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INTEGRATED PROTECTED AREA CO-MANAGEMENT (IPAC)

TRAINING AND SUPPORT FOR FOREST CARBON PROJECT DEVELOPMENT

May 2010

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INTEGRATED PROTECTED AREA CO-MANAGEMENT (IPAC)

TRAINING AND SUPPORT FOR FOREST CARBON PROJECT DEVELOPMENT

March 15-21, 2010

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Organized By: Integrated Protected Area Co-Management (IPAC) Project

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INTRODUCTION

The training course on Forest Carbon Project Development was organized by the Integrated Protected Area Co-management (IPAC) Project, a joint program of the United States Agency for International Development (USAID) and the Government of Bangladesh. The training course was held on 15-21 March 2010 at Conference Room of the Forest Department, Bana Bhaban, Agargaon, Dhaka. Twenty-four representatives from Forest Department, Department of Fisheries, Universities, NGOs, private sectors and other partner organizations who are active in climate change/carbon finance, participated (Annex 1).



Training session

The training course was organized to provide participants with an orientation on carbon project planning and designing, and to enable them to master the field survey techniques which are required to assess carbon stocks and to prepare carbon projects. The overall objective of IPAC is to assist Forest Carbon Training, field support and project development activities to contribute to the adaptation and mitigation of climate change and to promote the sustainable development of natural resources by strengthening the capacity of the IPAC implementing agencies including Forest Department (FD), Department of Fisheries (DOF) and Department of Environment (DOE) to prepare and implement forest carbon projects enabling them to access sustainable financing for the co-management of forest and wetland Protected Areas (PAs) from both national and international carbon markets.

BACKGROUND AND CONTEXT

A snapshot of the project design and development process has been presented by focusing on Land Use, Land-Use Change and Forestry (LULUCF), Afforestation and Reforestation (A/R) and Reduced Emissions from Deforestation and Forest Degradation (REDD).

Forest carbon project planning, design and development were discussed. A review of the main components of forest carbon projects, the key issues regarding feasibility and standards, Project Design Document (PDD), methodologies and tolls for making initial and ongoing measurements of carbon pool, and non-carbon risks and benefits, and requirements for accessing carbon markets were also included in the discussion.

Main focus was on mastering the use of equipment to be used to carry out carbon pool assessments and associated sampling and inventory techniques; this will include a review of carbon assessment protocols standards and procedures, inventory design, trends analysis and compliance with monitoring requirements.

Additional focus has been given on increased understanding of project design issues, including: i) project's relevance and contribution towards Bangladesh's national plans and development goals including poverty alleviation and biodiversity conservation, ii) approved baseline and monitoring methodologies, iii) estimation of *ex ante* net anthropogenic Green House Gases (GHG) removals by land-use sinks, and estimated amount of net anthropogenic

GHG removals by land-use sinks over the chosen carbon credit period, iv) potential barriers related to key issues, v) monitoring and reporting plan, and cost, and vi) assessment of environmental and socio-economic impacts.

Main principles, tools and procedures related to an A/R and REDD Projects Development for forest has been covered in this training (Phase I) in order to prepare the participants for field inventory and assessments that will be carried out in Phase II and project preparation write-up in Phase III.

IDENTIFIED PROJECT AREAS FOR CARBON PROJECTS

In addition to the Sunderbans REDD project (forest inventory and project preparation ongoing since December 2009), the following forest and wetland PAs have been targeted:

Sl No.	Name of IPAC PAs	Area of PA (in ha)	Upazila/District	Carbon Activity	Forest Division/DOF
1	Rema-Kalenga Wildlife Sanctuary	1,795	Chunarughat/Hobigonj	REDD	Sylhet WLD
2	Kangsha-Malijhee Basin	8,000	Jhenaigati, Sherpur Sadar/Sherpur	A/R	DOF
3	Teknaf Game Reserve	11,615	Teknaf/Cox's Bazar	A/R	Cox's Bazar (S)
4	Himchari National Park	1,729	Cox's Bazar Sadar/Cox's Bazar	A/R	Cox's Bazar (S)
5	Inani Reserve Forest	7,700	Ukhia/Cox's Bazar	A/R	Cox's Bazar (S)
6	Fasiakhali WS	1,302	Chakaria/Cox's Bazar	REDD	Cox's Bazar (N)
7	Medha Kachhapia National Park	396	Chakaria/Cox's Bazar	REDD	Cox's Bazar (N)
8	Sitakundu Reserve Forest	808	Sitakundu/Chittagong	A/R	Chittagong (N)
9	Dudpukuria National Park (Proposed)	3,500	Chittagong	REDD	Chittagong (N)
10	Hail Haor	1,000	Moulvibazar	A/R	DOF

TECHNICAL DETAIL

On the opening day, Mr. Ishtiaq Uddin Ahmad, Deputy Chief Conservator of Forest Department, welcomed everyone. He noted the importance of technical capacity building as part of the overall “readiness” of Bangladesh to participate in international REDD and other carbon market mechanisms, and urged participants to apply themselves diligently during the training workshop. After his speech, Mr. Kazi M.A. Hashem, Institutional Capacity Building Specialist, led the participants through an introductions and expectations exercise.

Participants Expectations:

- To know about carbon and different kinds of carbon measurement;
- Carbon project design/how to prepare or develop carbon project;
- Concept of Clean Development Mechanism (CDM);
- Sequestration of carbon;
- How to analyse carbon stock;
- Carbon trading-what are the markets and potentiality;
- Carbon inventory process;
- Calculation of carbon emission;
- Techniques of estimating carbon emission and sequestration process;
- Relation between power energy and CDM Project;
- Inventory process of carbon status in Forest.

Dr. Fazle Rabbi Sadeque Ahmed, Director, DOE mentioned that carbon trading is a flourishing project and CDM is an established concept of climate change. He hoped the participants would learn carbon measuring system and how to develop carbon project through this training. India and Indonesia have already developed project and in future financial help will come in REDD sectors, he added. Dr. Ram A Sharma, DCOP said that after this training we will know how to prepare carbon project proposal against REDD.

COP, IPAC Mr. Bob Winterbottom had a presentation on IPAC activities (Annex 2) and he explained how forest carbon project development fits within the overall program.

Next, Mr. Todd R. Johnson, Senior Manager and Forest Carbon Specialist, IRG stated the opening session presentation (Annex 3) as a guide for “leveling-off” of participants’ understanding on terrestrial carbon projects, international framework, carbon markets, carbon quality considerations. The session closed with a small group exercise where representatives of each project site listed the secondary information sources (Annex 4) available to them, including previous forest inventories, socioeconomic surveys, biodiversity assessments, and other relevant data.

The following day of training continued the interactive discussions, using a list of 20 key concepts from the opening session and the packet of documents as the basis for a plenary discussion. This method also allowed the specialist to assess how well the concepts had been understood. Conceptual understanding was seen as the critical result of the initial two days of training, and by the end of the day a sufficient foundation of core concepts was laid for fieldwork to be conducted with the level of rigor and data quality necessary. Participants understood clearly why they needed to be ever-mindful of introducing error and uncertainty into the data collection.

On the next day of the training, Dr. Sharma conducted a session on forest carbon project development (Annex 5), especially on case study of A/R and REDD+ project development in Bangladesh. He described the proposal that developed on Chunoti Wildlife Sanctuary and Sundarbans. Then the specialist from the Forest Department Md. Zaheer Iqbal of the RIMS Unit and Mr. Imran Ahmed, the ACF for Khulna Division conducted a series of sessions on field data collection (Annex 6 and 7). These sessions included both the concepts and practice of measuring forest carbon, as well as instruction on using the instruments (e.g., densitometer, diameter tape, GPS, laser clinometers, and soil augur). The following day (19th March, 2010) consisted of a field practicum on using the instruments, conducted in Sal forest (*Shorea robusta*) of Kaliakor Range, Gazipur District (photos with captions in Annex 8).

The final two days of the training workshop focused on how to apply the concepts of forest carbon projects, and the fieldwork of carbon pool assessment, to design the projects that meet the Voluntary Carbon Standards (VCS) and Climate, Community and Biodiversity (CCB) Standards. Using those two documents, and the supporting tools (e.g., Project Design Document Template and Tool for AFOLU¹ Non-Permanence Risk Analysis and Buffer Determination), the session highlighted which secondary data and other information needs could not be met through forest carbon accounting. The participants also made revisions to the draft Field Data Sheet, and in small groups developed timelines (Annex 9) to successfully complete fieldwork during Phase II of the training. Dr. Fazle Rabbi, Director of DOE, also delivered a presentation on the policy and institutional context (Annex 10) for developing forest carbon projects in Bangladesh and internationally.

RESULTS

1. Participants are being oriented with the important issues that are relevant to the following topics.
 - a. Afforestation/Reforestation (A/R) and REDD+ Forest Carbon Projects Development (PDD) methods and issues in designing and implementing forest carbon projects (both for regulatory and voluntary markets) including field design, specification, inventory, standards, verification, permanence and leakage, forest and tenures, monitoring, carbon credits, accounting, reporting etc.
 - b. International and national carbon markets: a brief overview of the specific aspects of international carbon trade as they relate to forest carbon projects including A/R and REDD+.
2. Participants have known how to carry out field inventory works including assessment of basement scenario and carbon sequestration rates for assessing net carbon changes due to implementation of A/R and REDD+ forest carbon projects in the 11 identified PAs.

¹ AFOLU-Agriculture, Forestry and Other Land Use

DISCUSSION AND CONCLUSION:

The training was conducted not as a lecture format; rather, an informal and interactive session where participants were freely asking questions and seeking clarification as the session proceeded.

At the end of the training session, Mr. Bob Winterbottom, COP, IPAC Project informed that Government of Bangladesh will submit Project Proposal (PP) on carbon project. He hoped we will make a contribution through giving all supports to complete a successful write shop. He thanked all participants and resource persons and closed the training. Then everybody participated in a group photo session.



Participants of training

ANNEX I

PARTICIPANTS LIST

Sl No	Name	Designation	Department/ Organization	Comments
	GO Department			
01	Md. Aminul Islam	SUFO	DOF	
02	Md. Mohsen Ali	SUFO	DOF	
03	Quazi Md. Nurul Karim	ACF	FD	
04	Md. Motlubur Rahman	ACF	FD	
05	Md. Anowar Hossain Serker	ACF	FD	
06	Md. Maksud Alam	ACF	FD	
07	Md. Abdur Rahman	ACF	FD	
08	Shahidul Islam Bhuiya	SUFO (in charge)	DOF	
09	Md. Aminul Hoque	UFO	DOF	
10	Hoq Mahbub Morshed	ACF	FD	Observer
11	Md. Rafiqul Islam	ACF	FD	Observer
12	Rafiqa Sultana	ACF	FD	Observer
13	Dr. Mariam Akhter	ACF	FD	Observer
	University			
14	Shohana Huq	Lecturer	Independent University of Bangladesh	
15	Md. Omar Sharif	Student	Bangladesh Agricultural University (BAU)	
16	Md. Monirul Islam	Student	Khulna University	
17	Bayezid Khan	Student	Jahangirnagar University (JU)	
18	Rasel Ahammed	Student	JU	
19	Md. Rajib-ul-Hoque	Student	North South University (NSU)	
20	Md. Manirul Islam	Student	NSU	
21	Sanjoy Das	Student	BAU	
	NGOs			
22	Utpal Bhattacharjee	Manager, CDM	Rahimafrooz	
23	Kazi Mahmud Ullah	DGM	Rural Services Foundation	
24	Md. Shawkat Hossain	Program Officer (M&E)	Arannyak Foundation	
	Resource Person			
25	Dr. Fazle Rabbi Sadeque Ahmed	Director	Department of Environment	
26	Todd Johnson	Sr. Manager	IRG	
27	Bob Winterbottom	COP	IPAC Project	
28	Dr. Ram A. Sharma	DCOP	IPAC Project	
29	Kazi M A Hashem	ICBS	IPAC Project	
30	Md. Zaheer Iqbal	DCF	FD	
31	Ruhul Mohaiman	PM Specialist	IPAC Project	
32	Imran Ahmed	ACF	FD	
	Other			

33	A.K.M. Shamsuddin	Advisor	IPAC Project	
34	Ishtiaq Uddin Ahmad	DCCF	FD	
35	Mostofa Omar Sharif	PMARA	IPAC Project	
36	Kanailal Debnath	PMARA	IPAC Project	
37	Shital Kumar Nath	PMARA	IPAC Project	
38	Md. Shakil Ahmed Khan	PMARA	IPAC Project	
39	Md. Amirul Islam		IPAC Project	

ANNEX 2

OVERALL IPAC ACTIVITY

<div data-bbox="272 342 453 396" data-label="Image"> </div> <div data-bbox="634 338 760 394" data-label="Text"> <p><i>ipac</i></p> </div> <div data-bbox="358 459 688 539" data-label="Section-Header"> <h3>Overview of IPAC and Climate Change</h3> </div> <div data-bbox="396 581 638 659" data-label="Text"> <p>Training Workshop on Carbon Project Development Dhaka, 15 March 2010</p> </div>	<div data-bbox="836 327 980 373" data-label="Image"> </div> <div data-bbox="1232 325 1354 375" data-label="Text"> <p><i>ipac</i></p> </div> <div data-bbox="860 403 1070 428" data-label="Section-Header"> <h4>Outline of Presentation</h4> </div> <div data-bbox="865 441 1070 466" data-label="Section-Header"> <h5>Context and background</h5> </div> <div data-bbox="865 464 1149 510" data-label="List-Group"> <ul style="list-style-type: none"> • IPAC overview • Importance of climate change to IPAC </div> <div data-bbox="865 508 1138 535" data-label="Section-Header"> <h5>IPAC Support for carbon projects</h5> </div> <div data-bbox="865 531 1214 684" data-label="List-Group"> <ul style="list-style-type: none"> • Chumoti Wildlife Sanctuary – CDM proposal • Collaboration with US Forest Service • Carbon policy workshop • Carbon project preparation training – 1st course • Sundarbans inventory and REDD proposal • Carbon project preparation training – 2nd course • PPP and collaboration with private sector </div>												
<div data-bbox="261 762 406 808" data-label="Image"> </div> <div data-bbox="659 758 774 810" data-label="Text"> <p><i>ipac</i></p> </div> <div data-bbox="290 835 493 863" data-label="Section-Header"> <h4>IPAC Project Summary</h4> </div> <div data-bbox="290 882 727 1110" data-label="List-Group"> <ul style="list-style-type: none"> • Integrated Protected Area Co-Management Project • Funded by USAID/Bangladesh – Environmental Program, for five years (5 June 2008 – 4 June 2013) • Implemented through MOFL and MOEF with technical assistance from IRG and partners <ul style="list-style-type: none"> – Dept of Environment – Forest Dept – Dept of Fisheries – Local Government – Community Based Organizations in 5 Clusters </div>	<div data-bbox="836 762 980 808" data-label="Image"> </div> <div data-bbox="1232 758 1354 810" data-label="Text"> <p><i>ipac</i></p> </div> <div data-bbox="865 835 1297 863" data-label="Section-Header"> <h4>Context for IPAC: USAID Environmental Program</h4> </div> <div data-bbox="865 882 1317 1108" data-label="List-Group"> <ul style="list-style-type: none"> • Management of Aquatic Ecosystems through Community Husbandry (MACH) <ul style="list-style-type: none"> – Community based collaborative management of inland fisheries and wetlands, with Dept. of Fisheries – 3 pilot sites: Sylhet and Central • Co-Management of Tropical Forest Resources in Bangladesh (Nishorgo) <ul style="list-style-type: none"> – Nishorgo Support Project (NSP) with Forest Dept. – 5 pilot sites: Sylhet and South East / Teknaf peninsula – Assistance with preparation of Chumoti WS pilot project • Tropical Forest Conservation (Arannayk Foundation) </div>												
<div data-bbox="500 1215 805 1253" data-label="Section-Header"> <h3>Wealth of Bangladesh</h3> </div> <div data-bbox="438 1289 862 1686" data-label="List-Group"> <ul style="list-style-type: none"> • 3rd largest wetland system and freshwater fisheries in the world • Flat deltaic land; 30-40% inundated under normal flooding • 100 million dependent on inland wetlands and open water capture fisheries for food and income • Long coast line and extensive coastal and marine capture fisheries • Fertile soils – long growing season </div> <div data-bbox="911 1255 1185 1736" data-label="Figure"> <p>Land Types Map of Bangladesh (Based on Depth of Inundation)</p> <p>LEGEND</p> <table border="1"> <tr> <td>Dark Green</td> <td>Forest</td> <td>Light Green</td> <td>Wetland</td> </tr> <tr> <td>Yellow</td> <td>Barren Land</td> <td>Red</td> <td>Urban Areas</td> </tr> <tr> <td>Blue</td> <td>Water Bodies</td> <td>Pink</td> <td>Agricultural Land</td> </tr> </table> <p>Map by C. Goy and D. Miller</p> </div>		Dark Green	Forest	Light Green	Wetland	Yellow	Barren Land	Red	Urban Areas	Blue	Water Bodies	Pink	Agricultural Land
Dark Green	Forest	Light Green	Wetland										
Yellow	Barren Land	Red	Urban Areas										
Blue	Water Bodies	Pink	Agricultural Land										



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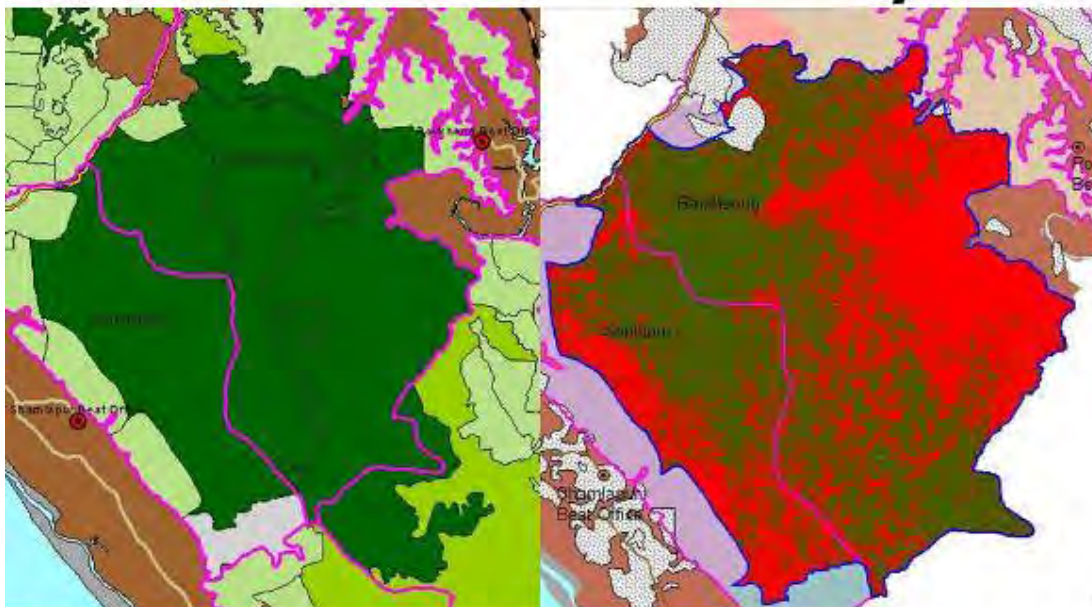
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- 90% forest cover lost
- Annual deforestation rate of 3.3%
- amounting to 8,000 ha per year
- Small endowment of remaining forest
- Livelihood for millions of people
- Less than 0.02 ha/person of forest land – lowest ratio in the world
- Surface area in "Protection status" only 1.4% – 2nd lowest in world
- 5 areas (23,000 ha) co-managed through Nishorgo





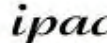










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Loss in Forest in Teknaf Area 1995-2003 – 42% cut down in 8 years

<div>   </div>  <p>Wetlands under threat:</p> <ul style="list-style-type: none"> • Encroachment, dewatering/ drainage, conversion to cropland • Erosion in upland areas and siltation of low lying area • Pollution • Over-exploitation • 40% of freshwater species threatened with extinction (IUCN, 2000) 	<div>   </div> <p>Overall challenge for IPAC Team</p> <ul style="list-style-type: none"> • Integrated <ul style="list-style-type: none"> – Terrestrial and aquatic ecosystems – Economic growth, governance and biodiversity conservation – National and local priorities – With FD, DoF, DoE • Protected Area <ul style="list-style-type: none"> – Control, limit destructive extraction of NR – Identify, support, promote sustainable use, improved mangt – Invest in protection, restoration, conservation • Co-management <ul style="list-style-type: none"> – Foster, empower collaboration gov't agencies and communities – Promote public private partnerships
<div>   </div> <p>What is the Protected Area network?</p> <ul style="list-style-type: none"> • The PA Network is proposed as the common identity of the expanding network of co-managed wetlands and forests <ul style="list-style-type: none"> – Dept of the Environment has established and is supporting participatory conservation of ECA's – Forest Department has established the Nishorgo network of co-managed forest Protected Areas – Department of Fisheries has pioneered wetland and open water co-management by promoting fish sanctuaries in beels, haors and river systems 	<div>   </div> <p>Why a National PA Network?</p> <ul style="list-style-type: none"> • Forests and wetlands of Bangladesh are some of the most productive ecosystems in the world <ul style="list-style-type: none"> – Greed and over exploitation destroy these forests and wetlands • Local population have sustainably utilized forests and wetlands for ages <ul style="list-style-type: none"> – Their destruction is forcing poor and natural resource dependent people deeper into poverty • Nature cannot be protected without engaging neighboring people <ul style="list-style-type: none"> – Participatory co-management can lead to both ecosystem preservation and poverty reduction through improved collaboration – Co-management organizations can provide a voice for adavast and the poor, and a forum for constructive dialogue among all stakeholders
<div>   </div> <p>Who supports the PA network?</p> <ul style="list-style-type: none"> • Government of Bangladesh <ul style="list-style-type: none"> – Ministry of Environment and Forest – Forest Department and Dept of Environment – Ministry of Fisheries and Livestock - Department of Fisheries – Ministry of Local Government - Local Government and Engineering Dept. – Ministry of Land – Ministry of Finance • Strategies, Programs and Action Plans <ul style="list-style-type: none"> – Poverty Reduction Strategy Plan and MDG – National Climate Change Strategy and Action Plan – National Biodiversity Strategy and Action Plan – Inland Capture Fisheries Strategy – Nishorgo Vision • Local communities, user groups, civil society, universities, youth, implementing partners 	<div>   </div> <p>What are the Central Principles for the Network?</p> <ul style="list-style-type: none"> • Conservation-focused: Within every PA in the national network, there is a core area of natural wetland or forest preserved in its natural state <ul style="list-style-type: none"> – As formally recognized park or reserve covered by Government Act or Rule or a small wetland sanctuary within a larger water body, this feature is maintained throughout the network sites. • Collaboratively Managed: Each PA in the network is conserved through formalized collaboration between neighboring communities and representatives of local government and technical depts. <ul style="list-style-type: none"> – This co-management organization is formally recognized and accepted by Government • Pro-Poor: Co-managed PA to promote local livelihood opportunities <ul style="list-style-type: none"> – All network PA are co-managed to ensure that benefits are directed to the neighboring poor to provide tangible economic incentives for their participation in conservation

<div data-bbox="263 205 406 252"> </div> <div data-bbox="662 205 774 252"> </div> <div data-bbox="293 285 725 308"> <p>What are the benefits of the national PA network?</p> </div> <div data-bbox="293 325 745 512"> <ul style="list-style-type: none"> • Helps to slow or reverse the loss and degradation of natural wetlands and forests • Contributes to maintenance of ecosystem services <ul style="list-style-type: none"> – biodiversity conservation – reduced vulnerability to climate change – Watershed protection and improved water supplies • Linkage with poverty reduction and increased food security • Enables expansion of ecotourism • Improved relations between government and local communities; promotes democracy at the grass roots </div>	<div data-bbox="839 205 982 252"> </div> <div data-bbox="1237 205 1349 252"> </div> <div data-bbox="868 275 1326 323"> <p>What practical benefits will the PA network generate locally?</p> </div> <div data-bbox="855 336 1341 518"> <ul style="list-style-type: none"> • Increased productivity of fisheries in co-managed wetlands • Sharing of entry fees from forest protected areas; • Preferential access to use of Reserve Forest land in PA landscape for fuelwood production, social forestry • Direct benefits as ecoguides, eco-cottage ownership, craft sales and other ecotourism enterprises and services • Opportunities to benefit from revenue from carbon credits and climate change adaptation resources; • Access to improved cook stoves, microcredit, AIG support and other assistance from NGOs and others </div>
<div data-bbox="263 640 406 686"> </div> <div data-bbox="662 640 774 686"> </div> <div data-bbox="293 714 709 737"> <p>Co-management – functional definition for IPAC</p> </div> <div data-bbox="280 756 742 917"> <ul style="list-style-type: none"> • Co-management is an approach used by government technical agencies to collaborate with local communities and other stakeholders in the management of designated forest lands, wetlands and other natural resources • To implement co-management approach, managers engage local stakeholders through a participatory approach that empowers them with a voice and well defined role in decision-making, and provides sufficient economic incentives to engage their interest and commitment to conservation </div>	<div data-bbox="839 640 982 686"> </div> <div data-bbox="1237 640 1349 686"> </div> <div data-bbox="868 718 1141 741"> <p>IPAC Approach – key elements</p> </div> <div data-bbox="868 760 1320 982"> <ul style="list-style-type: none"> • Increase local incomes - at landscape level: support AIG through value chain strengthening, alternative production systems, sustainable livelihoods, to reduce pressures on PA, improve land use in surrounding areas • Improve PA management through collaboration- support community participation in protection, habitat restoration and wildlife management, infrastructure development and visitor management, ecotourism and conservation enterprises to enable local communities to capitalize on increased value of PA </div>
<div data-bbox="263 1075 406 1121"> </div> <div data-bbox="662 1075 774 1121"> </div> <div data-bbox="293 1152 503 1176"> <p>IPAC Approach (cont'd)</p> </div> <div data-bbox="293 1194 745 1421"> <ul style="list-style-type: none"> • Empower local co-managers: support capacity building, training and social mobilization with agreed upon rights and responsibilities, and enabling of local user groups and co-managers to adopt good practices and to ensure equitable benefit distribution • Reinforce enabling conditions for site level co-management: <ul style="list-style-type: none"> – Institutional and legal reforms for clarified resource access / rights, management roles, benefit sharing – Awareness raising, communications and outreach – Innovative sustainable financing mechanisms – Local support services and networks for training, BDS </div>	<div data-bbox="839 1075 1349 1461"> <p>The diagram illustrates the IPAC approach. At the top, 'INTEGRATED PROTECTION AREA CO-MANAGEMENT' leads to 'LEVERAGED PARTNERSHIPS' (with an IPAC logo). This then branches into three main pathways: 'POLICY SUPPORT' (leading to GOVERNMENT entities like FTB, DOE, DOF, DC, UNO), 'EMPPOWERMENT' (leading to CIVIL SOCIETY entities like NGOs), and 'SOCIAL MOBILIZATION' (leading to COMMUNITY entities like Eco-Cottage Development, Eco-Cakes, Resource Owners, and Forest User Groups). A separate box on the right lists 'COMPANIES' and their products: 'URBOT', 'DEET', 'INSECT', 'FISHING', 'WASKET', and 'ACCESS'.</p> </div>


Purpose of IPAC














1. Support natural resources management and conservation of biological diversity
2. Develop an integrated Protected Area Strategy for wetlands, forest ecosystems and ecologically critical areas
3. **Build technical capacity for PA co-management**
4. Expand the area under co-management and ensure benefits to communities
5. **Address climate change mitigation and adaptation**

Proposed IPAC Project Sites









<div>   </div> <h3>Climate Change and Bangladesh</h3> <ul style="list-style-type: none"> • Need to prepare for drier, warmer periods, with changing and disrupted patterns of rainfall • Risk of sea level rise, increased severity and frequency of cyclones and other storms • Increased importance of protecting remaining intact natural ecosystems <ul style="list-style-type: none"> – Tropical forests, especially mangroves, are an important C sink and provider of ecosystem services, biodiversity conservation, local livelihoods and socio-economic benefits – Natural wetlands also sequester carbon, provide services, benefits • Important to undertake many actions to mitigate and adapt to climate change <ul style="list-style-type: none"> – Protection, restoration of natural forests and wetlands – Afforestation, reforestation, promotion of sustainable land use • Important to develop capacity to monitor impacts of climate change 	<div>   </div> <h3>Importance of Climate Change to IPAC</h3> <ul style="list-style-type: none"> • Cannot conserve biodiversity without doing more on mitigation of climate change • Cannot secure local livelihoods and sustain benefits to people without increased adaptation to climate change • Carbon finance represents an opportunity to diversify and increase sustainable financing for PA co-management • Support for AIG / IGA with local communities can also contribute to reduced vulnerability to climate change
<div>   </div> <h3>Role of IPAC - Mitigation</h3> <ul style="list-style-type: none"> • Reduce emissions of GHG by slowing or halting deforestation in targeted areas • Reduce loss and degradation of coastal mangroves, wetlands, open water bodies and forest lands • Assist with dissemination of improved cook stoves, biogas cookers and reduction of use of fuelwood • Promote community forestry aimed at the improved sustained-yield management and increased productivity of buffer zone forests and plantations • Contribute to sustainable / improved land use through extension of good practices for fisheries, homestead gardens, integrated cropping systems, soil/water conservation and agroforestry 	<div>   </div> <h3>IPAC Support - Vulnerability and Adaptation</h3> <ul style="list-style-type: none"> • Help control dewatering, promote habitat restoration, excavation and establishment of fisheries sanctuaries to conserve wetlands • Support regeneration and regeneration of natural forests to increase the biodiversity and productivity of forest ecosystems • Support organization of Upazila Fisheries Committees, Resource Management Organizations, Co-Management Councils, People's Forum and other organizations to institutionalize and sustain conservation and co-management of Protected Area landscapes • Policy and legislative reform, training and capacity building, development outreach, communication, networking and constituency building to maintain wetlands and natural forests • Provide training, micro-credit and enterprise development assistance to diversify local livelihoods, alleviate rural poverty and reduce pressures on remaining fisheries, forests and other natural resources • Support and promotion of market-based strengthening of targeted value chain chains to increase community level economic benefits from the improved management and sustainable use of targeted natural resources.
<div>   </div> <h3>Sustainable Financing of PA Co-management</h3> <ul style="list-style-type: none"> • Develop institutional capacity for the preparation of sustainable financing plans for long term co-management of Protected Areas, including mobilization of shared entry fee revenues • Promote carbon sequestration through the expansion of the national network of Protected Areas, and facilitate sale of carbon credits from PA landscapes with approved co-management plans • Capitalize on opportunities to mobilize Climate Change linked funding linked (REDD, CDM, Trust Fund, voluntary markets) • Support and promote <i>private-public partnerships</i>, corporate social responsibility grants, establishment of Endowment Funds, leveraged development assistance financing and other innovation financing mechanisms 	<div>   </div> <h3>IPAC Support for carbon projects</h3> <ul style="list-style-type: none"> • Chumoli Wildlife Sanctuary – CDM proposal • Collaboration with US Forest Service • Carbon policy workshop • Carbon project preparation training – 1st course • Sundarbans inventory and REDD proposal • Carbon project preparation training – 2nd course • PPP and collaboration with private sector

<div>   </div> <p>Chunoti Wildlife Sanctuary</p> <ul style="list-style-type: none"> • NSP support for pilot project in afforestation / reforestation – meeting standards for CDM proposals • Assisted with fieldwork to estimate carbon stocks • Preparation of project proposal, approved at national CDM project • Collaborated with GTZ in design of bilateral project to fund initial phase of funding for increased forest protection, regeneration, reforestation and AIG for surrounding community through FD and CMC 	<div>   </div> <p>USFS and EC Collaboration with IPAC in Sundarbans</p> <p>Technical Support to Forest Dept for:</p> <ul style="list-style-type: none"> • Carbon estimation • Forest planning • Infrastructure master planning <p>EC/ SEALS funding for</p> <ul style="list-style-type: none"> • Support of Forest Dept to conserve SRF • AIG support for local communities in SI2 
<div>   </div> <p>IPAC and carbon finance - recent activities</p> <ul style="list-style-type: none"> • Carbon policy workshop – October 2009 - recognized increasing need to recognize value of ecosystem services, including carbon sequestration • Followed up with two week practical training in Nov 2009 for Sundarbans forest inventory / carbon pool assessment • Fieldwork for Sundarbans inventory / REDD proposal development underway Dec 2009 – April 2010 • Currently exploring opportunities for PPP in support of carbon finance • Second training workshop – to support fieldwork and preparation of additional carbon projects in targeted forests and wetlands – March 2010 	<div>   </div> <p>Challenges to be addressed</p> <ul style="list-style-type: none"> • Mobilization of additional support for carbon inventories and fieldwork <ul style="list-style-type: none"> – Aranyak Foundation – Private sector • Completion of all project design tasks required to meet CCB and VCS standards <ul style="list-style-type: none"> – Comprehensive description of project intervention zones <ul style="list-style-type: none"> • Assessment of historical carbon trends • Identify drivers of changes in land use / land cover / carbon stocks • Agreement on project intervention strategies to sequester / secure carbon – Acquisition of land rights – Consultation and agreement on targeted benefits – Assessment of risks – Provisions for monitoring and evaluation • Agreement on provisions for sharing of carbon revenues
<div>   </div> <p>THANK YOU!</p>	

ANNEX 3

OPENING SESSION PRESENTATION

 <h1>Forest Carbon Project Development Training</h1> <p>Overview of planning, designing, and developing forest carbon projects</p> <p>15 March 2010 Todd R. Johnson, IRG</p>	 <h2>Outline of Presentation</h2> <p>Overview of terrestrial carbon projects</p> <ul style="list-style-type: none"> Reducing GHG emissions: agricultural land management, forest management, avoiding deforestation or forest degradation Increasing carbon stocks: sequestration into woody biomass or soils <p>Brief history of international negotiations for terrestrial carbon projects</p> <ul style="list-style-type: none"> United Nations Framework Convention on Climate Change process Voluntary processes outside of UNFCCC framework <p>Terrestrial carbon markets and other financing mechanisms</p> <ul style="list-style-type: none"> Compulsory or regulatory markets Voluntary markets <p>Carbon Quality = Price</p> <ul style="list-style-type: none"> Standards: what are they and why do they matter? Key concepts for carbon quality: leakage, permanence, risk assessment <p>Outline of Project Description Document (PDD)</p>
 <h2>Land-based carbon (1)</h2> <p>Land Use, Land Use Change, and Forestry (LULUCF)</p> <ul style="list-style-type: none"> Covers reducing emissions caused by land use activities and removing greenhouse gases (GHGs) into "sinks" Recognized as one of most cost-effective ways to address GCC REDD+ is a subset of LULUCF activities, which also include improved land management practices in six broad land-use categories: <ul style="list-style-type: none"> Forests Croplands Grasslands Wetlands Settlements Other lands Examples of actions include reduced impact logging, rangeland rehabilitation, reduced burning of agricultural residues, more 	 <h2>Land-based carbon (2)</h2> <p>REDD+ - What was decided in Copenhagen?</p> <ul style="list-style-type: none"> REDD – process of discussions began in 2005 to recognize avoided emissions as a contributor to GHG mitigation REDD+ enhancement became an official agenda item in Bali Action Plan Methodologies discussed various technical meetings – June 2008 through November 2009 SBSTA developed scientific basis for methodological guidelines to be used for standardized measurement and reporting Key issues include those related to permanence, leakage, verification, transaction costs, and indigenous peoples' rights Copenhagen called for "immediate establishment" of mechanism Parties committed to \$30b (2010-2012) for REDD, adaptation, technology development & transfer, and capacity building
 <h2>Overview of terrestrial carbon projects (1)</h2> <p>Reducing GHG emissions from "sources"</p> <ul style="list-style-type: none"> Primary GHGs from AFOLU – agriculture, forestry, and other land uses <ul style="list-style-type: none"> Carbon dioxide (CO₂) – from woody biomass and organic soils Nitrous oxide (N₂O) – from N-fixing trees, agricultural soils, manure Methane (CH₄) – from anaerobic digestion, wetlands, rice fields, landfills Common unit of measurement: CO₂e – N₂O = 289; CH₄ = 72 Options for reducing terrestrial GHG emissions <ul style="list-style-type: none"> Agricultural land management – for example: low-tillage farming, soil mgmt. Improved forest management – e.g., reduced-impact logging, rotation age Avoided deforestation / forest degradation – protection, nat. regeneration Relevant for Bangladesh – potentially eligible AFOLU activities <ul style="list-style-type: none"> ALM on wetlands, grasslands for reduced soil emissions (N₂O, CH₄) IFM of production forests to reduce CO₂ emissions (e.g., LRF) REDD on frontier and mosaic forests by increased protection 	 <h2>Overview of terrestrial carbon projects (2)</h2> <p>Increasing carbon stocks – sequestration of atmospheric C</p> <ul style="list-style-type: none"> Relevant for Bangladesh – potentially eligible AFOLU activities <ul style="list-style-type: none"> ARR – Afforestation, Reforestation, and Revegetation IFM – Improved Forest Management of production forests REDD – Reduced Emissions from Deforestation & Forest Degradation Woody biomass – establish, increase, or restore vegetation <ul style="list-style-type: none"> Above-ground trees – planting, sowing, or assisted natural regeneration Non-tree species (as appropriate) – palms, bananas, fruits, spices Below-ground biomass – root systems of trees (optional for IFM, REDD) Dead organic matter – pool included IF necessary <ul style="list-style-type: none"> Litter – optional for ARR, REDD, IFM forest conversion to high-productive Dead wood – required for IFM; optional for REDD, ARR (if significant) Soil – optional for ARR (if significant); not required for most IFM, REDD

<div>   </div> <h3>UNFCCC in brief</h3> <p>What is it and what does it do?</p> <ul style="list-style-type: none"> Legally-binding treaty to address global climate change in a coordinated, collaborative manner; in force 1994; key provisions: <ul style="list-style-type: none"> Parties (governments) gather and share information on greenhouse gas (GHG) emissions, national policies, and best practices for addressing GCC Parties launch national strategies for addressing GHG emissions and adapting to impacts; Annex 1 countries share finances and technologies Parties cooperate with one another in preparing to adapt to GCC impacts <p>How do the Parties do this?</p> <ul style="list-style-type: none"> Conference of Parties (COP): supreme body, meets annually; reviews implementation, decisions related to the Convention <ul style="list-style-type: none"> Subsidiary Body for Implementation: advises Parties on issues related to emissions reporting, national communications, and financial mechanisms Subsidiary Body for Scientific & Technological Advice: promotes transfer of technologies; advise on reporting methodologies, other scientific issues IPCC: (1988); conduct & compile research on climate change 	<div>   </div> <h3>Kyoto Protocol to UNFCCC</h3> <p>What is it and what does it do?</p> <ul style="list-style-type: none"> Amendment to UNFCCC, signed 1997 at COP-3 in Kyoto, Japan Key difference: UNFCCC encourages emissions reductions while Kyoto commits countries to doing so; 184 Parties ratified 37 countries + European Community to reduce GHG emissions by 5% of 1990 levels within first commitment period (2008-2012) <p>How is the Kyoto Protocol implemented?</p> <ul style="list-style-type: none"> Annual meeting of Protocol Parties held with UNFCCC COP Registry system, annual reports track actual emission reductions Compliance Committee develops procedures and mechanisms Adaptation Fund for developing country adaptation projects; assessment on each CDM transaction at 2% of CERs value Carbon markets – JI, CDM, ET – officially established by Kyoto Intense negotiations ongoing for 2nd commitment period
<div>   </div> <h3>From Bali to Copenhagen to Johannesburg?</h3> <h4>Bali Road Map</h4> <ul style="list-style-type: none"> Adopted at COP-13 (Bali, Indonesia), Dec. 2007 Parties agreed to timetable for negotiation process by COP-15 Tasked two Ad Hoc Working Groups with core responsibilities: <ul style="list-style-type: none"> AWG-KP (ad hoc working group on further commitments for Annex 1 parties to Kyoto Protocol): new targets, emissions trading, LULUCF, methodologies AWG-LCA (ad hoc working group on long-term cooperative action under the Convention): shared vision, mitigation, adaptation, technology, and finance <h4>Copenhagen – What was expected? What didn't happen?</h4> <ul style="list-style-type: none"> COP-15, Dec. 2009 – largest ever; very high expectations Pressure because Kyoto's 1st commitment period expires 2012 Four key items: new targets; developing country mitigation; financing and technology transfer; institutional changes Weak "Accord" – positive outcomes: REDD-plus, US\$30 billion 	<div>   </div> <h3>Overview of voluntary forest carbon initiatives (1)</h3> <p>Two main drivers of interest in forest carbon</p> <ul style="list-style-type: none"> Philanthropic or "pure voluntary" transactions <ul style="list-style-type: none"> Companies or individuals seeking to offset their own GHG emissions Operate outside of "cap-and-trade" or regulated systems; "non-compliance" Product generally referred to as Verified Emission Reductions (VERs) Public relations or "green good" interest in community, other co-benefits Pre-compliance and/or legally binding transactions <ul style="list-style-type: none"> Buyers hoping to purchase offsets at lower price in advance of regulations CCX uses rules-based "cap-and-trade" scheme modeled on CDM Trades in both emissions allowance-based credits and emissions offsets <p>Two main voluntary markets</p> <ul style="list-style-type: none"> OTC – over-the-counter: non-binding, non-regulated, informal CCX – Chicago Climate Exchange: legally-binding, formal
<div>   </div> <h3>Overview of voluntary forest carbon initiatives (2)</h3> <h4>OTC markets called "fertile ground" for forest projects</h4> <ul style="list-style-type: none"> Account for large majority of transacted volume <ul style="list-style-type: none"> 79% of transactions = 15 million tonnes CO₂ (Mt CO₂) in 1990-2007 90% of forest carbon transactions 2008; 72% in 1st half 2009 Total transacted value exceeds US\$100 million (as of 30 Jun 2009) Sharp increase in sales 2007 through 2009; trend expected to continue Diversity of project types, countries, land ownerships <ul style="list-style-type: none"> AR projects generated 59% of credits (7.8 Mt CO₂), 50% of value (\$52.5m) REDD projects 2nd highest at 24% of credits (3.1 Mt CO₂), valued at \$41.8m North Am. highest volume; Latin Am. highest value; Africa highest hectares 36.8% on government land; 27.8% community land; 22% private land <h4>Chicago Climate Exchange (CCX) second most important</h4> <ul style="list-style-type: none"> 12.5% of transactions (more than 2.5 Mt CO₂) Lowest average price per tonne at \$3.03 (weighted by volume) 	<div>   </div> <h3>Summary overview of terrestrial carbon markets</h3> <h4>Compulsory or regulated markets</h4> <ul style="list-style-type: none"> Clean Development Mechanism (CDM) <ul style="list-style-type: none"> Established by Kyoto Protocol; LULUCF credits allowable on CDM & JI Afforestation/Reforestation (AR) activities eligible up to 1% of total (183 Mt) 10 projects cover 41,063 ha; half of that in one project in Moldova New South Wales GHG Abatement Scheme (NSW GGAS) <ul style="list-style-type: none"> Established by Australian government in 2003; 2nd-largest mandatory market Specifically targets emissions reductions in Australian electricity industry 2.8 MtCO₂ credits issued in reforestation; 97% of those to Forests NSW <h4>Voluntary markets</h4> <ul style="list-style-type: none"> OTC – main market for most forest carbon transactions; not one "market" but a wide variety of private buyers and sellers CCX – voluntary but regulated market where members commit to binding targets for emissions reductions; forestry a minor part
<div>   </div> <h3>Carbon Quality = Price</h3> <h4>Critical factors affecting carbon quality</h4> <ul style="list-style-type: none"> Credibility of calculations <ul style="list-style-type: none"> Baseline scenario and project scenario use robust, accepted methodology Conservativeness principle applied to additionality estimates Credits have high likelihood of being real, permanent, and verifiable Uncertainty or other risk factors (e.g., leakage) are mitigated and monitored Independent 3rd-party validation and verification to Standards <ul style="list-style-type: none"> Project design is validated and approved before credits are generated Competent and experienced project managers in charge of implementation Clear, undisputed title to land, forest, and carbon rights documented Ongoing verification of continuing benefits, as part of MRV system <p>IPAC team endorses applying two "Gold" standards</p> <ul style="list-style-type: none"> Voluntary Carbon Standard (VCS) to certify carbon credits Climate, Community, & Biodiversity (CCB) for design, co-benefits 	<div>   </div> <h1>THANK YOU</h1> <h2>for your attention!</h2>

ANNEX 4

SECONDARY INFORMATION SOURCES

Protected Area: Hail Haor

Group Members:

1. Shahidul Islam Bhuyian, Senior Upazila Fisheries Officer (SUFO) (In charge), DOF, Srimangal, Moulvibazar
2. Monirul Islam, Student (Soil Science), Khulna University

Resources available:

1. HH area 10,000 ha;
2. Permanent Sanctuary area 100 ha
3. 13 more fish sanctuary in Hail Haor
4. Swamp forests plantation, basically Hijal, Karach forests: MACH study reports
5. Land tenure: Government Khas land (Jalmahal), controlled by AC (Land)
6. Maps : MACH and SUFO Offices
7. Socio-economic: Socio-economic study on fishers at Hail Haor – MACH
8. Biodiversity assessments by MACH project
9. Threats: Drying/dewatering of jalmahals; unregulated harvesting causes huge loss of biodiversity; siltation; deforestation,

Protected Area: Rema-Kalenga Wildlife Sanctuary

Group Members:

1. Haq Mahbub Morshed, Assistant Conservator of Forests (ACF), FD, Dhaka
2. Kazi Mahmud Ullah, DGM, RSF
3. Md. Amirul Islam, IPAC Project, Dhaka

Resources available:

1. Management Plan for RKWS- by NSP
2. Site information brochure- NSP
3. PRA/RRA reports- NACOM, NSP
4. Digital maps – NSP, RIMS, FD
5. Working Plan for Sylhet Forest Division 1998-2008
6. Articles on RKWS at Internet;
7. National biodiversity action plan by DOE
8. Video documentary by Impress Tele film and Channel i
9. Web site: www.nishorgo.org
www.bforest.gov.bd

Protected Area: Kangsha-Malijhee Basin

Group Members:

1. Md. Aminul Haque, Upazila Fisheries Officer (UFO), DOF, Jhenaigati, Sherpur
2. Md. Aminul Islam, SUFO, DOF, Jamalpur Sadar, Jamalpur
3. Omar Sharif, Student, Bangladesh Agricultural University (BAU)
4. Sanjoy Das, Student, BAU.

Resources available:

1. List of water body by Survey June 2000
2. Water body resources mapping- MACH project
3. Establish Fish Sanctuary in different water bodies
4. Plantation inside water bodies; 2,000+60,000 seedlings in 2003-04;
5. Roadside plantation along different roads of Jhinaigati Upazila; 120,000 + 43000 seedlings; 25-30 miles
6. Study on Fish production increased 150kg/ha to 307kg/ha; Study of MACH
7. land tenure: Govt. Khas land (8000ha)
8. Socio-economic: DOF and MACH project documents
9. Threats: Dewatering, illegal fishing, siltation, flash-flood, excessive lifting of water for irrigation,
10. Biodiversity: DOF and MACH project documents
11. Study of EWC research grant by Mr. Md. Aminul Hoque, UFO; topic: Fish market chain and incomes of fishers in Sherpur District, Bangladesh (Aug/09 – Jan/2010)

Protected Area: Teknaf Game Reserve (TGR)

Group Members:

1. Qazi Md. Nurul Karim, ACF, FD, TGR
2. Md. Monirul Islam, Student, North South University (NSU)
3. Md. Rafiqul Islam, ACF, FD, Dhaka

Resources available:

1. Area: 11,615 ha
2. Range: Teknaf, Shilkhali & Whykong
3. Forest type: Tropical ever green- semi evergreen forests
4. Dominant species: Floral: Garjan, Chapalish, Telsur, Boilam, Chondul, Uriam, Bhadi; Fauna: Asian elephant, wild boar, barking deer etc; different types of birds and reptiles.
5. Land tenure: Reserved Forests and Protected Forest; Managed by FD; It is a protected area declared in 1983.
6. Socio-economic profile: Mainly Bangali with some ethnic minority like Tanchangya and Chakma. Main profession: Agriculture, fishing, fuel wood collection.
7. Threats: Rohingya Refugees both legal and illegal migrants, conversion of forest lands into agricultural land, human settlements in the forest; illicit felling, brick fields, saw mills, high fuel wood demands;
8. Opportunities: 3 CMCs at Teknaf, Whykeong and Shilkhali; 15 CPGs (595 members); One nature park,
9. FRMP inventory 1995
10. Sub-block maps and forest beat maps
11. Aerial photography 1995
12. NSP mapping
13. PRA study in Nishorgo
14. Bird Monitoring
15. Study on “State of Protected Area (SOPA)
16. East West Center-NSP research monograph
17. Reconnaissance Survey Maps of 1954
18. Cadastral Survey Maps 1926
19. BS Maps 1975-80

20. Community based eco-tourism planning strategy for Teknaf Peninsula- Megan Eplerwood
21. Management Plan for Cox's Bazar Forest Division
22. Site Appraisal report – NSP
23. Site information brochure- NSP
24. PRA/RRA reports- NACOM, NSP
25. Digital maps – NSP, RIMS, FD
26. Web site: www.nishorgo.org
www.bforest.gov.bd

Protected Area: Himchari National Park

Group Members:

1. Qazi Md. Nurul Karim, ACF, FD, TGR
2. Md. Monirul Islam, Student, North South University (NSU)
3. Md. Rafiqul Islam, ACF, FD, Dhaka

Resources available:

1. Area : 1729 ha Cox's Bazar south forest division
2. Upazila: Cox's Bazar Sadar and Ramu
3. Forest inventory: FRMP inventory 1995
4. Floral diversity: tropical evergreen and semi-evergreen forests, mostly degraded forests;
5. Management Plan: Cox's bazar forest division
6. PRA/RRA done in IPAC
7. CMC is being developed through IPAC.
8. Highly potential site for eco-tourism development
9. At present annually BDTk.30 lakh are revenue earned
10. Threats: Encroachments for settlers and rapidly growing tourism, illegal fuel wood collectors, Marine drive road

Protected Area: Inani National Park (Proposed)

Group Members:

1. Qazi Md. Nurul Karim, ACF, FD, TGR
2. Md. Monirul Islam, Student, North South University (NSU)
3. Md. Rafiqul Islam, ACF, FD, Dhaka

Resources available:

1. Area : 7700 ha; Cox's Bazar south forest division
2. Upazilla: Ukhia
3. Forest inventory: FRMP inventory 1995
4. Possess a good chunk of natural forests at Swankhali
5. Floral diversity: tropical evergreen and semi-evergreen forests,;
6. Management Plan: Cox's Bazar forest division;
7. PRA/RRA done in AF/IPAC;
8. CMC is being developed through Arannayk Foundation
9. Highly potential site for eco-tourism development
10. Threats: Encroachments for settlers and rapidly growing tourism, illegal fuel wood collectors, Marine drive road,

Protected Area: Fasiakhali Wildlife Sanctuary

Group Members:

1. Qazi Md. Nurul Karim, ACF, FD, TGR
2. Md. Monirul Islam, Student, North South University (NSU)
3. Md. Rafiqul Islam, ACF, FD, Dhaka

Resources available:

1. Area. 1302 ha; Cox's Bazar south forest division
2. Upazila: Chakaria, Cox's Bazar
3. Forest inventory: FRMP inventory 1995
4. Floral diversity: tropical evergreen and semi-evergreen forests, enriched natural forests
5. Management Plan: Cox's Bazar forest division;
6. PRA/RRA done in IPAC
7. CMC is developed through IPAC.
8. Threats: Encroachments for settlers, illegal fuel wood collectors,

Protected Area: Medhakachapia National Park

Group Members:

1. Qazi Md. Nurul Karim, ACF, FD, TGR
2. Md. Monirul Islam, Student, North South University (NSU)
3. Md. Rafiqul Islam, ACF, FD, Dhaka

Resources available:

1. Area. 396 ha; Cox's Bazar north forest division
2. Upazilla: Chakaria, Cox's Bazar
3. Mature Garjan forests
4. Forest inventory: FRMP inventory 1995
5. Floral diversity: Tropical evergreen and semi-evergreen forests, enriched natural forests
6. Management Plan: Cox's Bazar forest division
7. PRA/RRA done in IPAC
8. CMC is developed through IPAC.
9. Threats: Encroachments for settlers, illegal fuel wood collectors,

Protected Area: Rajghat Forest

Group Members:

1. Qazi Md. Nurul Karim, ACF, FD, TGR
2. Md. Monirul Islam, Student, North South University (NSU)
3. Md. Rafiqul Islam, ACF, FD, Dhaka

Resources available:

Under Fulchhari Range, Cox's Bazar North Forest Division

1. Area. 396 ha; Cox's Bazar North Forest Division
2. Upazila: Chakaria, Cox's Bazar
3. Mature Garjan forests
4. Forest inventory: FRMP inventory 1995
5. Floral diversity: Tropical evergreen and semi-evergreen forests, enriched natural forests

6. Management Plan: Cox's Bazar forest division;
7. PRA/RRA done in IPAC
8. CMC is developed through IPAC
9. Threats: Encroachments for settlers, illegal fuel wood collectors

Protected Area: Sitakunda Reserve Forest

Group Members:

1. Md. Anowar Hossain Sarker, ACF, FD, Chittagong Forest Division
2. Utpal Bhattacharjee, Manager, CDM, RREL
3. Rafiq Sultana, ACF, FD, Dhaka
4. Rasel Ahmmed, Student, Jahangirnagar University (JU)

Resources available:

1. Total area : 22,382 acre
2. Two Range Offices and 5 Forest Beats
3. 2000 acre is already developed as Sitakunda eco-park
4. Upazila: Sitakunda
5. Land tenure: Govt. Land, Reserved Forest; managed by FD; RS, CS and BS maps are available
6. Forest inventory in 1994 (under FRMP)
7. Forest Management Plan, Chittagong Forest Division
8. Main features: Natural and plantation forests; forest types: Mixed evergreen forests
9. Dominant species: Teak, Gamar, Akashmoni, Myrobalans; Dominant animals: Deer
10. Historical importance Chandranath Temple
11. Natural geisure (fountain)
12. Socio-economic: mainly agriculture; indigenous (Tripura) community,
13. Livelihood: Agriculture and forestry related activities
14. Tk.200 is income/day- daily labours
15. Plant rotation: short and long rotation
16. Two projects studied in "Forestry Sector Project", Denuded Hill Forest Afforestation Project", Sitakunda Eco-park project
17. Threats: Soil erosion, loss of top soil, denuded for long time

Protected Area: Dudhpukuria National Park (Proposed)

Group Members:







1. Md. Maksud Alam, ACF, FD, Chittagong South Forest Division
2. Mr. Bayezid Khan, Student , JU

Resources available:

1. A proposed National Park
2. Forest types: Tropical semi-evergreen forests
3. Area = 3500 ha Reserved Forests
4. Location: Rangunia upazilla, Chittagong
5. Dominant flora: Garjan, Telsur, Chapalish, Toon, Uriam etc.
6. Fauna: Asian elephants
7. Threats: Santi bahini, forestfire, felling, encroachment and illegal settlement
8. A promising area for carbon project

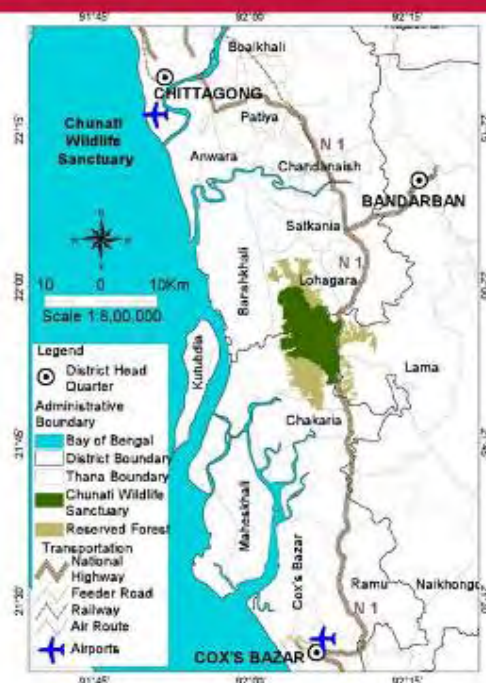
ANNEX 5

FOREST CARBON PROJECT DEVELOPMENT

<div data-bbox="272 373 454 430">  USAID <small>FROM THE AMERICAN PEOPLE</small> </div> <div data-bbox="636 373 760 430"> <i>ipac</i> </div> <div data-bbox="295 489 748 598"> <h3>Forest Carbon Project Development</h3> <p>Case Studies : A/R and REDD+ Project Development in Bangladesh</p> </div> <div data-bbox="454 684 581 707"> <p>16 March 2010</p> </div>	<div data-bbox="836 359 982 409">  USAID <small>FROM THE AMERICAN PEOPLE</small> </div> <div data-bbox="1234 359 1347 409"> <i>ipac</i> </div> <div data-bbox="865 438 1052 462"> <h4>Presentation Outline</h4> </div> <div data-bbox="865 483 1282 695"> <ul style="list-style-type: none"> • Chunoti (A/R) and Sundarbans (REDD+) Mitigation & Adaptation through Forest Carbon Projects • Present Status • Forest Carbon Project Objectives • Project Development Phases for Chunoti and Sundarbans • Carbon Pool Inventory and Assessment • Co-management Initiatives • Special Characteristics of A/R and REDD+ Projects • Monitoring Plan for Chunoti and Sundarbans • Carbon Stock Changes (with project interventions) </div>
<div data-bbox="261 795 407 844">  USAID <small>FROM THE AMERICAN PEOPLE</small> </div> <div data-bbox="662 795 776 844"> <i>ipac</i> </div> <div data-bbox="287 873 732 913"> <h4>Forest Carbon Projects (A/R and REDD+) for Climate Change Mitigation & Adaptation</h4> </div> <div data-bbox="292 917 514 938"> <h5>Climate Change Mitigation:</h5> </div> <div data-bbox="292 938 737 1050"> <ul style="list-style-type: none"> • Land-use sector (e.g. forests & wetlands) provides low cost opportunities to combat climate change • Carbon sequestration (removal & storage) of GHG by forests & wetlands • Reduced GHG emissions (by avoiding deforestation and controlling of degradation of forests & wetlands) </div> <div data-bbox="292 1050 522 1071"> <h5>Climate Change Adaptation:</h5> </div> <div data-bbox="292 1071 714 1144"> <ul style="list-style-type: none"> • Ecosystems (forests & wetlands) productivity enhancement • Adaptation of local community through increased flow of benefits to local community and improved land-use management practices </div>	<div data-bbox="836 795 982 844">  USAID <small>FROM THE AMERICAN PEOPLE</small> </div> <div data-bbox="1234 795 1347 844"> <i>ipac</i> </div> <div data-bbox="865 873 1286 913"> <h4>Examples of A/R and REDD+ Projects - Chunoti (A/R) and Sundarbans (REDD+)</h4> </div> <div data-bbox="865 913 1149 1161"> <ul style="list-style-type: none"> • Chunoti Wildlife Sanctuary : Co-managed Protected Area (PA) under Nishorgo & IPAC Projects of Forest Department • Sundarbans RF (Mangroves covering 6,017 sq. km.) • Climate Change Mitigation & Adaptation Projects supporting local communities and conserving biodiversity • Reforestation, Enrichment and Natural Regeneration of indigenous species through co-management • Forests protection and sustainable management with co-benefits to local community </div> <div data-bbox="1149 898 1339 1161">  </div>
<div data-bbox="550 1230 696 1278">  USAID <small>FROM THE AMERICAN PEOPLE</small> </div> <div data-bbox="950 1230 1063 1278"> <i>ipac</i> </div> <div data-bbox="579 1308 987 1329"> <h4>Present Status : Project Development & Implementation</h4> </div> <div data-bbox="579 1352 1029 1566"> <ul style="list-style-type: none"> • Project proposal for Chunoti developed by FD and BFRRI (as per the PDD format of CDM) • Compliance with CCBA Standards • Project document approved by the MOEF and submitted to the DNA • National CDM Committee and CDM Board approved the project document • Project document reviewed by the gtz, and the German Federal Ministry for Economic Cooperation and Development (BMZ) approved the project implementation with a project assistance of Euro 2.5 m over a project period of 5 years. • MOU signed between gtz & MOEF, and USAID & gtz. • Field inventory for Sundarbans ongoing and will be completed by April. A REDD project proposal will be developed after analyzing field data. </div>	

Chunoti & Sundarbans

- **Gazetted as WS in 1986 (7,764 ha), covering 7 Reserved Forests in Chunoti & Jakli Forest Ranges**
- **Degraded tropical semi-evergreen forests that are good habitats with elephant as main species**
- **Sundarbans mangrove forests including 4 Forest Ranges and 3 Wildlife Sanctuaries**
- **Local population depend on the forests and wetlands for their livelihood located in the forest areas.**



Forest Carbon Project Objectives

1. **Develop Forest Carbon Project Proposals**
 - **Support local communities and conserve biodiversity**
 - **Can be posed for regulatory and voluntary carbon markets**
 - **Compliant with CDM and/or IPCC guidelines**
 - **Compliant with CCBA standards**
 - **Both Mitigation & Adaptation issues are addressed**
2. **Building In-house Institutional Capacity**
 - **Participation of FD and BFRI staff**
 - **Participation of project field staff and local community**
3. **Develop and validate generic operational tools and methods for developing forest carbon projects**
 - **Carbon pool inventory methods**
 - **Land use mapping methods**
 - **Environmental and socio-economic impact assessment methods**

- Preparatory Phase
- Field Inventory : Data Collection Phase
- Analyses Phase
- Project Proposal Writing Phase
- Capacity Building Phase

















- Without Carbon Project (current situation) – ex-ante
- With Carbon Project (after project situation - project interventions implemented) - ex-post

- Carbon Pool Estimation (baseline and mitigation scenario) for A/R & REDD Projects:

Carbon Pool Estimation (baseline and mitigation scenario) for A/R & REDD Projects:





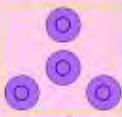
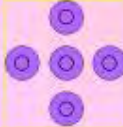

- Above-ground biomass
- Ground vegetation biomass
- Below-ground biomass (by using IPCC conversion factors)
- Forest soil carbon content (soil profiles)

- Above-ground, on-ground and below-ground forest carbon assessment for different strata:
- Assessment of historical deforestation rates
- Drivers of deforestation and forest degradation
- Co-benefits and co-management

  <p>Mitigation Scenario : Technological Interventions & Forests Protection</p> <ul style="list-style-type: none"> • Enrichment Plantations of indigenous species • Block Plantations of indigenous species • Forests protection and natural regeneration management (all over) • Grass (sunkhola) management in identified patches 	  <p>Mitigation Scenario : Co-management Initiatives by Co-management Committees and Community Patrolling Groups</p> <ul style="list-style-type: none"> • Existing Community Patrolling Groups (CPGs) • New Community Patrolling Groups • Co-management Committees (CMCs) • Livelihood opportunities • Revolving Fund operated by the CMCs for livelihood activities for CPGs and other local communities
  <p>Mitigation Scenario : Carbon sequestration rates</p> <ul style="list-style-type: none"> • BFRl yield models based on MAI estimates from Sample Plots • Yield estimates based on field measurements • Estimates from published documents and FD reports • BFRl soil carbon models 	  <p>Special Characteristics</p> <ul style="list-style-type: none"> • Leakage (diverted emissions beyond project boundaries) – Landscape zone activities including buffer and social forestry plantations; joint community patrolling, AIGs through revolving funds • Additionality – existing development activities included under IPAC and other FD projects do not have adequate provisions for reforesting the Sanctuary • Permanence – being sanctuaries timber & fuelwood harvesting through final felling is not permitted
  <p>Monitoring Plan</p> <ul style="list-style-type: none"> • Monitoring of Project Boundary • Monitoring of Forests Establishment • Monitoring of Forest Management • Leakage Monitoring • Quality Control and Assurance Procedures 	  <p>Carbon stock changes : Chunoti</p> <ul style="list-style-type: none"> • Total carbon stock changes of 758,450 ton C • Implementation cost of USD 2 m (over a period of 5 years) includes revolving fund to be operated by the two CMCs for implementing livelihood activities for CPGs and other poor members of local community • Total carbon credits of USD 7.58 m @ USD 10/ton C • With implementation cost equivalent to USD 2.5/tC carbon credits equivalent to USD 10/tC are generated
  <p>Conclusion</p> <ul style="list-style-type: none"> • Climate change is adversely affecting the country's terrestrial and aquatic ecosystems and thereby increasing vulnerability and risks to local people • Forests and wetlands in general and protected areas in particular offer climate change mitigation and adaptation opportunities • Department of Fisheries and Forest Department can develop terrestrial and aquatic carbon projects for carbon financing • Compliance and voluntary markets are growing manifold for funding under LULUCF and REDD+ type projects 	

ANNEX 6

FIELD DATA COLLECTION

<h2 style="text-align: center;">Forest Inventory & Forest Monitoring</h2> <p style="text-align: center;">Md. Zaheer Iqbal Deputy Conservator of Forests RIMS-GIS Unit, Forest Department</p>	<h2 style="text-align: center;">Forest Inventory</h2> <p>□ Forest inventory is the systematic collection of data and forest information for assessment or analysis.</p> <p style="text-align: center;">Some important things of Forest Inventory</p> <ul style="list-style-type: none"> • Forest type • Diameter at Breast Height (DBH) • Tree Height, Age of tree • Site quality • Pole, sapling, seedling, non timber plants, • Litter, woody debris
<h2 style="text-align: center;">Sampling rationale</h2> <p>Ideally, we would measure every tree in area</p> <p><i>In real life:</i> Must sample a subset of points to allow generalizations about whole area</p> <p>Sample provides estimate of value for whole area</p> <p>To evaluate how close the estimation is to reality, statistics are used</p> 	<h2 style="text-align: center;">Plot Types</h2>    <p>Examples of circular and rectangular nested plots. Adapted from Pearson et al. (2005). High-frequency C pools (e.g. small trees) are measured in inner nests, while lower-frequency pools (e.g. large trees) are measured in outer large nests.</p>
<h2 style="text-align: center;">Plot Types</h2> <p style="text-align: center;">-clustering-</p>  <p>U.S. FIA / CVS</p>   <p>Indo-Pacific Forest C Study</p>	<h2 style="text-align: center;">How many plots ?</h2> <ul style="list-style-type: none"> • Number of plots (sampling intensity) relates to <u>precision</u> and <u>uncertainty</u> • In general: more = better • In real life, must balance costs with needs • There is no magic number for plot density (plots per area)

How many plots ?

- We can use knowledge of variation in C stocks to estimate the needed number.
→ This knowledge comes from previous data or preliminary sample of 6-10 plots.
- Goal: Within 10% of the mean, with 95% confidence
- Simplest formula:

$$\text{Minimum number of sample plots } (n) = \left(\frac{t \cdot s}{E} \right)^2$$

n = the number of sample plots.
 t = the sample statistic from the t-distribution for the 95% confidence interval; t usually is set at 2 as sample size is unknown at this stage.
 s = standard deviation expected or known from previous trial data.
 E = a allowable error or the desired half-width of the confidence interval. Calculated by multiplying the mean carbon stock by the desired precision, i.e., mean * 0.1 (for 10 percent precision)

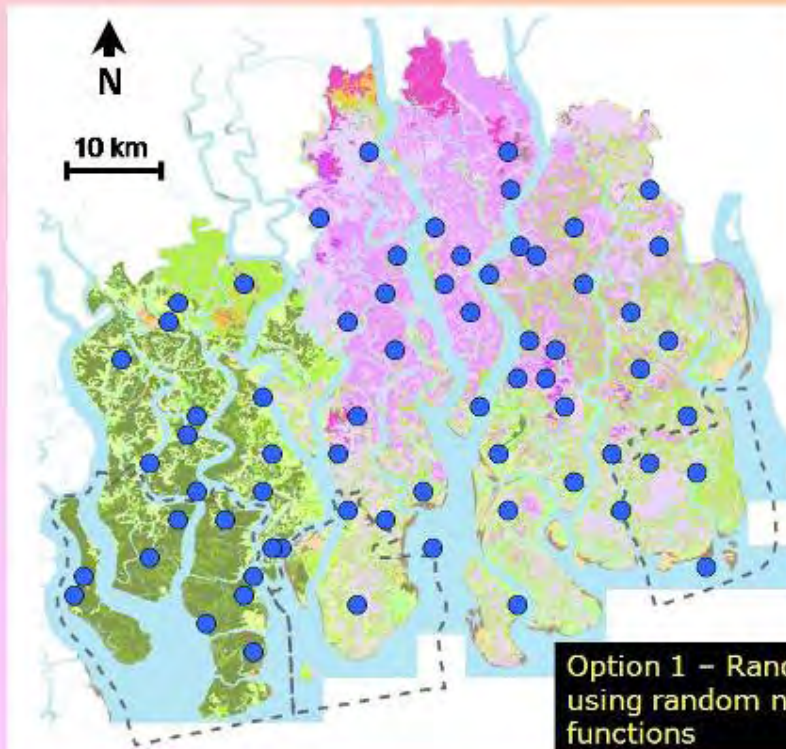
How many plots ?

- Preliminary estimate:
 - C density ~ 300 Mg ha⁻¹
 - Standard deviation = 60% of mean ~ 180 Mg ha⁻¹
 - Our objective is to be within 10%
 - Can adjust this based on actual analysis of previous inventory data

$$n = \left(\frac{2 \cdot 180}{0.1 \cdot 300} \right)^2$$



$$n = 144 \text{ plots}$$

- Other factors:
 - Increase by 10%: 144 + 14 = 158
 - Geographic coverage
 - recall U.S. Forest Inventory (FIA) program has used 1 plot per 30 km² in difficult-access roadless areas
 - would equate to ~ 135 plots for SRF



Option 1 – Random placement using random number tables or functions

Systematic Sampling

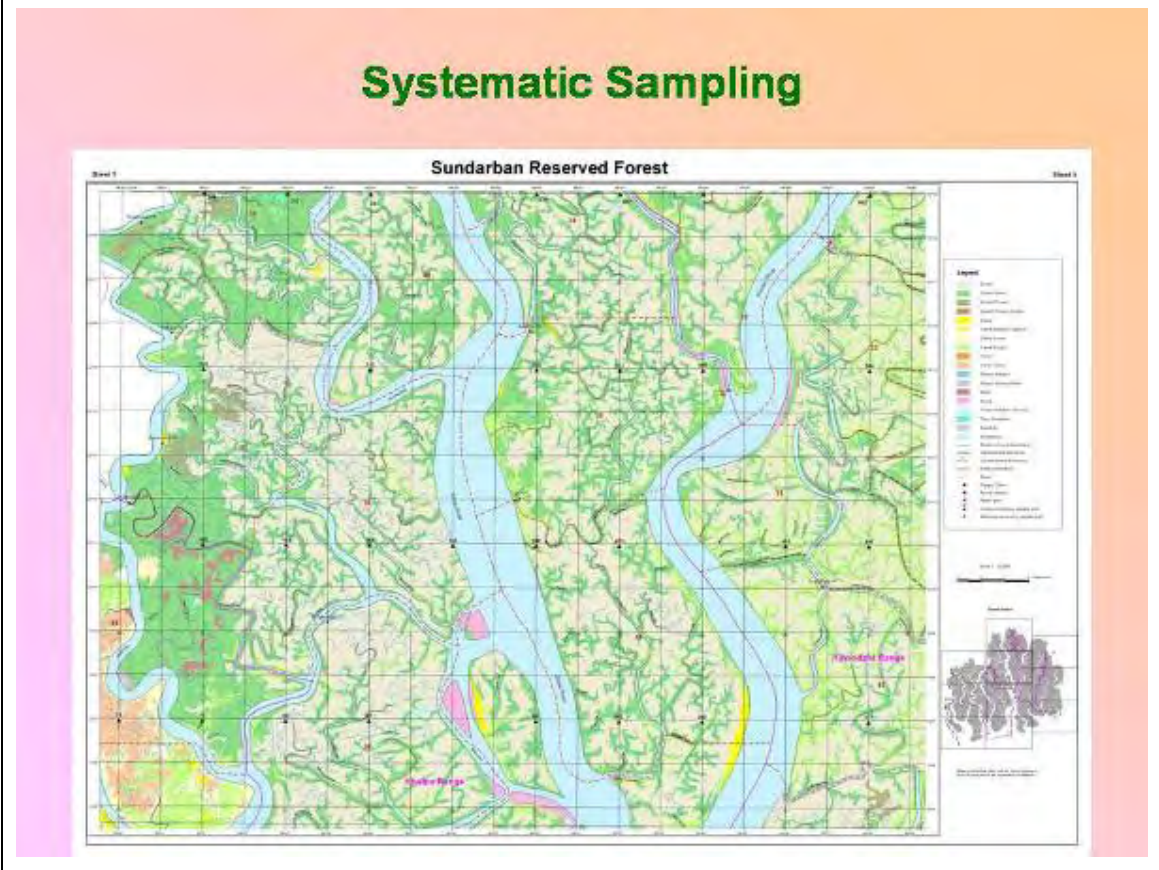


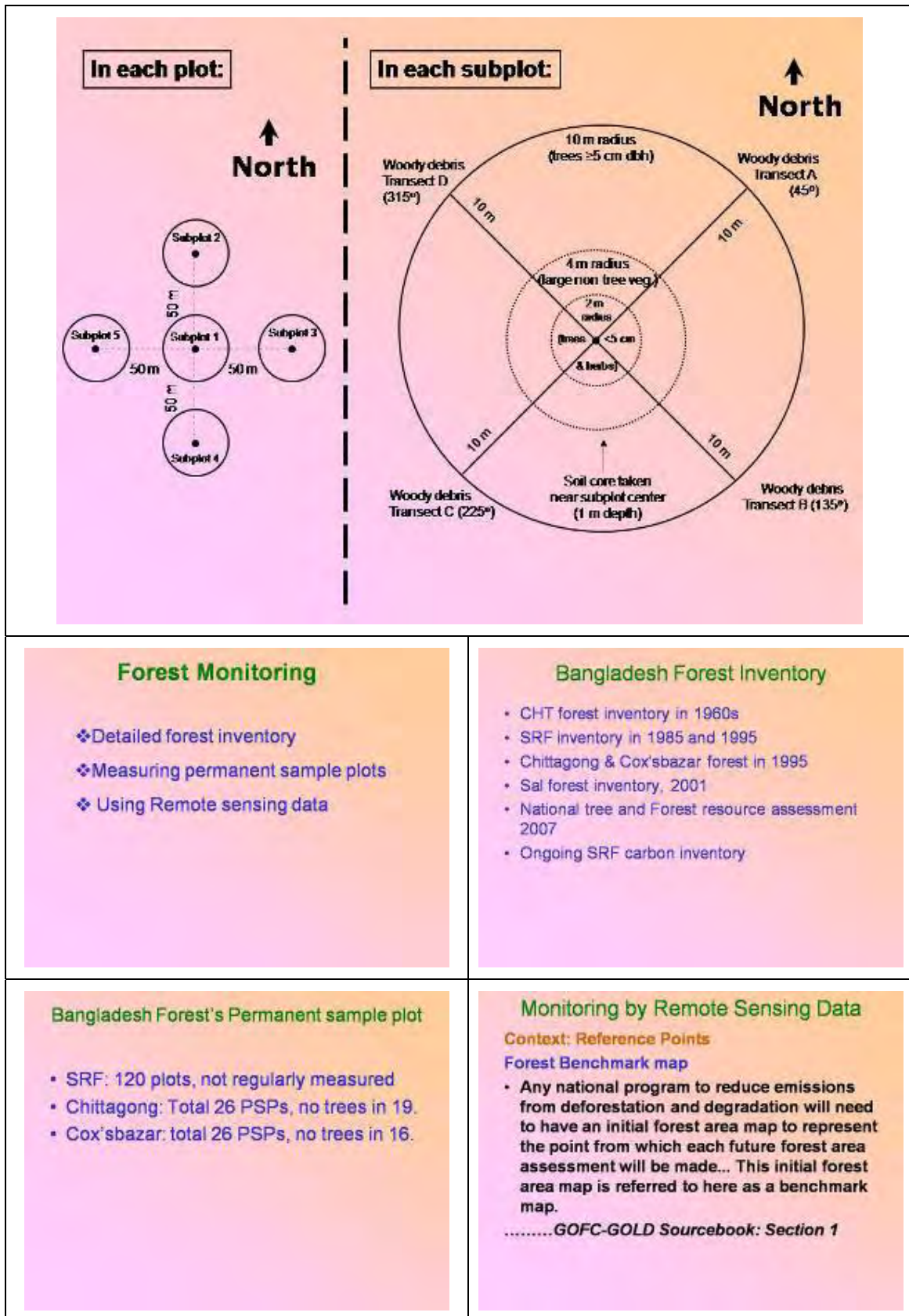
Sundarban Reserved Forest
(Monthly sample 2002)

DAY OF BENGAL

Option 2 – Systematic placement using a random start

154 Sample Plots





Remote Sensing For Mapping & Forest Monitoring

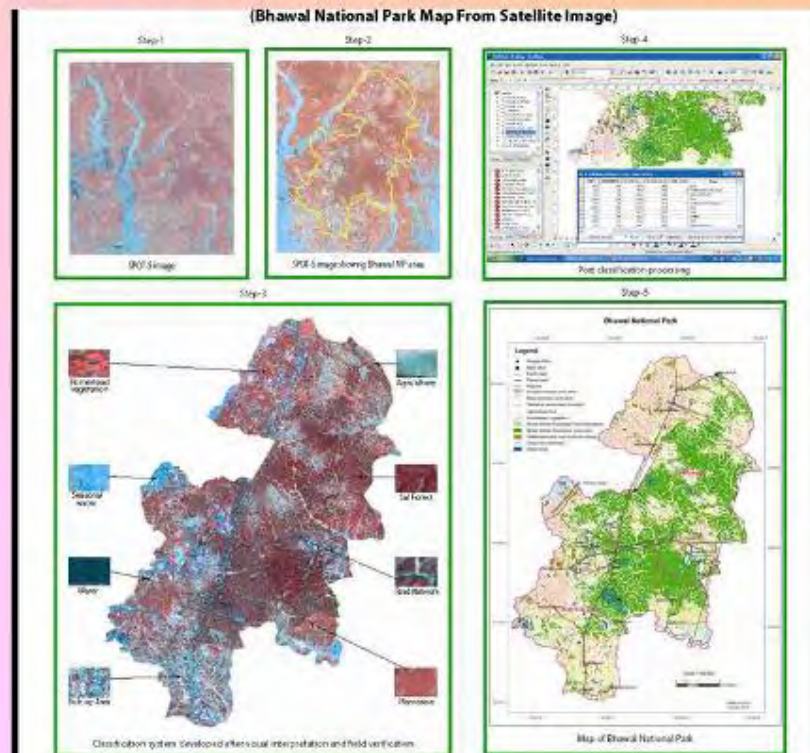
- Wide variety of RS images available
- Free to Costly image
- Landsat, ASTER and MODIS images are free.
- Very high resolution, medium, Low resolution images.
- Time series images of last 40 years
- Both Multispectrum (colour) and Panchromatic (B/W) images available.
- Single tree can be identified in case of 0.5 – 2.5 m resolution images.
- Selecting required images as per user's choice
- User friendly for RS & GIS software
- Minimum time required for monitoring result/ prepare maps at reasonable cost.

Different sensors, image resolution and price

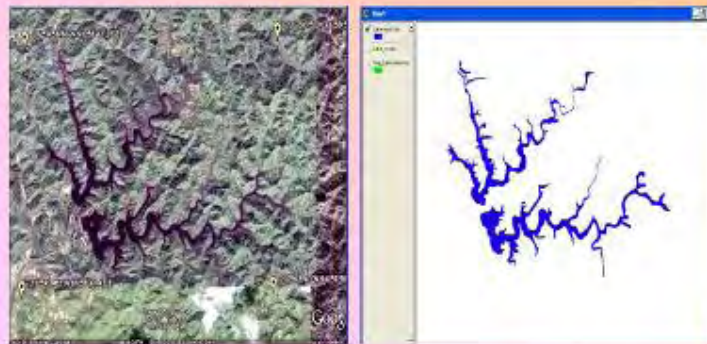
Sensor	Resolution	Price
Landsat TM	MSS- 30m, Pan- 15m	Free
Quickbird	MSS- 2.4m, Pan- 0.62m	25 US\$/ sq. km
Worldview-2	1.0m	25-30 US\$/ sq. km
SPOT-5	2.5-20m	1350-5400 Euro/ scene
IRS P-6	5.8m	135-700 US\$ / scene
CARTOSAT-2	Pan- 0.5m	<1.0 US\$ / sq. km
MODIS	250-1000m	Very low or free

Digital Classification to Produce Forest map

(Bhawal National Park Map From Satellite Image)



Digitization To produce map



Remote sensing & Forest maps

SRF Maps produced using Aerial Photos.



Remote sensing & Forest maps

Lawachara NP



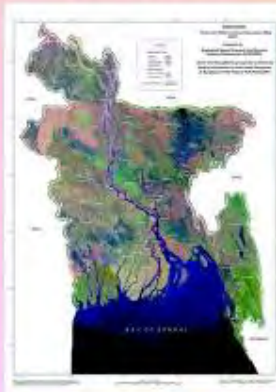
Bhowal NP



Modhupur NP



Remote sensing & Forest maps

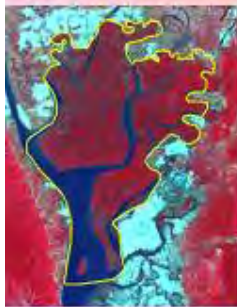


Satellite: Landsat TM

Image Year: 2005-06



Deforestation Monitoring



Landsat MSS 1972



Landsat TM 1989



Landsat TM 1999

Chokoria Sundarban Mangrove Forest Area

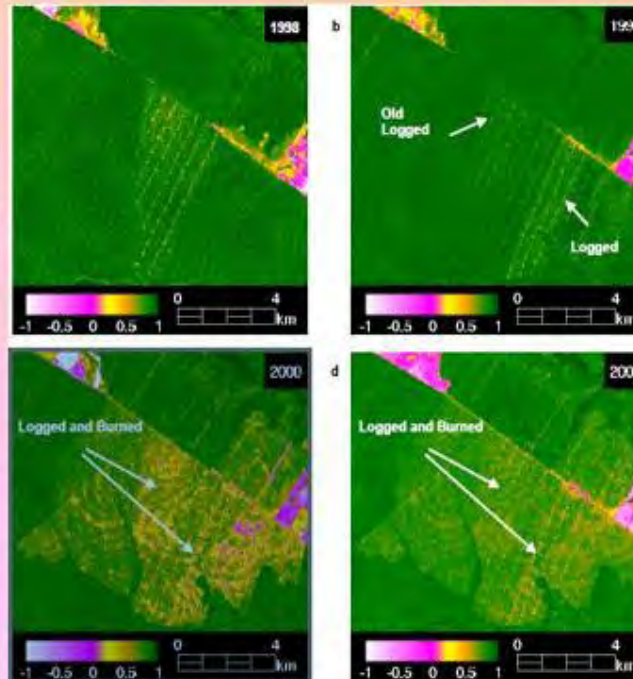
Deforestation Monitoring



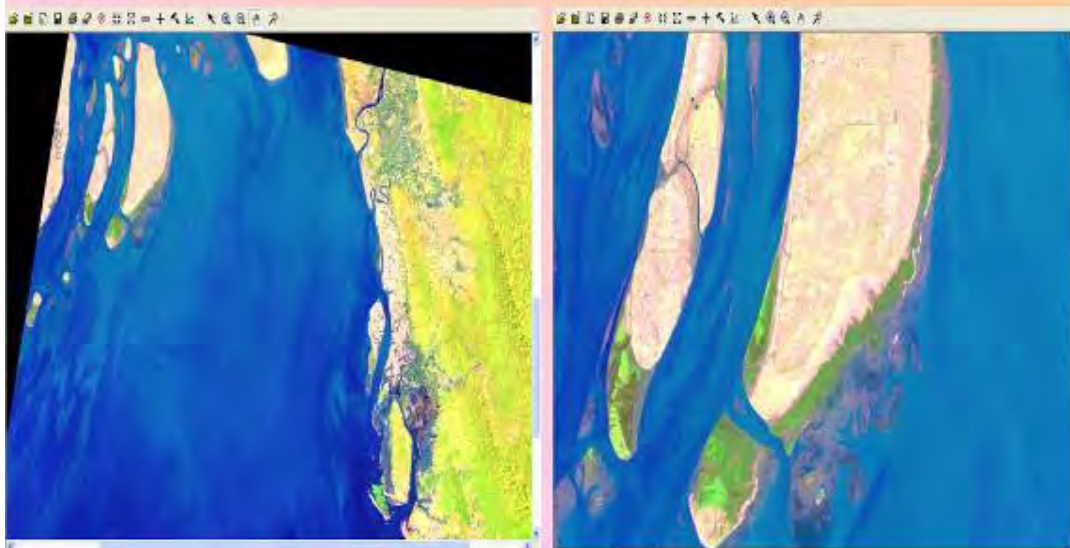
Year	Area (Ha)	Forest Cover
1972	6021	Natural mangrove
1989	64	Mangrove plantation & patches of natural mangroves
1999	148	Mangrove plantation

Forest Degradation Monitoring

- Monitoring of degradation is more difficult than deforestation
- Depends on drivers of degradation such as legal/illegal selective logging, fuel-wood removal, fires etc
- Monitoring can be done either by detecting canopy cover gaps or other proxies such as roads or log landings.
- Sophisticated algorithm may be needed to detect degradation.



Monitoring Afforestation



Chittagong-Noakhali Coastal Area

Hatia, Nijhum Dip Islands

How often to monitor ?

- Best to plan for every 5 years
- Pools that change slowly, such as soils, may be measured less frequently → perhaps every 10 years
- Check with given market; some require every 5 years for all pools

- Tree heights
 - Using a laser range finder
 - Only a subset of trees (3 at each subplot)
 - Purpose:
 - To facilitate future monitoring via remote sensing tools (e.g. LIDAR, etc.)
 - So that diameter-height regressions can be built for all trees
- Canopy cover
 - Using a densiometer
 - Purpose: To monitor forest canopy cover and to intersect with remote sensing data
- Photo documentation
 - Systematic photopoints at center of each plot
 - Reporting purposes, visualization



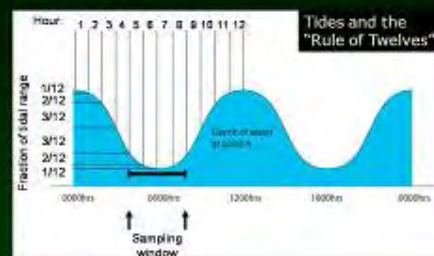
ANNEX 7

FIELD DATA COLLECTION

Sundarban Carbon Assessment

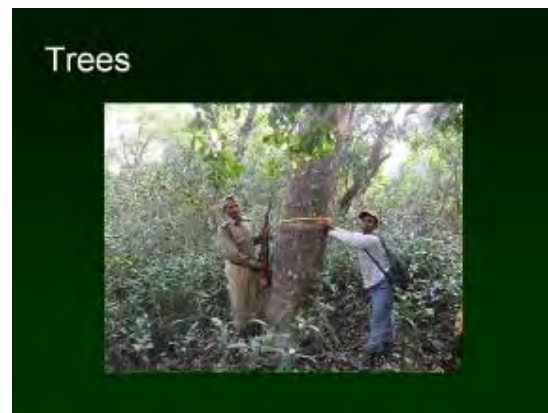


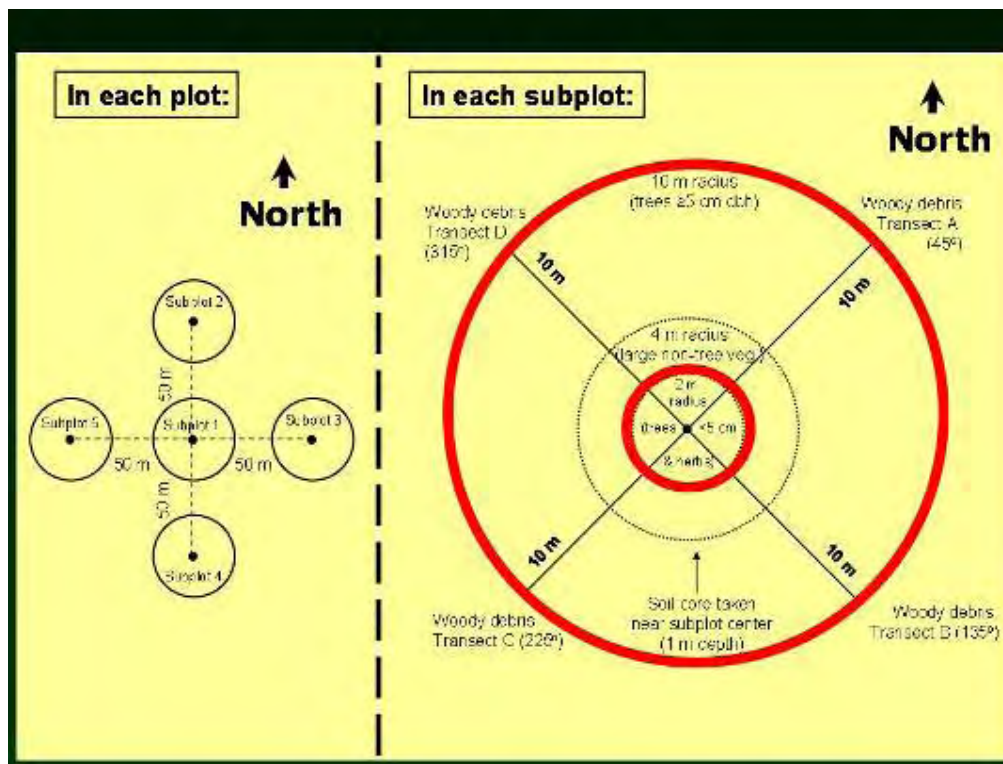
Mangroves – Special Considerations



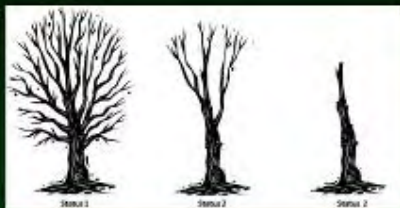
Mangroves – Special Considerations



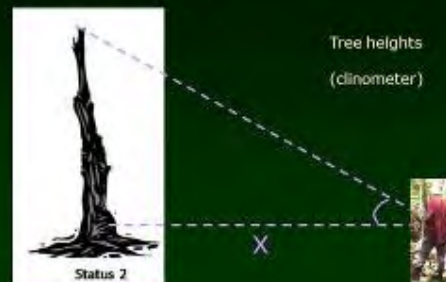




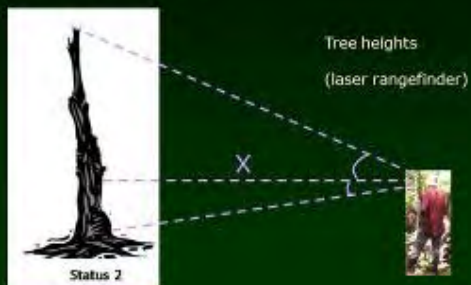
Dead trees



Dead trees



Dead trees



Trees



Seedling and Sapling

- Sapling – All live trees reaching at breast height (1.3 m), but having a DBH < 10 cm
- Any dead tree having dbh < 10 cm, angle from true vertical is less than 45 degrees.
- Seedling- All live trees not reaching breast height.
- Any dead tree not reaching breast ht. and having a top diameter < 10 cm.



Non-tree vegetation

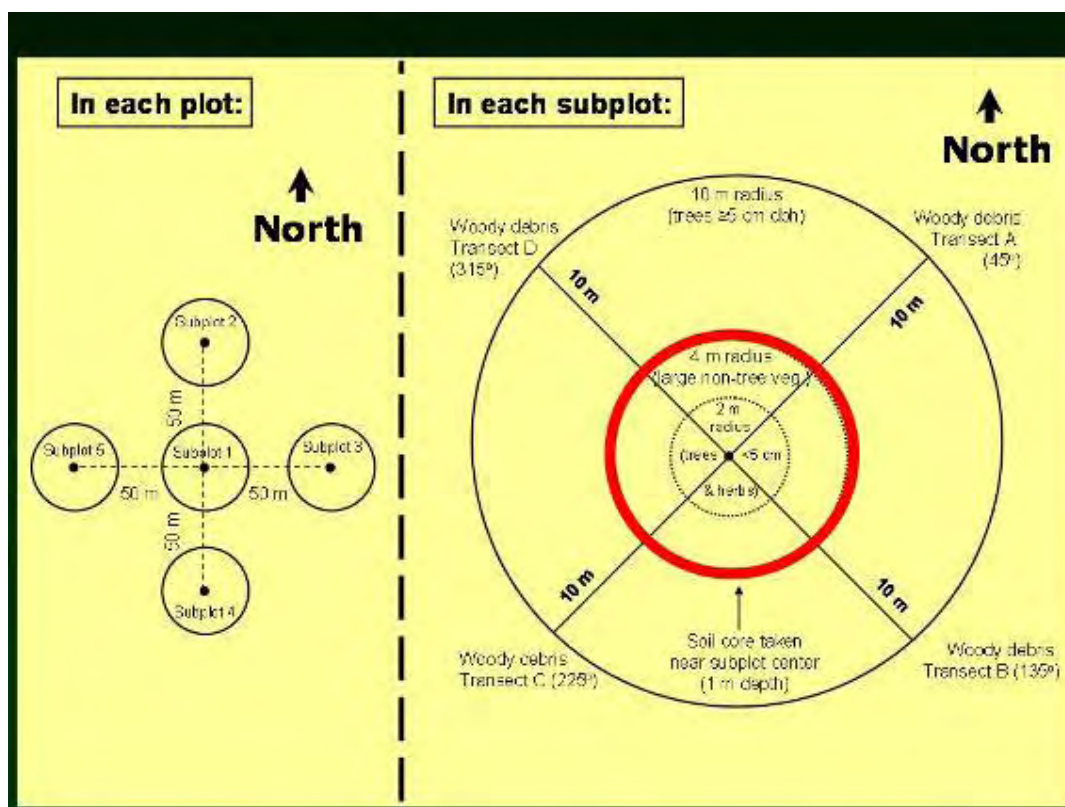


Non-tree vegetation

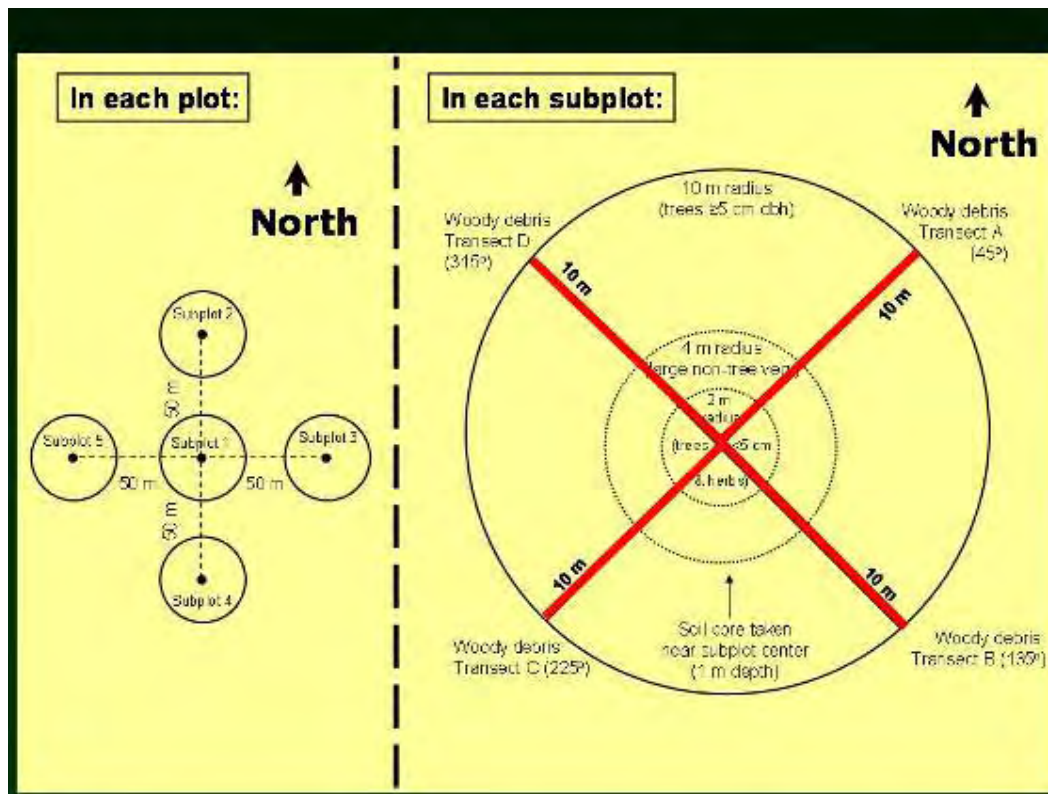
Measured as counts of individuals or stems

Scaled to biomass by using allometrics or average weights

Converted to C mass by multiplying by 0.5

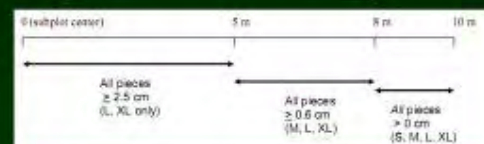


Dead wood



Woody Debris Size classes

Small	0 – 0.6 cm
Medium	0.6 – 2.5 cm
Large	2.5 – 7.6 cm
Extra-Large	≥ 7.6 cm



Dead wood

Measured using transects:
Pieces crossing the
line are tallied



Soil



Soil



Soil

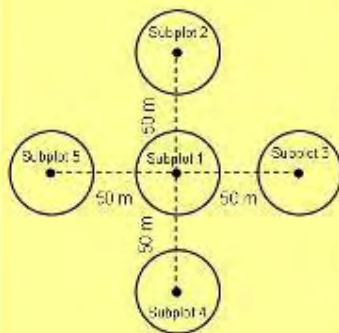


Two important parameters:
Soil Bulk Density (g cm^{-3})
% OC content



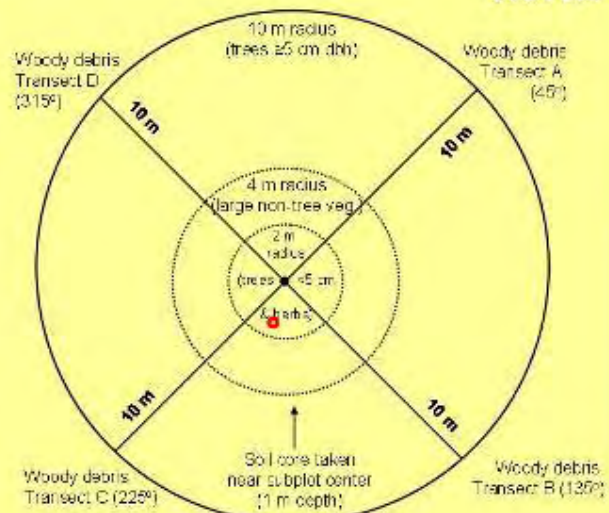
In each plot:

North ↑



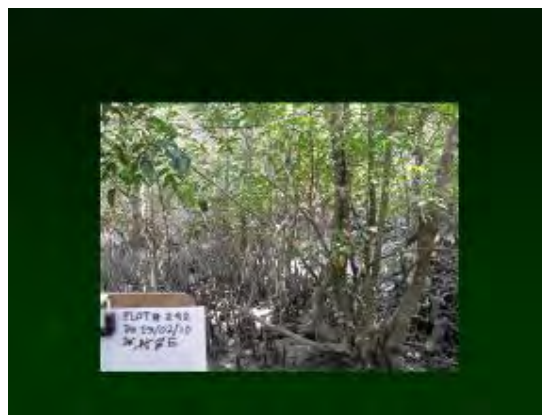
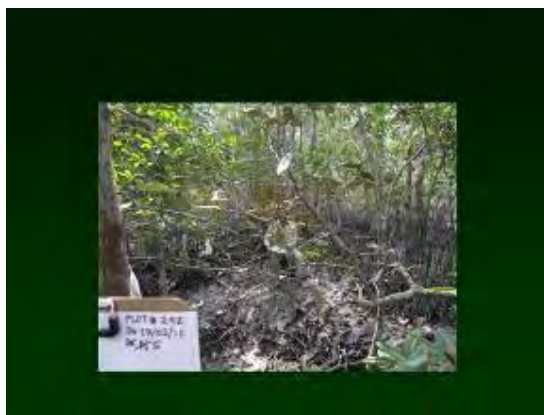
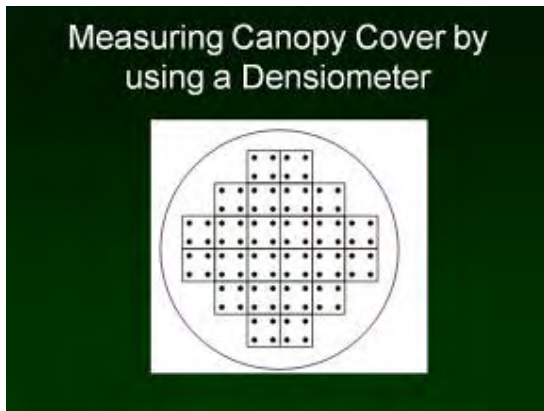
In each subplot:

North ↑





- **Tree heights**
 - Using a laser range finder
 - Only a subset of trees (3 at each subplot)
 - Purpose:
 - To facilitate future monitoring via remote sensing tools (e.g. LIDAR, etc.)
 - So that diameter-height regressions can be built for all trees
- **Canopy cover**
 - Using a densiometer
 - Purpose: To monitor forest canopy cover and to intersect with remote sensing data
- **Photo documentation**
 - Systematic photopoints at center of each plot
 - Reporting purposes, visualization





ANNEX 8

PHOTOS FROM FIELD PRACTICUM

19TH MARCH 2010; KALIAKOIR RANGE, GAZIPUR DISTRICT



Fieldwork preparation briefing



Briefing on use of densiometer



Discussing maps before practicum exercise



Team orientation to GPS before practicum exercise



Practicing use of laser clinometer



Team practicum: plot photographs



Team practicum: measuring plots



Data entry in prescribed format



Field measurements: diameter



Sample collection: soil augur

ANNEX 9

DEVELOPED TIMELINES

Working Plan to Conduct Carbon Inventory

Protected Area (PA): Hail Haor

Group Member: Md. Mohosen Ali, Shawkat Ali, Shahidul Islam and Monirul Islam

Sl No.	Activities	Timelines
1	Survey plot identification	01 April, 2010
2	Logistic and administrative arrangement support	02 April, 2010
3	Travel to arrive the targeted spot	03 April, 2010
4	Field data collection Total area 1000 ha No. of Main Plots = 10 @ 1 Plot / 0.80 ha Total No. of Plots including Sub Plot = 50 a. General project information sharing with local stakeholders and rapport building b. Plot description, photographs c. Land use area assessment d. Sub-plot description e. Seedling and sapling f. Tree information g. Woody debris data h. Soil sample collection i. Leaf litter data collection j. Non woody plant sample collection (Destructive harvest) k. Canopy coverage	04-20 April, 2010
5	Soil sample analysis Plant sample analysis	21-20 April, 2010
6	Data digitization and analysis	01-07 May, 2010
7	Data interpretation and report writing	08-30 May, 2010

PA: Kangsha-Malijhee Basin

Group Member: Aminul, Shakil, Aminul, Sharif

Sl No.	Activities	Timelines
1	Map and instrument collection	01-10 April, 2010

2	Introducing with formats	Do
3	Transect of plot/spot (survey)	Do
4	Feasible plot identification	Do
5	Spot. Latitude and longitude entry to GPS and save under name	Do
6	Introducing with local people/CMC, RMO, Stakeholders about the project	Do
7	Site specific activities: Plots and Sub Plots <ul style="list-style-type: none"> a. Reaching to the spots. b. Marking/Tagging of central plot c. Measuring 10 m radius d. Taking photographs (North, South, East and West) e. DBH measuring f. Counting woody debris (45⁰, 135⁰, 225⁰, 315⁰) Small, Medium, Large and Extra Large g. Seedling counting h. Sapling counting i. Shrub and herb identification j. Height of co-dominant trees (03 No) k. Soil sample collection (within 0-30 cm) l. Canopy coverage measurement (Vegetation, weeds-counting and weighting) 	Do
	Plot No (1-25)	11-20 April, 2010
	Plot No (26-50)	21-30 April, 2010
	Plot No (51-75)	01-10 May, 2010
	Plot No (76-100)	11-20 May, 2010
8	Over view the total activities	21-30 May, 2010

PA: Sitakundu Reserve Forest (SRF)

Group Member: Anwar (ACF), Utpal, Sanjay and Rafiq (ACF)

Area: 22,382 acrs

Estimated plots: 113

Plot estimation: Three plots/day (on an average)

Sl No.	Activities	Timelines
1	Map collection and plot identification (Previous information collection)	1-2 April, 2010
2	Consultation with Forest Staff	2-3 April, 2010
3	Readiness for inventory works (Capacity building of the team members) Start of field works (Team mobilization)	2-4 April, 2010
4	GPS entry and move for filed work	4 April, 2010
5	Start of first phase survey	5-8 April, 2010
6	Second phase survey	15-20 April, 2010

7	3 rd Phase survey	25-30 April, , 2010
8	4 th Phase survey	3-7 May, 2010
9	5 th Phase survey	9-13 May, 2010
10	6 th Phase survey	17-22 May, 2010
11	7 th Phase, Field survey completed	24-27 May, 2010
12	Compilation of data	28-31 May, 2010
13	Compilation of Carbon Inventory	Do

Note: Total Days: 40 (For field work and data entry)

PA: Inani Reserve Forest and Himchari National Park

Group Member: Abdur Rahman, Shital.Kumar Nath and Rasel Ahammed

Site: Inani Reserve Forest

Area: 7,700 ha

Plot No: 88

Sl No.	Activities	Timelines
1	Mobilization to the Inani Forest Range Office Meeting with RO/BOs Field Reconnaissance	04 April, 2010
2	Locating plots, getting data on all parameters (54 plots)	05-30 April, 2010
3	Locating plots, getting data on all parameters (26 plots)	02-30 May, 2010

Site: Himchari National Park

Area: 1,825 ha

Plot No: 23

Sl No.	Activities	Timelines
1	Mobilization Meeting Reconnaissance	16 May, 2010
2	Locating Plots Taking measurements	17-31 May, 2010

PA: Teknaf Game Reserve

Group Member: Karim, Rafique, Mahmud and Manir

1. Area: 11,615 ha
2. Proj. Sample Plot: 150
3. Range: Whykong, Shilkhali, Teknaf

4. Division: Cox's Bazar South
5. Upazila: Teknaf

Sl No.	Activities	Timelines
1	Discussion with CMC, FD, Local Community Collection of survey materials	25-30 March, 2010
2	Data collection: <ul style="list-style-type: none"> ○ Go to sample plot with all instruments with the help of GPS and Map ○ Identify central plot and tagging ○ Taking photograph (E.W.N.S) ○ Marking 10 m radius ○ Counting trees and DBH measurement ○ Division of circle 45⁰, 125⁰, 225⁰, 315⁰ ○ Debris counting ○ Height measurement- co-dominant tree ○ Sapling, seedling counting ○ Canopy closer identification ○ Vegetative coverage checking ○ Soil sample collection ○ Destructive measure ○ Observation of invasive plant ○ Identify sub plot and data collection ○ Review of the data sheet Per day 3 plots (Weekend: Friday) Whykong (50 plot)	01-20 April, 2010
	Shilkhali (40 plot)	21 April-05 May, 2010
	Teknaf (60 plot)	06-30 May, 2010
	Data analysis and report writing	June 2010

PA: Rema-Kalenga Wildlife Sanctuary

Group Member: Md. Motlubur, Kanailal, Razibul and Shohana

Total Area: 1,795 ha

Total no of plots: 25 (approx.)

Sl No	Activities	Timelines
1	Plot map/Grid map collection (from IPAC)	1 st April 2010
2	Equipment collection (from IPAC)	do
3	Arrival to site	3 rd April 2010
4	Team discussion	do
5	Stakeholder discussion and secondary data collection (CMC, FUG, RMO, LGED etc)	4-6 April, 2010

6	Plot identification/Discussions	7 th April, 2010
7	Plot survey (1/2 plots per day)	8-25 April, 2010
8	Formats and samples submission	26 – 30 April' 10

PA: Dudhpukuria National Park (Proposed)

Group Member: Md. Maksud Alam, Mostofa Omar Sharif, Bayezid Khan

There are 3 Beats under 2 Ranges in the proposed National Park. Dhopachari Beat under Dohazari Range is the largest amongst the 3 beats and comprises approximately 40% of the total land coverage. Other two Ranges (Dudhpukuria and Kamlachari under Khurusia Range) are more or less similar in size. Total area of the PA is approximately 4000 ha.

No. of plots need to be measured: 60
(Dhopachari-24, Dudhpukuria-18, Kamlachari-18)

Sl No.	Activities	Timelines
1	Map & Equipments Collection	1 st week of April, 2010
2	Discussion: FD & others	April to May 2010
3	Discussion with Community	Do
4	Field Data Collection: Dhopachori Beat	1 st week to 3 rd week of April, 2010
5	Field Data Collection: Dudhpukuria Beat	4 th week of April to 2 nd week of May, 2010
6	Field Data Collection: Kamlachari Beat	2 nd week to 3 rd week of May, 2010
7	Data Sheet Supply	4 th week of May, 2010

Accommodation Facilities:

Dhopachari Beat: Dohazari R/O Rest House; 2 hrs. journey; boat & CNG/Motorbike

Dudhpukuria Beat: Dudhpukuria Rest House; Motorbike

Kamlachari Beat: Dudhpukuria Rest House; Motorbike, 1 hr. journey

Logistics Support:

Motorbike / CNG (Hire) - 2

Boat (Hire) - 1

Cooking Utensils – 1 Set

Mattress – 2

Mosquito Net – 2

Pillow – 4

Bed Sheet – 2

Rain Coat - 6

Umbrella – per member of team

ANNEX 10

POLICY AND INSTITUTIONAL CONTEXT

<p>REDD, REDD plus and REDD Readiness Around the Globe</p> <p>Fazle Rabbi Sadeque Ahmed Director Department of Environment</p> <p>March 21, 2010</p>	<p>Forest and Climate Change</p> <ul style="list-style-type: none">▪ According IPCC fourth assessment report forest and other terrestrial sinks sequester 2.6 Gtc annually.▪ According to FAO forest store about 638 Gtc.▪ Deforestation and other land use activities emit 1.6 Gtc annually.▪ Forest sector mostly deforestation accounts for 17% of the total anthropogenic GHG emissions▪ Forestry sector is important both for adaptation and mitigation.
<p>Origin and Development of REDD and REDD plus</p> <ul style="list-style-type: none">▪ Compensated reduction of deforestation first proposed at COP 11 in Montreal in 2005▪ In subsequent SBSTA meetings and workshops degradation was also discussed and included▪ Compensated conservation suggested by Indian (2007) and supported by others	<p>Bali Action Plan</p> <ul style="list-style-type: none">▪ Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
<p>Copenhagen Accord (para 8,10)</p> <ul style="list-style-type: none">▪ We recognize the crucial role of reducing emission from deforestation and forest degradation and the need to enhance removals of GHG emission by forests and agree on the need to provide positive incentives to such actions through the immediate establishment of a mechanism including REDD-plus to enable the mobilization of financial resources from developed countries.	<p>Contd.</p> <ul style="list-style-type: none">▪ We decide the Copenhagen Green Climate Fund shall be established as an operating entity of the financial mechanism of the Convention to support projects, programme, policies and other activities in developing countries related mitigation including REDD-plus, adaptation, capacity-building, technology development and transfer.

REDD Readiness

Readiness Focused on:

- Preparing effective strategy to reduce emission developed to stakeholder consultation
- Institutional, technical and human capacity building
- Designing/implementing MRV systems, forest carbon accounting
- Developing baselines/reference scenarios against which deforestation reductions can be measured
- Transparent, equitable and accountable benefit sharing mechanisms
- Safeguards and protect the interest of the poor
- Clarification of forest and land tenure

Phases of REDD Mechanism

- Phase 1: Initial support for national REDD strategy development supported by voluntary contributions, grants such as FCPF, UN-RED
- Phase 2: financing linked with performance in the implementation of REDD strategy
- financing based on performance in reductions and removals against agreed reference level

Support for REDD

- World bank: forest carbon partnership facility
- Forest investment programme
- UN-REDD programme (UNDP, UNEP, FAO)
- Governments: UK, Norway, Australia, Germany and Denmark
- Private foundations: Clinton Climate Initiative, Packard foundation, Moore foundation, Forest Philanthropy Action Network

Key Issues

- Design issue
 - Boundary
 - Base line/reference line
 - Additionality
 - MRV
 - Permanance
 - Leakage

Other Issues

- Addressing causes of deforestation
- Financing: fund based or market based
- Rights and livelihood of local and forest dependent people
- Benefit sharing mechanism

Finally.....

- REDD is not just money it is also an issue of forest management and governance
- It is not just about carbon it is also welfare of the forest dependent people and multiple products and services from forest.

Thanks for Your Time and Patient
Hearing