



**USAID**  
FROM THE AMERICAN PEOPLE



**WINROCK**  
INTERNATIONAL

**Report**  
**on**  
**Training Needs Assessment (TNA)**  
*Climate-Resilient Ecosystems and Livelihoods (CREL)*

July, 2013

---

-----  
This Report is made possible by the support of the American People through the United States Agency for International Development (USAID). The contents are the sole responsibility of the CREL project and do not necessarily reflect the views USAID or the United Government.

# Report on Training Needs Assessment (TNA)

**Publisher** : United States Agencies for International Development (USAID), CREL  
And Ministry of Environment and Forests, Ministry of Fisheries and Livestock and Ministry of Land

**Prepared by** : Bangladesh Centre for Advanced Studies  
TNA Team  
Md. Golam Rabbani  
Training Specialist

Dr. Samarendra Karmakar  
Vulnerability Assessment and Capacity Development  
Expert

Faisal M Rasul  
Training Assistant

**Editing And  
Technical  
Assistance:**

Utpal Dutta  
Institutional Development Manager  
Enhanced Knowledge and Capacity of Stakeholder

M. A Wahab  
Senior Training Specialist (NRM)  
Enhanced Knowledge and Capacity of Stakeholder

Dr. Dwijen L. Mallick  
Climate Change Specialist

## CONTENTS

Section No.	Name of Sections	Page
	Acknowledgement	5
1.	Introduction	6
1.1	Background	6
1.2	Scope and objective of the Training Needs Assessment (TNA)	6
1.3	CREL Strategy of Capacity Building	7
1.4	Approach and Methodology of the TNA	7
1.4.1	Discussion and consultation with CREL HQ on Approach and Methods of TNA	9
1.4.2	Collection and Review of Secondary Data/Information	9
1.4.3	Development of Data Collection Tools	9
1.4.4	Interview with stakeholders	10
2.	Study Findings	11
2.1	Overall Capacity Building on Climate change at the national level	11
2.2	Review of USAID funded project documents	12
2.2.1	Capacity Needs Reflected in Integrated Protected Area Co-management (IPAC)	12
2.2.2	Capacity Needs Reflected in Nishorgo Network Strategy and Action Plan (NNSAP), 2011	14
2.2.3	Capacity Needs Reflected in Management of Aquatic Ecosystems through Community Husbandry (MACH) project	14
2.3	Climate Change Knowledge and Capacity Needs of the CREL partners	15
2.3.1	Capacity Needs of the Government Organizations	16
2.3.2	Capacity Needs of Government Organizations at the Regional and Local Levels	24
2.3.3	Capacity Needs of CMC, VCF and RUG	28
2.3.4	Capacity needs of the Implementing Partners	30
3.	Strategy for training/capacity building under CREL	37
3.1	Common Training for the Institutional Personnel of all Partners	37
3.2	Training Programmes for Government Agencies (Central, regional and local levels)	40
3.3	Training for CREL Implementing partners	42
4.	Conclusions and Recommendations	42
4.1	Conclusions	42
4.2	Recommendations	44
	Appendix-A	45
	Appendix-B	47
	Appendix-C	49

## **List of Tables**

<b>Tables</b>	<b>Captions</b>	<b>Page</b>
Table 1	Capacity Assessment Framework	8
Table 2	Needs for capacity building at organizational, professional and individual levels of the Government Departments	16
Table 3	Needs for capacity building at organizational, professional and individual levels of Implementing Partners	17
Table 4	Capacity Building Needs of CMC and VCF	18
Table 5	List of common training issues for CREL Project partner organizations	38

## **List of Figures**

<b>Figures</b>	<b>Captions</b>	<b>Page</b>
Fig.1	Diagram of the TNA methodology	10
Fig.2	Conceptual framework on institutional arrangements to address Climate Change in Bangladesh	12

## **ACKNOWLEDGEMENT**

The Training Needs Assessment (TNA) report is an important initial input to CREI project, particularly for the Component-2. The study has been conducted in partnership and consultation with the relevant government organizations and CREL partners in the national, regional and local levels. The different organizations who have helped in the preparation of the report by providing their perspectives, needs, priority for trainings, information and documents are Department of Environment (DOE), Bangladesh Forest Department (FD), Bangladesh Meteorological Department (BMD), Department of Fisheries (DoF), International Union of Conservation Nature (IUCN), Centre for Natural Resource Studies (CNRS), Nature Conservation Management (NACOM), Community Development Centre (CODEC), World Fish Centre, and Bangladesh Centre for Advanced studies (BCAS). Without their support, this report would not have been possible to be completed. A small team of Bangladesh Centre for Advanced studies (BCAS) has conducted this TNA by visiting these organizations. The TNA team, consisting of Mr. Md. Golam Rabbani, Dr. Samarendra Karmakar, and Faisal M. Rasul, acknowledges their help and cooperation with gratitude. The team is also grateful to the component managers of CREL project for their valuable suggestions in the preparation of the methods, tools and guidelines of the TNA.

During the field visit at the regional and local levels, the cooperation and assistance offered by CODEC, Divisional Forest Officer (Chittagong south), Director of Forest Science and Technology Institute (FSTI) at Chittagong, Director of District Fisheries Office at Chittagong, Regional Coordinators at Chittagong and Sylhet, CMC and VCF members at Kaptai and Sylhet are thankfully acknowledged.

The TNA team would like to express profound gratitude to Dr. Atiq Rahman, Executive Director of BCAS for providing all types of facilities in carrying out the TNA and the team is also grateful to Dr. Dwizen L. Mallick, Fellow at BCAS (CREL Focal Point), Mr. Utpal Dutta, Component Manager and Mr. Abdul Wahab, Capacity Building Specialist at CREL Office for their all efforts, guidance and valuable suggestions in preparing the report.

TNA team also appreciates the cooperation of the BCAS staff for providing congenial atmosphere and support in carrying the work in the office.

### **TNA Team**

# **1. Introduction**

## **1.1 Background**

There are increasing evidences that climate is becoming more variable and the extreme events are affecting ecosystems and human system more severely. Increasing climate variability may lead to an intensification of the disastrous climatic events. In Bangladesh, increases in magnitudes and frequencies of extreme events are already being observed. In addition there is a possibility that future extremes are projected to be even more severe than those experienced to date. Climate change, as well as increases in climate variability, will increase the vulnerability of ecosystem and livelihood in the country. Foresighted management practices will be needed to help cope with, and adapt to, these changes. Climate variability and change have been identified as key drivers of ecosystem health and the growth and spreading of water-related diseases. Building climate resilience to ecosystem and livelihood can reduce the effects of climate change.

The Climate-Resilient Ecosystems and Livelihoods (CREL) project supported by the United States Agency for International Development (USAID) is being implemented by Winrock International in partnership with Department of Environment (DOE) and Bangladesh Department of Forests (FD) under the Ministry of Environment and Forests (MOEF), Department of Fisheries (DOF) under the Ministry of Fisheries and Livestock (MOFL) and Ministry of Land (MOL). In addition, Bangladesh Centre for Advanced Studies (BCAS), Centre for Natural Resources Studies (CNRS), National Conservation Management (NACOM) and Community Development Centre (CODEC), World Fish centre and Tetra Tec are involved as partners of the CREL project. The TNA team also reviewed the IPAC document critically.

CREL project intends to build the capacity of above mentioned institutions and stakeholders at different levels (local, regional and national) to address climate change. One of the major activities under the capacity building component of CREL project was to initiate the training need assessment (TNA) of the targeted stakeholders. BCAS was assigned to conduct the training needs of both government and non-government partners of the project.

## **1.2 Scope and objective of the Training Needs Assessment (TNA)**

The main objective of the training need assessment (TNA) was to explore the existing knowledge, understanding and skills of the government and non-government partner organizations in relation to understanding climate change impacts and vulnerability planning and implementation of climate change adaptation, mitigation and REDD+. The TNA is also to identify the gaps in knowledge and understanding and specific training to build their capacity to address climate change. However, the specific objectives of conducting TNA are as follows:

- i. To undertake training needs assessment (TNA) in terms of gaps in knowledge and skill in the thematic areas for effective implementation of the CREL programme,
- ii. To identify existing in-country capacity for training in the technical fields of CREL.
- iii. To recommend training package for increasing knowledge and skills identified as gap for effective implementation of CREL activities,

- iv. To identify opportunities for policy level support to help create an enabling environment in national and landscape level for strengthening capacity building, and

### **1.3 CREL Strategy of Capacity Building**

The CREL strategy for capacity building is under component-2 of the project. The main thrusts of CREL are:

- to scale up and adapt successful co-management models to conserve ecosystems and protected areas
- to improve governance of natural resources and biodiversity
- to increase resilience to climate change through improved planning and livelihoods diversification.
- to support long term changes in more general human resource development within the concerned agencies and organizations and for the future through curricula and capacity of those teaching the next generation of co-managers .
- to complete assessments for GOB and CMOs
- to train key stakeholders
- to strengthen technical, organizational, and financial capacity of CMOs for long-term sustainability
- to make periodic assessments of biodiversity, climate change threats, key species, ecosystem valuations.

In the project, 3 Ministries and 3 government departments are considered which are:

1. Ministry of Environment and Forests (MoEF)-Department of Environment (DOE), Forest Department (FD)
2. Ministry of Fisheries and Livestock (MoFL)-Department of Fisheries (DOF)
3. Ministry of Land (MoL)

Besides, CREL has a team of national and international partners to implement the project in partnership with GoB. These partners are BCAS, CNRS, CODEC, NACOM, WorldFish and TetraTech ARD.

The component-2 is to enhance capacity of the line stakeholders both GOs and NGOs through structured training delivery. The training issues include NRM, DRR, Climate Change Adaptation and Mitigation plan development and for long term sustainability that is possible to ensure co-management approach.

### **1.4 Approach and Methodology of the TNA**

In conducting the training Needs Assessment (TNA), the following stages have been undertaken:

- i. Establishing aims of the TNA
- ii. Identifying key institutions, departments and staff for training
- iii. Defining required competencies
- iv. Gathering required data

- v. Analysis and identifying gaps and training needs
- vi. Deriving conclusions.

Training Needs Assessment in relation to climate-resilient NRM, climate change, adaptation, mitigation, climate-resilient livelihoods, and identification of performance requirements have been made at three levels through reviewing documents, key informants' interviews (KII), FGD, etc. addressing gaps of knowledge. The levels are given in Table 1:

**Table 1: Capacity Assessment Framework**

<b>Levels</b>	<b>Organizational</b>	<b>Professional</b>	<b>Individual</b>
National	Long term training and development needs across the whole organization at the national level of different organizations in the light of new and emerging issues like CCA/M, Co-management in NRM, etc to influence the policy and functions.  The organizations are:  WorldFish, CNRS, NACOM, CODEC, DoF, FD, DoE, DAE, DoFL.	Professional knowledge gap analysis, Gathering professional knowledge in relation to climate change & NRM, livelihood, market-value chain development professional.	Individual Knowledge gap analysis, Individual thought about Ecosystem Livelihood, Climate-resilient ecosystem, climate change and NRM
Regional	District offices of the above departments	Officers of district offices of the concerned departments	
Local	UP, VCF, CMC.	Officers of UP VCF, CMC of the concerned departments	Upazila Chairman

The methodology for TNA is as follows:

- Conducted a stakeholder mapping to identify relevant stakeholders and actors at national, district and local levels of the thematic areas in close collaboration with CREL team and core partners, areas.
- Reviewed IPAC, MACH and NNSAP Project Documents
  - (ii) Consultations at National and Partners levels
  - (iii) KII at regional and LGI (FD, DOF, DoE, UP Administration)
  - (iv) Linkage and Venn Diagram
- Collected of climate change related reports, documents, capacity building materials from the government agency (GA)
- Developed training assessment plan in consultation with CREL Team.
- Developed of checklist/questionnaire for workshop and interviews to assess knowledge and understanding of the government stakeholders.
- Interview was made with the Focal Points, Departmental Heads and Regional Heads on knowledge and understanding on climate resilience.



- Analyzed the collected information to quantify the climate knowledge.
- Consultation was made with CREL partners to develop tools to conduct interview.
- Used different tools (interview, consultative meetings at local level stakeholders, etc) with key stakeholders and experts at community, district and national levels for information collection on training needs.
- Assessed the training needs for carrying out project activities for all stakeholders and partners at individual, institutional and systemic levels
- Identified required training for identified stakeholder's needs (whom, what training, how and when)
- Presented results of TNA to CREL team and selected stakeholders
- Identified cases where existing training materials can be used, and where there is a need for the CREL programme to develop new training materials/activities
- Identified TNA for genders under the present social circumstances
- Chalked out TNA for women for better co-management and sustainable livelihoods.
- Presented the findings of the TNA at a stakeholder debriefing National Workshop
- Finalized the TNA report.

#### **1.4.1 Discussion and consultation with CREL HQ on Approach and Methods of TNA**

At the beginning of the study, the TNA team held discussions and consultations with CREL senior staff. In fact, detailed methodology and other aspects (e.g. targeted interviewee, timeframe, field visits etc.) related to this study were shared with CREL for necessary support and inputs. This was practically useful for conceptual, planning and methodological development of the study. Few limitations of the study were also shared in the above mentioned meetings. Appropriate suggestions and comments of all these meetings were taken into consideration in implementing the study.

#### **1.4.2 Collection and Review of Secondary Data/Information**

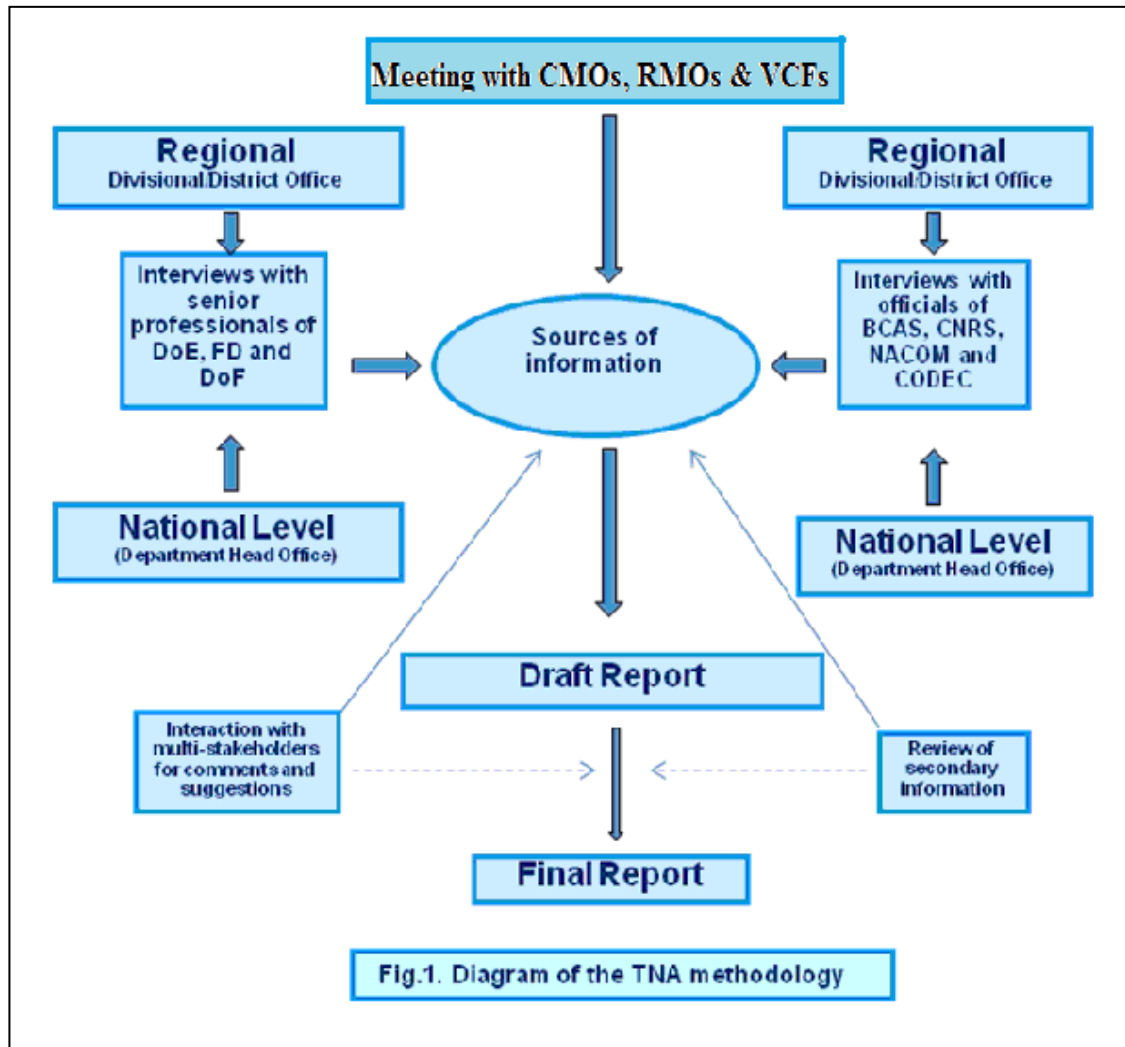
A number of climate change and capacity building related documents were collected from different sources. The major sources for secondary documents include MOEF, DOE, FD, BMD, IUCN, CNRS, NACOM, CODEC, WB, ADB, CREL and BCAS. Information from relevant websites were also used.

#### **1.4.3 Development of Data Collection Tools**

A checklist for interview with identified government and non-government partners was developed to collect required information for assessing the training needs. A number of issues including existing institutional structure and policy on climate change, capacity building programme on climate change related issues, participation in any training programme on climate change, adaptation or mitigation and potential capacity building or training issues were main discussion points during the interviews. The checklist also offered to capture gap in awareness, knowledge and understanding on climate change of the study respondents of different institutions. The questions in the checklist were mostly open ended. (Please see annex-1 for survey questionnaire).

#### 1.4.4 Interview with stakeholders

The interviews were taken to collect the information on the specific issues on the needs of training on climate change related issues. Senior personnel of the Department of Environment, Department of Fisheries, Forest Department, Forestry Science and Technology Institute, CNRS, NACOM, CODEC were visited for interviews.



In addition, group discussions were also held with CMCs (Co-Management Committees at the community level) in some areas including Kaptai and Moulavibazar. The following diagram shows that the draft report is based on the sources of information of different above mentioned government and non-government organizations at different administrative level (Please see Fig. 1). It is expected that the draft report will be consulted with multiple stakeholders for their inputs into the process of capacity development plan.

## **2. Study Findings**

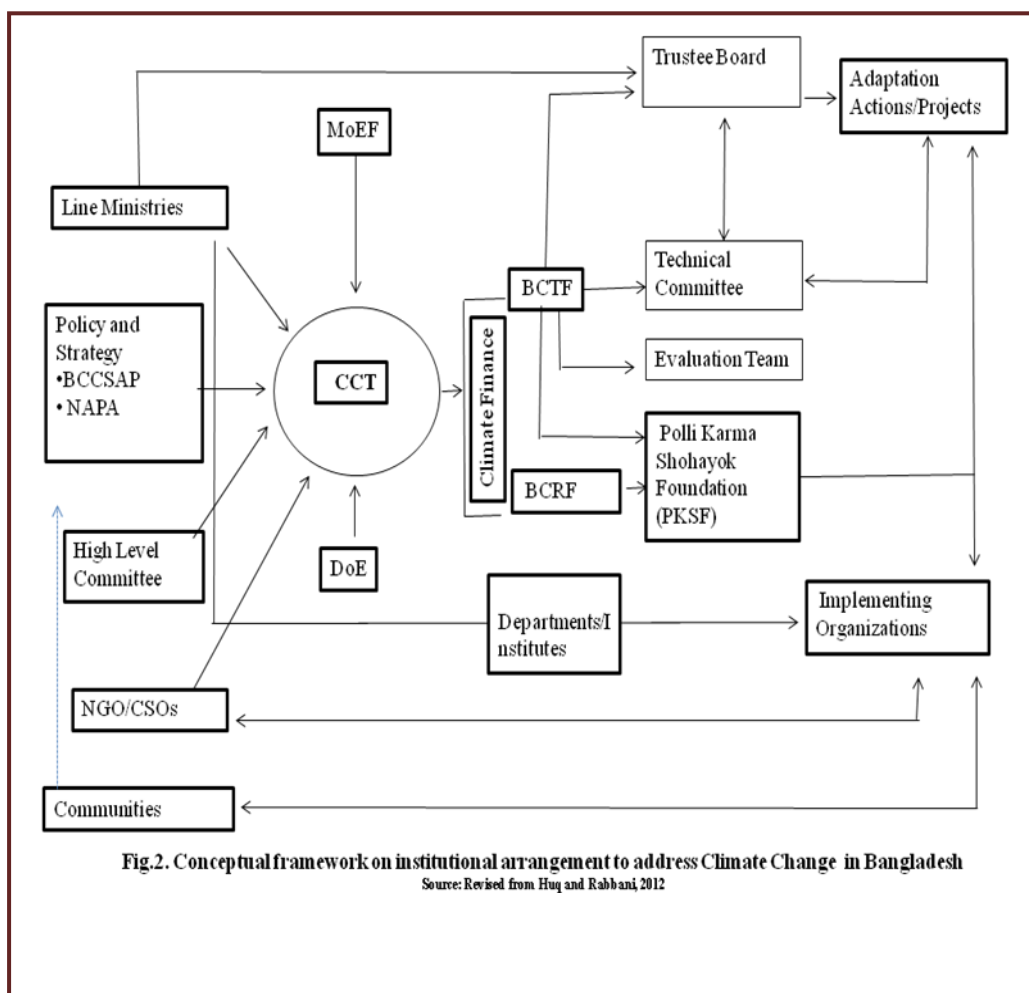
### **2.1 Overall Capacity Building on Climate change at the national level**

The Government of Bangladesh recognised that the need of involvement of different relevant ministries and agencies, civil society and the business sector to address climate change. It was also recognized that strengthening capacity of government especially the key agencies and departments is quite vital for sustainable development and adaptation to the adverse effects. The key agencies/departments need to plan, design and implement their development programmes in climate change friendly manner. The National Adaptation Programmes of Actions (NAPA) and Bangladesh Climate Change Strategy and Action Plan (BCCSAP) suggested several capacity building aspects to meet the challenges of climate change. These policy documents emphasized the needs of mainstreaming climate change mainly through strengthening of human resource capacity, institutional capacity and review of sectoral policies.

The government of Bangladesh invested more than 3 Million USD in last three years from its own trust fund (Bangladesh Climate Change Trust Fund) to strengthen the capacity of a number of institutions including the Ministry of Environment and Forests, Bangladesh Space Research & Remote Sensing Organization (SPARRSO), Bangladesh University of Engineering and Technology (BUET) and some other organizations (MOEF website, 2013). Establishing the Climate Change Trust (former Climate Change Unit) with support from the BCCTF for facilitating BCCSAP implementation was the first institutional capacity development effort on climate change at the ministerial level (MOEF) of the government of Bangladesh. In 2005, the Climate Change Cell was established at the department level (at DoE) which is still active in the internal climate change related projects and programmes. Some other key ministries and departments also established Climate Change Cell for effective contribution in project planning, designing and implementation. But it is being recognized that they need capacity to increase awareness and understanding of climate change before planning and designing any climate change related projects. It is also generally recognized that the capacity strengthening is somehow happening at some of the key ministries and departments (at the central level) for example, Ministry of Environment and Forests, Department of Environment, Department of Forests, Ministry Disaster Management and Relief though especially Comprehensive Disaster Management Programme (CDMP). But there is strong gap in climate change knowledge and understanding at the regional (Division/District) and local (Sub-district/Union level of all the key agencies. In other words, the need of training on climate change at the implementation of the key government agencies is vital.

It is well understood that increasing capacities of professional and technical staff on climate change is not a straightforward task. The capacity building will continue in a process of learning experiences and evidences on climate change. Someone can positively argue that many organizations built their capacity (project in-built nature) during the implementation of more than 100 climate change related projects with support from BCCTF in last few years while many are in the process of developing the capacity on climate change.

The government is also keen (personal communication with MOEF staff) to develop climate policy based on lessons and learning drawn from existing policy and institutional framework (Fig. 2). The following Fig. 2 indicates how the key agencies are currently involved in climate change institutional framework and putting efforts in building capacity of the respective institutions through learning by doing.



## 2.2 Review of USAID funded project documents

TNA team reviewed three previous USAID funded project documents such IPAC, MACH and NNSAP to find capacity needs reflected in the documents and look into the capacity building on conservation of protected area and aquaculture and to see whether the climate change has been integrated into the projects. IPAC organized foundation/orientation training on “conservation and development through co-management but climate change and adaptation has not been addressed adequately. In NNSAP, there is lack of climate resilient strategy for PAs including budgetary allocation. People management has not been given prime importance for co-management of climate resilient natural resources. In both MACH and NNSAP, climate change has not been integrated. The reviews of the documents are given below.

### 2.2.1 Capacity Needs Reflected in Integrated Protected Area Co-management (IPAC)

Review of IPAC document is one of the objectives of the CREL Project. The review is as follows:

IPAC focused on building a foundation of sustainability for co-management of integrated protected area conservation through the Nishorgo Network. This includes both policy and site-based fieldwork. Implementation completed through a modified matrix management approach. In matrix management, team members report to both a functional manager and a project manager. Under a functional manager, work is divided among groups –

each concentrating on their area of knowledge – located in a hierarchical organizational structure. IPAC put in place a modified matrix management system that addressed three layers of complexity:

- Obligations of staff and sub-contractors to the contractual outcomes of their technical specialties,
- Obligations of staff to their Cluster and site-based program, and
- The obligations of staff to support several crosscutting themes like gender.

*IPAC project includes three main components:*

- Development of a coherent strategy for integrated protected area co-management and biodiversity conservation, with supports for constituency building; visioning, policy analysis and strategy development; partnership building for sustainable financing and development of an outreach and communication strategy.
- Building stakeholder and institutional capacities; strengthening of existing training centers and development of new and innovative applied training courses; and development of local support services for integrated and participatory co-management initiatives.
- Site specific implementation of co-management in Protected Areas to continue field testing and institutionalization of proven approaches for integrated PA co-management; to scale up the network of co-managed of the PAs, expand support for Alternative Income Generation activities, Value Chain strengthening, robust public-private partnerships, leveraged conservation financing and local level outreach while contributing to improved welfare of rural communities through reduced vulnerability and increased adaptation to climate change, improved access to drinking water supplies and more secure and diversified livelihoods.

Integrated Protected Area Co-management (IPAC) project contributed to sustainable natural resource management and enhanced biodiversity conservation in targeted forest and wetland protected areas with the goal of preserving the ecological bio-diversity of Bangladesh while promoting equitable economic growth and strengthening environmental governance.

The technical support contract for the Integrated Protected Area Co-Management (IPAC) Project was awarded on June 4, 2008 by USAID/Bangladesh. IPAC provided technical advisory services and other supports over a five year period (2008-2013) to the agencies of Government of Bangladesh responsible for the conservation of wetland and forest protected areas across Bangladesh.

IPAC implemented with the help of the Ministry of Environment and Forests (MoEF), and Ministry of Fisheries and Livestock (MoFL), through a consortium of partners led by International Resources Group (IRG).

IPAC organized foundation/orientation training on “conservation and development through co-management. Raised awareness program, specialized short courses for additional training of IPAC staff and partners in the areas of governance, ecotourism, communications, value chain strengthening and enterprise development, and laws and policies on forest, environment and fisheries. IPAC organized only one session on climate change adaptation and mitigation but not any climate resilient ecosystems and livelihoods.

### **2.2.2 Capacity Needs Reflected in Nishorgo Network Strategy and Action Plan (NNSAP), 2011**

The Nishorgo Network Strategy and Action Plan for Bangladesh has been prepared with the help from the Forest Department and Department of Environment of the Ministry of Environment and Forests, and the Department of Fisheries of the Ministry of Fisheries and Animal resources, to support their efforts to strengthen, scale –up and institutionalize a national and collaboratively managed network of ecologically significant wetlands and forests.

There are some gaps in NNSAP, which are:

1. There are many important wetlands which require legal protection to save biodiversity in relation to climate change intensity, which have not been addressed properly. In this plan, fish species category, impact of climate change on aquatic animals are not cited.

Runoff/sipping of water containing toxic chemical, which are coming or not into the wetland, have not been addressed.

2. There is lack of climate resilient strategy for PAs including budgetary allocation. People management should be given prime importance for co-management of climate resilient natural resources.

3. There is lack of sustainable land use policy including forest, wetland and ECAs in relation to climate change and its variability.

4. It is necessary to develop a national strategy and pursue on-going forest-carbon financing opportunities for the areas under study.

5. All the PAs should be brought under co-management and the approved entry fee guidelines should be implemented for community benefits sharing in all co-managed PAs.

6. There is lack of development of suitable guidelines for generating revenue and ensuring community benefits sharing from carbon credits from the co-managed PAs.

7. Climate resilient Aquaculture was not addressed. Some climate resilient fish species need to be evolved (both marine and fresh water species).

### **2.2.3 Capacity Needs Reflected in Management of Aquatic Ecosystems through Community Husbandry (MACH) project**

The Management of Aquatic Ecosystems through Community Husbandry (MACH) project was supported by USAID and the Government of Bangladesh and implemented by Winrock International, CNRS, Caritas and BCAS working closely with Department of Fisheries and Ministry of Fisheries and Livestock.

The key elements of the MACH approach had been establishing community organizations and then embedding within them institutions for sustainable wise use of wetland resources, formally linking these with the existing local government system, and through this making interventions to restore wetland productivity and improve the livelihoods of the poor.

The organizations involved consisted of: 16 Resource Management Organizations representing all local people with interests in wetlands and fisheries, 13 Federations of Resource User Groups comprising of poor fishers and other poor wetland users, 25 Union Parishads, and the administrations of 5 Upazilas. Co-management was formalized

through Upazila Fisheries Committees where representatives of all bodies sat to coordinate and oversaw management of the systems.

Based on the outcomes of participatory planning, each RMO developed and agreed upon a set of rules or norms regarding fishing within those areas where it directly controls access or has direct influence<sup>2</sup>. These have been formalized into resource management plans with associated maps and are endorsed by the Upazila Fisheries Officer (UFO). The main access limits introduced by RMOs to ensure sustainable fisheries are:

- aquatic sanctuaries,
- closed seasons of various lengths for all fishing in the early monsoon to protect fish when they are breeding, and,
- bans on fishing gears and activities that have been identified with the local communities to be most harmful to the fishery and wetland – such as dewatering and pumping out of deeper parts of the lakes (beels) and ditches, and use of fine mesh nets that target juvenile fish. In order to cover costs of water body leases, maintenance of conservation measures and RMO operations, they collect payments for fishing from fishers that just cover these costs.

By agreeing to stop fishing year round in areas that retain water in the dry season, the community ensures that adult fish can survive the dry season to breed (and the RMO establishes a general closed season at that time to improve the chances of spawning and juvenile fish). Expected benefits include higher catches in the rest of the wetland system, and restoration of biodiversity including fish, plants, invertebrates and water birds. By the end of 2005, MACH had helped RMOs establish 56 functioning wetland sanctuaries at the three sites covering 427 acres (173 ha).

MACH also supported the Department of Fisheries (DoF) to take up similar activities in some of the Fourth Fisheries Project sites, and to assist the new inland capture fisheries team of the department. The MACH approach had taken up at the policy level. The Inland Capture Fisheries Strategy of the DoF incorporated as a key element establishing Upazila Fisheries Committees nationally to incorporate and work with an expanding network of community based organizations, and also places the spread of permanent sanctuaries and efforts to restore and sustain major wetlands as high priorities.

### **2.3 Climate Change Knowledge and Capacity Needs of the CREL partners**

Review of the relevant national policies in the main climate sensitive sectors demonstrates that climate change issues are neither assessed nor tackled in a strategic or routine manner. The recent emergence of climate change issues, low levels of scientific capacity, awareness, knowledge and understanding about climate change processes and impacts especially in local sectoral government institutions are quite evident.

As mentioned above that a small team of BCAS as part of CREL project interviewed the senior staff of DOE, FD, DOF and other partners to identify knowledge gaps on climate change and the needs of capacity to address climate change. The following points summarize the knowledge gap of the interviewed organizations:

- i. There is a clear lack of awareness, understanding on climate change basics and how it affects the livelihoods of the communities, especially at the regional and local level.
- ii. There is an absence of evidence based knowledge and experiences on climate change to have sectoral adaptation measures. Theoretical interpretation on

- climate change is not enough to promote practical adaptation measures for most of the sectors including forestry, fisheries and environment.
- iii. Lack of clear knowledge and understanding to adapt to adverse effects of climate change on different sectors including forestry, fisheries and ecosystems.
  - iv. There is a need to understand the impacts and vulnerabilities to natural resource management due to climate change
  - v. Currently there is a clear need to understand the different climate change elements, their immediate, mid-term and long-term (robust science based) projections and what does that mean to different sectors (fisheries, forestry, environment and ecosystem etc) and associated organizations.
  - vi. Knowledge is being generated by taking both adaptation and mitigation actions. There is need of a systematic cross sectoral knowledge dissemination process so that one can learn from others and avoid duplication of adaptation actions.
  - vii. Climate change related information should be translated into a simple format so that it can be easily understood by non-technical persons or by the local communities.
  - viii. Lack of scientific data/information related to climate change
  - ix. Linkages of climate change adaptation and disaster risk reduction
  - x. Gender dynamics in climate change

### 2.3.1 Capacity Needs of the Government Organizations

The TNA team consulted with four key departments of the Government of Bangladesh and assessed their training and capacity needs and priorities. The key training needs include basic climate science, impact and vulnerability, adaptation and mitigation planning and implementation. The focal point of CREL of higher Officials in the Government organizations and implementing non-government partners, members of CMCs and VCFs were interviewed for TNA. The Officials and members/personnel interviewed are given in Appendix-B. The synopsis of the needs of the Government Organizations, Implementing Organizations and CMCs/VCFs are given in Tables 2-4 respectively.

**Table 2: Needs for capacity building at organizational, professional and individual levels of the Government Departments**

Government Organizations	Organizational level	Professional level
Department of Environment (DoE)	Strengthening Climate Change Cell Training on Ecosystem based adaptation Training on Community based adaptation. Training on GHG emission assessment Training on Ecosystem and biodiversity management through adaptation in changing climate and Training on Solid waste management at central, regional and local levels	Training on Climate Impact and Vulnerability Analysis Training on Adaptation Planning Training on Mitigation Technologies Training on Consideration of biodiversity in adaptation and mitigation project Training on Coastal noise pollution



Bangladesh Forest Department (FD)	<p>Training on Basic on climate change, ecosystem and livelihood at the Central, Regional and Local levels</p> <p>Training on capacity building /curriculum on climate change issues for the officials and staff</p> <p>Human Resource Management</p> <p>Strengthening REDD+ Roadmap process</p> <p>Capacity to integrate climate change into Policy and Act</p>	<p>Basic science on climate change, ecosystem and livelihood at the Local levels</p> <p>Capacity building curriculum on climate change issues for the officials and staff</p> <p>Training on Climate change adaptation and mitigation strategy</p> <p>Training on Climate change mitigation and adaptation through co-management approach</p> <p>Introduction of climate change adaptation and mitigation, impact of climate change on Biodiversity in the curriculum of FSTI</p>
Department of Fisheries (DoF)	<p>Capacity to integrate climate change into Forest Policy</p> <p>Access weather &amp; temperature</p> <p>Tsunami, cyclone, rainfall and</p> <p>Disaster preparedness and the impacts of climate change on Aquaculture both at the Regional and Local levels</p>	<p>Common understanding of climate change and its impacts i.e. basic science of climate change issues.</p> <p>Climate change adaptation and mitigation and Climate resilient livelihood</p> <p>Disaster preparedness and the impacts of climate change on Aquaculture both at the Regional and Local/CMOs levels</p> <p>Basic courses on climate change and its impacts on aqua-culture for building capacity of the staff and local community</p> <p>Breeding parameters of the rivers through capacity building</p> <p>Training on how to make fisheries climate resilient</p>

**Table 3: Needs for capacity building at organizational, professional and individual levels of Implementing Partners**

<b>Partner Organizations</b>	<b>Organizational level</b>	<b>Professional level</b>
Community Development Centre (CODEC)	<p>Capacity building of the community on climate change and its impact on ecosystem, livelihood and aquatic animals</p> <p>Adaptation capacity building is essential both in CODEC and community.</p>	<p>Capacity building related to awareness on climate change</p> <p>Awareness building capacity of salinity increase, sea level rise, impact of climate change on ecosystems, livelihoods and aquatic animals</p>
Nature Conservation Management (NACOM)	<p>Capacity to integrate climate change into policy</p> <p>Capacity building on Forest Law, Fisheries and Wildlife Fisheries and Wildlife, Ecosystem Monitoring and NRM Law. at the regional and local levels</p> <p>Capacity building on Climate change adaptation &amp; mitigation, and Natural Resource Governance at national, regional and local levels.</p>	<p>Climate change adaptation &amp; mitigation</p> <p>Natural Resource Governance</p>
WorldFish Centre	<p>Basic training on climate change science, adaptation and mitigation, climate resilient livelihoods in the Fisheries sectors at the local I level</p>	<p>Basic training on climate change science, adaptation and mitigation, climate resilient livelihoods in the Fisheries sectors at the regional level</p>

**Table 4: Capacity Building Needs of CMC and VCF**

CMC/VCF/RUG	Needs
Co-Management Committee (CMC) at Kaptai, Chittagong	Training on Aforestation Climate change training for the teachers, students, females, social worker, Religious person, political leaders, Local Government personnel Prohibition of Zhum cultivation and provision for Alternative income generation (AIG) for the community people Climate change and family planning training for both male and females
Co-Management Committee (CMC), Kamalganj, Pourashava, Moulovibazar	Basic training on climate change, adaptation and mitigation Training on every issue based on this project for at least 1 week
Co-Management Committee (CMC), at Chunarughat, Habiganj	Training regarding climate change adaptation and mitigation. Training on impact of climate change Tree plantation training Training on how to protect ecosystems from the impact of climate change
VCF, Shilchhari, Kaptai, Chittagong	Aforestation training Training on alternating Income Generation training on livestock management Basic training on climate change
VCF, Chunarughat, Habiganj	Training to save Environment Training on Tree plantation for mini forest in the hillside village Human and Nature related training Primary education on Climate change
RUG, Borogunia Hail Haor, Srimongal	Basic training on climate change Aforestation training Training on alternating Income Generation Training on livestock management Impact of climate change on fisheries and wetlands

DOE has a Climate Change Cell but it has no training institute. It needs capacity building on climate change adaptation and mitigation, and GHG assessment at the administrative level.

Since FD manages a vast Forest Systems, has the responsibility to manage the forestry ecosystems, it needs capacity building training of basic science of climate change, adaptation and mitigation. FD has good quality of physical and logistic structure of each training centres but FD needs manpower for proper functioning of capacity building training.

The Department of Fisheries needs a separate division and personnel/staff with specific responsibility on climate change and adaptation for climate change issues. The DoF needs a institutional policy addressing capacity building of the organizational officials/staff on climate change issues. It also needs capacity building at the administrative and professional levels at the Central and Regional levels on the general topics for understanding of the basic climate science.

Bangladesh Meteorological Department (BMD) is engaged in issuing forecast disastrous weather events for the people to reduce their vulnerability. During the inclement weather need to disseminate the current situation to the people, BMD needs. A TV studio for nowcasting of weather information/forecast, which is essential to reduce the

vulnerability of the people of Bangladesh. Capacity building at administrative level of BMD regarding sector specific topics on climate change are (i) Agro-meteorological related training course, (ii) Impact of climate change on disastrous weather. It is apparent that all the Government organizations need capacity building training on basic science of climate change issues.

The following sections give details of the findings of interview:

## **I. Department of Environment under the Ministry of Environment and Forests**

Through an interview of the Focal Point for CREL in the Department of Environment (DOE), following information has been obtained:

DOE has a division/section with manpower having specific responsibility on climate change issues. Its adaptation cell/section is performing really well. According to the interviewee, is capable enough to plan and implement climate resilient NRM at ecosystem level because it is a continuous process and there is always a scope for further improvement. DOE always has to identify capacity building gaps and needs to modify the present situation of capacity gaps.

DOE is always receiving various institutional supports. DOE has capacity policy for its own organizational staff. Moreover, it has to capacitize the departmental officials/staff on climate change issues. The officials/ staff of DOE receive training at different levels. They have received training in Bangladesh as well as abroad. The department of Environment implemented climate change related capacity building projects/programmes in last few years and at the moment is also implementing some climate change related capacity building projects. There are several manpower working in those projects. Climate change capacity building projects are Designated National Authority (DNA), ECCO, etc.

DOE developed capacity building materials on climate change related issues in recent past and also has manual. For example: SNC (Second National Convocation); Waste Management and Climate Change, NAPA, CDM etc.

DOE is in view of proposing any climate related activity in its upcoming working plan/implementation plan/development plan. These plans are:

- a) Strengthening Climate Change Cell,
- b) Ecosystem based adaptation, and
- c) Community based adaptation.

The awareness level of officials of DOE about climate change adaptation and mitigation is moderate to high at the central level and moderate at the regional and local levels. DOE had prepared climate change training curriculum for the department and has trained officials and staffs for training and we are matured enough to train our officials. DOE does vulnerability assessment of climate change at community level for climate change training purpose. The methodologies used for vulnerability assessment are: FGD, BS, Workshop, Social Impact Assessment, PAPD, Conservation Management etc. DOE

organizes climate change adaptation and mitigation training session in the department. For Example: Foundation Training; Project base Training.

Needs:

- DOE need capacity building/training at administrative and professional levels in (i) Climate Impact and Vulnerability Analysis, (ii) Adaptation Planning, (iii) Mitigation Technologies, (iv) Consideration of biodiversity in adaptation and mitigation project and (v) Coastal noise pollution.
- DOE also needs capacity building at the administrative level on the following sectors: (i) GHG emission assessment in industrial and green sector, (ii) Water pollution control, (iii) Air pollution control, (iv) Ecosystem and biodiversity management through adaptation in changing climate and (v) Solid waste management at central, regional and local levels.

## **II. Bangladesh Forest Department under the Ministry of Environment and Forest**

An interview was taken with the official of the Bangladesh Forest Department (*FD*) on Training Needs Assessment. The information obtained from the interview is as follows:

The FD has no specific division/section and personnel/staff with specific responsibility on climate change issues. FD doesn't have any climate cell, though the Ministry of Environment and Forest has a climate cell.

In the current institutional policy, the FD doesn't have any capacity building program on climate change related issues for its organizational staffs. Forest Department has multiple training centres but it didn't develop any capacity building curriculum on climate change issues for the officials and staff. FD has good quality of physical and logistic structure of each training centres but FD needs manpower and should develop them with quality training. This office hasn't done any TNA but it should be done for better assessment of the needs in the department.

FD has REDD+ programme dealing with climate change. It has two projects on climate change related issues. These are: (i) Climate Resilient Participatory Aforestation (CRPA) and (ii) Community based adaptation to climate change through coastal aforestation in Bangladesh.

Approximately 8/10 staffs are working in each project. FD didn't develop any capacity building materials on climate change related issues in recent past. The department is in view of proposing climate related activity in its upcoming working plan/implementation plan/development plans such as in the project Integrated Resource Management plan for Sunderban.

FD is also in view of proposing climate related activity in its upcoming working plan/implementation plan/development. Practically, FD has been developing climate resilient forestry since 1960 but the issue has not yet been documented. Climate related capacity building program particularly in the coastal zone area of Bangladesh has been undertaken for the forests at Patuakhali, Bhola, Feni, Noakhali, Chittagong and Cox’Bazar by planting new varieties along the coastal zone to resist climatic events like cyclone and associated storm surge.

Climate Change Awareness level of the organizational staff of FD is moderate to high at Central Level (Head Office), Regional Level (Division and District) and Local Level (Union and Upazilla) respectively. FD didn’t prepare any climate change training curriculum on climate change training objectives.

**Needs:**

- FD needs capacity building at administrative and professional levels on (i) Climate change adaptation and mitigation strategy, (ii) Climate change mitigation and adaptation through co-management approach and (iii) Basic on climate change, ecosystem and livelihood at the Central, Regional and Local levels.
- It also needs capacity building at the administrative level on sector specific topics as mentioned above.

**III. Department of Fisheries under the Ministry of Fisheries and livestock**

In an interview with the Department of Fisheries for TNA, the information obtained are as follows:

The department doesn’t have any separate division or section and personnel/staff with specific responsibility on climate change and it does not have any adaptation cell or section particularly for climate change issues.

The Department of Fisheries does not have current institutional policy addressing capacity building of the organizational officials/staff on climate change issues. Any kind of TNA on climate change issues has not yet been conducted in the department itself.

The Department of Fisheries didn’t complete any climate related capacity building project/programme in last few years. The department has been implementing the project “Wetlands Biodiversity Rehabilitation Project (QBRP)” related to climate change. It did not develop any capacity building materials on climate change related issues in recent past. The department is associated with climate change project with Bangladesh Meteorological Department (BMD). FD is in view of proposing climate related activity in its upcoming working plan/implementation plan/development plan such as FAO Climate change related project.

**Findings:**

- Climate Change Awareness levels of the organizational staff are moderate to higher at the Central level and lower at Regional and Local levels of the department.
- This department did not prepare any climate change training curriculum on climate change training objectives.

- Fisheries department doesn't have any tools/methods for vulnerability assessment of climate change at community level for climate change training purpose.
- There is no any climate change adaptation and mitigation training session in the department.

Needs:

- It needs capacity building at the administrative and professional levels at the Central, Regional and Local/CMOs levels on the general topics such as (i) Common understanding of climate change and its impacts, (ii) Climate change adaptation and mitigation and (iii) Climate resilient livelihood.
- The Department of Fisheries also needs capacity building at administrative level on the specific topics: (i) Access weather & temperature, (ii) Tsunami, cyclone, rainfall and (iii) Disaster preparedness and the impacts of climate change on Aquaculture both at the Regional and Local levels.

#### **IV. Bangladesh Meteorological Department (BMD)**

Bangladesh Meteorological Department (BMD) is source of vast climatic information and maintains the records of historical climatic data, disastrous weather events such as cyclones, storm surges, heavy rainfall, severe local storms/thunderstorms, tornadoes, etc since 1948. These data are very important for research in climate change. Therefore, the interview of BMD personnel was considered essential for TNA. The TNA team visited BMD and had a discussion with the present Director and former Director.

Bangladesh Meteorological Department (BMD) is a government organization under the administrative control of the Ministry of Defence. BMD is committed to providing effective meteorological and seismological services for improved protection of life, property and the environment, increased safety on land, at sea and in the air, enhanced quality of life and sustainable economic growth. BMD takes regular observations of all weather elements including rainfall, temperature, humidity, etc. routinely at different times of observations as per World Meteorological Organization (WMO) standards. Some of the responsibility of BMD are:

- ♣ Monitor and issue forecasts and warnings of all meteorological extreme events like tropical cyclone, severe thunderstorm/tornadoes, heavy rainfall, drought, cold and heat wave along with daily routine forecasts round the clock.
- ♣ Issues short, medium and long-range forecasts for agricultural planning and operation of daily farmer's activities.
- ♣ Provide Flood Forecasting and Warning Centre with rainfall data, forecasts/warnings, radar and satellite image for the operation of flood forecasting and warning system.

♣ Supply and facilitate the application of climate data and information to the Government and private agencies for planning and performance of socio-economic development activities.

♣ BMD is involved with WMO's science based monitoring of the change/variability of climate and preparation of 21st century climate scenario development activities.

♣ Archives all weather and climate data, maintenance of historical records of all meteorological and seismological extreme events in numeric and graphical forms.

Bangladesh Meteorological Department (BMD) has a separate Climate division. The responsibility of the climate division is mainly to archive the meteorological and climatological data and to issue climate bulletins. A lot of manpower is there for this division. BMD has separate Meteorological Training Institute for capacity building of meteorological personnel. It conducts both scheduled/unscheduled training courses as per WMO approved syllabus. Officials of Bangladesh Army, Navy and Air Force also participate in the training courses. The courses contain a basic course on climatology. BMD should emphasize more on climate change issues for capacity building of the personnel. Climatology is taught in regular courses in BMD training courses. BMD personnel are being given capacity building training frequently outside the country under different programme. There is ongoing project in Agro-meteorology related to climate change issues. This would enhance the capacity of the BMD personnel and DAE personnel in the field of Agro-meteorology and agriculture to grow climate-resilient crops. In the current agro-meteorological project related to climate change issues BMD is preparing a training manual for the capacity building of the meteorological and agricultural personnel in the field of Agro-meteorology. BMD is in view of proposing climate related activity in its upcoming working plan/implementation plan/development plan and it is currently implementing the climate change issues by establishing new Automatic weather station at 8 places under the present Agro-meteorological project. The awareness levels on climate change of the officials of BMD are high above in the central level, moderate at the regional and local levels.

Needs:

- BMD needs to strengthen the capacity of the organizational officials/staff on (i) Impact of Climate change on disaster weather phenomenon along with mitigation and adaptation (ii) Impact of thunderstorms on agriculture, ecosystems and Livelihoods in Bangladesh and (iii) Preparation of manuals and bulletins related to climate and climate change issues,
- Capacity building at administrative level of BMD regarding sector specific topic on climate change are (i) Agro-meteorological related training course, (ii) Impact of climate change on disastrous weather, and
- Training on Aviation Meteorology related to climate change.
- BMD needs a TV studio for nowcasting of weather information/forecast, which is essential to reduce the vulnerability of the people of Bangladesh.

The TNA team also visited CREL partner organizations and consulted with their Human Resource Departments and Training Heads to capture their training needs and priorities in relation to the main capacity building focus of CREL. Details are given below.

### **2.3.2 Capacity Needs of Government Organizations at the Regional and Local Levels**

Climate change is a vital issue with global consequences that requires action to be taken in the governmental, corporate and individual arenas on a world-wide basis. As a most vulnerable country due to climate change, it is essential to train the people of Bangladesh about climate change and its impact on the ecosystem and livelihood. During the TNA, the CREL Team at BCAS interviewed the community people with some checklist on the understanding of climate change, resilience, ecosystems and livelihoods and got the feedback from the people at Chittagong, Moulavibazar and Srimangal during 21-24 June 2013.

The details of TNA are furnished below:

#### **I. Divisional Forest Office (South), Chittagong**

An interview was taken with Divisional Forest Officer at Chittagong South Division at Nandakanon, Chittagong. In Chittagong, there are 10 ranges at Chittagong South Division and 8 ranges at Chittagong North Division. Department of Forestry conducts forestry related training, training on nursery, biodiversity, forest management and offences, etc. Training on climate change is done at the central level. There is provision for short term, mid-term and long term training on climate change in the ADB project BCCRF (2014-2016). Climate change issues have been incorporated in coastal management plan of the department. Forestry Department is in view of proposing climate change activity in its upcoming working plan. One topic may be: Impact of sea level rise on coastal rise and capacity building in this regard is necessary. It is known that people are migrating from the coastal region into the forestry areas due to climate change. It is very difficult to remove the migrated people from the forestry land. The climate change refugees are destroying the forest.

Needs:

- (i) Capacity building on climate change adaptation and mitigation is very essential in forestry.
- (ii) Basic course climate change along with the probable rise in temperature, change in rainfall, sea level rise and their impacts on forestry, biodiversity and ecosystems is needed.
- (iii) Impact of climate change on flowering, fruiting of trees and associated problems is to be addressed.
- (iv) At least 2 trainings are needed at mid-level and lower level are necessary.
- (v) Awareness building on the impact of climate change on forestry is essential

#### **II. District Fisheries Office, Chittagong**

An interview was taken with District Fisheries Officer in Chittagong. This office does not have any separate cell/section for climate change issues. As per interview, it is known that the people can understand climate change but do not know the impact of climate change. There will be profound effect of climate change on Halda River and it is universally true. It will be impacted in two ways: (i) intrusion of saline water as a result of sea level rise and (ii) decrease in the flow of sweet water from the upstream. Because of the increase in population and destruction of forest and cutting of trees, flow of fresh water from the upstream has been reduced considerably. Rainfall variation is a factor for the reduction of the flow of water. The favourable temperature of water for the release of eggs is 27°C. If the temperature of water increases due to climate change, it will hamper the release of eggs by fish. The fish will not come to the breeding area if the



temperature is higher especially in the Halda River. Normally, fish releases eggs 3 times a year with an interval of one month. These conditions are changing now-a-days due to climate change. In 2011, fish released eggs 3 times, but fish released eggs 2 times in 2013. In 2013, eggs were released during about 10 am to evening on 4 May and again at mid-night on the same date and till now no more eggs have been released. It is because of the less/erratic rainfall in this year.

Needs:

- (i) Capacity building on fisheries is essential.
- (ii) Basic courses on climate change and its impacts on aqua-culture are very much necessary for building capacity of the staff and local community.
- (iii) It is necessary to protect breeding parameters of the rivers through capacity building.
- (iv) The Halda River and other rivers should not be excavated as a result of which the breeding places especially the loops may be destroyed. If the loops are destroyed fish will lose their shelters and also if the river bed is lower than the sea bed, saline water flow will be towards the rivers affecting release of eggs.
- (v) Sweet water flow from the source is necessary to resist saline water intrusion in the river and capacity building in this regard is necessary. Water flow at Kaptai needs to increase to resist saline water intrusion and that will also save the Halda from saline water.
- (vi) Increase in plantation at Khagrachhari, the source of the Halda, is necessary to increase the flow of water. Climate resilient plantation is needed.
- (vii) Awareness campaign is necessary at local levels.

### **III. Forestry Science and Technology (FSTI), Chittagong**

An interview was taken with Director of Forestry Science and Technology Institute at Chittagong. In the Institute, there 3 years Diploma course in Forestry. 50 students with a minimum qualification of S.S.C. enroll in the course. The Institute is open for both male and female students, but female students enroll there. The syllabus for 3 years Diploma course is old and it does not contain any climate change issues, but there is a chapter on environment. A new syllabus of 4 years Diploma course is under implementation and this course contains adequate climate change issues with impact on forests.

Needs:

- (i) Training on climate change basic science for 7-15 days is a need.
- (ii) Training on the impact of climate change on forestry, ecosystem and biodiversity and climate change adaptation and mitigation is necessary both for the teachers and students.

### **IV. Department of Fisheries (DOF) at Moulavibazar**

Interview was taken with the District Fisheries officer (Add. In Charge), Department of Fisheries (DOF) at Moulavibazar. According to interview, there are many reasons for global Climate change but excessive population effects on our climate. The causes of climate change are: Industrial gas, Brick-field, tree cutting cause's climate change. The impacts of climate change would be on:

- a) Natural Resource Management

- b) Human System
- c) Life and Livelihoods

To reduce climate hazard, the people should be sincere of their political and social commitments. It is impossible for local level people to identify alternate livelihood options. It is not known whether there any organizations working in your area regarding climate change. No training has so far been conducted there on climate change.

**Needs:**

Types training for better understanding of climate change adaptation, mitigation and NRM etc. are:

- d) Attitude
- e) Behavior
- f) Skill

**V. Forest Department, Chunarughat, Habiganj**

Forest Range Officer at Chunarughat, Hobigonj was interviewed. He understands the climate change as:

- The weather pattern of last 30 years indicates climate change
- Last year temperature increased 12 C at Satchari, Srimongal area.
- In here, the forest can't keep moisture which is a big concern for the wildlife.

The causes of climate change are:

- Deforestation
- Population growth rate in the forest area
- Pattern of make use of land
- No feasibility study
- Lack of proper planning

The impact of climate change would be on: Natural Resource Management, Human System and Life and Livelihoods. The climate change adaptation and mitigation mean:

Adaptation: Floating garden and alternate rice harvest for excessive rain

Mitigation: Project launches based on prioritizing

According to Forest Officer, vulnerability climate Hazards are: Drought, excessive rain, thunder increases, excessive salt ratio, Landslide increase, the size of fruit has decreased. In the major disaster, situation alternate livelihood options are:

- Short term and Long term plan
- 3 step arrangement
- Forest guard wall

IPAC organized training on Forest management and Climate change in this area.

**Needs:**

- Proper NRM (Natural Resource Management)
- Increase the awareness level of climate change
- Motivation

- Training can be 6/7 days long and should arrange for CMC members. 3 month certificate course would be a good option.
- Climate change, adaptation and mitigation.
- Disaster preparedness.
- Training for rearing domestic animals, cultivating vegetables, fisheries etc.
- Updated checklist (inventory) for flora or fauna.
- Special field visits for the trainees.
- Video documentation ( CMC should be responsible for documenting video)

Gaps:

- Lack of interest
- FD has no involvement
- Manpower problem
- Lack of resources
- Ensure 5 people in 1 bit.

## **VI. Department of Forest, Moulavibazar Sadar**

The DFO of the Department of Forest, Moulavibazar Sadar was interviewed. According to him, climate change happens for many reasons but Man-made causes probably do the most damage. There are many man-made causes. Pollution is one of the biggest man-made problems. Pollution comes in many shapes and sizes. Rises of temperature, sea level rise and also some other reason causes climate change. The impacts of climate change would be on:

- Natural Resource Management
- Human System
- Life and Livelihoods

To reduce climate hazard, initiative should be taken both in long term and short term. During flood season, almost all parts of the south region plunge into water and Bangladesh government doesn't have enough resources to deal with the situation all alone but needs international support for better outcomes. It is very necessary to take initiative to save the forest. New technology should be used for purifying water, massive tree plantation and also have to make sure people follow environmental rules. As per conversation with him:

Adaptation: Scientific research on agriculture sector and new housing system

Mitigation: GOB has to be sincere and should take proper initiative for mitigation

Climate Hazards are Drought, Cyclone, Flood, etc. In the major disaster situation, alternate livelihood option in this area is needed to change socio-political system. Forest Department and Local people initiative plantation are the organizations working in this area regarding climate change. He did not have taken any training regarding climate change, mitigation, adaptation etc.

Needs:

- Area based Ecosystem Training related to climate change.
- Alternate livelihood option in this area is needed to change socio-political system.

### **2.3.3 Capacity Needs of CMC, VCF and RUG**

The TNA team visited different CMCs and VCFs at Chittagong and Sylhet regions. Almost all the members of CMCs and VCF are lack of knowledge on Climate change adaptation and mitigation. The members of the CMCs and VCF have a discussion at least once in a month. They need basic training on Climate change, adaptation, mitigation, alternate income generation, awareness building on climate change, family planning training for both male and female. Members of CMC emphasized on climate change training for the teachers, students, females, social worker, Religious person, political leaders, Local Government personnel. There is lack in knowledge about climate change adaptation and mitigation. During TNA, it was found that there is a strong need of capacity building on basic climate change science, alternating income generating livelihood, and climate resilient tree plantation at the local levels. Detailed findings are given below:

#### **I. Co-Management Committee (CMC) at Kaptai, Chittagong**

A discussion meeting with some interview was held with the members of CMC at Kaptai, Chittagong. About 8 members were present in the meeting for TNA. The chairman of the Union Parishad at Kaptai was also present in the meeting. The members heard about climate change and understand that the trees should be protected from climate change. They got 15-20 trainings through IPAC for the protection of forest from climate change. Most of the CMC members were trained in climate change issues and even some members made exposure visit to India. IPAC provided with computers and other necessary materials with training manual in 2 offices. They made 39 plans in VCF level and 252 plans in the region. Union Standing Committee involved the representatives from CMC. CMC made plan for 5 years last year where mention has been made on how to reduce climate change, its impact along with awareness, forest protection and adaptation. Disaster management is also included in the plan.

Needs:

- (i) Training on Aforestation.
- (ii) Climate change training for the teachers, students, females, social worker, Religious person, political leaders, Local Government personnel.
- (iii) Prohibition of Zhum cultivation and provision for Alternative income generation (AIG) for the community people.
- (iv) Climate change and family planning training for both male and females.

#### **II. Co-Management Committee (CMC), Kamalganj, Pourashava, Moulovibazar**

The members of CMC understand the climate change as:

- Excessive Heat
- Lack of rain
- Almost 40 out 100 Chora lost its usual water

According to them, the causes of climate change are:

- Tree cutting
- Land annexation

The impacts of climate change ranking are:

- g) Natural Resource Management
- h) Human System
- i) Life and Livelihoods
- j)

It is necessary to stop cutting of trees, and tree plantation is necessary to reduce climate change impact. They do not know about climate change adaptation and mitigation. But

understand hazards such as Cyclone, Heavy Rainfall, Flood etc. During the major disaster situation, alternate livelihood options are:

- Rearing domestic animal
- Rehabilitate tribal people
- Encourage them

Needs:

- (i) Basic training on climate change, adaptation and mitigation.
- (ii) Training on every issue based on this project for at least 1 week.

### **III. Co-Management Committee (CMC), at Chunarughat, Habiganj**

At an interview, CMC and Petrol member at Chunarughat, Habiganj understand climate change as:

- Lack of rain in rainy season
- Lack of cold in cold season
- Lack of storm and heavy rain
- Excessive heat
- Increases Drought

According to him, climate has changed because of tree cutting and the impact would be on:

- (a) Natural Resource Management
- (b) Life and Livelihoods
- © Human System

There are organizations working in the area regarding climate change and these are: IPAC, CREL and Nishorgo. There was no training regarding climate change, mitigation, adaptation etc.

Needs:

- Need excessive tree plantation
- Tree plantation training
- Alternative livelihood options

### **IV. VCF, Shilchhari, Kaptai, Chittagong**

A discussion meeting was held with the members and leader of VCF at Shilchhari, Kaptai. Out of the members only 2 were males and others are females. Practically, they do not know what climate change is. They convene a meeting every month. IPAC conducted training on climate change once. Two members participated in the training session conducted by IPAC. No manual/document was given to them. IPAC told them to protect trees, domestic animals. IPAC told them that climate change would have impact on trees, forests, etc.

According to them:

- i. There is a change in summer/winter: warming/coldness,
- ii. Rainfall is erratic,
- iii. Now-a-days continuous rain for 7-10 days is not found.
- iv. Rain does not occur in due time.
- v. Before drinking was better than now.
- vi. Erratic rainfall has bad impact on crops/agriculture.

During the last 8-10 years these erratic behaviour has been found.

Needs:

- (i) Awareness training on climate change.
- (ii) Seeds resilient to warm temperature and erratic rainfall are necessary.
- (iii) Aforestation training.
- (iv) Training on alternating Income generation is necessary.
- (v) Training on livestock management.
- (vi) Basic training on climate change.

## **V. VCF, Chunarughat, Habiganj**

President of VCF and CMC member at Chunarughat, Habiganj was interviewed. According to him, climate change means: Deforestation and Lack of Tea plantation. These are also the causes of climate change. Impacts of climate change would be on:

- Natural Resource Management
- Human System
- Life and Livelihoods

There is lack in knowledge about climate change adaptation and mitigation. Drought is the major hazard in this region. In the major disaster situation, alternate livelihood option in this area is to migrate to another district. IPAC and CREL are the organizations working in this area regarding climate change. He did not take part in any training.

Needs:

- Save our Environment
- Tree plantation for mini forest in the hillside village
- Human and Nature related training
- Primary education on Climate change

## **Vi. Borogunia Federation of Resource User Group (FRUG), Hail Haor, Srimangal**

A discussion meeting was held with the members of Borogunia Federation of Resource User Group (FRUG), Hail Haor, at Srimangal. Practically, they do not know what climate change is. But they observed erratic rainfall, increasing heat waves. They convene a meeting every month. IPAC conducted training on climate change once. No manual/document was given to them. IPAC told them to protect trees, domestic animals. IPAC told them that climate change would have impact on trees, forests, etc.

According to them, following are the basic needs fo capacity building:

- Basic training on climate change
- Aforestation training
- Training on alternating Income Generation
- Training on livestock management
- Impact of climate change on fisheries and wetlands

### **2.3.4 Capacity needs of the Implementing Partners**

The TNA team consulted with the key personnel/CREL Focal Points of the CREL implementing partners and assessed their training and capacity needs and priorities.

The implementing partners are CNRS, NACOM, CODEC and WorldFish Center at the national, regional and local levels.

CNRS has no separate division/section and personnel/staff for dealing with climate change issues. It does not have any policy for building capacity on climate change issue. But CNRS has the intension to propose climate related activity in its upcoming working plan/implementation plan/development plan focusing on (a) Mangrove for future, (b) CBA (Climate Resilient Coastal Agriculture), (c) Agriculture Value Chain and (d) Power in Agriculture. In CNRS, climate change awareness level of the organizational staff is moderate to high at the central, regional and local levels mainly on natural resource management (NRM). On non-NRM, the awareness level is moderate at the regional and local levels. At the regional and local levels, CNRS need more manpower, more academic and practical training and more research based work. CNRS needs capacity building training on NRM, Climate Resilient Agriculture, Housing in the coastal area, Climate Resilient cropping calendar and Livelihood at regional and local levels.

CODEC has a general policy/informal strategy on capacity building of the officials and staff. A mid-Level Officer looks after the climate change issues, who has the relevant degree and training in climate change issues. Capacity building related to awareness on climate change is essential and the community should understand what climate change is. They need capacity building on awareness of salinity increase, sea level rise, impact of climate change on ecosystems, livelihoods and aquatic animals.

WorldFish has a dedicated climate change project, which is SmartFarm under CCAFS, working in close collaboration with AAS program. AAS progressively mainstreams climate change into its activities and research components. WorldFish used vulnerability assessment for SmartFarm done through PRA tools:

- Risk prioritization matrix
- Improved agricultural / livelihood calendar
- Semi-structured interviews and focus group discussions

WorldFish needs capacity building on awareness level of the officials at the central and regional levels and local levels on Basic science on Climate Change issues.

## **I. Centre for Natural Resource Studies(CNRS)**

An interview was taken with the official of Centre for Natural Resource Studies (CNRS) on Training Needs Assessment. It is known from the interview that CNRS doesn't have any separate division/section and personnel/staff for dealing with climate change issues. It does not have any policy for building capacity on climate change issue. CNRS only works on a project base. CNRS did some capacity building program over the last few years related to climate change issue but those programs were only designed on the basis of the particular project. At the moment it has also been implementing some capacity building project related to climate change. Some of the projects are: CBAECA funded by UNDP & DOE; CBA funded by GEF and implemented by UNDP; haor based 3 projects with OXFAM; CDMP with World Bank; Some study work with WFP. This organization developed some capacity building materials on climate change related issues. These are: Communication materials (Department of Environment, climate change cell) under CDMP, UNDP; 2/3 materials with Oxfam on 2/3 projects; OACB (Organization for human capacity building) with Practical Action. CNRS is in view of

proposing climate related activity in its upcoming working plan/implementation plan/development plan focusing on (a) Mangrove for future, (b) CBA (Climate Resilient Coastal Agriculture), (c) Agriculture Value Chain and (d) Power in Agriculture. In CNRS, climate change awareness level of the organizational staff is moderate to high at the central, regional and local levels mainly on natural resource management (NRM). On non-NRM, the awareness level is moderate at the regional and local levels.

Needs:

- CNRS needs to strengthen the capacity of its staff on (i) Climate Resilient for Agriculture, (ii) Climate Resilient Housing (Coastal Area), (iii) Climate Resilient cropping calendar and (iv) Climate Resilient Livelihood (non farm) at regional and local levels.

## **II. CNRS-CREL at North East Region (Sylhet)**

The Governance Officer of CNRS-CREL at North East Region (Sylhet) was interviewed. According to him, climate change means: Natural climate change and manmade climate change. Fossil fuel, Electricity, destruction of NRM and so many reasons causes climate change. Impacts of climate change would be on: Human System, Life and Livelihoods and Natural Resource Management.

Climate change adaptation and mitigation means: Tree plantation, Solar Panel, Agriculture saline tolerant, Rain water preservation, new type of housing system etc. Climate Hazards are Cyclone, flood, drought. In the major disaster situation alternate livelihood options in this area are Tourism sector and Changing Agriculture pattern. CNRS, Chevron and RDRS are the organizations working in this area regarding climate change. He does not have any training on climate change. He does not any training on climate change.

Needs:

- Building adaptive capacity, Disaster preparedness program, Idea generates in Agriculture sector, Forestation and NRM conservation.
- Climate change Knowledge
- Adaptation and Mitigation
- Agriculture (Climate Resilient)
- Livelihood Training

Gaps:

- Need more manpower
- Need more academic and practical training
- Need more research based work

## **III. RC, CNRS-CREL at North East Region (Sylhet)**

The Regional Coordinator was interviewed. According to him, climate change is a natural phenomenon. Climate can also change by human activities. There are many reasons of climate change. Industrialization causes excessive greenhouse gases in the atmosphere, Tree cutting etc. The impacts of climate change would be on: Natural Resource Management, Human System and Life and Livelihoods. To reduce climate hazard, it is necessary to implement adaptation and mitigation policy in our social system. We also have to build resilience in our ecosystem. He underwent training on climate change adaptation and mitigation. Climate Hazards are Drought, Cyclone etc. In the major disaster situation, alternate livelihood options in this area are to identify alternative



livelihood options in this area. We need to organize the local community. DOE, Local NGO's, IDEA, Prochesta, Chevron are the organizations working in this area regarding climate change.

Needs:

- Training on Climate change adaptation and mitigation
- Training on NRM and Ecosystem
- Training on Livelihood

Gaps:

- More manpower and training are needed.

#### **IV. Community Development Centre (CODEC)**

An interview was taken with the Executive Director of Community Development Centre (CODEC) on Training Needs Assessment. It was learnt that a mid-Level Officer looks after the climate change issues and he has the relevant degree and training in climate change issues. CODEC has a general policy/informal strategy on capacity building of the officials and staff. It has a management team consisting of 5 Directors. Till now, one workshop was organized by CODEC on the occasion of 25 years Celebration of the office and one expert from Jadavpur University attended the workshop. In the workshop, a discussion was made on climate change issues. About 150 participants at different levels from CODEC participated in workshop for 4 days.

CODEC has 3500 staff of which 75 are core staff and the rest are project staff. It has a project named 'Nabajiban Project' for 5 years (2011-2016), which is climate change related project. Nabajiban has 300 staff. CODEC has another project named 'Prosar Project' for the 5-year period (2012-2017), which is also related to climate change issues. CODEC has no separate publication and training module except the proceedings of the workshop mentioned earlier.

Trees in Sundarban are becoming red due to climate change. Last 5 years, the changes occurred rapidly and the change in colour of the trees is being occurred every year. Soyabin at Noakhali and Laxmipur are damaged due to excessive earlier rainfall in 2013.

In CODEC, 4 persons out of 8 have moderate to high knowledge of climate change awareness and rest 4 persons have less to moderate knowledge of climate change awareness. One TNA was done in CODEC.

Gaps:

- CODEC did not do any vulnerability assessment of climate change.
- CODEC did not organize any climate change adaptation and mitigation session except one workshop.

Needs:

- (i) Capacity building related to awareness on climate change is essential and the community should understand what climate change is. They need to be aware of salinity increase, sea level rise, impact of climate change on ecosystems, livelihoods and aquatic animals.
- (ii) Adaptation capacity building is essential both in CODEC and community.

- (iii) Piloting livelihood and capacity building are essential.
- (iv) Action research is needed in fisheries in the coastal region.

## **V. Nature Conservation Management (NACOM)**

An interview was taken with the official of Nature Conservation Management (NACOM) on Training Needs Assessment. It is known from the interview that NACOM doesn't have any particular division/section and personnel/staff dealing with the climate change issues. But sometimes sections are open on the basis of the project. Therefore, NACOM has some personnel/staff about the climate change issue for one of its current project, named CBAECA. NACOM does not have any particular institutional policy to build capacity on climate change issues but it normally undertakes some capacity building training as/when required for any project. NACOM did some capacity building project/program in the last few years. For example: Climate change adaptation among fisher communities in Noakhali; Community based adaptation in ecologically critical area through biodiversity conservation and social protection. NACOM has been implementing some projects that focus on climate change issues and therefore it has to build capacity on climate change for the need of the project. For example: Cox's Bazar and Sonadia projects are related to climate change issues; Climate change adaptation and impact assessment and monitoring, based in Noakhali and Sundarban area. In the recent past it developed some capacity building materials on climate change issues and also developed training manual and guidelines on the above mentioned projects. NACOM has the intension to climate related activity in its upcoming working plan/implementation plan/development plan, especially in the projects: (a) Cox's Bazar and Sonadia project which is related to climate change issues and (b) Climate change adaptation and impact assessment and monitoring, based in Noakhali and Sundarban areas.

### Gaps:

The awareness levels of the officials of NACOM are moderate to high, moderate and less moderate in the national, regional and local levels respectively.

### Needs:

- NACOM needs capacity building at the administrative level on Climate change adaptation & mitigation, and Natural Resource Governance at national, regional and local levels.
- NACOM needs capacity building at the administration and professional levels mainly at the regional and local levels on (i) Climate change adaptation & mitigation and (ii) Natural Resource Governance.
- It also needs capacity building at the administration levels mainly at the regional and local levels on Forest Law training, Fisheries and Wildlife, Fisheries and Wildlife, Ecosystem Monitoring and NRM Law Training.

## **Vi. WorldFish Centre**

An interview was taken with the official of the climate Change Advisor of the WorldFish Centre, who has been leading a pilot participatory action research project SmartFarm, under the Climate Change, Agriculture and Food Security (CCAFS) Program, and started as climate change advisor in January 2012, at the creation of the position.

SmartFarm is a very small project aiming at developing, testing and evaluating a range of climate change risk management and adaptation practices and community level, level in order to create "farms of the future" that implement optimized integrated farming systems that are better able to meet the income, food and biomass requirements of present and future communities. SmartFarm is also developing its M&E for CBA framework following the ARCAB framework and these experiences are meant to be scaled through other WF projects in the future in order to progressively integrate climate change mainstreaming into decision making and strategic thinking. So far the support comes from the CGIAR CCAFS and AAS programs.

WorldFish has a dedicated climate change project, which is SmartFarm under CCAFS, working in close collaboration with AAS program. AAS progressively mainstreams climate change into its activities and research components. The SmartFarm staff (4 project officers + 1 project manager) received orientation on climate change from me. Most of the other staffs are familiar with the concept but no specific capacity-building has been delivered.

Apart from the SmartFarm project, AAS program is looking at mainstreaming climate change into their activities. For other projects, this is part of a longer term process and needs recognition from all project leaders and donors of the importance of mainstreaming climate change.

WorldFish is in view of proposing climate related activity in its upcoming working plan. Some programs are:

*A. For SmartFarm*

1. PAR on rice fish sanctuaries to increase fish population in the face of increasing on vertical agriculture options for better resilience to drought, floods, water logging, cyclones
2. Development of a prototype of climate-smart house.
3. Action research variation of water level

*B. For Research on:*

- State of the art of weather forecast and information dissemination in Bangladesh, and further needs for research
- potential of land-water systems (sorjans, ghers) for improved resilience
- state of the art and potential for index-based insurances in Bangladesh.

WorldFish used vulnerability assessment for SmartFarm done through PRA tools:

- Risk prioritization matrix
- Improved agricultural / livelihood calendar
- Semi-structured interviews and focus group discussions

Methodology explained in:

Braun, M., Saroar, M. (2012). Participatory Action Research on Climate Risk Management, Bangladesh. WorldFish, Penang, Malaysia. Studies & Reviews: 2012-39.

Gaps:

- The staff for SmartFarm received some orientation on climate change but the staff of other projects did not. The institutional policy does not include climate change capacity building.
- WorldFish has no specific material developed for capacity building of its staff so far but interested to get some if possible. It made a presentation for DoF officials on the impacts of climate change and adaptation options for fisheries and aquaculture in Bangladesh.
- The awareness level of the officials about climate is moderate at the central and regional levels, but comparatively lower at the local levels.
- WorldFish did not prepare any climate change training curriculum so far.

Needs:

- Mainstreaming climate change in all steps of project design.
- Basic training on climate change science, adaptation and mitigation, climate resilient livelihoods in the Fisheries sectors at the regional and local levels.

### **3. Strategy for training/capacity building under CREL**

#### **3.1 Common Training for the Institutional Personnel of all Partners**

According to recent research reports, 20 percent of the land area of Bangladesh is predicted to be inundated by the year 2050 because of projected sea level rise. This is the high time to take necessary adaptation and mitigation measures to enhance climate resilience. Training and capacity building is one of the major requirements for all sectors at all levels to be climate resilient. Climate resilient Ecosystem and Livelihood (CREL) project aims to make a common and shared understanding on climate change among its project stakeholders. As needed by the stakeholders, the following topics may be considered as “common issues of training” for CREL project partners:

1. Concepts and basic science of climate change and climate variability issues
2. Causes and consequences of climate change and climate variability
3. Climate Change Impacts and vulnerabilities to natural resources management (Forest and wetlands: loss and damage assessment)
4. Climate Change Global, Regional and Country Context
5. Coping and Adaptation measures (Key Sectors) to climate change (policy, institutions, projects and programmes)
6. Climate Change and Disaster Linkages
7. Community Based Adaptation to Climate Change
8. Community Based Flood Management
9. Community Based Drought Management
10. Ecosystem Based Adaptation to Climate Change
11. Community Based NRM
12. Economics of Climate Change
13. Climate Change and Social Conflicts
14. Mainstreaming climate change and climate variability
15. Climate change and gender context
16. GIS and Remote Sensing as tools to adapt to Climate Change
17. IWRM as tool for Climate Change Adaptation
18. Climate Change Database Development, Monitoring and Management
19. Climate Change and Mitigation

List of common training issues for CREL Project partner organizations with level and types of training is given in Table 5.

**Table 5: List of common training issues for CREL Project partner organizations**

Topics of Training under CREL	Level of Training			Type of Training		
	Highest Level (Deputy Secretary-Secretary)	Mid-level (Assistant Secretary-Senior Assistant Secretary)	Non-gazette officers	Highest Level (Deputy Secretary-Secretary)	Mid-level (Assistant Secretary-Senior Assistant Secretary)	Non-gazette officers
2.4 Concepts and basic science on climate change and climate variability issues		√	√		<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days</li> <li>• Bengali</li> </ul>
2.5 Causes and consequences of climate change and climate variability	√	√	√	<ul style="list-style-type: none"> <li>• Seminar</li> <li>• Half –one day</li> <li>• English</li> </ul>	<ul style="list-style-type: none"> <li>• Seminar</li> <li>• Half –one day</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Seminar</li> <li>• Half –one day</li> <li>• Bengali</li> </ul>
2.6 Climate Change Impacts and vulnerabilities to natural resources management (social, economic, environmental, technological)		√	√		<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days</li> <li>• Bengali</li> </ul>
2.7 Climate Change Global, Regional and Country Context	√	√	√	<ul style="list-style-type: none"> <li>• Seminar</li> <li>• Half –one day</li> <li>• English</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 1-2 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 1-2 days</li> <li>• Bengali</li> </ul>
2.8 Coping and Adaptation measures (Key Sectors) to climate change (policy, institutions, projects and programmes)	√	√	√	<ul style="list-style-type: none"> <li>• Seminar</li> <li>• Half –one day</li> <li>• English</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days</li> <li>• Bengali</li> </ul>
2.9 Climate Change and Disaster Linkages	√	√	√	<ul style="list-style-type: none"> <li>• Seminar</li> <li>• Half –one day</li> <li>• English</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days</li> <li>• Bengali</li> </ul>
2.10 Community Based Adaptation to Climate Change		√	√		<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days</li> <li>• Bengali</li> </ul>
2.11 Community Based Flood Management		√	√		<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days</li> <li>• Bengali</li> </ul>
9. Community Based Drought Management		√	√		<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days</li> <li>• Bengali</li> </ul>

a. Ecosystem Based Adaptation to Climate Change		√	√		<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days</li> <li>• Bengali</li> </ul>
b. Climate change and NRM	√	√	√	<ul style="list-style-type: none"> <li>• Seminar</li> <li>• Half –one day</li> <li>• English</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days</li> <li>• Bengali</li> </ul>
c. Community Based NRM		√	√		<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 3-5 days</li> <li>• Bengali</li> </ul>
d. Economics of Climate Change	√	√	√	<ul style="list-style-type: none"> <li>• Seminar</li> <li>• Half –one day</li> <li>• English</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days</li> <li>• Bengali</li> </ul>
e. Climate Change and Social Conflicts	√	√	√	<ul style="list-style-type: none"> <li>• Seminar</li> <li>• Half –one day</li> <li>• English</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days</li> <li>• Bengali</li> </ul>
f. Mainstreaming climate change and climate variability	√	√		<ul style="list-style-type: none"> <li>• Seminar</li> <li>• Half –one day</li> <li>• English</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days long</li> <li>• English/Bengali</li> </ul>	
g. Climate change and gender context	√	√	√	<ul style="list-style-type: none"> <li>• Seminar</li> <li>• Half –one day</li> <li>• English</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days</li> <li>• Bengali</li> </ul>
h. Ecosystems vulnerability in climate negotiation	√			<ul style="list-style-type: none"> <li>• Seminar</li> <li>• Half –one day</li> <li>• English</li> </ul>		
i. GIS and Remote Sensing as tools to adapt to Climate Change		√	√		<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days</li> <li>• Bengali</li> </ul>
j. IWRM as tool for Climate Change Adaptation	√	√	√	<ul style="list-style-type: none"> <li>• Seminar</li> <li>• Half –one day</li> <li>• English</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days</li> <li>• Bengali</li> </ul>
k. Climate Change Database Development, Monitoring and Management		√	√		<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days</li> <li>• Bengali</li> </ul>
l. Climate Change and Mitigation	√	√	√	<ul style="list-style-type: none"> <li>• Seminar</li> <li>• Half –one day</li> <li>• English</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days long</li> <li>• English/Bengali</li> </ul>	<ul style="list-style-type: none"> <li>• Short course</li> <li>• 2-3 days</li> <li>• Bengali</li> </ul>

### 3.2 Training Programmes for Government Agencies (Central, regional and local levels)

Department of Environment is the implementing agency of the Ministry of Environment and Forests (MOEF). DOE plays a vital role in both environment and climate change policy formulation and associated implementation. Environmental management, conservation, pollution control etc are the major role of DOE established a Climate Change Cell (CCC) to build capacity and to mainstream climate change issues to promote climate-resilient development in Bangladesh about eight years back. Forests Department and associated institutes under the Ministry of Environment and Forests also play effective in conservation and management forests ecosystems. Department of Fisheries (DoF) is responsible government organization fisheries management in the country. All these three sectors are exposed to climate change threats. These sectors and associated infrastructures are already facing climate related problems. The CREL project aims to build the capacity of human resources and the respective institutions for better adaptation.

Based the interviews and discussions with above mentioned government agencies and actors, the TNA team developed the following table for specific training for the staff of selected organizations. It is felt that the stakeholders and actors at grassroots (VCF, RUG, CMO, CBOs) need training and capacity for understanding climate change impacts in their local contexts and developing adaptation, mitigation and NRM plans. The forest and fisheries departments at the regional levels and members of the CMCs and partners need some capacity of understanding the scientific basis of climate change, trends in climate change and vulnerability at the regional scale, guideline for mainstreaming climate change adaptation and mitigation in NRM and wetland management plans. They also need capacity and institutional support for implementation and monitoring of climate change adaptation and mitigation, REDD+ and DRR projects. The national level institutions and stakeholders need capacity for integration of climate change adaptation, mitigation, REDD+, co-management etc. into policy and programmes. They would also need to know the local contexts, needs and priorities to address climate change impacts in ecosystem.

#### a. Department of Forests

SL	Proposed Issues of Training	Level of training		
		Central	Regional	Local (CMCs) /VCF
1	Concepts and basics on climate change science	√	√	√
2	Climate Change impacts and Forests Management	√	√	√
3	Climate Change and Wildlife Biology		√	√
4	Forests land management under changing condition (Hill, plain land and coastal forests),		√	√
5	REDD+	√	√	√
6	Forests related Mitigation and Adaptation	√	√	√
7	Community Based Aforestation (social forestry)		√	√
8	SLR impacts on forests biodiversity	√	√	√
9	Climate change impacts on women and gender relation	√	√	√
10	Climate Change Awareness Training		√	√



**b. Department of Fisheries**

SL	Proposed Issues of Training	Level of training		
		Central	Regional	Local
1	Concepts and basics on climate change science	√	√	√
2	Climate Change impacts on fisheries sector and livelihood	√	√	√
3	Community Based Natural Resources Management adaptation in fisheries and wetlands			√
4	Climate Change impacts on fisheries infrastructure		√	√
5	Climate Change Awareness Campaign		√	√
6	Mainstreaming climate change adaptation and mitigation in fisheries		√	√
7	Formulation and implementation of climate change in wetlands	√		

**c. Department of Environment**

	Proposed Issues of Training	Level of Training	
		Central	Regional
1	Concepts and basics on climate change science		√
2	Climate Change impacts on different ecosystems and biodiversity	√	√
3	Assessment of impacts and vulnerability of climate change	√	√
4	Climate Change adaptation and mitigation measures in forest and fisheries	√	√
5	REDD+ in forest	√	√
6	Planning climate Change and mitigation projects		√
7	Application of meteorological data in climate change management	√	√
8	Climate Change and urban forest and city lakes	√	√
9	Climate Change Awareness Training		√

### 3.3 Training for CREL Implementing partners

Most of the CREL Implementing Partners are more or less aware about climate change and adaptation. It may be considered that all CREL implementing partners depending on level of expertise and experiences can attend the both common and specific sectoral trainings. Even though Officials/staff of CREL Implementing Partners need a comprehensive training in the light of CREL objectives. A training course for the capacity building of Officials/staff of CREL Implementing Partners would be offered as per the TNA.

Training issues proposed by CREL Implementing Partner	Implementing Partners				
	CNRS	NACOM	CODEC	BCAS	WorldFish
Climate change science, impacts, risks and vulnerability	√	√	√		√
Community Based Adaptation to Climate Change	√	√	√		√
Climate Change and NRM	√	√	√	√	√
Climate Change and Livelihoods	√	√	√	√	√
Climate Change Adaptation and Mitigation	√	√	√		√
Climate Resilient Agriculture and WASH	√	√	√		
Tools for Impacts and Vulnerability Assessment	√	√	√	√	√
Formulation of Climate Change Resilient Project	√	√	√	√	√
Evaluation and Prioritization of Climate Resilient Projects	√	√	√	√	√
Mainstreaming of climate change resilience in sectoral Plan and Programs	√	√	√	√	√

The TNA team developed Training and Capacity Development Plans for strengthening climate capacity of the Government, Implementing Partners and Communities for five years as given in Appendix-C.

## 4 Conclusions and Recommendations

### 4.1 Conclusions

The training need assessment method followed by the assessment team was a participatory approach to find out actual climate knowledge gaps with a view to furnish a training plan for different level of climate change adaptation and mitigation actors. The TNA covers all actors and key institutions who are involved in implementation of CREL.

The Training Needs Assessment made at national, regional and local levels draws a portrait of the existing situation in terms of capacities and stakeholders involved in addressing climate change adaptation and mitigation in ecosystem, biodiversity and livelihoods. Moreover, it provides the TNA team with entry points and proposals for the capacity building component and related activities.

The TNA team has noted that training needs in climate change adaptation and mitigation are generally quite pronounced across all climate change management structures in the country.

Knowledge and skill for climate change mitigation or climate science is generally poor at all levels. Almost all of the Government and non-Government organizations have no separate section/division for climate change activities, except DoE.

The major contributing factor to the prevailing capacity situation has been the fact that climate change is an emerging phenomenon, much of which is also highly technical. This has hampered efforts for the country to come up with comprehensive policy guidelines that would guide climate change interventions and is probably a contributing factor that has affected progress in the implementation of the NAPA.

Climate change issues should be addressed in all Government and Non-Government policies and the existing policies need to be modified with practical actions.

Lack of climate change integration in strategic plans and policies has hampered leadership commitment to climate change resource mobilization from the national budget.

Though the NAPA has many interesting proposal in black and white forms but in reality it has to be in practical action from top to bottom process to cope with climate change variability and extreme events that hampers the NRM, biodiversity and livelihoods of millions of poor in the country.

The government organizations and NGO implementing partners have training needs on different issues, some of which are:

1. Concepts and basics on climate change science.
2. Climate Change impacts on different ecosystems and biodiversity, risks and vulnerability.
3. Assessment of impacts and vulnerability of climate change.
4. Climate Change adaptation and mitigation measures in forest and fisheries.
5. REDD+ in forest.
6. Planning climate Change and mitigation projects.
7. Application of meteorological data in climate change management.
8. Climate Change and urban forest and city lakes.

9. Climate Change Awareness Training.
10. Climate Change and Wildlife Biology.
11. Community Based Aforestation (social forestry).
12. SLR impacts on forests biodiversity.
15. Climate change impacts on women and gender relation.
16. Climate Change impacts on fisheries sector and livelihood.
17. Community Based Natural Resources Management adaptation in fisheries and wetlands.

## **4.2 Recommendations**

The TNA team makes the following recommendations to address the training needs of the climate change management structures.

- It is expected that the assessed training needs from national to local should be properly implemented in CREL project with a view to increase resiliency of NR, biodiversity and livelihood through effective co-management approach by the strong participation of the relevant stakeholders.
- A combined package of well funded and targeted short and long term courses coupled by well thought out study tours constitute the training plan intervention in the short and long term perspective. Such a strategic approach to capacity building will contribute significantly towards achievement of climate change outcomes in the MGDS.
- Training course would be conducted at three levels (Grassroots, Regional/PA levels and National levels).
- Integrate climate change in the education sector through capacity building for mainstreaming climate change in primary school curriculum and the teacher education curriculum.
- Specific Training Manual and Modules could be developed on common and specific issues.
- The training needs of the Universities and specialized Institute (Forest Research Institute, FRI) could be assessed further to improve their curricula.

**Checklist for Training Need Assessment on Climate Change under CREL Project**

1. Would you kindly tell us if you have any division/section and personnel/staff in your department with specific responsibility on climate change issues? (Who, when the division started)
  - *Would you please tell us –do you have any cell or department that actually addressing the climate change adaptation issues? OR any one from the institution is responsible to work on climate change issues? who? from when? his designation or grade?*
  - *If you have climate change adaptation cell/dept, how it is performing? do you think that it is satisfactory? why?*
  - *Ar the people working with the cell are capable enough? if not why?*
  - *What sorts of institutional support (policy, fund, strategy, decisions) are receiving by the cell?*

ANS:

2. Does your current institutional policy address capacity building of your own organizational staff on climate change issues?
  - *Do you have capacity building strategy that address climate change issues?*
  - *had you ever been done any TNA for the staffs?*
  - *Do you have plan to capacitize your staffs on climate change issues?*
  - *did your staffs receive any training/orientation about it? who are those staffs?*

ANS:

3. Did your organization/department implement any climate change related capacity building project/programme in last few years? Does your organization/Department implements any climate change related capacity building project now?
  - *Did your organization/department implement any climate change related ng project/programme in last few years?*
  - *Does your organization/Department implements any climate change related capacity building project now?*
  - *How many staffs are working there?*

ANS:

4. Did your organization develop any capacity building materials on climate change related issues (or any organization developed for you) in recent past? If yes, would you please share with us?

ANS:

5. Are you in view of proposing any climate related activity in your upcoming working plan/implementation plan/development plan?  
Yes                      No (if no, move to question 6)

If yes, could you mention them?

- d) .....
- e) .....
- f) .....

6. How do you roughly rate the awareness level of your officials about climate? (Please tick one of the following)

Administrative Level	Climate Change Awareness level of the Organizational staff			
	Less than 25 %	25 - 50 %	50 - 75 %	75% above
Central Level (Head Office)				
Regional Level (Division and District)				
Local Level (Union and Upazilla)				

7. In your opinion, what are the training programmes that you need to strengthen capacity of your organizational staff at different levels to address climate change?

7.1. How did you prepare/procedure climate change training curriculum and setting of CC training objectives? Who arrange and conducted the training on climate change?

ANS:

**7.2. General topic/sessions on climate change issues**

SL	General topic/session on climate change training issues	Capacity building needs at administrative level		
1		Central(Government/NGO)	Regional (Government/N GO)	Local/CMOs/Stakeholders
2				
3				
4				
5				

**7.3. Sector specific topic on climate change issues for capacity building training on climate change**

SL	Specific Topic/sessions for your Organizational staff	Capacity building needs at administrative level		
		Central (Government/NGO)	Regional (Government/NGO)	Local/CMOs
1				
2				
3				
4				
5				

7.4. What tools/methods used for vulnerability assessment of climate change at community level for CC training purpose?

ANS:

7.5. Are there any climate change adaptation and mitigation training session, if yes please mention elaborately.

ANS:

## Appendix-B

### Individual experts and CMC/VCF/RUG members consulted

<b>Name</b>	<b>Position</b>	<b>Institutions</b>
Mr. Ratan Kumar Majumder	Deputy Chief Conservator of Forest	FD
Dr. Abu Wali Raghieb Hassan	Project Director	DOAE
Mr. Mohammad Solaiman Haider	Deputy Director	DOE
Dr. Binay Kumar Chakraborty	Project Director	DOF
Dr. Samarandra Karmakar	Retired Director	BMD
Mr. Shah Alam	Director	
Dr. Craig A Meisner	Director South Asia	WorldFish Center
Ms. Melody Braun	Climate Change Advisor	
Dr. Istiak Sobhan	Programme Coordinator	IUCN
Mr. Anisur Rahman	Chairman	CNRS
Dr. Abdul Wahab	Director	NACOM
Mr. M.A. Wahab	Institutional Capacity Building Specialist	IPAC
Dr. Khurshid Alam	Executive Director	CODEC, Chittagong
Mr. Md. Baktiar Nur Siddique	Divisional Forest Officer, Chittagong South Forest Division	Forest Department, Chittagong
Mrs. Provati Dev	District Fisheries Officer, Chittagong	Department of Fisheries
Mrs. Neela Dutta	Director	Forestry Science and Technology Institute (FSTI)
Mr. Kazi Naksudul Rahman Babul	President	CMC, Kaptai, Chittagong
Engineer Abdul Latif (Along with Members of CMC)	Chairman, UP, Kaptai, Chittagong	
Ms. Atoma Marma (Along with Members of VCF)	Leader	VCF, ShilChhari, Marmapara, Kaptai, Chittagong

Name	Position	Institutions
Kamaru, Safia Begum, Dilara Begum	Members/Participants	Borogunia Federation of Resource User group (FRUG), Hail haor, Srimangal
Mr. Ahsan Hasib Khan	District Fisheries officer (Add. In Charge)	Department of Fisheries (DOF), Moulavibazar
Mr. Chittaranjan Deb Barman	CMC and Petrol member	Paikpara, Chunarughat, Habiganj,
Mr. A. K. M. Munir Ahmed Khan	Forest Range Officer And CMC Member Secretary	CMC , Chunarughat, Habiganj
Mr. Abul Kalam Azad	CMC Vice President	CMC , Chunarughat, Habiganj
Mr. Md. Abul Khair Azad	President of VCF and CMC member	VCF and CMC, Chunarughat, Habiganj
Mr. Abdul Sobhan Chowdhury	RMO Chairman	RMO, Kalachanpur, Srimangal, Moulavibazar
Mr. Minnat Ali	RMO Chairman	RMO, Kalachanpur, Srimangal, Moulavibazar
Mr. Md. Mirash Mia	RMO Secretary	RMO, Kalachanpur, Srimangal, Moulavibazar
Mr. Polash Sarker	Governance Officer	CNRS-CREL, North East Region (Sylhet)
Mr. Saran Kumar Chowhan	RC (Regional Coordinator)	CNRS-CREL, North East Region (Sylhet)
Mr. Md. Mahbubur Rahman	District Forest Officer	Forest Department, Moulavibazar Sadar



## Appendix-C

### **Key Elements and Format of the Training and Capacity Development Plan**

(for Strengthening Capacity of the Government, Implementing Partners and Communities)

#### **(a) Government Personnel**

Plans	Training Issues	Phase	Duration	Government Organizations: DOE, FD and DOF		
				Level of Training		
				Senior	Mid-Level	Non-gazette/UP
1 <sup>st</sup> Year	Basics on Climate Change Science	Short-term	0-3 months	√	√	√
	Climate change and NRM	Mod-term	3-6 Months	√	√	√
	Economics of Climate Change	Long-term	6-12 Months	√	√	
2 <sup>nd</sup> year	Mainstreaming of climate change resilience in sectoral Plan and Programs	Long-term	Above 12 Months	√	√	
	Protected area governance Co managed PAs: Issues and challenges	Mod-term	3-6 months	√	√	
	Training on proposal writing for grant	Short-term	0-3 months	√	√	
3 <sup>rd</sup> year	Environment, forest, water body, sanctuary and fisheries law	Mod-term	3-6 months	√	√	
4 <sup>th</sup> year	Biodiversity surveillance, illegal activities and impact monitoring	Mod-term	3-6 months	√	√	√
5 <sup>th</sup> year	Financial management And Good Governance and Social Audit	Mod term	3-6 months	√	√	
	REDD+, Carbon stock measurement & climate change mitigation	Mod term	3-6 months	√	√	√

## (b) Implementing Partners

Plans	Training Issue	Phase	Duration	Implementing Partners					
				BCAS	CNRS	CODEC	NACOM	World Fish Center	Tetra Tech ARD
1 <sup>st</sup> year	<b>Basics on Climate Change Science</b>	Short-term	0-3 months	√	√	√	√	√	√
	Climate change and NRM	Mod-term	3-6 Months	√	√	√	√	√	√
	Awareness raising, training of trainers and strengthening of training institutions with relevance for climate change : knowledge management, and regional networking for climate change and adaptation related issues	Long-term	6-12 Months	√	√	√	√	√	√
2 <sup>nd</sup> year	Mainstreaming of climate change resilience in sectoral Plan and Programs	Long-term	Above 12 Months	√	√	√	√	√	√
	Protected area governance Co managed Pas: Issues and challenges	Mod-term	3-6 months	√	√	√	√	√	√
3 <sup>rd</sup> year	Environment, forest, water body, sanctuary and fisheries law	Mod-term	3-6 months	√	√	√	√	√	√
4 <sup>th</sup> year	Biodiversity surveillance, illegal activities and impact monitoring	Mod-term	3-6 months	√	√	√	√	√	√
5 <sup>th</sup> year	Financial management And Good Governance and Social Audit	Mod term	3-6 months	√	√	√	√	√	√
	REDD+, Carbon stock measurement & climate change mitigation	Mod term	3-6 months		√	√	√		

## (C) Communities

Plans	Training Issue	Phase	Duration	Communities		
				CMOs	CMCs	VCFs
1 <sup>st</sup> year	Basics on Climate Change Science	Short-term	0-3 months	√	√	√
	Climate change and NRM	Mod-term	3-6 Months	√	√	√
2 <sup>nd</sup> year	Gender mainstreaming in NRM and CC adaptation			√	√	√
	Mainstreaming of climate change resilience in sectoral Plan and Programs	Long-term	Above 12 Months	√	√	√
3 <sup>rd</sup> year	Ecological monitoring	Long-term	Above 12 Months	√	√	√
4 <sup>th</sup> year	Economics of Climate Change: Alternative Income Generating Activities	Long-term	6-12 Months		√	√
5 <sup>th</sup> year	Self-assessment methods of co-managers in performance, target achievement, progress in conservation (IPAC scorecards, sustainability index etc.)	Mod-term	3-6 Months	√	√	√
	REDD+, Carbon stock measurement & climate change mitigation	Long-term	6-12months	√	√	