
FY	Fiscal Year
GBV	Gender-based Violence
GCC	Global Climate Change
GFP	Gender Focal Person
GHG	Greenhouse Gas
GIS	Geographic Information Systems
GIZ	German Commission for International Development [Gesellschaft für Internationale Zusammenarbeit]
GoB	Government of Bangladesh
GRC	Grants Review Committee
IBTC	International Business and Technical Consultants, Inc.
ICIMOD	International Centre for Integrated Mountain Development
ICS	Improved Cook Stoves
IDLC	Industrial Development Leasing Company
IFAD	International Fund for Agriculture Development
IFPRI	International Food and Policy Research Institute
IGA	Income Generating Activity
IPAC	Integrated Protected Area Co-Management

IPCC	Intergovernmental Panel on Climate Change
IPT	Interactive Popular Theatre
ITAP	International Technical Assistance Program
IUCN	International Union for the Conservation of Nature
IVR	Interactive Voice Response
JDR 3rd	John D. Rockefeller (Research Grant Program)
LCG	Local Consultative Group
LGI	Local Government Initiative
LOP	Life of Project
LSP	Local Service Provider
M&E	Monitoring and Evaluation
MACH	Management of Aquatic Ecosystems through Community Husbandry
MFF	Mangroves for the Future
MEL	Monitoring Evaluation and Learning
MoEFCC	Ministry of Environment, Forest and Climate Change
MoF	Ministry of Finance
MoFL	Ministry of Fisheries and Livestock
MoL	Ministry of Land
MoLJPA	Ministry of Law, Justice and Parliamentary Affairs
MOU	Memorandum of Understanding
NACOM	Nature Conservation Management
NE	Northeast (CREL project region, based in Sreemongol)
NGO	Non-Governmental Organization
NP	National Park
NR	Natural Resources
NRM	Natural Resource Management
NSU	North South University
NTFP	Non-Timber Forest Product
NUPAS	Non-U.S. Organization Pre-Award Survey Guidelines and Support
OCAT	Organizational Capacity Assessment Tool
PA	Protected Area
PCR	Project Completion Report
PCVA	Participatory Climate Vulnerability Assessment
PES	Payment for Environmental Services
PF	People's Forum (forest PAs)
PGNA	Participatory Gender Need Assessment
RDMA	Regional Development Mission for Asia
REDD	Reducing Emissions from Deforestation and Degradation
RFA	Request for Applications
RIMS	Resource Information Management System (FD)

RMO	Resource Management Organization (wetlands)
RO	Range Officer (Forest Department)
RS	Remote Sensory
RUG	Resource User Group (wetlands)
SBCA	Special Biodiversity Conservation Area
SDC	Swiss Development Corporation
SDLG	Strengthening Democratic Local Government
SE	Southeast (CREL project region, including Chittagong and Cox's bazar)
SI	Standard Indicator
SLG	Savings and Loans Group
SMART	Spatial Mapping and Monitoring Tool
SOP	Standard Operating Procedures
SPARRSO	Space Research and Remote Sensing Organization
SRCWP	Strengthening Regional Cooperation for Wildlife Protection Project
SW	Southwest (CREL project region, based in Khulna)
TAC	Technical Advisory Committee
TAPP	Technical Assistance Project Proforma
TNA	Training Needs Assessment
TOCAT	Technical and Organizational Capacity Assessment Tool
TOR	Terms of Reference
ToT	Training of Trainers
TPP	Technical Project Proforma
UDMC	Union Disaster Management Committee
UFRCDC	Upazila Fisheries Resources Conservation and Development Committee
UNDP	United Nations Development Program
UNO	Upazila Nirhabi Officer
UP	Union Parishad
USAID	United States Agency for International Development
USFS	United States Forest Service
USG	United States Government
VAT	Value Added Tax
VCF	Village Conservation Forum
VCG	Village Conservation Group
VGC	Vulnerable Group Feeding
WBRP	Wetland Biodiversity Rehabilitation Project
WEAI	Women's Empowerment in Agriculture Index
WI	Winrock International
WLP	Wetlands Leasing Policy
WS	Wildlife Sanctuary

ANNEX 2 – CMO SCORECARD AND SUMMARY OF OUTPUTS

A major focus of CREL was to build the capacity and sustainability of Co-Management Organizations. This was guided and outcomes determined by developing an assessment scorecard. The main report explains how this was developed from an initial detailed stocktaking assessment in 2013 which used a large number of indicators and questions (which have been re-categorized and reworked for the tables in this annex), into a more concise and practical set of five key criteria for sustainability and associated with these 17 measures.

This was operationalized by developing a scorecard with cut-off criteria for scores/categories for each of the measures, two other indicators/measures that contributed to CREL performance monitoring, space for providing evidence and additional information, and guidance for the CREL staff and government officials and CMO leaders who were involved in carrying out the assessments. For example, in later years leaders involved in co-management took part in assessing each other's CMOs where those are nearby and of similar type, for this purpose a Bangla version as well as English version of the scorecard was developed. The scorecard is reproduced here. An example of a completed scorecard is given at the end of this annex, transcribed from the hardcopy version used in the field into a spreadsheet showing the qualitative and quantitative evidence collected, which has helped in guiding customized support and in documenting successes and challenges.

The scores calculated from these assessments each year for each CMO for the five indicators are shown in Tables 1-7, according to the region and type of CMO involved. The color coding used in interpreting and comparing results are included (where red indicates zero capacity, pink a capacity rated at below 40% of possible capacity, and green indicates in the overall score CMOs that achieved 70% or more of the potential score and were considered capable of sustaining under normal circumstances without significant external capacity building. Note that there are three qualifications to this interpretation of sustainability:

1. Unforeseen events and new challenges could undermine sustainability. This happened in the past when most of the Hail Haor RMOs lost rights to waterbodies when ten-year MOUs were not renewed by Ministry of Land – undermining their purpose and success, part of their income and ability to use grants from endowment funds. This is also likely in the current-near future with the massive pressure on Cox's Bazar region forest s from Rohingyan refugees since 2017. Support from external facilitators to help advocate solutions is important.

2. Despite developing a toolkit and orienting CMO leaders on how to orient new leaders, the transitions when there are elections or transfers of relevant officials are a challenge when access to resource persons and help in conducting training is needed.

3. Resource mobilization has been a major challenge, and the ability of CMOs that in the last years of CREL started to generate income and attract funds to cover part of their operating costs has not been tested over multiple years. Only two CMOs can access sufficient funds to cover all of their regular costs – Lawachara CMC because of the very high visitor numbers and tourism development there, and Baragangina RMO because it manages Baikka Beel permanent wetland sanctuary and MACH established a reserved part of an endowment fund specifically for guards and maintenance.

CMO ASSESSMENT SCORECARD

		Indicator	**Status** (fill in figures given by informants or write in if different answer, circle appropriate score)	Categories	Score
		Background data			
		Site (PA name)			
		CMO/CBO name			
		Type of body (co-management committee (civil society and government members) or community organization (e.g. RMO, VCG)			
		Date of assessment			
		LEGITIMACY			
		Government recognition and support			
1	**1.1**	If CMO is formally recognised by government	Details:	**Yes (registered or ordinance/ similar) => 2**	
				Not recognized => 0	
		Community organization - co-management representation			
2a	**1.2**	**Co-management committee** (CMC, UFC, UZECACC): % members from local community organizations	No. and %:	**≥33% from CBOs => 2**	
				20-33% from CBOs => 1	
				< 20% from CBOs => 0	
2b	**1.2**	**CBO** (RMO, VCG): has at least one member who is a member of co-management committee	No.	**1 or more => 2**	
				None => 0	
		Local government support			
3	**1.3**	No of times in last year UP supported CMO (endorsed request to higher government level, met need identified by CMO, in solving conflicts or other support)	Details:	**Yes for all such requests => 2**	
				Some of times when requested => 1	
				Never => 0	
4	**Ind 5**	Formal requests for actions in support of conservation, adaptation and/or sustainable NRM made to government bodies in last 12 months	Details:	**2 or more => 2**	
				1 => 1	
				none => 0	
		ORGANIZATIONAL FUNCTIONING			
		Self-organized and timely			
5a	**2.1**	For **Forest CMCouncils**: half-yearly council meeting organized by CMCommittee within last 7 months	Details:	**Within last ≤7 months =>2**	
				8-12 months ago =>1	
				> 12 months ago =>0	
5b	**2.1**	For **all other CMOs and CBOs**: EC organized AGM within last 13 months	Details:	**Within last ≤13 months =>2**	
				14-18 months ago =>1	
				> 18 months ago =>0	
		Record keeping			
6	**2.2**	If the CMO keeps minutes and records of its decisions by itself	Details:	**All agenda items in last meeting written up with solutions/ decisions => 2**	
				Record of last meeting written up but not for all agenda items => 1	
				Minutes and records not up to date, or filled in largely or all by project/NGO staff => 0	
		Financial management			
7	**2.3**	Accounts book and records maintenance in last 12 months	Details:	**Well maintained by CMO => 2**	
				Satisfactory by CMO => 1	
				Not well maintained (not up to date, mistakes, none, filled in by project staff) => 0	
		Audit			

		Indicator	**Status** (fill in figures given by informants or write in if different answer, circle appropriate score)	Categories	Score
8	**2.4**	Date of last external audit and outcome (conducted e.g. by a govt. body or qualified auditor)	Details:	**within last 12 months, satisfactory and got feedback => 2**	
				Over 12 months ago got feedback => 1	
				None => 0	
		GOVERANCE AND INCLUSIVENESS			
		Changing leaders			
9	**3.1**	Date of last election of CMO (committee) office bearers	Date:	**Within 3 months of constitution schedule => 2**	
				4-12 months later than in constitution => 1	
				More than 12 months late (including never held election) => 0	
		Active participation of women			
10	**3.2**	Current role of women as office bearers or chairing sub-committees	Evidence:	**at least one office bearer or sub-committee chair => 2**	
				only chair women's affairs => 1	
				no women office bearers or sub-committee chairs => 0	
		Active participation of poor			
11	**3.3**	Current role of poor (<50 dec and sell labor or actively fish) as office bearers or chairing sub-committees	Evidence:	**at least one is an office bearer or sub-committee chair => 2**	
				only chair poverty/welfare sub-committee => 1	
				none among office bearers or sub-committee chairs => 0	
		Fair resource access			
12	**3.4**	CMO's current rules favor disadvantaged in access to resources in ways disadvantaged consider fair	Details:	**Rules explicitly give preference to poor, women and ethnic minorities => 2**	
				Rules give preference to at least one disadvantaged group but not all => 1	
				Rules do not favor disadvantaged, or disadvantaged say they are not fair => 0	
		ADAPTIVE MANAGEMENT			
		Participatory planning			
13a	**4.1**	Management planning process (co-management body) - current annual plan	Details:	**One plan jointly prepared by co-management stakeholders including GOB => 2**	
				Separate plans of GOB and community/co-management body, some adjustment to modify for consistency => 1	
				Separate plans and not coordinated in participatory way, or with little participation from community members => 0	
13b	**4.1**	Management planning process (community organization) - current annual plan	Details:	**Plan prepared by CBO with full member participation and informed/ endorsed by Govt (record of GOB advice or endorsement) => 2**	
				Plan prepared by CBO but limited participation => 1	
				No plan or plan driven by outsiders and not made in participatory way => 0	
		Climate Change Resilience			

		Indicator	**Status** (fill in figures given by informants or write in if different answer, circle appropriate score)	Categories	Score
14	**4.2**	Current management plan takes account of hazards and risks	Details:	**Yes - explicitly includes contingency plans or considered what would happen if hazard occurred in planning activities => 2**	
				Yes - not written in plan but e.g. taken up activities that are less vulnerable to risks => 1	
				No => 0	
15	**Ind 8**	If CMO has provided information on risks or hazard events in last year?	Details and estimated number of households informed:	Warned community about one or more hazard events => 2	
				Informed community about future risks or environmental trends => 2	
				Discussed risks in meeting but not with general members or wider community => 1	
				No => 0	
		Conflict resolution			
16	**4.3**	Conflict and dispute resolution among CMO members and stakeholders in the area during term of current leaders/last year (whichever is longer)	Details:	**leaders skilled in this, have resolved conflicts and perceived to be just => 2**	
				conflicts resolved but not seen as fair by all => 1	
				conflicts persist unresolved => 0	
		Monitoring and Learning			
17	**4.4**	CMO regularly discusses monitoring results and uses this in decisions that it documents in last year	Details	**yes, documented in records => 2**	
				some discussion but use in decisions not clear or documented => 1	
				no, including no monitoring or not used => 0	
		RESOURCE MOBILIZATION			
		Capacity to mobilize			
18	**5.1**	If the CMO has a realistic "fund/ resource raising" plan (income and expenditure including fund raising) designed to cover its functioning and planned actions that it is following	Details:	**Yes, written plan and covers planned actions => 2**	
				Yes, but unwritten or not covering plans => 1	
				No => 0	
		Regular funding			
19	**5.2**	If the CMO had sufficient regular funding to meet its functioning and planned actions in last 12 months	Details:	**100% or more of needed funds available => 2**	
				66% to 99% funds were available, and no debt => 1	
				Under 66% available, or in debt, or any key activities halted for lack of funds => 0	
		OTHER			
		Comments - any key issues affecting the status or performance of the CMO that are not properly reflected in the assessment format. Impressions about the acceptance of the CMO in wider community, acceptance of its leaders, its sustainability. Any other problems or achievements/advantages of the CMO			
		Assessment made by:			
		Note: last year = last 12 months up to date of assessment			

	Criteria and indicators	Score
	OVERALL (%)	
1	**LEGITIMACY**	
1.1	*Government recognition of CMO*	
1.2	*CBO representation in co-management*	
1.3	*Local government support*	
2	**ORGANIZATION FUNCTIONING**	
2.1	*Timely self-organizing*	
2.2	*Record keeping*	
2.3	*Financial management*	
2.4	*Audit*	
3	**GOVERNANCE AND INCLUSIVENESS**	
3.1	*Electing and changing leaders*	
3.2	*Active participation of women*	
3.3	*Active participation of poor*	
3.4	*Fair access to resources for disadvantaged*	
4	**ADAPTIVE PARTICIPATORY MANAGEMENT**	
4.1	*Participatory planning*	
4.2	*Climate change planning*	
4.3	*Conflict resolution*	
4.4	*Monitoring*	
5	**RESOURCE MOBILIZATION**	
5.1	*Capacity to mobilize*	
5.2	*Regular funding*	
Ind 5	Requests for support	
Ind 8	Climate information dissemination	

Table 1. Capacity Scores of Forest PA CMCs in Northeast and Central Region

CMC	Year	Legitimacy	Organization functioning	Governance & inclusion	Adaptive management	Resource mobilization	Overall Score %
Lawachara CMC	**2013**	36.1	68.8	68.1	38.1	37.5	49.7
	2014	66.7	75.0	62.5	75.0	75.0	70.6
	2015	66.7	100.0	75.0	87.5	75.0	82.4
	2016	100.0	87.5	75.0	100.0	75.0	88.2
	2017	100.0	87.5	75.0	100.0	75.0	88.2
	2018	100.0	100.0	87.5	100.0	100.0	97.1
Satchari CMC	**2013**	41.7	65.6	56.3	42.7	45.8	50.4
	2014	100.0	62.5	50.0	62.5	75.0	67.6
	2015	100.0	50.0	87.5	87.5	50.0	76.5
	2016	83.3	75.0	62.5	100.0	50.0	76.5
	2017	83.3	100.0	75.0	87.5	25.0	79.4
	2018	100.0	62.5	75.0	100.0	75.0	82.4
Rema Kalenga CMC	**2013**	50.0	64.1	69.4	49.4	50.0	56.6
	2014	83.3	62.5	37.5	50.0	25.0	52.9
	2015	83.3	62.5	62.5	37.5	25.0	55.9
	2016	100.0	75.0	87.5	100.0	50.0	85.3
	2017	83.3	75.0	25.0	75.0	25.0	58.8
	2018	83.3	75.0	75.0	100.0	25.0	76.5
Khadimnagar CMC	**2013**	43.1	14.1	45.6	30.4	8.3	28.3
	2014	83.3	25.0	25.0	62.5	0.0	41.2
	2015	100.0	12.5	37.5	75.0	25.0	50.0
	2016	83.3	50.0	62.5	100.0	25.0	67.6
	2017	100.0	87.5	62.5	100.0	75.0	85.3
	2018	100.0	100.0	62.5	100.0	100.0	91.2
Dokhola CMC	**2013**	62.5	34.4	57.5	26.9	21.7	40.6
	2014	100.0	50.0	37.5	37.5	0.0	47.1
	2015	66.7	75.0	37.5	37.5	0.0	47.1
	2016	100.0	62.5	62.5	87.5	25.0	70.6
	2017	83.3	87.5	50.0	75.0	25.0	67.6
	2018	83.3	75.0	87.5	75.0	25.0	73.5
Rasulpur CMC	**2013**	41.7	35.9	63.8	31.0	13.3	37.1
	2014	100.0	50.0	62.5	37.5	0.0	52.9
	2015	100.0	50.0	37.5	37.5	0.0	47.1
	2016	100.0	50.0	62.5	75.0	25.0	64.7
	2017	100.0	100.0	87.5	87.5	25.0	85.3
	2018	83.3	75.0	75.0	100.0	25.0	76.5
Ratargul CMC	**2018**	100.0	50.0	87.5	87.5	50.0	76.5

Note Ratargul CMC was formed in 2017 so only a baseline assessment in 2018 was conducted

Table 2. Capacity Scores of Resource Management Organizations in Hail Haor in Northeast region

RMO	Year	Legitimacy	Organization functioning	Governance & inclusion	Adaptive management	Resource mobilization	Overall Score %
Baragangina RMO	2013	76.4	82.8	68.8	46.9	54.2	65.8
	2014	100.0	100.0	62.5	87.5	100.0	88.2
	2015	100.0	87.5	87.5	87.5	100.0	91.2
	2016	100.0	100.0	87.5	75.0	100.0	91.2
	2017	100.0	100.0	87.5	75.0	100.0	91.2
	2018	100.0	100.0	87.5	100.0	100.0	97.1
Dumuria RMO	2013	66.7	65.6	58.8	18.8	20.8	46.1
	2014	100.0	100.0	50.0	50.0	50.0	70.6
	2015	100.0	87.5	87.5	37.5	25.0	70.6
	2016	66.7	87.5	87.5	37.5	25.0	64.7
	2017	66.7	100.0	75.0	37.5	25.0	64.7
	2018	100.0	75.0	75.0	87.5	25.0	76.5
Balla RMO	2013	45.8	75.0	68.1	22.9	25.0	47.4
	2014	83.3	62.5	62.5	50.0	0.0	55.9
	2015	66.7	37.5	62.5	50.0	0.0	47.1
	2016	66.7	100.0	87.5	37.5	0.0	64.7
	2017	66.7	100.0	87.5	50.0	0.0	67.6
	2018	100.0	75.0	75.0	62.5	50.0	73.5
Sananda RMO	2013	64.6	65.6	50.6	10.4	5.0	39.3
	2014	100.0	50.0	50.0	37.5	25.0	52.9
	2015	100.0	75.0	75.0	12.5	0.0	55.9
	2016	100.0	62.5	75.0	50.0	0.0	61.8
	2017	66.7	62.5	75.0	50.0	0.0	55.9
	2018	66.7	62.5	75.0	62.5	0.0	58.8
Kajura RMO	2013	25.0	26.0	30.0	16.3	12.5	22.0
	2014	66.7	50.0	75.0	50.0	0.0	52.9
	2015	66.7	37.5	75.0	12.5	0.0	41.2
	2016	66.7	37.5	75.0	37.5	0.0	47.1
	2017	66.7	50.0	75.0	37.5	0.0	50.0
	2018	66.7	62.5	100.0	75.0	75.0	76.5
Agari RMO	2013	12.5	23.4	35.6	2.1	0.0	14.7
	2014	83.3	12.5	25.0	12.5	0.0	26.5
	2015	100.0	25.0	62.5	12.5	0.0	41.2
	2016	66.7	87.5	75.0	37.5	0.0	58.8
	2017	83.3	75.0	75.0	50.0	0.0	61.8
	2018	83.3	75.0	87.5	75.0	75.0	79.4
Ramedia RMO	2013	16.7	60.9	74.4	37.5	8.3	39.6
	2014	66.7	50.0	12.5	12.5	0.0	29.4
	2015	66.7	50.0	62.5	12.5	0.0	41.2
	2016	66.7	62.5	75.0	37.5	0.0	52.9
	2017	66.7	37.5	75.0	37.5	0.0	47.1
	2018	100.0	37.5	87.5	75.0	75.0	73.5
Jethua RMO	2013	58.3	49.5	40.6	20.2	5.0	34.7
	2014	66.7	50.0	0.0	0.0	0.0	23.5
	2015	100.0	62.5	50.0	25.0	0.0	50.0
	2016	66.7	62.5	62.5	37.5	0.0	50.0
	2017	66.7	62.5	62.5	37.5	0.0	50.0
	2018	66.7	37.5	62.5	50.0	0.0	47.1

Table 3. Capacity Scores of Village Conservation Groups in Hakaluki Haor in Northeast Region

VCG	Year	Legitimacy	Organization functioning	Governance & inclusion	Adaptive management	Resource mobilization	Overall Score %
Halla VCG	2013	51.4	79.7	43.8	37.5	60.0	54.5
	2014	66.7	75.0	12.5	75.0	75.0	58.8
	2015	83.3	87.5	37.5	50.0	50.0	61.8
	2016	83.3	100.0	37.5	75.0	25.0	67.6
	2017	100.0	75.0	50.0	87.5	50.0	73.5
	2018	100.0	75.0	62.5	75.0	100.0	79.4
Borodal VCG	2013						ns
	2014	33.3	87.5	37.5	62.5	0.0	50.0
	2015	33.3	75.0	50.0	62.5	50.0	55.9
	2016	66.7	75.0	75.0	50.0	25.0	61.8
	2017	100.0	100.0	75.0	50.0	50.0	76.5
	2018	100.0	100.0	87.5	50.0	75.0	82.4
Judihistipur VCG	2013	43.1	71.9	41.9	40.6	41.7	47.8
	2014	33.3	87.5	62.5	62.5	25.0	58.8
	2015	66.7	75.0	87.5	50.0	25.0	64.7
	2016	66.7	75.0	87.5	75.0	25.0	70.6
	2017						ns
	2018	100.0	100.0	75.0	87.5	75.0	88.2
Ekota VCG	2013	43.1	76.6	48.1	36.5	41.7	49.2
	2014	33.3	62.5	37.5	62.5	0.0	44.1
	2015	66.7	75.0	37.5	50.0	25.0	52.9
	2016	83.3	100.0	87.5	75.0	25.0	79.4
	2017	66.7	100.0	75.0	62.5	50.0	73.5
	2018	83.3	87.5	75.0	87.5	75.0	82.4
Naogaon VCG	2013						ns
	2014	100.0	100.0	75.0	62.5	0.0	73.5
	2015	100.0	75.0	75.0	25.0	25.0	61.8
	2016	100.0	100.0	75.0	62.5	25.0	76.5
	2017	100.0	100.0	62.5	37.5	50.0	70.6
	2018	100.0	62.5	75.0	87.5	50.0	76.5

Note ns indicates not surveyed – lack of clarity as to which of more than 20 VCGs in Hakaluki Haor would be the focus of CREL activities in 2013 resulted in two not being assessed in that year; and one was missed in error in 2017.

Table 4. Capacity Scores of Forest CMCs in Southwest Region

CMC	Year	Legitimacy	Organization functioning	Governance & inclusion	Adaptive management	Resource mobilization	Overall Score %
Sarankhola CMC	2013	37.5	19.8	33.8	20.8	8.3	24.0
	2014	100.0	0.0	50.0	50.0	25.0	44.1
	2015	100.0	75.0	12.5	100.0	0.0	61.8
	2016	100.0	87.5	62.5	100.0	50.0	82.4
	2017	100.0	100.0	100.0	100.0	50.0	94.1
	2018	100.0	87.5	100.0	100.0	50.0	91.2
Chandpai CMC	2013	54.2	28.1	43.5	28.1	22.9	35.4
	2014	100.0	12.5	12.5	50.0	25.0	38.2
	2015	100.0	75.0	12.5	100.0	0.0	61.8
	2016	100.0	100.0	75.0	100.0	50.0	88.2
	2017	66.7	100.0	87.5	100.0	50.0	85.3
	2018	66.7	100.0	87.5	100.0	50.0	85.3
Dakop-Koyra CMC	2013	48.6	25.0	43.5	28.1	16.7	32.4
	2014	83.3	12.5	12.5	50.0	25.0	35.3
	2015	100.0	75.0	50.0	100.0	0.0	70.6
	2016	100.0	75.0	50.0	100.0	50.0	76.5
	2017	100.0	100.0	50.0	100.0	75.0	85.3
	2018	100.0	100.0	100.0	100.0	75.0	97.1
Munshigonj CMC	2013	37.5	33.6	46.9	26.0	16.7	32.1
	2014	83.3	25.0	37.5	50.0	25.0	44.1
	2015	100.0	62.5	25.0	87.5	0.0	58.8
	2016	100.0	100.0	75.0	100.0	50.0	88.2
	2017	100.0	100.0	62.5	100.0	50.0	85.3
	2018	100.0	100.0	87.5	100.0	75.0	94.1
Tengragiri CMC	2013						nf
	2014						Ns
	2015	66.7	25.0	0.0	25.0	0.0	23.5
	2016	66.7	75.0	37.5	25.0	0.0	44.1
	2017	100.0	100.0	62.5	87.5	50.0	82.4
	2018	100.0	100.0	62.5	100.0	75.0	88.2

Note: nf – not formed, ns – not surveyed – Tengragiri CMC was formed in 2014 just before the assessment took place.

Table 5. Capacity Scores of Forest CMCs in Chittagong Region

CMC	Year	Legitimacy	Organization functioning	Governance & inclusion	Adaptive management	Resource mobilization	Overall Score %
Chunati	2013	31.9	50.0	58.1	40.0	20.8	40.2
	2014	100.0	50.0	37.5	75.0	25.0	58.8
	2015	100.0	75.0	75.0	75.0	25.0	73.5
	2016	83.3	100.0	87.5	87.5	25.0	82.4
	2017	66.7	87.5	100.0	75.0	25.0	76.5
	2018	83.3	62.5	100.0	100.0	50.0	82.4
Jaldi	2013	36.1	35.9	45.4	46.9	16.7	36.2
	2014	100.0	0.0	12.5	75.0	25.0	41.2
	2015	100.0	87.5	87.5	75.0	50.0	82.4
	2016	83.3	75.0	87.5	87.5	25.0	76.5
	2017	83.3	100.0	100.0	100.0	25.0	88.2
	2018	100.0	75.0	100.0	100.0	50.0	88.2
Dudpukuria	2013	45.8	39.1	48.1	38.1	25.0	39.2
	2014	100.0	50.0	50.0	87.5	25.0	64.7
	2015	83.3	50.0	37.5	62.5	25.0	52.9
	2016	83.3	100.0	100.0	87.5	25.0	85.3
	2017	100.0	100.0	100.0	75.0	25.0	85.3
	2018	100.0	87.5	100.0	75.0	50.0	85.3
Dhopachari	2013	62.5	12.5	57.5	46.3	0.0	35.8
	2014	100.0	25.0	50.0	87.5	25.0	58.8
	2015	83.3	75.0	50.0	75.0	25.0	67.6
	2016	100.0	87.5	62.5	87.5	25.0	76.5
	2017	100.0	100.0	75.0	87.5	25.0	82.4
	2018	100.0	75.0	75.0	87.5	25.0	76.5
Hazarikhil	2013						ns
	2014	66.7	0.0	25.0	0.0	0.0	17.6
	2015	66.7	25.0	25.0	62.5	0.0	38.2
	2016	83.3	50.0	100.0	75.0	25.0	70.6
	2017	83.3	100.0	87.5	87.5	50.0	85.3
	2018	100.0	87.5	87.5	87.5	50.0	85.3
Baroiyadhala	2013						Ns
	2014	66.7	12.5	0.0	25.0	0.0	20.6
	2015	83.3	50.0	37.5	62.5	0.0	50.0
	2016	83.3	75.0	75.0	87.5	25.0	73.5
	2017	100.0	100.0	75.0	100.0	50.0	88.2
	2018	100.0	87.5	75.0	100.0	50.0	85.3
Nijhum Dweep	2013						Ns
	2014	66.7	0.0	25.0	0.0	0.0	17.6
	2015	100.0	25.0	25.0	50.0	0.0	41.2
	2016	83.3	75.0	75.0	87.5	25.0	73.5
	2017	83.3	75.0	62.5	87.5	25.0	70.6
	2018	100.0	100.0	62.5	87.5	25.0	79.4

Note – ns – not surveyed these three CMCs were formed in late 2013 and early 2014 and so did not exist at the time of the 20103 assessment.

Table 6. Capacity Scores of Forest CMCs in Cox's Bazar Region

CMC	Year	Legitimacy	Organization functioning	Governance & inclusion	Adaptive management	Resource mobilization	Overall Score %
Teknaf CMC	2013	59.7	84.4	58.8	34.6	12.5	50.0
	2014	66.7	37.5	50.0	62.5	25.0	50.0
	2015	83.3	75.0	50.0	75.0	25.0	64.7
	2016	66.7	50.0	87.5	100.0	25.0	70.6
	2017	83.3	100.0	87.5	100.0	50.0	88.2
	2018	83.3	87.5	75.0	75.0	75.0	79.4
Whykong CMC	2013	61.1	64.1	58.1	28.8	16.7	45.7
	2014	66.7	37.5	100.0	37.5	0.0	52.9
	2015	83.3	75.0	50.0	87.5	0.0	64.7
	2016	83.3	62.5	75.0	75.0	25.0	67.6
	2017	66.7	100.0	100.0	100.0	25.0	85.3
	2018	100.0	50.0	100.0	87.5	75.0	82.4
Shilkhali CMC	2013	47.2	82.8	53.8	26.7	16.7	45.4
	2014	100.0	37.5	50.0	50.0	50.0	55.9
	2015	100.0	50.0	87.5	62.5	0.0	64.7
	2016	100.0	62.5	75.0	100.0	25.0	76.5
	2017	83.3	100.0	87.5	100.0	25.0	85.3
	2018	100.0	87.5	100.0	87.5	75.0	91.2
Inani CMC	2013	66.7	45.3	62.5	20.0	4.2	39.7
	2014	83.3	0.0	50.0	50.0	25.0	41.2
	2015	66.7	0.0	12.5	50.0	0.0	26.5
	2016	83.3	25.0	12.5	37.5	0.0	32.4
	2017	100.0	0.0	25.0	87.5	0.0	44.1
	2018	66.7	0.0	25.0	50.0	0.0	29.4
Himchari CMC	2013	51.4	67.2	59.4	30.8	41.7	50.1
	2014	100.0	50.0	75.0	75.0	0.0	64.7
	2015	100.0	25.0	75.0	87.5	0.0	61.8
	2016	100.0	87.5	100.0	75.0	25.0	82.4
	2017	66.7	87.5	100.0	100.0	25.0	82.4
	2018	100.0	87.5	87.5	87.5	25.0	82.4
Medakacchapia CMC	2013	50.0	59.4	53.1	39.2	12.5	42.8
	2014	83.3	62.5	62.5	25.0	0.0	50.0
	2015	100.0	75.0	87.5	100.0	0.0	79.4
	2016	66.7	100.0	100.0	100.0	25.0	85.3
	2017	100.0	100.0	100.0	100.0	25.0	91.2
	2018	100.0	100.0	100.0	75.0	75.0	91.2
Fasiakhali CMC	2013	55.6	67.2	64.4	41.7	29.2	51.6
	2014	83.3	75.0	37.5	50.0	25.0	55.9
	2015	100.0	75.0	87.5	100.0	0.0	79.4
	2016	100.0	100.0	62.5	100.0	25.0	82.4
	2017	100.0	100.0	100.0	100.0	25.0	91.2
	2018	100.0	100.0	100.0	62.5	75.0	88.2

Table 7. Capacity Scores of Village Conservation Groups and Upazila ECA Committee in Sonadia ECA, Cox's Bazar Region

CMC	Year	Legitimacy	Organization functioning	Governance & inclusion	Adaptive management	Resource mobilization	Overall Score %
Sonadia (Moheshkhali UZ) ECA com	2013	83.3	45.3	24.0	49.0	20.8	44.5
	2014	66.7	75.0	0.0	50.0	25.0	44.1
	2015	33.3	0.0	0.0	50.0	50.0	23.5
	2016	33.3	50.0	12.5	50.0	75.0	41.2
	2017	33.3	50.0	12.5	62.5	50.0	41.2
	2018	66.7	0.0	12.5	37.5	25.0	26.5
Baradia VCG	2013	34.7	55.8	26.0	25.0	5.0	29.3
	2014	50.0	50.0	62.5	12.5	0.0	38.2
	2015	50.0	62.5	75.0	25.0	25.0	50.0
	2016	33.3	12.5	50.0	62.5	50.0	41.2
	2017	50.0	62.5	37.5	25.0	25.0	41.2
	2018	50.0	100.0	50.0	62.5	0.0	58.8
Ghotibhanga VCG	2013	34.7	50.9	43.8	27.1	13.3	34.0
	2014	66.7	62.5	62.5	0.0	0.0	41.2
	2015	66.7	75.0	75.0	0.0	25.0	50.0
	2016	33.3	50.0	50.0	25.0	25.0	38.2
	2017	33.3	62.5	37.5	37.5	25.0	41.2
	2018	66.7	87.5	62.5	50.0	25.0	61.8
Taziakata VCG	2013	30.6	10.3	47.9	24.0	0.0	22.5
	2014	66.7	37.5	37.5	25.0	0.0	35.3
	2015	100.0	75.0	50.0	25.0	25.0	55.9
	2016	83.3	75.0	50.0	62.5	75.0	67.6
	2017	100.0	100.0	50.0	50.0	25.0	67.6
	2018	83.3	100.0	62.5	75.0	50.0	76.5
Eastpara VCG	2013	30.6	41.5	39.0	33.3	0.0	28.9
	2014	66.7	12.5	62.5	25.0	50.0	41.2
	2015	33.3	50.0	75.0	25.0	25.0	44.1
	2016	33.3	0.0	62.5	75.0	50.0	44.1
	2017	66.7	37.5	12.5	25.0	0.0	29.4
	2018	83.3	75.0	50.0	75.0	0.0	61.8
Westpara VCG	2013	38.9	55.8	51.7	55.2	35.4	47.4
	2014	66.7	37.5	75.0	25.0	25.0	47.1
	2015	66.7	37.5	100.0	12.5	25.0	50.0
	2016	50.0	25.0	87.5	62.5	50.0	55.9
	2017	100.0	50.0	62.5	37.5	25.0	55.9
	2018	66.7	75.0	50.0	75.0	0.0	58.8

EXAMPLE OF COMPLETED CMO SCORECARD – BAROIYADHALA CMC, CHITTAGONG REGION, 2017

		Indicator	**Status** (fill in figures given by informants or write in if different answer, circle appropriate score)	Categories	Score
		Background data			
		Site (PA name)	Baroiyadhala National Park		
		CMO/CBO name	Baroiyadhala CMC		
		Type of body (co-management committee (civil society and government members) or community organization (e.g. RMO, VCG)	CMC		
		Date of assessment	10-Sep-17		
		LEGITIMACY			
		Government recognition and support			
1	**1.1**	If CMO is formally recognised by government	Details: The CMC is recognized by the gazette of Ministry of Environment and Forest (MoEF). (Gazette No. from MoEF: Pabama/porisha-4/Nishorgo/105/ sting/2006/396 Date: 23/11/2009.); CMC formed according to constitution and it is approved by UNO	**Yes (registered or ordinance/ similar) => 2** Not recognized => 0	2
		Community organization - co-management representation			
2a	**1.2**	**Co-management committee** (CMC, UFC, UZECACC): % members from local community organizations	No. and %: Member representating from PF-6; Forest Conservation Club-2; CPG-3 total 11 (out of 29) in percentage about 38%.	**≥33% from CBOs => 2** 20-33% from CBOs => 1 < 20% from CBOs => 0	2
2b	**1.2**	**CBO** (RMO, VCG): has at least one member who is a member of co-management committee	No: N/A	**1 or more => 2** None => 0	
		Local government support			
3	**1.3**	No of times in last year UP supported CMO (endorsed request to higher government level, met need identified by CMO, in solving conflicts or other support)	Details: 1) CMC requested to Koiyachara UP Chairman for tube well installation at Koiyachara Water Fall area as facilities of drinking water for tourist & local community at source. 2) UP Chairman of Koiyachara gave commitment in the occasion of hands on training program (20. 09. 17) of climbing for controlling the illegal felling of forest sp. from BDNP area.	**Yes for all such requests => 2** Some of times when requested => 1 Never => 0	2
4	**Ind 5**	Formal requests for actions in support of conservation, adaptation and/or sustainable NRM made to government bodies in last 12 months	Details: 1) CMC requested to Ctg. North DFO (DFO-CMC meeting decision on 24 April, 2017) for taking action on entry collection issue at Baroiyadhala site. 2) Baroiyadhala CMC requested to UNO for inclusion CMO representative (CM Council meeting decision on 18 September, 2017) in Upazilla level Environment & Forest Development Committee. 3) CMC requested to (CM Council meeting decision on 18 September, 2017) Assistant Commissioner (Land) of Mirsharai for acquisition of DC kash land at Dhaka-Ctg. highway site of Mirsharai.	**2 or more => 2** 1 => 1 none => 0	2
		ORGANIZATIONAL FUNCTIONING			
		Self-organized and timely			
5a	**2.1**	For **Forest CMCouncils**: half-yearly council meeting organized by CMCommittee within last 7 months	Details: Last Formal council meeting organized on 29 April 2017	**Within last ≤7 months =>2** 8-12 months ago =>1 > 12 months ago =>0	2
5b	**2.1**	For **all other CMOs and CBOs**: EC organized AGM within last 13 months	Details: N/A	**Within last ≤13 months =>2** 14-18 months ago =>1 > 18 months ago =>0	
		Record keeping			
6	**2.2**	If the CMO keeps minutes and records of its decisions by itself	Details: CMO keeps minutes and records by themselves. They follow-up agenda and decision. CMC office bearer are very active to maintain the meeting minutes	**All agenda items in last 2 meetings written up with solutions/ decisions => 2** Record of last 2 meetings written up but not for all agenda items => 1 Minutes and records not up to date, or filled in largely or all by project/ NGO staff => 0	2
		Financial management			
7	**2.3**	Accounts book and records maintenance in last 12 months	Details: CMC have the bank accounts and Well maintained by CMO. They maintain accounts procedure. CMC treasurer is skilled regarding this issue.	**Well maintained by CMO => 2** Satisfactory by CMO => 1 Not well maintained (not up to date, mistakes, none, filled in by project staff) => 0	2

		Indicator	Status (fill in figures given by informants or write in if different answer, circle appropriate score)	Categories	Score
		Audit			
8	2.4	Date of last external audit and outcome (conducted e.g. by a govt. body or qualified auditor)	Details: Last audit conducted on May 7, 2017 firm (Shafiq-Bosak Audit firm). Audit Report is already submitted. Audit Firm audited the Accounts report but in the Audit report there is no outcome, findings & recommendation option.	**within last 12 months, satisfactory and got feedback => 2** Over 12 months ago got feedback => 1 None => 0	2
		GOVERANCE AND INCLUSIVENESS			
		Changing leaders			
9	3.1	Date of last election of CMO (committee) office bearers	Date: Last date of CMC election 5 April 2016; earlier committee (1st committee) was formed on 30 May 2013 (so last election 11 months late)	**Within 3 months of constitution schedule => 2** 4-12 months later than in constitution => 1 More than 12 months late (including never held election) => 0	1
		Active participation of women			
10	3.2	Current role of women as office bearers or chairing sub-committees	Evidence: Ms. Monu Rani Paul is the president of gender sub-committee	**at least one office bearer or sub-committee chair => 2** only chair women's affairs => 1 no women office bearers or sub-committee chairs => 0	1
		Active participation of poor			
11	3.3	Current role of poor (<50 dec and sell labor or actively fish) as office bearers or chairing sub-committees	Evidence: Mr. Abul Kashem is the sub-committee chair of Disaster Management committee and he is poor.	**at least one is an office bearer or sub-committee chair => 2** only chair poverty/welfare sub-committee => 1 none among office bearers or sub-committee chairs => 0	2
		Fair resource access			
12	3.4	CMO's current rules favor disadvantaged in access to resources in ways disadvantaged consider fair	Details: 1) CMC has policy for supporting disadvantaged. 2) Poor people have fair access in climate-resilient IGAs, demo support, value-chain, training etc. e.g. Poor VCF & CPG members are prioritized by CMC and FD in access to resources (60 poor VCF member received homestead demo support); 3) Poor CPG & VCF member received cow fattening support; 4) In the CMC there is representative of Ethnic Group. CMC ensured the participation of Tripura ethnic group who are living in the area of Barioyadhala National Park and poor Forest Dependent People in the Group get facilities from the project & also considered for Social Forestry Participants.	**Rules explicitly give preference to poor, women and ethnic minorities => 2** Rules give preference to at least one disadvantaged group but not all => 1 Rules do not favor disadvantaged, or disadvantaged say they are not fair => 0	2
		ADAPTIVE MANAGEMENT			
		Participatory planning			
13a	4.1	Management planning process (co-management body) - current annual plan	Details: CMC has Annual Development Plan (ADP: 2017-18) & Long Term Plan (2016-2026) which prepared in collaboration with Forest Department (FD)	**One plan jointly prepared by co-management stakeholders including GOB => 2** Separate plans of GOB and community/co-management body, some adjustment to modify for consistency => 1 Separate plans and not coordinated in participatory way, or with little participation from community members => 0	2

		Indicator	**Status** (fill in figures given by informants or write in if different answer, circle appropriate score)	Categories	Score
13b	**4.1**	Management planning process (community organization) - current annual plan	Details: N/A	**Plan prepared by CBO with full member participation and informed/ endorsed by Govt (record of GOB advice or endorsement) => 2** Plan prepared by CBO but limited participation => 1 No plan or plan driven by outsiders and not made in participatory way => 0	
		Climate Change Resilience			
14	**4.2**	Current management plan takes account of hazards and risks	Details: Disaster Management sub-committee is formed. CMC prepared site specific Forest Fire Management Plan. In the ADP & Long Term Plan forest fire control is addressed. At the time of plan preparation CMC consider hazards and risks. But no specific contingency plan. Baroiyadhala CMO have specific Written Forest Fire Management Plan.	**Yes - explicitly includes contingency plans or considered what would happen if hazard occurred in planning activities => 2** Yes - not written in plan but e.g. taken up activities that are less vulnerable to risks => 1 No => 0	2
15	**Ind 8**	If CMO has provided information on risks or hazard events in last year?	Details and estimated number of households informed: 1) CMC provided climatic hazard information at community level during VCF level adaptation planning and estimated number of households informed; 2) CMC organized school level climate change information, Natural Resource management and hazard risk reduction information sharing program on 17 May 2017 and collected signed copy of informed people (138) at Nizampur Muslim High School; 3) To raise awareness among the local people CMC arrange miking against Forest Fire dated on 30 January 2017.	Warned community about one or more hazard events => 2 Informed community about future risks or environmental trends => 2 Discussed risks in meeting but not with general members or wider community => 1 No => 0	2
		Conflict resolution			
16	**4.3**	Conflict and dispute resolution among CMO members and stakeholders in the area during term of current leaders/last year (whichever is longer)	Details: in 2017 with help of CPGs & CMC member FD representative seized the illegal log trafficking at Bortakia area and solved the issues but is not documented by written. Like as many other also. In the regular meeting CMC discussed on different issues and try to solve. President and other members are very active. Through forming a sub-committee CMC taken initiative to solve the conflict between FD and villagers (local community). CMC sub-committee solve the case and Local community & Forest Department both are happy. There is some other success but no documentation to place	**leaders skilled in this, have resolved conflicts and perceived to be just => 2** conflicts resolved but not seen as fair by all => 1 conflicts persist unresolved => 0	2
		Monitoring and Learning			
17	**4.4**	CMO regularly discusses monitoring results and uses this in decisions that it documents in last year	Details: CMC president leaded Participatory Ecological monitoring team is here. Some discussion on monitoring results regarding effects of Forest Fire & Forest resource collection, CPG leaded monitoring and bird monitoring result which also documented in the CMC meeting minutes	**yes, documented in records => 2** some discussion but use in decisions not clear or documented => 1 no, including no monitoring or not used => 0	2
		RESOURCE MOBILIZATION			
		Capacity to mobilize			
18	**5.1**	If the CMO has a realistic "business plan" (income and expenditure including fund raising) designed to cover its functioning and planned actions that it is following	Details: Baroiyadhala CMC prepared their own written business plan covering different business trade which also termed as sustainability plan of Baroiyadhala CMC. This planned action is functioning (Tom-Tom, boat riding, cow fattening, tourist shop and fish culture) at present.	**Yes, written plan and covers planned actions => 2** Yes, but unwritten or not covering plans => 1 No => 0	2
		Regular funding			

		Indicator	**Status** (fill in figures given by informants or write in if different answer, circle appropriate score)	Categories	Score
19	**5.2**	If the CMO had sufficient regular funding to meet its functioning and planned actions in last 12 months	Details: CMC continuous funding source (Tom-Tom, boat riding, cow fattening, tourist shop and fish culture) not cover the planned action of last 12 months but the CMC hope it will cover the planned action in near future. CMC income from non-CREL sources BDT 89417/- (Cow Fattening, Tom-tom, Paddle Boat, Camping). Tom-tom, Paddle Boat and Camping is very potential which is started since July 2017.	**100% or more of needed funds available => 2** 66% to 99% funds were available, and no debt => 1 Under 66% available, or in debt, or any key activities halted for lack of funds => 0	0
		OTHER			
		Comments - any key issues affecting the status or performance of the CMO that are not properly reflected in the assessment format. Impressions about the acceptance of the CMO in wider community, acceptance of its leaders, its sustainability. Any other problems or achievements/ advantages of the CMO	CMC made aware the community people to protect the Natural Forest which is not reflected in the assessment.		
		Assessment made by:	President & FD representative Jaldi CMC; Site Team, CMC president, Member Secretary, CMC Treasurer, Beat Officer and members of CMO		

	Criteria and indicators	**Score**
	OVERALL (%)	***88.24***
1	**LEGITIMACY**	
1.1	*Government recognition of CMO*	2
1.2	*CBO representation in co-management*	2
1.3	*Local government support*	2
2	**ORGANIZATION FUNCTIONING**	
2.1	*Timely self-organizing*	2
2.2	*Record keeping*	2
2.3	*Financial management*	2
2.4	*Audit*	2
3	**GOVERNANCE AND INCLUSIVENESS**	
3.1	*Electing and changing leaders*	1
3.2	*Active participation of women*	1
3.3	*Active participation of poor*	2
3.4	*Fair access to resources for disadvantaged*	2
4	**ADAPTIVE PARTICIPATORY MANAGEMENT**	
4.1	*Participatory planning*	2
4.2	*Climate change planning*	2
4.3	*Conflict resolution*	2
4.4	*Monitoring*	2
5	**RESOURCE MOBILIZATION**	
5.1	*Capacity to mobilize*	2
5.2	*Regular funding*	0

Ind 5	Requests for support	2
Ind 8	Climate information dissemination	2

ANNEX 3 – LIST OF AGRICULTURE TECHNOLOGIES AND THEIR ADOPTION

The following table comprises a detailed listing of the technology packages and elements within them promoted by CREL for climate resilient/adapted agriculture enterprises, and the total numbers of beneficiaries (trainees) who reported and were found to have adopted those elements based on follow up visits. This information was consolidated in the main text into broader categories of practices/technologies. One respondent could (and most did) adopt more than one climate resilient improved practice within their main supported enterprise and some (about 17%) adopted improved practices/technologies in more than one enterprise. Examples of this second type of household include cases where someone trained in for example horticulture by CREL was later also trained in chicken rearing, and other cases where someone trained in and adopting technologies related to for example aquaculture also observed a neighbor or fellow VCF member using new practices in agriculture and adopted these without training.

Numbers of trainees (households) subsequently using recommended improved and/or climate resilient technology practices

Technology	Total		Region				Sex	
	No	%	Cox's Bazar	Chitta-gong	Khulna	North-east	Female	Male
AQUACULTURE (FISH FARMING)								
Overall adopters	**19999**	**38.9**	**15**	**1074**	**17775**	**1135**	**15606**	**4393**
Carp polyculture								
Stock species feeding in 3-layers (e.g. Katla upper, Rui middle, Common carp lower)	15109	29.4	2	848	13737	522	11941	3168
Maintain stocking density (45-60/dec)	11523	22.4	2	316	10950	255	9542	1981
Regular supplementary feeding 3-10 % weight of stocked biomass	10513	20.4	10	583	9541	379	8465	2048
Application of 1-2 kg/dec lime during pond preparation	13179	25.6	2	679	12162	336	10599	2580
Bi-weekly sampling for feeding	8378	16.3	2	237	7845	294	6907	1471
Carp-GIFT Tilapia poly-culture								
Maintain stocking density (Carp 35/Dec and Tilapia 20/Dec)	4274	8.3	0	205	3643	426	3164	1110
Regular supplementary feeding 3-10 % weight of stocked biomass;	3013	5.9	1	128	2363	521	2116	897
Application of 1-2 kg/dec lime in Pond preparation	3557	6.9	0	102	2999	456	2582	975
Bi-weekly sampling for feeding.	2229	4.3	0	73	1733	423	1529	700
Carp-Tilapia commercial culture								
Maintain stocking density (Carps 20 and Tilapia 150/dec)	1780	3.5	0	152	1511	117	1293	487
Regular supplementary feeding 3-10 % weight of stocked biomass	881	1.7	0	44	723	114	632	249
Application of 1-2 kg/dec lime in pond preparation	1001	1.9	6	44	840	111	730	271
Bi-weekly sampling for feeding.	490	1.0	0	59	337	94	321	169
Tilapia mono-culture								
Maintain stocking density (250/dec)	1081	2.1	0	113	905	63	799	282
Regular supplementary feeding 3-10 % weight of stocked biomass	574	1.1	0	70	469	35	411	163
Application of 1-2 kg/dec lime in pond preparation	678	1.3	0	33	614	31	523	155
Bi-weekly sampling for feeding	506	1.0	0	20	461	25	414	92
HORTICULTURE AND CROP AGRICULTURE								

Technology	Total		Region				Sex	
	No	%	Cox's Bazar	Chitta-gong	Khulna	North-east	Female	Male
Overall adopters	**24988**	**48.6**	**6144**	**2839**	**12423**	**3582**	**17689**	**7299**
IPM/organic farming								
Use compost;	21860	42.5	6008	2366	10127	3359	15290	6570
Use vermi-compost	1848	3.6	33	568	1206	41	1294	554
Sex pheromone trap	5518	10.7	1652	498	2381	987	3698	1820
Climate-smart technology								
Tower cultivation	1734	3.4	798	281	625	30	1346	388
Vegetables grown in sacks	1098	2.1	20	96	850	132	870	228
Raised beds	16293	31.7	5023	1277	7243	2750	11727	4566
Plastic sheet house and/or net house	5648	11.0	1595	124	3659	270	4905	743
Resilient cropping pattern								
Multi cropping	13614	26.5	3497	1756	5833	2528	9222	4392
Mixed cropping	11281	21.9	3063	1276	5292	1650	7645	3636
Inter cropping	4501	8.7	876	331	2549	745	3100	1401
Relay cropping	5100	9.9	1293	1029	2015	763	3239	1861
Use of climate stress resilient crop varieties								
Saline tolerant	5478	10.6	183	81	5208	6	4839	639
Drought tolerant	1815	3.5	337	334	900	244	1225	590
Short duration varieties	6963	13.5	2118	944	2582	1319	4808	2155
Adoption of new crops								
Strawberry	242	0.5	126	4	110	2	156	86
Capsicum	238	0.5	59	23	142	14	172	66
Basak (medicinal plant)	230	0.4	5	35	125	65	159	71
Red Lady Papaya	2307	4.5	470	337	499	1001	1352	955
Sunflower	308	0.6	34	4	257	13	264	44
Orange Sweet Potato (Bari SP 4)	1557	3.0	554	220	447	336	1085	472
Maize	81	0.2	8	23	13	37	39	42
Rice variety BR-49	564	1.1	0	270	227	67	239	325
DUCK REARING								
Overall adopters	**4254**	**8.3**	**493**	**905**	**261**	**2595**	**3216**	**1038**
Improved breed								
Zending	1017	2.0	2	48	37	930	696	321
Khaki Cambell	1129	2.2	276	216	112	525	868	261
Improved supplementary balanced feed								
Feed 50 g/duck/day in additional to rearing in the wetland	2747	5.3	125	511	114	1997	2073	674
Vaccination								
Duck Plague Vaccine 4-6 months	943	1.8	0	254	156	533	706	237
Fowl Cholera Vaccine within 4-6 months	374	0.7	0	101	82	191	260	114
Fowl Pox Vaccine (FPV) within 4-6 months	169	0.3	0	51	86	32	128	41
Improved shed/house management								
2 sq. feet per duck with sufficient light aeriation	2871	5.6	241	555	20	2055	2144	727
Regular (weekly) cleaning	3375	6.6	271	588	85	2431	2495	880
Saw dust, rice hulls etc. used as bedding	2885	5.6	189	501	37	2158	2220	665
CHICKEN REARING								

Technology	Total		Region				Sex	
	No	%	Cox's Bazar	Chitta-gong	Khulna	North-east	Female	Male
Overall adopters	**9884**	**19.2**	**1375**	**1051**	**6553**	**905**	**8380**	**1504**
Improved breed								
Sonali	4435	8.6	142	416	3461	416	3730	705
Rhode Island Red	979	1.9	9	94	812	64	868	111
Faomi	1482	2.9	16	47	1325	94	1195	287
Improved supplementary balanced feed								
Mash feed for chicken	5689	11.1	1142	535	3575	437	5029	660
Crumble for younger hen	4200	8.2	776	358	2655	411	3792	408
Pellet for mature hen	2943	5.7	207	117	2567	52	2604	339
Vaccination								
Ranikhet-RDV Vaccine- 1st dose within 8th week and booster dose after 6 months (before giving egg), 1 ml per chicken	4976	9.7	778	445	3455	298	4284	692
Gambro- Gambro inactivated vaccine	1616	3.1	496	77	995	48	1393	223
Fowl pox vaccine- ¾ drop – Within 4 weeks	1081	2.1	94	45	864	78	945	136
Improved shed/house management								
1.5 square feet for matured hen and 0.5 square feet for chicken with sufficient light aeration	4762	9.3	849	381	2806	726	3992	770
Rice hulls used as bedding	5160	10.0	887	594	2829	850	4356	804
LIVESTOCK (COW/GOAT/PIG)								
Overall adopters	**1131**	**2.2**	**34**	**1069**	**28**	**0**	**468**	**663**
Improved breed								
Cow- Australian Friesian	10	0.0	0	10	0	0	2	8
Cow- Red Chittagong	723	1.4	30	688	5	0	204	519
Cow- Pabna cow	19	0.0	0	8	11	0	8	11
Goat- Black Bengal	244	0.5	1	234	9	0	61	183
Goat- Jamuna pari	13	0.0	0	13	0	0	7	6
Pig- Pakhribas Black Pig	183	0.4	0	183	0	0	54	129
Pig- Hurra	6	0.0	0	6	0	0	2	4
Pig- Chwanche	8	0.0	0	7	1	0	1	7
Improved supplementary balance feed								
Cow/goat - Urea-Molasses-Straw Feed	70	0.1	0	62	8	0	50	20
Cow/goat - Napier, German, Para fodder grasses	234	0.5	0	233	1	0	180	54
Cow/goat - Handmade feed - Wheat/Rice bran, Oilcake, Dry straw	446	0.9	31	412	3	0	215	231
Cow/goat - Maize (straw or green)	41	0.1	0	41	0	0	16	25
Pig - Arum	79	0.2	0	79	0	0	30	49
Pig - Vegetable waste	71	0.1	0	71	0	0	31	40
Vaccination								
Cow-Khura (By Bhalent)	296	0.6	0	295	1	0	146	150
Cow-Tarka	112	0.2	0	109	3	0	79	33
Cow-Badla	52	0.1	0	52	0	0	23	29
Goat- PPR	54	0.1	1	52	1	0	28	26
Goat- Cholera	35	0.1	0	34	1	0	14	21

Technology	Total		Region				Sex	
	No	%	Cox's Bazar	Chitta-gong	Khulna	North-east	Female	Male
Goat- Pneumonia	8	0.0	0	8	0	0	5	3
Pig- Swine Fever	1	0.0	0	1	0	0	1	0
Pig- Khura	7	0.0	0	7	0	0	2	5
Improved shed/house management								
High land with slope	438	0.9	12	422	4	0	187	251
Concrete Floor	28	0.1	0	28	0	0	21	7
Easy Air Circulation	420	0.8	28	391	1	0	175	245
Easy to clean	333	0.6	29	304	0	0	178	155
Space calculated as per animal type and number	230	0.4	21	209	0	0	143	87
Total households adopting at least one practice/ technology	**51463**		**7588**	**5917**	**29824**	**8134**	**38230**	**13233**

Notes
Technologies/recommendations are summarized from training materials provided to beneficiaries.
Dec = decimal = 0.01 acre (100 decimals = 1 acre) or about 40 m^2

Technology	All respondents		% by sex		% by region			
	No.	%	Female	Male	Cox's Bazar	Chit-tagong	Khulna	Northeast
Aquaculture (follow guidelines on:)								
Fish (carp) layers	15094	29.3	31.2	23.9	0.0	14.3	46.0	6.4
Stocking density	16328	31.7	34.1	24.9	0.0	9.8	50.0	10.1
Feeding fish	14097	27.4	28.6	23.8	0.1	12.8	41.4	12.0
Liming pond	16801	32.6	34.4	27.4	0.1	13.9	50.6	10.6
Sampling pond	11073	21.5	23.1	17.1	0.0	6.1	33.2	9.9
Horticulture and agriculture								
Apply compost	21781	42.3	39.9	49.5	79.1	39.7	33.8	41.3
Vermi-compost	1845	3.6	3.4	4.2	0.4	9.6	4.0	0.5
Pheromone traps	5467	10.6	9.6	13.6	21.5	8.2	7.9	12.1
Tower cultivation of vegetables	1712	3.3	3.5	2.9	10.3	4.7	2.1	0.4
Sack cultivation of vegetables	1097	2.1	2.3	1.7	0.3	1.6	2.8	1.6
Raised bed	16158	31.4	30.4	34.3	65.6	21.6	24.0	33.8
Plastic/net house	5628	10.9	12.8	5.6	21.0	2.1	12.2	3.3
Multi/mix/inter/relay cropping	19723	38.3	35.5	46.4	66.0	40.3	30.2	40.9
Saline tolerant variety	5421	10.5	12.5	4.8	2.4	1.4	17.3	0.1
Drought tolerant variety	1806	3.5	3.2	4.4	4.4	5.6	3.0	3.0
Shorter duration variety	6923	13.5	12.5	16.1	27.8	15.7	8.6	16.2
New crop	4799	9.3	7.8	13.7	13.9	14.3	5.2	16.5
Poultry (chickens and ducks)								
Improved poultry variety	7535	14.6	15.7	11.5	5.3	12.7	15.2	22.7
Use recommended feeds	9958	19.3	22.0	11.8	16.4	19.5	16.8	31.2
Vaccinate poultry	6275	12.2	13.8	7.5	10.5	11.4	13.1	10.9
Sufficient size poultry shed	7444	14.5	15.6	11.1	13.4	15.0	9.3	34.1
Clean poultry shed regularly	3341	6.5	6.5	6.6	3.6	9.9	0.3	29.5
Use poultry bedding	7848	15.2	16.7	11.0	13.2	17.3	9.5	36.9
Medium-large livestock								
Improved cattle breed	736	1.4	0.6	3.9	0.4	11.7	0.1	0.0
Improved goat breed	250	0.5	0.2	1.4	0.0	4.1	0.0	0.0
Improved pig breed	195	0.4	0.1	1.0	0.0	3.3	0.0	0.0
Improved feed	655	1.3	0.9	2.3	0.4	10.4	0.0	0.0
Vaccinate livestock	400	0.8	0.5	1.4	0.0	6.7	0.0	0.0
High shed	436	0.8	0.5	1.9	0.2	7.1	0.0	0.0
Concrete floor	28	0.1	0.1	0.1	0.0	0.5	0.0	0.0
Air circulation	420	0.8	0.5	1.9	0.4	6.6	0.0	0.0
Easy to clean	333	0.6	0.5	1.2	0.4	5.1	0.0	0.0
Sufficient space	230	0.4	0.4	0.7	0.3	3.5	0.0	0.0
Total	**51,463**	**51,463**	**38,230**	**13,233**	**7,588**	**5,917**	**29,824**	**8,134**

Notes: Percentages of trainees are for each row separately as individuals typically adopted several technologies. Overall mean of 4.7 technologies per respondent using detailed definitions of technologies. In this table several technologies have been summarized (e.g. all improved varieties of poultry merged into one category, all types of vaccination merged into one category). Annex X provides a full list of technologies and numbers of households (farmers) adopting them.

Italics indicates technologies adopted by 30% or more of all households trained/surveyed. Most households made improvements in only one of the four sub-sectors shown.

ANNEX 4 – SMALL SCALE CONSTRUCTION ACTIVITIES

Region	Protected Area/Wet-land	Activities	Number of Activities Completed	Start Date	End Date
Chittagong	Dudpukuria WS	Construction of picnic shed	1	Jun. 9, 2016	Oct.31, 2016
	Dudpukuria WS	Renovation of resting sheds;	2	Jun. 9, 2016	Oct. 31, 2016
	Dudpukuria WS	construction of latrine & sewerage system	1	Jun. 9, 2016	Oct. 31, 2016
	Dudpukuria WS	Trail Development	1	Jun. 9, 2016	Oct. 31, 2016
	Dudpukuria WS	Construction of overhead water tank, water supply line	1	Jun. 9, 2016	Oct. 31, 2016
	Chunati WS (Chunoti CMC)	Deep Tube well installation at Rashiderghona	1	Jun. 9, 2016	Oct. 31, 2016
	Chunati WS (Jaldi CMC)	Tube well installation (Puichori and Jaldi village) ;	2	Jun. 9, 2016	Oct. 31, 2016
	Chunati WS (Jaldi CMC)	CMC Office renovation	1	Jun. 9, 2016	Oct. 31, 2016
	Chunati WS (Jaldi CMC)	Latrine and sewerage system installation	1	Jun. 9, 2016	Oct. 31, 2016
	Chunati WS (Chunoti CMC)	Student Dormitory Renovation (under the PPP initiative)	1	Jun. 25, 2016	Aug. 31, 2016
	Barayadhala NP	Tourist Shop Construction	1	Jan. 11, 2017	Mar. 31, 2017
	Barayadhala NP	Toilet Construction	1	Jan. 11, 2017	Mar. 31, 2017
	Barayadhala NP	Kitchen Construction	1	Jan. 11, 2017	Mar. 31, 2017
	Barayadhala NP	Visitor Round Shelter Construction	2	Jan. 11, 2017	Mar. 31, 2017
	Barayadhala NP	Swing Installation	2	Jan. 11, 2017	Mar. 31, 2017
	Barayadhala NP	Install Electricity Wiring at CMC Office	1	Jan. 11, 2017	Mar. 31, 2017
	Chunati WS (Chunoti CMC)	Repair Access Path from CMC Office to Main Road at Chunoti	1	Jan. 24, 2017	Mar. 31, 2017
	Hazarikhil WS	Patrol Shed Construction	2	Jan. 10, 2017	Mar. 31, 2017
	Hazarikhil WS	Ticket Counter Construction	1	Jan. 10, 2017	Mar. 31, 2017
	Hazarikhil WS	Visitor Round Shelter Construction	3	Jan. 10, 2017	Mar. 31, 2017
	Hazarikhil WS	CMC Office Construction	1	Jan. 10, 2017	Mar. 31, 2017
	Hazarikhil WS	Toilet Construction	1	Jan. 10, 2017	Mar. 31, 2017
	Hazarikhil WS	400' Tube Well Installation	1	Jan. 10, 2017	Mar. 31, 2017
	Hazarikhil WS	Build a Kitchen	1	Jan. 10, 2017	Mar. 31, 2017
	Hazarikhil WS	Swing Installation	2	Jan. 10, 2017	Mar. 31, 2017
	Hazarikhil WS	15' RCC Bridge Construction	2	Jan. 10, 2017	Mar. 31, 2017
	Hazarikhil WS	20' RCC Bridge Construction	1	Jan. 10, 2017	Mar. 31, 2017
	Barayadhala NP	Barayadhala Range office renovation	1	Sep. 19, 2017	Oct. 19, 2017
	Barayadhala NP	Civil & Structural Work of Sewerage System	1	Sep. 19, 2017	Oct. 19, 2017
	Hazarikhil WS	50' trail construction	1	Sep. 15, 2017	Oct. 31, 2017
	Hazarikhil WS	60' trail construction	1	Sep. 15, 2017	Oct. 31, 2017
	Hazarikhil WS	130' trail construction	1	Sep. 15, 2017	Oct. 31, 2017
	Hazarikhil WS	100' trail construction	1	Sep. 15, 2017	Oct. 31, 2017
	Hazarikhil WS	1000' Barbed wire fencing	1	Sep. 15, 2017	Oct. 31, 2017
	Hazarikhil WS	Parking area build	1	Sep. 15, 2017	Oct. 31, 2017

Region	Protected Area/Wetland	Activities	Number of Activities Completed	Start Date	End Date
Cox's Bazar	Teknaf WS (Teknaf CMC)	Repair and maintenance of CMC Office	1	Nov.19, 2015	Mar. 31, 2016
	Teknaf WS (Teknaf CMC)	Tubewell installation	10	Apr. 17, 2016	Jul. 31, 2016
	Himchari NP	CMC office renovation	1	Mar. 27, 2016	Jun. 30, 2016
	Himchari NP	Overhead Water Tank	1	Mar. 27, 2016	Jun. 30, 2016
	Himchari NP	Road repairing	1	Mar. 27, 2016	Jun. 30, 2016
	Himchari NP	Pechar Dwip Cyclone shelter cum primary school renovation	1	Mar. 27, 2016	Jun. 30, 2016
	Himchari NP	Tube well installation	5	Mar. 27, 2016	Jun. 30, 2016
	Teknaf WS (Shilkhali CMC)	CMC office construction ;	1	Mar. 27, 2016	Jun. 30, 2016
	Teknaf WS (Shilkhali CMC)	Tube well installation	2	Mar. 27, 2016	Jun. 30, 2016
	Teknaf WS (Shilkhali CMC)	Access road -250 feet	1	Mar. 27, 2016	Jun. 30, 2016
	Teknaf WS (Shilkhali CMC)	Erosion retention wall	1	Mar. 27, 2016	Jun. 30, 2016
	Teknaf WS (Whykong CMC)	Beat office renovation (Roikhong beat office);	1	Apr. 17, 2016	Jul. 31, 2016
	Teknaf WS (Whykong CMC)	Tube well installation	8	Apr. 17, 2016	Jul. 31, 2016
	Teknaf WS (Teknaf CMC)	Renovation of Inside Gate	1	Apr. 17, 2016	Jul. 31, 2016
	Teknaf WS (Teknaf CMC)	Renovation of Student Dormitory	1	Jan. 4, 2017	Mar. 31, 2017
	Teknaf WS (Teknaf CMC)	Renovation of Ticket Counter	1	Jan. 4, 2017	Mar. 31, 2017
	Teknaf WS (Teknaf CMC)	Visitor Round Shelter	3	Jan. 4, 2017	Mar. 31, 2017
	Teknaf WS (Teknaf CMC)	Tourist shop Renovation	1	Jan. 4, 2017	Mar. 31, 2017
	Teknaf WS (Teknaf CMC)	Ticket Counter Construction	1	Jan. 4, 2017	Mar. 31, 2017
	Teknaf WS (Teknaf CMC)	Swing Installation	3	Jan. 4, 2017	Mar. 31, 2017
	Teknaf WS (Teknaf CMC)	Children's slide	1	Jan. 4, 2017	Mar. 31, 2017
	Teknaf WS (Shilkhali CMC)	Barbed Wire Fence	1	Jan. 4, 2017	Mar. 31, 2017
	Teknaf WS (Shilkhali CMC)	25' RCC Bridge Build	1	Jan. 4, 2017	Mar. 31, 2017
	Teknaf WS (Shilkhali CMC)	60' RCC Bridge Build	1	Jan. 4, 2017	Mar. 31, 2017
	Teknaf WS (Shilkhali CMC)	Build a Kitchen	1	Jan. 4, 2017	Mar. 31, 2017
	Teknaf WS (Shilkhali CMC)	Build Resting Bench	5	Jan. 4, 2017	Mar. 31, 2017
	Teknaf WS (Shilkhali CMC)	Dustbin Installation	5	Jan. 4, 2017	Mar. 31, 2017
	Teknaf WS (Shilkhali CMC)	Children's slide	2	Jan. 4, 2017	Mar. 31, 2017
	Teknaf WS (Shilkhali CMC)	Swing Installation	3	Jan. 4, 2017	Mar. 31, 2017

Region	Protected Area/Wetland	Activities	Number of Activities Completed	Start Date	End Date
	Teknaf WS (Shilkhali CMC)	Tube Well Installation	1	Jan. 4, 2017	Mar. 31, 2017
	Medakachhapia NP	CMC Office Renovation	1	Jan. 7, 2017	Jun. 18, 2017
	Medakachhapia NP	Patrol Shed Construction	3	Jan. 7, 2017	Jun. 18, 2017
	Medakachhapia NP	Ticket Counter Construction	1	Jan. 7, 2017	Jun. 18, 2017
	Medakachhapia NP	Visitor Round Shelter Construction	2	Jan. 7, 2017	Jun. 18, 2017
	Himchari NP	Repair to Stairways	1	Jan. 7, 2017	Jun. 18, 2017
	Himchari NP	Guide Wall Construction (Retaining wall)	1	Feb. 20, 2017	Jun. 18, 2017
	Fasiakhali WS	CMC Office Construction	1	Jan. 7, 2017	Jun. 18, 2017
	Fasiakhali WS	Patrol Shed Construction	3	Jan. 7, 2017	Jun. 18, 2017
	Fasiakhali WS	Ticket Counter Construction	1	Jan. 7, 2017	Jun. 18, 2017
	Fasiakhali WS	Visitor Round Shelter	2	Jan. 7, 2017	Jun. 18, 2017
	Teknaf WS (Whykong CMC)	Tourist Shop Construction	1	Jan. 7, 2017	Jun. 18, 2017
	Teknaf WS (Whykong CMC)	Toilet Construction	1	Jan. 7, 2017	Jun. 18, 2017
	Teknaf WS (Whykong CMC)	800’ Tube Well Installation	1	Jan. 7, 2017	Jun. 18, 2017
	Teknaf WS (Whykong CMC)	Bridge Step with Guide wall Construction	1	Jan. 7, 2017	Jun. 18, 2017
	Teknaf WS (Whykong CMC)	150 nos. RCC Blocks Installation	1	Jan. 7, 2017	Jun. 18, 2017
	Teknaf WS (Whykong CMC)	Visitor Round Shelter Construction	3	Jan. 7, 2017	Jun. 18, 2017
	Teknaf WS (Whykong CMC)	550’ Barbed Wire Fence Build	1	Jan. 7, 2017	Jun. 18, 2017
	Teknaf WS (Whykong CMC)	CMC Office Construction	1	Jan. 7, 2017	Jun. 18, 2017
	Teknaf WS (Shilkhali CMC)	Construction of Entry Gate	1	Apr. 1, 2018	Jun. 30, 2018
	Himchari NP	Round Sheds for Visitors	2	Apr. 1, 2018	Jun. 30, 2018
	Himchari NP	Patrol Sheds for CPGs	2	Apr. 1, 2018	Jun. 30, 2018

Region	Protected Area/Wet-land	Activities	Number of Activities Completed	Start Date	End Date
Khulna	Chandpai CMC	CMC office renovation;	1	Dec. 15, 2015	Mar. 31, 2016
	Chandpai CMC	Pond dock installation	1	Dec. 15, 2015	Mar. 31, 2016
	Chandpai PF	Pond dock installation	1	Dec. 2, 2015	Feb. 28, 2016
	Chandpai PF	Access road/ road repair	1	Dec. 2, 2015	Feb. 28, 2016
	Chandpai PF	Bamboo bridge installation	1	Dec. 2, 2015	Feb. 28, 2016
	Dacope Koyra CMC	CMC office renovation	2	Mar. 7, 2016	May 31, 2016
	Dacope Koyra CMC	Pond Sand Filter installation	1	Mar. 7, 2016	May 31, 2016
	Dacope Koyra PF	Tube well installation	1	Dec. 2, 2015	Feb. 28, 2016
	Dacope Koyra PF	Foot bridge repair & installation	3	Dec. 2, 2015	Feb. 28, 2016
	Satkhira / Munshiganj CMC	Pond re-excavation	1	Dec. 15, 2015	Mar. 31, 2016
	Satkhira PF/ Munshiganj CMC	Pond re-excavation	1	Dec. 15, 2015	Mar. 31, 2016
	Satkhira PF/ Munshiganj CMC	Pond Sand Filter repair (Gabura Union)	1	Dec. 15, 2015	Mar. 31, 2016
	Satkhira PF/ Munshiganj CMC	Pond Sand Filter build (Gabura Union)	1	Dec. 15, 2015	Mar. 31, 2016
	Dacope-Koyra CMC	Resting / Patrol Shed at Dacop-Koyra	2	Jan. 12, 2017	Mar. 31, 2017
	Satkhira / Munshiganj CMC	Bank protection at Burigoloni in Shatkhira	1	Jan. 12, 2017	Mar. 31, 2017
	Sharankhola CMC	Pond Sand Filter installation	1	Jan. 22, 2017	Mar. 31, 2017
	Tengragiri WS	31' jetty	1	Jan. 22, 2017	Mar. 31, 2017
	Tengragiri WS	330' walk trail	1	Jan. 22, 2017	Mar. 31, 2017
	Tengragiri WS	Visitor Round Shed	1	Jan. 22, 2017	Mar. 31, 2017
	Chandpai CMC	CMC Office Renovation	1	Sep. 19, 2017	Oct. 25, 2017
	Chandpai CMC	Visitor Round Shelter	1	Sep. 19, 2017	Oct. 25, 2017
	Dacope Koyra CMC	Build CMC office	1	Apr. 1, 2018	Jun. 30, 2018
	Satkhira / Munshiganj CMC	Build CMC office	1	Apr. 1, 2018	Jun. 30, 2018
	Satkhira / Munshiganj CMC	Build Double Toilet	1	Apr. 1, 2018	Jun. 30, 2018
	Satkhira / Munshiganj CMC	Build Visitor Round Shelter	1	Apr. 1, 2018	Jun. 30, 2018
	Satkhira / Munshiganj CMC	Submersible Pump Installation	1	Apr. 1, 2018	Jun. 30, 2018
Madhupur	JAUS CMC	Visitor Round Shelter Construction	2	Feb. 7, 2017	Mar. 31, 2017
	JAUS CMC	Resting Bench	3	Feb. 7, 2017	Mar. 31, 2017
	JAUS CMC	Swing/Cradle	4	Feb. 7, 2017	Mar. 31, 2017
	JAUS CMC	Children's slide	2	Feb. 7, 2017	Mar. 31, 2017
	JAUS CMC	Renovation Of Belly Cottage	1	Feb. 7, 2017	Mar. 31, 2017
	Dokhola CMC	Renovation of Bakul Cottage	1	Feb. 7, 2017	Mar. 31, 2017
	Dokhola CMC	Renovation of Jui Cottage	1	Feb. 7, 2017	Mar. 31, 2017
	Dokhola CMC	Public Toilet (Double)	1	Feb. 7, 2017	Mar. 31, 2017

Region	Protected Area/Wetland	Activities	Number of Activities Completed	Start Date	End Date
Sylhet	Hakaluki Haor (Judhistapur VCG)	Baiya Beel sanctuary waterbody excavation	1	Feb. 15, 2015	Apr. 5, 2015
	Hakaluki Haor (Ekota VCG)	Gajua Beel sanctuary waterbody excavation	1	Feb. 15, 2015	Apr. 5, 2015
	Hakaluki Haor (Ekota VCG)	VCG office renovation	1	Feb. 15, 2015	Apr. 5, 2015
	Hakaluki Haor (Halla VCG)	Kaiyer kona Beel sanctuary adjacent channel Excavation	1	Feb. 15, 2015	Apr. 5, 2015
	Hakaluki Haor (Naogaon VCG)	VCG office Construction	1	Feb. 15, 2015	Oct. 31, 2015
	Hail Haor (Baragangina RMO)	RMO office renovation	1	Feb. 15, 2015	Apr. 5, 2015
	Hail Haor (Baragangina RMO)	Tubewell	1	Feb. 15, 2015	Apr. 5, 2015
	Rema Kalenga WS	CMC office renovation with toilet facilities;	1	Nov. 8, 2015	Feb. 28, 2016
	Rema Kalenga WS	Cistern installation for tube well (Rema Kalenga primary school and Mongolia Bari)	2	Nov. 8, 2015	Feb. 28, 2016
	Khadimnagar NP	Repair of trail bridge	1	Mar. 1, 2016	Jun. 30, 2016
	Khadimnagar NP	Build car parking lot	1	Mar. 1, 2016	Jun. 30, 2016
	Khadimnagar NP	Construction of toilet & sewerage system	1	Mar. 1, 2016	Jun. 30, 2016
	Khadimnagar NP	Construction of overhead water tank, water supply line	1	Mar. 1, 2016	Jun. 30, 2016
	Khadimnagar NP	Construction of resting shed and benches	5	Mar. 1, 2016	Jun. 30, 2016
	Khadimnagar NP	Construction of ticket counter	1	Mar. 1, 2016	Jun. 30, 2016
	Lawachara NP	Patrol shed installation	1	Mar. 1, 2016	May 31, 2016
	Satchari NP	CMC office renovation ;	1	Sep. 15, 2016	Dec. 31, 2016
	Satchari NP	CPG patrol shed build;	1	Sep. 15, 2016	Dec. 31, 2016
	Satchari NP	Tubewell installation	1	Sep. 15, 2016	Dec. 31, 2016
	Satchari NP	Latrine and sewerage system installation	1	Sep. 15, 2016	Dec. 31, 2016
	Lawachara NP	Renovation of Student Dormitory	1	Jan. 29, 2017	Mar. 31, 2017
	Lawachara NP	Renovation of Park Office	1	Jan. 29, 2017	Mar. 31, 2017
	Lawachara NP	Repair of ticket counter & Toilet	1	Jan. 29, 2017	Mar. 31, 2017
	Lawachara NP	35′ bridge construction	1	Jan. 29, 2017	Mar. 31, 2017
	Lawachara NP	45′ bridge construction	1	Jan. 29, 2017	Mar. 31, 2017
	Satchari NP	Renovation of student Dormitory	1	Feb. 10, 2017	Mar. 31, 2017
	Satchari NP	Retaining Wall at NIC (50′)	1	Feb. 10, 2017	Mar. 31, 2017
	Satchari NP	Canopy Netting	1	Feb. 10, 2017	Mar. 31, 2017
	Satchari NP	Construction of Ticket Counter	1	Feb. 10, 2017	Mar. 31, 2017
	Rema Kalenga WS	Construction of 70′ Bridge	1	Feb. 13, 2017	Mar. 31, 2017
	Hail Haor (Balla RMO)	Tube well installation at Balla	1	Feb. 1, 2017	Mar. 31, 2017
	Hail Haor (Dumuria RMO)	Tube well installation at Dumuria	1	Feb. 1, 2017	Mar. 31, 2017
	Hail Haor (Sananda RMO)	Tube well installation at Sananda	1	Feb. 1, 2017	Mar. 31, 2017
	Hakaluki Haor (Judhistapur VCG)	Submersible Embankment - Baiya Beel sanctuary	1	Feb. 4, 2017	Mar. 12, 2017

Region	Protected Area/Wet-land	Activities	Number of Activities Completed	Start Date	End Date
	Hakaluki Haor (Ekota VCG)	Submersible Embankment - Gajua Beel sanctuary	1	Feb. 4, 2017	Mar. 12, 2017
	Hakaluki Haor (Halla VCG)	Submersible Embankment - Kaiyer Kona Beel sanctuary	1	Feb. 4, 2017	Mar. 12, 2017
	Khadimnagar NP	Khadimnagar CMC Office Renovation	1	Sep 18, 2017	Oct. 25, 2017
	Khadimnagar NP	Guest House Renovation	1	Sep 18, 2017	Oct. 25, 2017
	Khadimnagar NP	Beat Office Renovation	1	Sep 18, 2017	Oct. 25, 2017
	Khadimnagar NP	1000' Tube well installation	1	Sep 18, 2017	Oct. 25, 2017
	Khadimnagar NP	Overhead water Tank	1	Sep 18, 2017	Oct. 25, 2017
	Ratargul SBPA	Renovation of building for CMC Office	1	Sep 18, 2017	Oct. 25, 2017
	Lawachara NP	Repair/Renovation of CONIC	1	Apr. 1, 2018	Jun. 30, 2018
	Satchari NP	Repair/Renovation of NIC	1	Apr. 1, 2018	Jun. 30, 2018
	Ratargul SBPA	Tourist Shop cum Ticket Counter	2	Apr. 1, 2018	Jun. 30, 2018
Total Number of Completed Construction Activities			237		

ANNEX 5 – OVERVIEW OF BIODIVERSITY CONSERVATION ACTIVITIES TAKEN UP BY CMOS

Sl	Region	PA/site	CMO	Flagship species	Number of threatened species recorded*		Threatened species focus of awareness and/or conservation actions**	Conservation (and other biophysical) activities
					Global	National		
1	Chit-tagong	Baroiyadhala NP	Baroiyadhala CMC	Dhole	2	3	Mainland or Red Serow	ANR, CPGs (also Nursery, Homestead agroforestry, institutional plantation)
2		Chunati WS	Chunati CMC	Asian Elephant and Hog Badger	12	8	Asian Elephant	ANR, CPGs (also Homestead agroforestry and institutional plantation, seedling distribution to students)
6			Jaldi CMC					
3		Dud-pukuria-Dho-pachari WS	Dhopachari CMC	Asian Elephant and Binturong	18	12	Asian Elephant	CPGs (institutional plantation, nursery, roadside plantation)
4			Dudpukuria CMC					
5		Hazarikhil WS	Hazarikhil CMC	Mainland or Red Serow	3	3	Mainland or Red Serow	ANR, CPGs (also Homestead agroforestry)
7		Nijhum Dweep NP	Nijhum Dweep CMC	Indian Skimmer	8	3	Indian Skimmer, Spoon-billed Sandpiper, Spotted Greenshank, Great Knot	Established and protects fish sanctuary, trying to protect key areas for water-birds, CPG (also homestead and institutional plantation, nursery and seedling distribution)
8	Cox's Bazar	Fasiakhali WS	Fasiakhali CMC	Northern Pig-tailed Macaque & Asian Ele-phant	8	4	Asian Elephant and Oriental Small-clawed Otter	ANR and restoring elephant habitat (also SMART patrolling, homestead agro-forestry, seed sowing and institutional plantation)
9		Himchari NP	Himchari CMC	Asian Elephant & Boilam tree	3	9	Asian Elephant	Garjan seed planting, ANR, CPG (Roadside afforestation, homestead agrofor-estry, institutional plantation)
10		Inani RF	Inani CMC		4	2	Asian Elephant	None
11		Medakachapia NP	Medakachapia CMC	Garjan tree	9	3	Asian Elephant and Oriental Small-clawed Otter	ANR, planting garjan seed, CPG (also homestead agroforestry and institutional plantation)
12		Teeknaf WS	Shilkhali CMC	Great Slaty Woodpecker and Asian Ele-phant	13	21	Olive Ridley Turtle and Asian Elephant	Turtle hatchery, ANR, CPG (also homestead agroforestry, institutional planta-tion, roadside plantation, cane and bamboo plantation, bird nestboxes)
13			Teknaf CMC	Asian Elephant and Crab-eating Macaque			Asian Elephant	ANR, CPGs (also homestead agroforestry, institutional plantation, roadside plantation, cane and bamboo plantation, bird nestboxes)
14			Whykeong CMC	Asian Elephant and Boilam				
15		Sonadia ECA	Sonadia ECA comm	Spoon-billed Sandpiper	8	1	Olive Ridley Turtle, Spoon-billed Sandpiper, Spotted Greenshank, Great Knot	Turtle hatchery, Shorebird conservation (also sand dune plantation and home-stead agroforestry)
18			Sonadia Eastpara VCG					
16			Baradia VCG				Spoon-billed Sandpiper, Spotted Greenshank, Great Knot	Shorebird protection (also sand dune plantation and homestead agroforestry)
17			Ghativanga VCG					
19			Sonadia Westpara VCG					(sand dune plantation and homestead agroforestry)
20			Tajiakata VCG					Shorebird protection (also sand dune plantation and homestead agroforestry)

Sl	Region	PA/site	CMO	Flagship species	Number of threatened species recorded*		Threatened species focus of awareness and/or conservation actions**	Conservation (and other biophysical) activities
					Global	National		
21	South-west	Sundarbans	Chandpai CMC	Tiger, Ganges River Dolphin	16	4	Ganges River Dolphin and Irrawaddy Dolphin	Protects 2 dolphin sanctuaries, campaigns against poison fishing, CPGs (also homestead agroforestry and institutional plantation)
22			Dacope-Koyra CMC	Tiger, Saltwater Crocodile				Mangrove plantation and protection, campaigns against poison fishing, CPGs (also nursery, institutional and roadside plantation)
23			Munshiganj CMC	Tiger, Spotted Deer				Mangrove plantation and protection, campaigns against poison fishing, CPGs (also CSA, soil conservation, nursery, institutional and roadside plantation)
24			Sarankhola CMC	Tiger, Masked Finfoot				CPGs (campaigns against poison fishing, CSA, soil conservation, saline tolerant cropping, nursery, roadside, institutional and homestead agroforestry)
25		Tengragiri CMC	Tengragiri CMC	Fishing Cat	3	11	Fishing Cat	Established and protects fish sanctuary, reducing persecution of crocodiles (also nursery, mangrove protection and institutional plantation)
26	Central	Modhupur NP	Dokhola CMC	Capped Langur	5	5		(Homestead agroforestry and institutional plantations)
27			JAUS CMC					
28	North-east	Khadimnagar NP	Khadimnagar CMC	Kalij Pheasant	6	3	White-rumped Vulture	ANR (homestead agroforestry, institutional and roadside plantation)
29		Lawachara NP	Lawachara CMC	Western Hoolock Gibbon	14	16		CPGs (homestead agroforestry, and institutional plantation)
31		Rema-Kalenga WS	Rema-Kalenga CMC	White-rumped Vulture and Black Giant Squirrel	15	18	Chinese and Indian Pangolins and White-rumped Vulture	Protecting one of last colonies of vultures in Bangladesh, CPGs (also Homestead agroforestry, institutional and roadside plantations)
32		Satchari NP	Satchari CMC	Spotted Flying Lizard	12	11		Campaigning to reduce road kill of wildlife, CPGs (institutional and roadside plantation, homestead agroforestry)
30		Ratargul SBPA	Ratargul CMC	Koroch tree	3	4		No notable action yet
35		Hail Haor	Baragangina RMO		16	19	Fishing Cat, Yellow Turtle, Peacock Softshell Turtle, Crowned River Turtle	Protects and manages large permanent wetland sanctuary of Baikka Beel (about 170 ha) for waterbirds, fish, swamp forest, nestboxes for Cotton Pygmy Goose, etc.
33			Agari RMO					Sustainable fishing in 2 beels (6.71 ha)
34			Balla RMO					(Homestead agroforestry)
36			Dumuria RMO					
37			Jethua RMO					
38			Kajura RMO					Sustainable fishing in 2 beels (1.89 ha)
39			Ramedia RMO					Sustainable fishing in 1 beel (0.55 ha)
40			Sananda RMO					(Homestead agroforestry)
41		Hakaluki Haor ECA	Borudal VCG		14	14	Baer's Pochard, Common Pochard, Yellow Turtle, Peacock Softshell Turtle, Crowned River Turtle	Protects one wetland sanctuary of 160 ha
42			Ekota VCG					Protects two wetland sanctuaries and adjacent 295 ha of swamp forest
43			Halla VCG					Protects waterbird roost in village grove, Koiyerkona wetland sanctuary and 48.7 ha of swamp forest, sustainable fishing in 2 beels (11.14 ha)
44			Judhistapur VCG					Protects three wetland sanctuaries and adjacent 186.4 ha of swamp forest. From 2017 also manages fishing in 1 group fishery (115 ha)
45			Naogaon VCG					Protects extensive restored swamp forest area of 149 ha and Tolar wetland sanctuary

* Vertebrate species (mammals, birds, reptiles, amphibians, freshwater fish) only; national threatened species are additional species that are threatened as assessed in IUCN Bangladesh (2015) but are not globally threatened, based on species lists considered to be reliable and compiled from various sources.

** In addition all CMOs in Year 6 were encouraged to raise awareness against persecution of all smaller carnivores (including several threatened and near-threatened species), and a range of posters covering species and species groups present or potentially occurring in their areas were distributed to CMOs and discussed with communities, but only species targeted deliberately for conservation awareness or actions by CMOs are shown here. The PAs already protect more threatened species than these (see columns with numbers of species.

ANNEX 6 – SUMMARY OF CMOS THAT RECEIVED GRANTS FROM CREL (AMOUNTS OF CREL GRANTS IN USD)

Sl #	Region	CMO name	Type	Year formed	1st Round	2nd Round	3rd Round	4th Round	Total (USD)
1	Cox's bazar	Fashiakhali	CMC	2009	23,577	21,504	14,997	15,000	75,078
2	Cox's	Himchari	CMC	2010	24,998	26,803	3,365	3,337	58,503
3	Cox's	Medakachhapia	CMC	2009	16,057	18,464	1,609	15,000	51,130
4	Cox's	Shilkhali	CMC	2006	24,998	27,298	3,397	14,998	70,691
5	Cox's	Teknaf	CMC	2006	24,999	29,052	3,333	3,337	60,721
6	Cox's	Whykong	CMC	2005	24,996	26,486	3,333	14,999	69,814
7	Cox's	Tajiakata	VCG	2006	-	-	-	9,140	9,140
8	Cox's	Baradia	VCG	2006	-	-	-	3,216	3,216
9	Cox's	Ghotibhanga	VCG	2006	-	-	-	3,290	3,290
10	Cox's	Sonadia poschim para	VCG	2006	-	-	-	3,285	3,285
11	Chittagong	Chunati	CMC	2005	24,991	24,203	2,391	1,945	53,530
12	Chittagong	Jaldi	CMC	2006	24,947	21,082	1,776	14,647	62,452
13	Chittagong	Dhopachari	CMC	2012	13,109	18,726	929	1,080	33,844
14	Chittagong	Dudpukuria	CMC	2011	22,189	19,926	1,253	14,884	58,252
15	Chittagong	Baroiyadhala	CMC	2013	-	21,726	14,979	14,703	51,408
16	Chittagong	Hazarikhil	CMC	2014	-	19,907	14,989	14,997	49,893
17	Chittagong	Nijhum Dweep	CMC	2014	-	23,125	1,453	14,833	39,411
18	Central	Dokhola	CMC	2010	18,624	13,856	192	172	32,844
19	Central	Jaus	CMC	2011	22,849	13,857	192	172	37,070
20	Northeast	Akota	VCG	2006	12,569	8,999	1,256	1,104	23,928
21	Northeast	Borudal	VCG	2012	12,044	8,999	1,256	1,104	23,403
22	Northeast	Halla	VCG	2004	12,706	8,999	1,256	14,998	37,959
23	Northeast	Judhistipur-Badedeuly	VCG	2006	13,285	8,999	1,256	14,994	38,534
24	Northeast	Noagaon	VCG	2003	9,796	8,999	1,256	1,104	21,155
25	Northeast	Balla	RMO	2000	-	10,000	-	-	10,000
26	Northeast	Dumuria	RMO	2000	-	10,000	-	-	10,000
27	Northeast	Baragangina	RMO	2002	4,048	10,999	-	-	15,047
28	Northeast	Rema-Kalenga	CMC	2006	24,967	22,999	4,008	14,750	66,724
29	Northeast	Khadimnagar	CMC	2009	-	14,230	15,000	14,770	44,000
30	Northeast	Satchari	CMC	2006	24,989	-	1,146	14,755	40,890
31	Northeast	Lawachara	CMC	2005	24,123	17,911	-	-	42,034
32	Northeast	Ratargul	CMC	2016	-	-	3,000	14,724	17,724
33	Khulna	Satkhira	CMC	2011	4,993	14,585	14,997	14,995	49,570
34	Khulna	Dacope-Koyra	CMC	2011	4,998	13,596	135	261	18,990
35	Khulna	Chandpai	CMC	2010	4,983	14,898	14,995	14,994	49,870
36	Khulna	Sarankhola	CMC	2010	4,993	13,900	135	261	19,289
37	Khulna	Tengragiri	CMC	2015	-	14,799	154	14,994	29,947
38	Khulna	Chandpai	PF	2009	4,985	-	-	-	4,985
39	Khulna	Dacope-Koyra	PF	2011	4,983	-	-	-	4,983
40	Khulna	Satkhira	PF	2010	4,985	-	-	-	4,985
41	Khulna	Sarankhola	PF	2009	4,983	-	-		4,983
	Total				**444,764**	**528,927**	**128,038**	**300,843**	**1,402,572**

Sl #	Region	CMO name	Type	Year formed	1st Round	2nd Round	3rd Round	4th Round	Total (USD)
1	Cox's	Fashiakhali	CMC	2009	23,577	21,504	14,997		60,078
2	Cox's	Himchari	CMC	2010	24,998	26,803	3,365		55,167
3	Cox's	Medhakachhapia	CMC	2009	16,057	18,464	1,609		36,130
4	Cox's	Shilkhali	CMC	2006	24,998	27,298	3,397		55,693
5	Cox's	Teknaf	CMC	2006	24,999	29,052	3,333		57,385
6	Cox's	Whykong	CMC	2005	24,996	26,486	3,333		54,815
7	Chittagong	Chunati	CMC	2005	24,991	24,203	2,391		51,585
8	Chittagong	Jaldi	CMC	2006	24,947	21,082	1,776		47,805
9	Chittagong	Dhopachari	CMC	2012	13,109	18,726	929		32,764
10	Chittagong	Dudpukuria	CMC	2011	22,189	19,926	1,253		43,367
11	Chittagong	Baroiyadhala	CMC	2013	-	21,726	14,979		36,705
12	Chittagong	Hazarikhil	CMC	2014	-	19,907	14,989		34,897
13	Chittagong	Nijhum Dweep	CMC	2014	-	23,125	1,453		24,578
14	Central	Dokhola	CMC	2010	18,624	13,856	192		32,672
15	Central	Jaus	CMC	2011	22,849	13,857	192		36,898
16	Northeast	Akota	VCG	2006	12,569	8,999	1,256		22,824
17	Northeast	Borudal	VCG	2012	12,044	8,999	1,256		22,299
18	Northeast	Halla	VCG	2004	12,706	8,999	1,256		22,962
19	Northeast	Judhistipur-Badedeuly	VCG	2006	13,285	8,999	1,256		23,540
20	Northeast	Noagaon	VCG	2003	9,796	8,999	1,256		20,051
21	Northeast	Balla	RMO	2000	-	10,000	-		10,000
22	Northeast	Dumuria	RMO	2000	-	10,000	-		10,000
23	Northeast	Baragangina	RMO	2002	4,048	10,999	-		15,047
24	Northeast	Rema-Kalenga	CMC	2006	24,967	22,999	4,008		51,973
25	Northeast	Khadimnagar	CMC	2009	-	14,230	15,000		29,230
26	Northeast	Satchari	CMC	2006	24,989	-	1,146		26,135
27	Northeast	Lawachara	CMC	2005	24,123	17,911	-		42,034
28	Northeast	Ratargul	CMC	2016	-	-	3,000		3,000
29	Khulna	Satkhira (Munshiganj)	CMC	2011	4,993	14,585	14,997		34,575
30	Khulna	Dacope-Koyra	CMC	2011	4,998	13,596	135		18,729
31	Khulna	Chandpai	CMC	2010	4,983	14,898	14,995		34,876
32	Khulna	Sarankhola	CMC	2010	4,993	13,900	135		19,027
33	Khulna	Tengragiri	CMC	2015	-	14,799	154		14,953
Other organisations (PF) not counted as CMOs									
34	Khulna	Chandpai	PF		4,985	-	-		4,985
35	Khulna	Dacope-Koyra	PF		4,983	-	-		4,983
36	Khulna	Satkhira	PF		4,985	-	-		4,985
37	Khulna	Sarankhola	PF		4,983	-	-		4,983
	Total				**444,763**	**528,927**	**128,042**		**1,101,732**

ANNEX 7 – ORGANIZATIONS ORIENTED ON LSP FINDINGS

Organizations	Type of Organization
ACI Agri Business	Private Sector
Lal Teer	Private Sector
Agricultural Advisory Society (AAS)	Private Sector
Syngenta Bangladesh Limited	Private Sector
Bombay Sweets Limited	Private Sector
PRAN Agro Business Ltd.	Private Sector
Rafim Afroze	Private Sector
MM Ispahani Group, Agro Business	Private Sector
COCOLA FOOD Production Ltd.	Private Sector
EH & AgroVet Ltd.	Private Sector
Agro Best Corporation (Pvt) Ltd.	Private Sector
Siddique Food & Agrobase Ind. Ltd.	Private Sector
Alin Food Products Ltd.	Private Sector
BD Green Agro Complex (Pvt.) Ltd.	Private Sector
Juteko Bangladesh Pvt. Ltd.	Private Sector
Bangla Food & Beverage Ltd.	Private Sector
B-Mart (Supper Shops and Café)	Private Sector
Atlas Food & Beverage Ltd.	Private Sector
ACME Agro Business	Private Sector
bKash	Private Sector
CARE Bangladesh, Shomosti Project	NGO
CARE Bangladesh, SHOUHARDO III Project	NGO
CARE Bangladesh, USAID Ag Ext. Project	NGO
Helen Keller International (HKI)	NGO
IDE Bangladesh	NGO
Islamic Relief Bangladesh	NGO
Practical Action Bangladesh	NGO
Oxfam Bangldesh	NGO
HELVETAS Swiss Intercooperation	NGO
Swisscontact, M4C project	NGO
ACDI/VOCA LPIN Project	NGO
Jagorani Chakra Found	NGO

Organizations	Type of Organization
USAID's Agro Inputs Project in Bangladesh	NGO
Dhaka Ahsania Mission (DAM)	NGO
Concern Universal	NGO
Bangladesh Women Chamber of Commerce Ind.	NGO
Christian AID- Bangladesh	NGO
Dhaka University - Development Studies Dep.	NGO
World Fish Centre- Bangladesh, USAID-AIN	NGO
Environment and Social Development Organization	NGO
IRRI Bangladesh, FtF, Rice Value Chain Project	NGO
Dwip Unnayan Songstha (DUS)	NGO
DNET	NGO
Samajik Unnayan Sangstha (SUS)	NGO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