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INTEGRATED PROTECTED AREA CO-MANAGEMENT (IPAC)

REDD STRATEGY DEVELOPMENT WORKSHOP

5 September 2010

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REDD STRATEGY DEVELOPMENT WORKSHOP

10 August 2010

Venue: Conference Hall, Ban Bhaban, Agargaon, Dhaka
Organized By: IPAC Project

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Acronyms

ACF	Assistant Conservator of Forests
BCAS	Bangladesh Center for Advanced Studies
BFRI	Bangladesh Forest Research Institute
BIDS	Bangladesh Institute of Development Studies
CCF	Chief Conservator of Forests
COP	Chief of Party
DCF	Deputy Conservator of Forests
DCOP	Deputy Chief of Party
DCCF	Deputy Chief Conservator of Forests
DOE	Department of Environment
DOF	Department of Fisheries
EGFE	Economic Growth, Food and Environment
FD	Forest Department
GOB	Government of Bangladesh
IPAC	Integrated Protected Area Co-Management
IRG	International Resources Group
MOEF	Ministry of Environment and Forests
REDD	Reduction of Emissions from Deforestation and Forest Degradation
SE	South East
TOR	Terms of Reference
UNDP	United Nations Development Program
USAID	United States Agency for International Development
UNHCR	United Nations High Commission for Refugees

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Purpose

The purpose of this daylong workshop was to familiarize the workshop participants on REDD (Reduction of Emissions from Deforestation and Forests Degradation) strategy development and present the findings on the Principle Marketed Value Chains Derived from the Sundarban Reserve Forest, a study conducted by Dr. K M Nabiul Islam, Senior Research Fellow, BIDS.
The morning session of the workshop focused on providing guidance to the participants on how to prepare a national level REDD strategy for Bangladesh with reference to experiences from national strategies being developed in other countries. The workshop mainly focused on the main elements to be considered when developing a national REDD Strategy for Bangladesh.
The afternoon session of the workshop focused on a presentation by an ACF who shared his experiences from a recent visit to China followed by the presentation by Dr. K M Nabiul Islam.

Participants at the Workshop

- Representatives of FD
- Representatives of DOF
- Representatives of DOE
- Representative of BFRI
- Representative of BCAS
- Representative of IUCN
- Representative of USAID
- University Students
- Chief Guest: Dr. Mihir Kanti Majumder, Secretary, MOEF
- Special Guest: Mr. Monowar Islam, Director General, DOE
- Special Guest: Mr. Philip J DeCosse, Senior Program Manager, IRG/Washington

Speakers at the Workshop

- Mr. Todd Johnson, Forest Carbon Specialist, IRG/Washington
- Mr. Haradhan Banik, Conservator of Forests, Dhaka
- Dr. Fazle Rabbi, Director (Climate Change), DOE
- Dr. Ram Sharma, DCOP, IPAC Project
- Dr. K M Nabiul Islam, Senior Research Fellow, BIDS

Opening Session (Morning Session)

Mr. Ishtiaq Uddin Ahmad, CCF

The CCF inaugurated the workshop with a welcome address for all the attendees of the workshop. In light of Climate Change, the CCF highlighted the need for reforestation, reducing deforestation and forest degrading. He made special reference to the Bali Road Map and the standing of REDD on the global scale and its need in Bangladesh. He acclaimed the expertise of Mr. Todd Johnson in the field of REDD Strategy Development and what value he is to Bangladesh for his contribution in the REDD National Strategy Development. He mentioned about the carbon stock measurement in Chunati Wildlife Sanctuary and completion of Project

Proposal on Carbon in Chunati which was submitted to MOEF and as a result the "Resource Conservation through Community Reforestation and Forest Management" Project was initiated by GTZ with support from IPAC. In addition, he mentioned about preparation of a similar Project Proposal of Carbon in Sundarbans which will be completed very soon. The completed Proposal will be submitted to USAID next September or October 2010 through the MOEF.
He mentioned about the ongoing 3 week long Land-Use Carbon Project Development Writehop and the participation by DOF, DOE and university students along with FD staff in the Writeshop to highlight the importance of the subject matter which requires attention from different sectors. In closing, he expressed his gratitude for the participants attending the workshop and wished success to the workshop.

Naren Chanmugam, Director EGFE, USAID

He thanked the participants and guests at the workshop and extended his special gratitude to the Secretary, MOEF for his active participation and support. He highlighted the ongoing efforts of USAID for generating more funding for such initiatives of natural resource management and spoke of other USAID funded projects with similar management objectives. He recollected the important role played by MACH Project & NSP and their contribution towards IPAC Project. He considers the ongoing Land-Use Carbon Project Development Writeshopto be of prime importance and its success will lead to development of Project Proposals on Carbon.

Dr. Mihir Kanti Majumder, Secretary, MOEF

He welcomed everyone to the workshop and appreciated the presence of IRG Senior Program Manager and USAID representatives. He added that "Our survival is now in question due to increase in GHG emission, global warming and climate change". He mentioned about the vulnerability of Bangladesh to impacts of Climate Change and how Bangladesh is a victim to Climate Change due to its high population density. He spoke of the necessity of capacity development for Bangladesh to mitigate the impacts of Climate Change.
The Secretary informed about 3,000 cyclone shelters that have been constructed to provide shelter against numerous natural disasters, a step by GOB towards adapting to Climate Change. Also, development of saline tolerant variety of rice have been successful and a great relief for people living in areas with high concentration of saline water. Forests conserve CO_2, sequestrate CO_2 so the need to conserve forests for our own survival is not an option but a necessity. REDD mechanism should be developed keeping in mind the opportunity to receive grants by international donor agencies. He spoke of the pioneering role of NSP in initiating forest management in Bangladesh. He declared the need for working hand in hand to conserve the remaining forests for our own survival.
In closing, the CCF thanked USAID, MOEF, DOF and DOE for their presence, participation and initiatives. He expressed his sincere appreciation to all the participants who were involved with field operations for their work in Carbon Field Inventory Operations, a part of the Carbon Projects Development, during the harsh rainy season.

Presentations

Mr. Todd Johnson, Forest Carbon Specialist, IRG/Washington
Mr. Haradhan Banik, Conservator of Forests, Dhaka
Dr. Fazle Rabbi, Director (Climate Change), DOE
Dr. Ram Sharma, DCOP, IPAC Project

Open Discussion Session

Session Moderator: Mr. Farid Uddin Ahmed, Executive Director, Arannayk Foundation
An open discussion session was held to present an opportunity to share opinions, comments and experiences. Following are some of the highlights from that session:

- Mr. Quazi Md. Nurul Karim, ACF, Wildlife and Nature Conservation Division, Sylhet, Moulvibazaar – spoke about the rate of forest degradation in Teknaf, Teknaf forest degradation is not natural and mentioned the role of *rohingyas* (refugees) in such forest degradation. There is a camp in the reserve forest of Teknaf by UNHCR & UNDP where these *rohingyas* reside – breaking the norms of a reserve forest and hence causing degradation through their livelihood practices.
    - The moderator responded to the comment saying that it is beyond the capacity of this session to resolve the mentioned problem of *rohingyas*.
    - Dr. Ram Sharma, IPAC DCOP also mentioned that it is a complex issue and cannot be easily resolved. IPAC is being implemented in Teknaf and wherever possible sustainable forest use is being encouraged but REDD can highlight this issue. Further he added that a Project Proposal on Teknaf Carbon can highlight this issue.
- Moderator – praised Mr. Todd Johnson for his presentation and referred to the presentation of Mr. Haradhan Banik which indicates that 42.3 million metric ton of carbon remains as stock in Bangladesh as measured in 2005-2007. The report on this measurement was published in 2010.
    - In this issue Dr. Fazle Rabbi added that the presentation on international status and its high appreciation. Giving an example he compared the share market to Carbon Trading saying “It is like the share market, where primary & secondary share and dividend fund are being juggled”. He suggested that an action plan and documentation on REDD should be developed specific to Bangladesh.
    - Ruhul Mohaiman Chowdhury, Performance Monitoring Specialist, IPAC Project - he mentioned that fossils and roots of trees were not considered during the measurement process, therefore the stated amount is not accurate and is actually lower than the accurate amount.

- Mr. Abani Bushun, DCF, FD – suggested that we should document the assessments regarding the ongoing carbon trade. He put special emphasis that the ecosystem of the Sundarbans is not like any other forest and should be paid special attention developing Project Proposals.

- Mr. Abdur Rahman, ACF, Cox's Bazar (South) Forest Division, Cox's Bazar – raised the issue of considering the cost of leakage which should be properly measured and a necessity towards preparing a proper carbon project.

    - Mr. Todd Johnson – according to ISO protocols (December 31, 1989), any country cannot convert wetland into forest within 10 years after initializing a Carbon Project. What this means is, land conversion is restricted or prohibited and forest land should remain as forest land and cannot be altered for any other purpose. The trend in forest degradation in the last 20 years has shown only increase. "We know in SE Asia, we have more forests" he explained. In preparing Carbon Project Proposal, knowing how to compensate leakage is very important.

- Dr. Fazzle Rabbi – The REDD mechanism is a complex process and many things are now under processing but he mentioned gaining experience from Indonesia, Papua New Guinea who are much more advanced in this regard.

- Moderator - he highlighted the lack of medicinal plants in the world.

- Zaheer Iqbal, DCF,FD - he said regarding REDD, we should consider additionality to prepare Project Proposals. If this fails then we do not have any scope to receive funds.

- Moderator – He questioned about relocating indigenous people as a part of REDD Strategy Development.

    - Mr. Todd Johnson – He replied saying that voluntary relocation would lead to disqualification of the Project Proposal as per fund provision protocols.

- Mr. Laskar Maksudur Rahaman – he inquired saying that forestry is for food, fruit and poverty alleviation, can a REDD Strategy incorporate all of these?

    - Mr. Todd Johnson – according to National Strategy, very serious effects on the land occur as farmers set watershed for production. REDD is not a magical procedure that will solve all problems of a country, it is only a tool which can help in solving certain problems. He quoted a prior comment of the CCF, "Bangladesh is one of the most vulnerable countries in the world and it needs to build adaptation capacity to face Climate Change."

- Moderator – encouraged the participants to comment on Carbon Stocks and the recently completed Training on Management and Analysis for Field Inventories of Forest Carbon.

In addition, he said that in case of management, we cannot compromise with habitat conservation – a comment on the previous inquiry.

- Dr. Yoon Kim – spoke about social issues related to REDD, in particular about refugees. Bangladesh is one of those countries with a good opportunity to receive funds in relation to Carbon Projects Development. She added that in order to develop a proper Carbon Project, participation of different stakeholders including local communities is necessary.

In closing, Mr. Reed Merrill, COP, IPAC Project thanked everyone for their participation at the workshop led by the MOEF Secretary. He added that Bangladesh is dealing with Climate Change issues and the role of forest & wetland PAs which have an interface with Climate Change. REDD is a product of the Bali Road Map and the conference in Copenhagen failed to produce any strategy like REDD. He requested everybody to work together under the IPAC umbrella.

Afternoon Session

The workshop continued in the afternoon session starting with a presentation by Mr. Tariqul Islam, ACF who presented about his experiences from a recent visit to China.
His presentation can be found in Annex II a
Dr. K M Nabiul Islam, Senior Research Fellow, BIDS presented on "Principle Marketed Value Chains Derived from the Sundarban Reserve Forest", a study that was completed in January 2010. His presentation focused on the value chain flow found in some of the main Sundarban dependant livelihood activities such as resource collection and aquaculture undertaken by local communities living within and nearby the Sundarbans. His study noted how much revenue is derived from each activities and how much benefit goes to which section of the value chain flow. Furthermore, his presentation focused on topics such as policy implications for these value chains, climate change, role of FD staff, co-management and other related topics.
Dr. Nabiul's presentation can be found in Annex II b

Open Discussion Session II

Session Moderator: Mr. Ali Haider, DCCF, FD
The presentations were followed by an open discussion session to provide the session participants with an opportunity to share their opinions and comments regarding the session. Following are the highlight of this discussion session:

- Mr. Akbar Hossain, CF, Khulna - spoke about leasing and lifting of *Goran* permissions with relation to the presentation made by Dr. Nabiul Islam.
    - Mr. Tanvir Hossain, BIDS – replied that the suggestion mentioned in the presentation comes from the Focus Group Discussion conducted as part of the project.

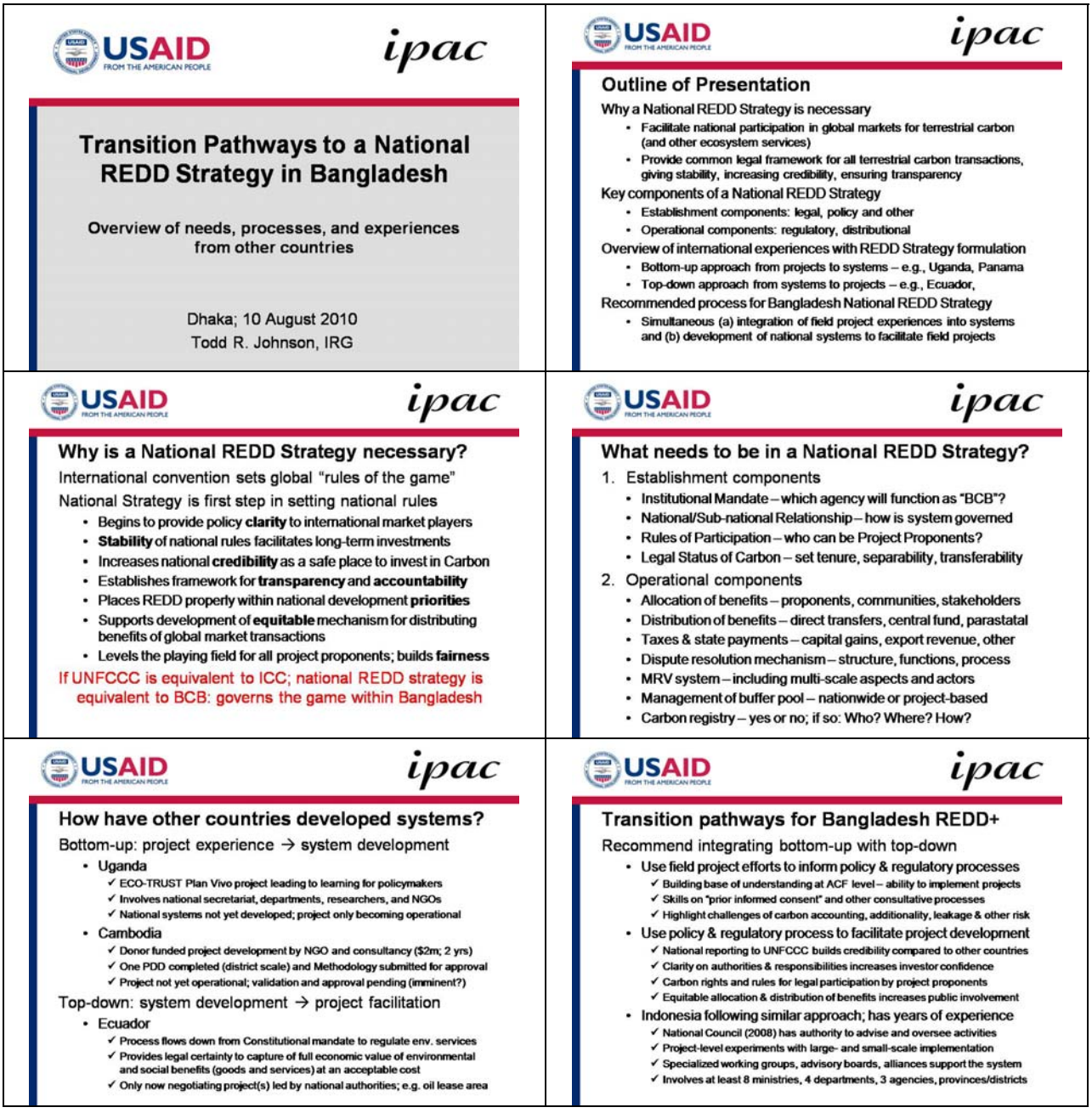
- Mr. Md. Younus Ali, CF - He asked about the role of NGOs and added that in 2007, natural disaster like Cyclone Aila has severely affected different Sundarban forest product collectors.
    - Dr. Nabiul Islam - replied saying that only two months time was available within which 5 districts and 10 upzalias had to be surveyed, it was a very vast area and some issues were not covered in the TOR of the study.
- Mr. Atikul Azam, DCCF - said that people should consider National Policies in regard to Sundarban Management.
- Dr. Nabiul Islam – mentioned that comments and observations made by participants at the open discussion will be taken into consideration before finalizing the report on the study.
- Mr. Philip J DeCosse - said that a new initiative was introduced to the participants at the workshop and he invites the comments of the participants. He spoke of time limitations but requested the development of value chains.
- Mr. Abdur Rahman, ACF - In accordance to SBC Project (Sundarban Conservation Project) documents of 1995, we know that pressure on Sundarbans have increased by many folds and people dependant on the Sundarbans require more livelihood support. The question that remains is who will provide such support to those who need it?
    - Dr. Nabiul Islam: He mentioned that some of the observations made by the participants supplemented for the question of support for the Sundarban dependant people. A lot of insight was gained from the discussion session and he expressed his gratitude especially towards Akbar Hossain and spoke of efforts to incorporate all comments in the finalization of the report.

IPAC DCOP concluded the session by thanking all participants who attended the afternoon session. He extended his gratitude towards representatives of FD, DOF and other organizations for attending the session amidst of their busy schedule.

Annex - I

Presentations of the Morning Session

a. Pathways to a National REDD Strategy in Bangladesh by Mr. Todd Johnson, Forest Carbon Specialist, IRG/Washington



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Transition Pathways to a National REDD Strategy in Bangladesh

Overview of needs, processes, and experiences from other countries

Dhaka; 10 August 2010
Todd R. Johnson, IRG

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Outline of Presentation

Why a National REDD Strategy is necessary
- Facilitate national participation in global markets for terrestrial carbon (and other ecosystem services)
- Provide common legal framework for all terrestrial carbon transactions, giving stability, increasing credibility, ensuring transparency

Key components of a National REDD Strategy
- Establishment components: legal, policy and other
- Operational components: regulatory, distributional

Overview of international experiences with REDD Strategy formulation
- Bottom-up approach from projects to systems – e.g., Uganda, Panama
- Top-down approach from systems to projects – e.g., Ecuador,

Recommended process for Bangladesh National REDD Strategy
- Simultaneous (a) integration of field project experiences into systems and (b) development of national systems to facilitate field projects

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Why is a National REDD Strategy necessary?

International convention sets global "rules of the game"

National Strategy is first step in setting national rules
- Begins to provide policy **clarity** to international market players
- **Stability** of national rules facilitates long-term investments
- Increases national **credibility** as a safe place to invest in Carbon
- Establishes framework for **transparency** and **accountability**
- Places REDD properly within national development **priorities**
- Supports development of **equitable** mechanism for distributing benefits of global market transactions
- Levels the playing field for all project proponents; builds **fairness**

If UNFCCC is equivalent to ICC; national REDD strategy is equivalent to BCB: governs the game within Bangladesh

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What needs to be in a National REDD Strategy?

1. Establishment components
   - Institutional Mandate – which agency will function as "BCB"?
   - National/Sub-national Relationship – how is system governed
   - Rules of Participation – who can be Project Proponents?
   - Legal Status of Carbon – set tenure, separability, transferability
2. Operational components
   - Allocation of benefits – proponents, communities, stakeholders
   - Distribution of benefits – direct transfers, central fund, parastatal
   - Taxes & state payments – capital gains, export revenue, other
   - Dispute resolution mechanism – structure, functions, process
   - MRV system – including multi-scale aspects and actors
   - Management of buffer pool – nationwide or project-based
   - Carbon registry – yes or no; if so: Who? Where? How?

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How have other countries developed systems?

Bottom-up: project experience → system development
- Uganda
  - ✓ ECO-TRUST Plan Vivo project leading to learning for policymakers
  - ✓ Involves national secretariat, departments, researchers, and NGOs
  - ✓ National systems not yet developed; project only becoming operational
- Cambodia
  - ✓ Donor funded project development by NGO and consultancy ($2m; 2 yrs)
  - ✓ One PDD completed (district scale) and Methodology submitted for approval
  - ✓ Project not yet operational; validation and approval pending (imminent?)

Top-down: system development → project facilitation
- Ecuador
  - ✓ Process flows down from Constitutional mandate to regulate env. services
  - ✓ Provides legal certainty to capture of full economic value of environmental and social benefits (goods and services) at an acceptable cost
  - ✓ Only now negotiating project(s) led by national authorities; e.g. oil lease area

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Transition pathways for Bangladesh REDD+

Recommend integrating bottom-up with top-down
- Use field project efforts to inform policy & regulatory processes
  - ✓ Building base of understanding at ACF level – ability to implement projects
  - ✓ Skills on "prior informed consent" and other consultative processes
  - ✓ Highlight challenges of carbon accounting, additionality, leakage & other risk
- Use policy & regulatory process to facilitate project development
  - ✓ National reporting to UNFCCC builds credibility compared to other countries
  - ✓ Clarity on authorities & responsibilities increases investor confidence
  - ✓ Carbon rights and rules for legal participation by project proponents
  - ✓ Equitable allocation & distribution of benefits increases public involvement
- Indonesia following similar approach; has years of experience
  - ✓ National Council (2008) has authority to advise and oversee activities
  - ✓ Project-level experiments with large- and small-scale implementation
  - ✓ Specialized working groups, advisory boards, alliances support the system
  - ✓ Involves at least 8 ministries, 4 departments, 3 agencies, provinces/districts

b. REDD Strategy Development in Bangladesh by Mr. Haradhan Banik, Conservator of Forests, FD, Dhaka

REDD Strategy Development in Bangladesh

Haradhan Banik
National Focal Point
UN-REDD Programme
&
Conservator of Forests
Forest Department

Paper for: Workshop on REDD Strategy Development, Ban Bhaban, Agargaon, Dhaka, Dated: 10th August 2010

Introduction

- Forest is the life of all living organisms in the world. Due to rising of global warming 0.74 ± 0.20 OC and increase of CO2 concentration in the atmosphere the earth is facing serious climate change challenges.
- In this regard forest can play vital role in mitigation of climate change. About 20% emissions occur due to deforestation and forest degradation in the developing countries. By using REDD+ technology in forest sector it is possible to reduce CO2 emissions from the earth at the same time removal of CO2 from the atmosphere by sequestration during photosynthesis and store carbon in the forests.
- Bangladesh is the highest densely populated country in the world and as such reason tremendous pressure in forests and forest resources resulting deforestation and forest degradation in the country.

Forest area in Bangladesh:

There is an estimated 2.52 million ha of land as forest land which is 17.49% of the total area of the country.

Out of this total forest land 2.25 million ha is owned by the government as classified and unclassified forests and 0.27 million ha is owned privately.

It is estimated that in Bangladesh 83% is natural forests and 17% is plantation (NFA 2007).

Forest Area

Type	Area (ha)	Percentage (forests)	Percentage (country)
Hill forests	6,70,000	44%	4.54
Sal forests	1,20,000	78%	0.81
Mangrove forests	6,01,700	40%	4.07
Mangrove plantations	1,65,000		
Village forests	7,74,000		

Area of Forests (Legal type)

Reserved Forest (RF): 12,221.69 sq. km (sec 20)

Protected Forest (PF): 3.69.80 sq. km

Aquired Forest (AF): 84.81 sq. km

Vested Forest (VF): 38.41 sq. km

Water development board (Embankment): 7,120.00 km

What is REDD?

REDD – Reducing Emissions from Deforestation and Forest Degradation in Developing Countries- is an effort to create a financial value for the carbon stored in forests.

It decides that developing country Parties should contribute to mitigation action in the forest sector by undertaking the following **5 activities**.

* Reducing emissions from deforestation;
* Reducing emissions from forest degradation;
* Conservation of forest carbon stocks;
* Sustainable management of forests;
* Enhancement of forest carbon stocks.

Status of REDD+

*REDD+ is being considered as a mechanism to reduce the green house effect, as part of a new climate treaty under the United Nations Framework Convention on Climate Change (UNFCC).

*REDD was first adopted at the meeting in Bali, Indonesia, 2007 (COP13).

*Negotiations at the UNFCCC are going very slowly so REDD+ has not yet been adopted officially some decisions has taken (COP15).

*Decision at next meeting in Mexico, December 2010.

*REDD may be started after Kyoto Protocol 2012.

*Donors are providing fund for the interim period.

REDD Readiness

*A developing country party aiming to undertake activities referred above (provided that support is made available) in accordance with national circumstances and respective capabilities, develop:

*A national strategy or action plan and if appropriate a sub national strategy as part of low carbon emission strategies and in accordance with provisions for enhanced action on mitigation.

*A national forest reference emission level and / or forest reference level appropriate, sub-national forest reference emission level and/ or forest reference level.

*A robust and transparent national forest monitoring system for the monitoring and reporting of the activities with as appropriate, sub-national monitoring and reporting as an optional interim measure.

UNFCCC: Decision 4/CP.15

Methodological guidance for activities relating to reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries

Requests developing country Parties, on the basis of work conducted on the methodological issues set out in decision 2/CP.13, paragraphs 7 and 11, to take the following guidance into account for activities relating to decision 2/CP.13, and without prejudging any further relevant decisions of the Conference of the Parties, in particular those relating to measurement and reporting:

a) To identify drivers of deforestation and forest degradation resulting in emissions and also the means to address these;

b) To identify activities within the country that result in reduced emissions and increased removals, and stabilization of forest carbon stocks;

c) To use the most recent Intergovernmental Panel on Climate Change guidance and guidelines, as adopted or encouraged by the Conference of the Parties, as appropriate, as a basis for estimating anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes;

(d) To establish, according to national circumstances and capabilities, robust and transparent national forest' monitoring systems and, if appropriate, sub-national systems as part of national monitoring systems that:

(i) Use a combination of remote sensing and ground-based forest carbon inventory approaches for estimating, as appropriate, anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes;

(ii) Provide estimates that are transparent, consistent, as far as possible accurate, and that reduce uncertainties, taking into account national capabilities and capacities;

(iii) Are transparent and their results are available and suitable for review as agreed by the Conference of the Parties;

2. Recognizes that further work may need to be undertaken by the Intergovernmental Panel on Climate Change, in accordance with any relevant decisions by the Conference of the Parties;

3. Encourages, as appropriate, the development of guidance for effective engagement of indigenous peoples and local communities in monitoring and reporting;

4. Encourages all Parties in a position to do so to support and strengthen the capacities of developing countries to collect and access, analyse and interpret data, in order to develop estimates;

5. Invites Parties in a position to do so and relevant international organizations to enhance capacity-building in relation to using the guidance and guidelines referred in to paragraph 1 (c) above, taking into account the work of the Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention;

6. Requests the secretariat, subject to availability of supplementary funding, to enhance coordination of the activities referred to in paragraph 5 above, in the context of existing initiatives;

7. Recognizes that developing country Parties in establishing forest reference emission levels and forest reference levels should do so transparently taking into account historic data, and adjust for national circumstances, in accordance with relevant decisions of the Conference of the Parties;

8. Invites Parties to share lessons learned and experiences gained in the application of the guidance referred to in paragraph 1 above and the annex to decision 2/CP. 13 through the web platform on the UNFCCC website;

9. Urges relevant international organizations, non-governmental organizations and stakeholders to integrate and coordinate their efforts in order to avoid duplication and enhance synergy with regard to activities relating to decision 2/CP. 13.

REDD+: Principles

- contributing to the ultimate objective of the UNFCCC.
- being country driven (and voluntary)
- being undertaken in accordance with national circumstances and capabilities and respecting national sovereignty
- being consistent with national sustainable development needs and goals
- facilitating sustainable development, poverty reduction and responding to climate change
- promoting board country participation
- being consistent with the adaptation needs of the country
- being (integrated with nationally appropriate mitigation actions) developed within the context of low GHG emission strategies)
- being subject to (equitable, adequate predictable and sustainable) financing, technology support and capacity building
- being results based
- promoting the sustainable management of forests.

REDD+: Safeguard

- complimenting the objectives of national forest programmes and relevant international conventions and agreements
- adopting transparent and effective national forest governance structures
- respecting the knowledge the rights of indigenous communities
- involving full and effective participation of relevant stakeholders
- consistency with the conservation of natural forests and biological diversity
- avoiding the risk of reversal and the displacement of emissions.

Divers of deforestation in Bangladesh:

The divers of deforestation and degradation are complex. They include both natural and anthropogenic elements. In Bangladesh anthropogenic divers often span a wide number of sectors, beyond those operating purely at the forest level. Implementing REDD+ divers should be addressed properly. The divers may be classified into 4 groups.

Direct divers: Agriculture, shifting cultivation, logging

Enabling drivers: Construction of roads,

Underlying divers: Population pressure

Others factors: Disasters, forest fires.

Major divers of deforestation and forest degradation in Bangladesh are as follows:

- Demand and supply gap of forest produces.
- Population increase in the country and in the vicinity of forests
- Encroachment of forest land
- Release of forest land for various development purposes
- Leasing of forest land for agricultural purposes
- Theft by organized groups
- Unauthorized felling.
- Jhum (Slash and burn) cultivation by the tribal peoples
- Over exploitation by newsprint, pulp and hard board mills; match factories and foe electric (REB) poles
- Top-dying of Sundaris and stem borer attack on Gewa in the Sundarbans
- Shrimp cultivation in the coastal areas
- Over-grazing of cattle in the coastal and others areas
- Firewood supply for brick kilns
- Natural calamities
- Refugees and political upheavals

Carbon Stock in Bangladesh:

Total above ground carbon and carbon per hectare in the major land use classes are as follows (NAF 2007)

Land Use	Carbon (tons/ha)	Total Carbon(1000 tons)
Forest	96	139,000
Cultivates Land	9	71,000
Villages	72	206,000
Urban Areas	46	5,000
Inland Water	1	2,000
Total	29	423,00

Possible REDD sites in Bangladesh

A. Hill Forests (Tropical and Semi-evergreen Forests)

i. Protected area
ii. Reserved forests
iii. Protected forests
iv. USF (Unclass State Forests)
v. VCF (Village Common Forests)
vi. Private natural forests
vii. Municipal Forests
viii. City forests

B. Sal Forests (Tropical Moist Deciduous Forests)

- Protected Area
- Natural Sal Patch
- Sal Coppice
- Private Sal Forests

C. Mangrove Forests

- Protected Area
- Reserved forests
- Mangrove plantations

D. Fresh Water Swamp Forests

- Reed land forests
- Haor

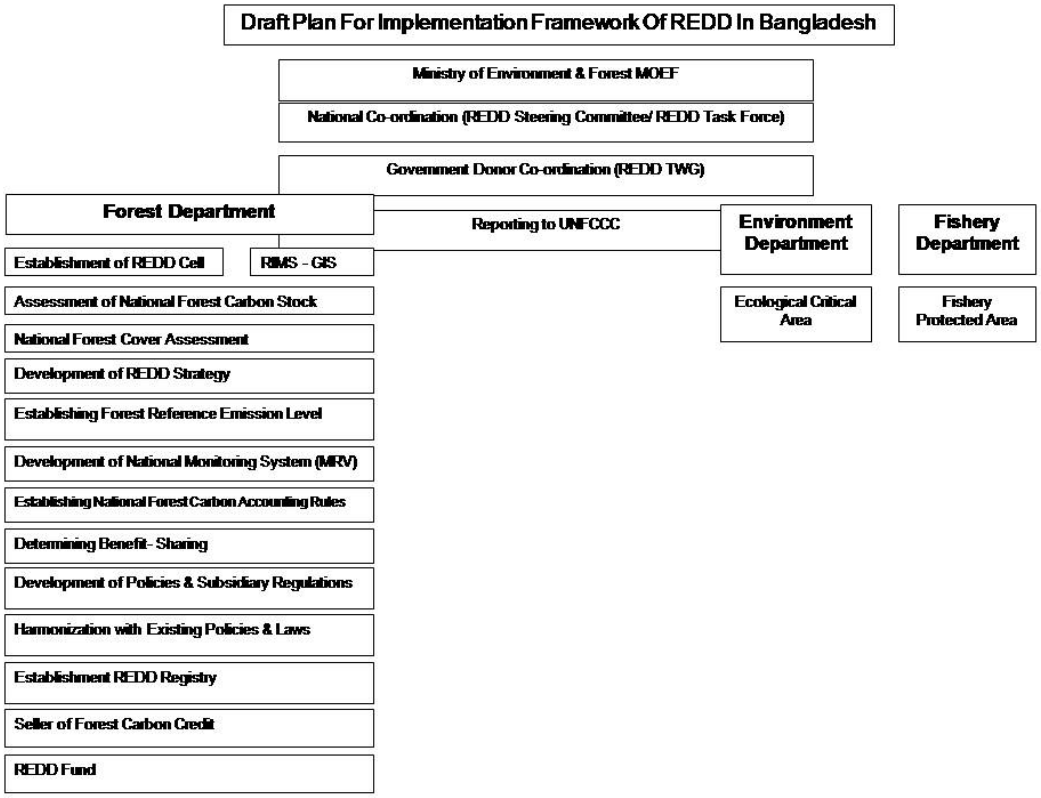
Participatory approach in REDD

In Bangladesh peoples participation in forest management has earned a good result and reputation in the world.

Due to Social forestry development and conservation forest resources increased significantly in Bangladesh and at the same time socio-economic upliftement of participant gained a momentum which contributed overall poverty reduction policy of the government.

In the REDD mechanism following participatory approach my be adopted in Bangladesh.

Forest type	Participatory approach
1. Protected Area	Co-management
2. Reserved forests	Joint Forest Management
3. Plantations	Social forestry
4. Village common Forests (VCF)	Community forestry
5. Private forests	Non-participatory
6. Unclassed State Forest (USF)	Social Forestry



Laws and Polices

REDD+ Implementation Strategies will be based on:

Forest Department
- The Forest Act 1927
- The Bangladesh (Wildlife) Preservation Order 1973
- Brick Burning Controlling Act 1989
- Forest policy 1994
- Social Forestry Rules 2004
- Protected Area Co-management Rules 2010 (Proposed)

Environment Department
- The Environment Law

Fishery Department
- Fishery Law

REDD+ Implementation of Main responsible Government Agencies

Forest Department (FD) is responsible for Protected Areas, Reserved Forests, Protected Forests, Vested Forests, Acquired Forests, Forest Plantations.

Ministry of Environment and Forest is responsible for overall co-ordination among stakeholders and international donors, UNFCCC etc.

Stakeholders Involved in the Development of REDD+ Strategies

Ministry of Environment & Forest
Ministry of Land
Ministry of Hill Tracts Affairs
Forest Department
Environment Department
Department of Fishery
Local Government
SPARSO

Academic Institutions

* Institute of Forestry & Environmental Sciences Chittagong University (IFESCU)
* Forestry Discipline, Khulna University

Supporting Stakeholders

* Integrated Protected Area Co-management
* Forest Research Institute
* Local Organizations/ Communities Administrative/NGO
* Indigenous people

Proposed Component of the National REDD Strategy

*Reference Scenario Formulation (N& R Levels)
*Engagement with Stakeholders at a Various Levels (Stakeholder Dialogues)
*Assessment of Benefits & Impacts
*Development of Participatory C-stock Monitoring, Assessment, Reporting and Verification System
*Design of Payment System
*Design Roadmap, Institutional Arrangement & Management System (Report, Review & Evaluation the Performance)
*Capacity Building for The Relevant Stakeholders

Financing REDD+ implementation

*Donor-based financing USAID, UN-REDD Programme, ADB
*Voluntary Carbon Market
*Bangladesh Climate Trust Fund
*Bangladesh Climate Resilence Trust Fund
*Bangladesh REDD Trust Fund ?
*Others.

Strategies proposed to secure resources to implement REDD interventions:

A) National Capacity Building REDD+

* To collect and update forest sector data and compare with recent historical emission levels.
* Identify reference scenarios using appropriate model, assess data on carbon emissions from forest sector and update/compare with projections documented in the Initial National Communication to UNFCCC.
* Assess drivers of deforestation.
* Carry out multi-stakeholder consultations.
* Prepare a REDD National Strategy and discuss/disseminate widely before adopting it al national level.
* Build capacity to enhance measurement, monitoring and verification at national level local levels.

B) Carbon Cycle Assessments and relevant Research

* To carry out experiments and calculate emissions and assess carbon cycles.
* To define and map hotspots of deforestation and pressure on forests drivers.
* Data on carbon emissions will be tagged to hotspot maps to monitor case by case improvement or deterioration of site conditions.

C) Emission Reduction in pilot sites

* Protection and maintenance of protected area by responsible government organization as well as participation of local communities.
* Livelihood plantations as buffers to core natural forest areas.
* Restoration of degraded forest areas with indigenous and long rotation species providing long term carbon sequestration potential.

Stakeholder Consultation Process

Stakeholder Consultation related to REDD+ Strategy: reducing deforestation, protecting natural forest area, model forestry, sustainable forest management, community forestry, protected area extension, law enforcement, and payment for watershed protection and management and by villagers etc.

Concepts of Stakeholder Consultation Process

* Create a dialogue with stakeholders about their viewpoints.
* Evaluate the role various stakeholders can play in developing and implementing strategies or programs.
* A need on a broad based inter agency, government and non-governmental consultation process under REDD.
* An existing mechanism of the protected area Co-management Council a multi-stakeholder body including ethnic minorities, forest dwellers and women to support protected area management and reduce conflict between protected area managers, forest dwellers and ethnic minorities.
* At local (sub-national) levels, a need on multi-stakeholder consultations at village level and with Sub-district and district administrations.
* Due to regional variation REDD mechanism should be adopted according to Forest type.

c. REDD in International Negotiation by Dr. Fazle Rabbi, Director (Climate Change), DOE

Paragraph 10

- 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.

Phases of REDD Mechanism

- Phase 1: Initial support for national REDD strategy development .
- Phase 2: Financing linked with performance in the implementation of REDD strategy
- Phase 3: Financing based on performance in reductions and removals against agreed reference level

Support for REDD

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

Status of REDD in International Negotiation

Scope of REDD

Consensus

- REDD plus could form an important part of mitigation effort for developing countries
- Co-benefits, sustainable forest management, permanence and leakage should be addressed
- Support for implementation is based on results
- Implemented at the national level

Unresolved issues

- Primary set of measures for deforestation and degradation
- Enhancement of forest carbon stock on forestland or non forest land
- Double counting with CDM
- Legal nature of action (different form country to country)

Financing and benefit distribution consensus

- Resources should be new additional, adequate. Predictable and sustainable
- Generation of resources should be based on the principles of equity and common but differentiated responsibilities and respective capabilities
- Financial support for policy reform process and capacity building
- Be under the guidance and authority of COP

Consensus

- Full transparency, efficiency., effectiveness, openness, equitable and balanced representation of all parties
- Coherence and coordination among various sources of funding
- Emphasis on the needs of vulnerable countries in the context of adaptation
- Delivery of resources should be measurable, reportable and verifiable
- Easy access should be ensured

Options for new and additional financial resources

- As assessed contribution from developed country parties % of GDP or GNP
- Distribution on GHG emission, respective capacity and population
- Auctioning
- An uniform global levy on CO_2 emissions
- Levy on international aviation and maritime transport
- A share of proceeds form KP
- Levy on international monetary transaction

Options for ways and means to support implementation

- A performance based approach supported by non-market positive incentives
- Compensated successful efforts approach
- Financial support through both public and market mechanism.
- Payments based on the cost of the implementing plans.
- Two track approach
  - Market based approach for deforestation and forest degradation
  - Fund based support for land use activities (conservation)

Options for institutional arrangements

- Creating new institutional arrangement
- Efficient and effective use of current institutional arrangement
- Reforming the existing institutional arrangement and creating new institutional arrangement
- Creating a single umbrella body under the COP to co-ordinate properly

Proposal for equitable distribution o funds

- Transferring fund directly to the national government
- Establishing special agencies or accounts in country to handle funds
- Implementing projects through bilateral or multilateral agencies such as world bank or un agencies
- Distributing funds to multiple recipients of the in-country

Options for support of activities

- Land tenure reform
- Forest management planning
- Reduced impact logging
- Expansion of forest reserve
- Wildlife prevention
- Forest law enforcement
- Modernization of agriculture and wood energy supply chain
- Reference level and MRV assessment
- Quantified changes of GHG emissions

MRV consensus

- Information on the implementation of actions
- GHG emissions achieved by the actions
- The incremental cost of the action
- Sustainable development benefits and co benefits
- Emissions should take reference level into consideration
- Common methodology based on remote sensing and ground verification
- MRV will require both national forest monitoring and verification
- MRV should be based on national forest inventories and unbiased periodic reviews to asses the application of agreed modalities including review of data

Outstanding issues of MRV

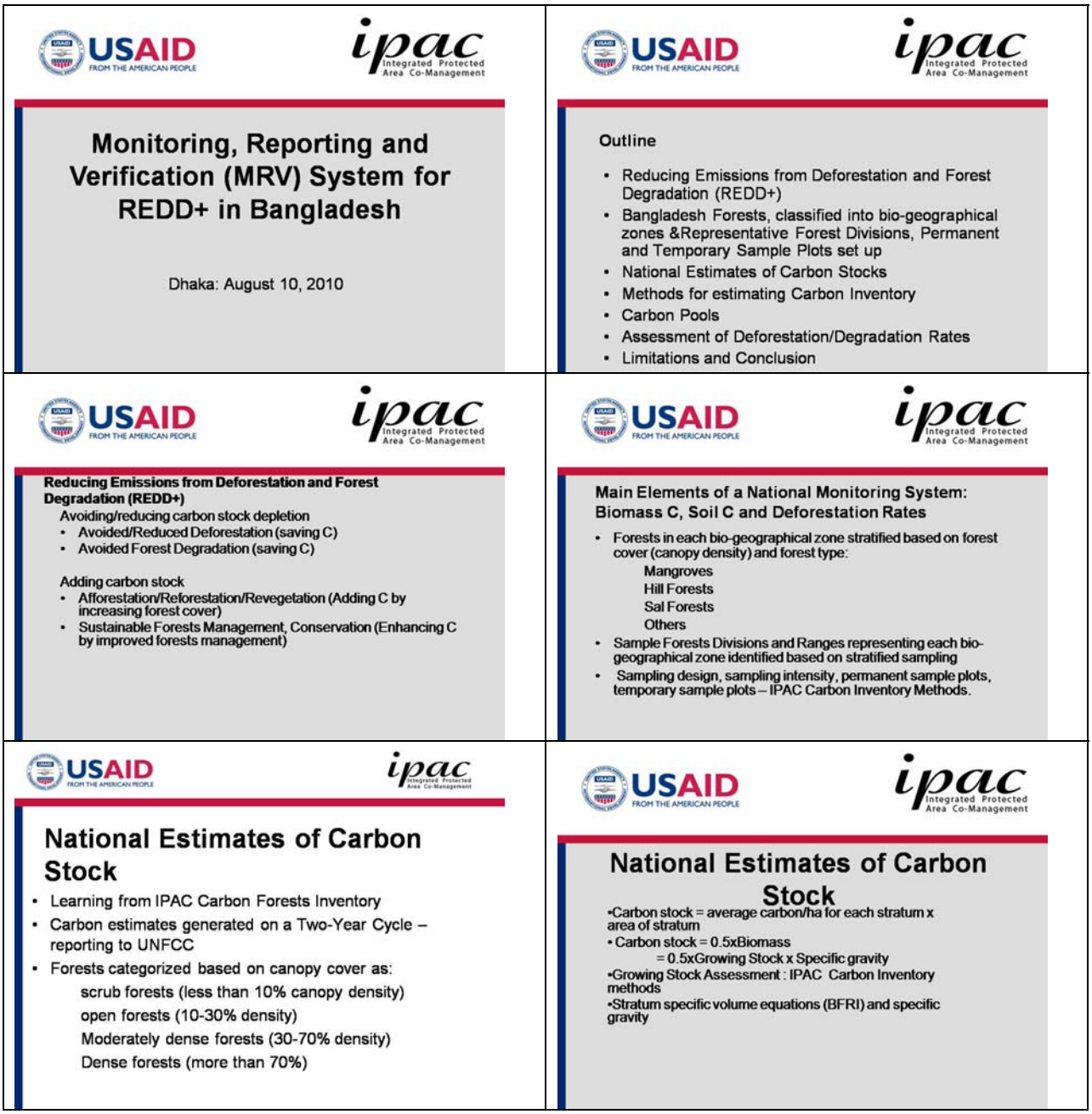
- What to monitor (above ground biomass, belowground biomass, soil OM, dead wood and litter)
- Constitution of RL (historical emission, SBSTA)
- Gross emission or net emission
- Whether and how to measure leakage, biodiversity and co-benifits

Research needs

- Key drivers for deforestation
- Community participation, role of forest in local livelihood, benefit sharing method
- Baseline, carbon accounting, co-benefit indicators, co-benefit versus atmospheric benefit, market research

Thanks

d. Monitoring, Reporting and Verification (MRV) System for REDD+ in Bangladesh by Dr. Ram A. Sharma, DCOP, IPAC Project



Methods for estimating C inventory

- Carbon gain-loss method (net balance of additions to and removals from a carbon stock- annual growth rates as in Chunoti):

  $\Delta C = \Delta C_{gain} - \Delta C_{loss}$

- Carbon stock change method (difference in carbon stocks at two points - Sudarbans):

  $\Delta C = (C_{t2} - C_{t1})/(t_2 - t_1)$

Carbon Pools : Learning from IPAC Carbon Inventory

Above-ground Carbon

•Tree, saplings, seedlings, bamboo, cane, crown foliage, branches

On-ground Carbon

•Woody debris, dead trees, leaf litter, grass, etc.

Below-ground carbon

•Soils, Roots, etc.

Historical Deforestation/Degradation Rates: Sundarbans Assessment

•Forest Degradation : Inventory data from ODA (1985), FRMP (1996) and IPAC (2010) – Plots on the Grids

•Deforestation : LANDSAT/IRS temporal imageries

•Inputs from RIMS and SPARSO for generating 1:50,000 maps

•LGED Sheets as base maps and ground truthing

Limitations

- Forests inventory characterized by uncertainty and data limitations
- Due to lack of research emission factors are not available according to forest land categories
- Land-use changes taking place widely
- Lack of adequate RIMS equipments and facilities

Conclusion

•RIMS be upgraded as Forest Survey wing within FD

•Growing stock estimated at a 2-year cycle to be reported nationally and to UNFCC

•Continuous Forests Inventory System by laying out permanent sample plots

•Capacity building

•Close linkages with SPARSO and other relevant research organizations

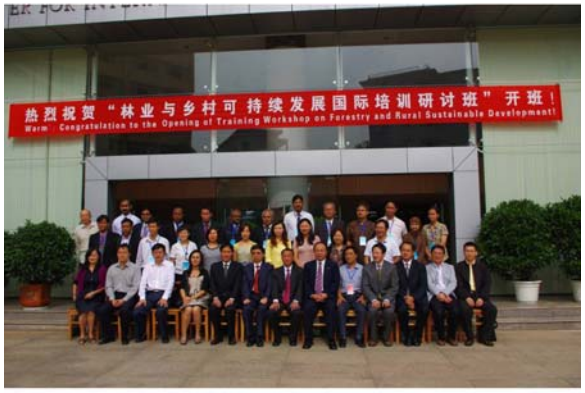
•Community Monitoring Systems (see Chunoti Monitoring Plan)

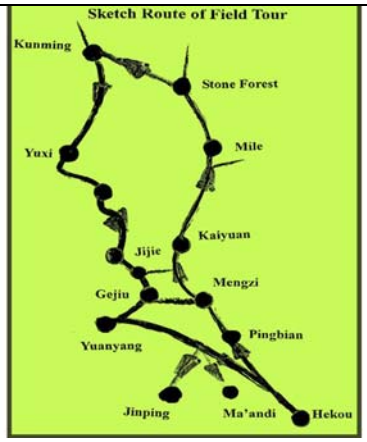
THANKS

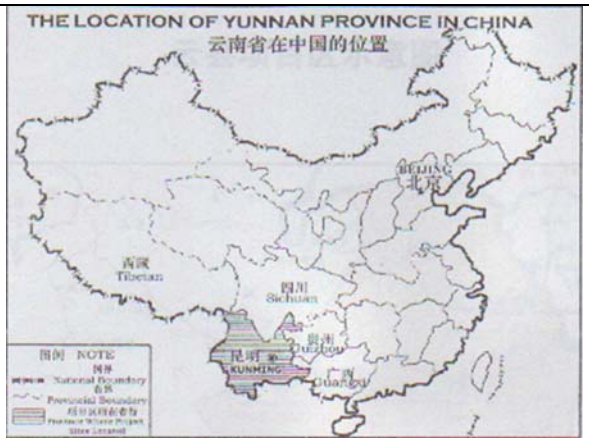
Annex – II

Presentations (Afternoon Session)

a. Experience in China by Mr. Tariqul Islam, ACF







China

- The world's largest country by population and one of the largest by area with 9,571,300 Sq. km(More than 65 of Bangladesh). The Chinese call their country Zhongguo, which means "Central Country" or "Middle Kingdom."
- One-fifth of the world's population—1.3 billion people—live in China. More than 90 percent of these are ethnic Han Chinese, but China also recognizes 55 national minorities, including Tibetans, Mongols, Uighurs, Zhuang, Miao, Yi, and many smaller groups.

One Child policy

- In 2008 China had an overall population density of 143 persons per sq km. Population densities varies from urban eastern China (more than 2,200 persons per sq km) to western China (less than 10 persons per sq km) greatly.
- Chinese couples to have only one child. To implement the policy, the birth-control information and contraceptive devices are of little or no cost. Abortion is legal and pregnant mother of one or more children face social and administrative pressures to terminate their pregnancies.

Forest Resources

- China's forest resources were limited due to centuries of cutting for fuel and building materials.
- Programs to convert open land into forests have increased the extent of forestland from about 8 percent of the total area in 1949 to 20.6 percent in 2005.
- Rural villages have been responsible for planting 70 percent of the total reforested area.
- Trees have been planted around settlements, along roads, on the edge of bodies of water, and by the sides of peasant homes.
- Chinese are planting 4 million hectare every year.

Forest Administration system in China

•Central Level: State Forestry Administration (SFA)

•Provincial: Department of Forestry or Forestry Bureau or Forestry and Agricultural Department

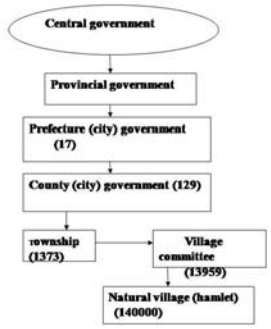
•Profecture: Forestry Bureau

• County: Forestry Bureau

•Township: Forestry Station

•Village committee: Forester

Chinese administrative structure of **Yunnan**



Forestry policy in China

•Forestry land

•Trees and Forests

Forestry lands

- Land ownerships: State, Collectives
- Land tenure changes profile
  - 1st time: land reform (1951-1953): from landlord to individual households
  - 2nd time: Cooperative period(1953-1958): from individual to small cooperative, and great cooperatives
  - 3nd time: Commune period(1958-1961),
  - 4th time: Siguding period (four fixing: labors, farming tools, lands, big livestock (cow, buffalo, horse))
  - 5th time: Sanding period(three fixing or confirming period), (1981-1983): ownership, user right, management
  - 6th time: forest land lease system (Sihuang lease) (1993-1995)
  - 7th time: Collective Land tenure reform

Trees and Forests: based on function or purposes

- Classification
  - Commercial forests: timber, Cash trees, fuel wood
  - Ecological forests: protection, water and soil conservation, scenery, biodiversity and ecosystem and so on.
- Timber cutting (natural or plantation)
  - Cutting quote since 1987
  - Logging ban (1998) for natural forests
  - Total control of cutting in the whole country

Forest Products

Tropical forest provides various bio-products ranging from timber, fuel, NTFPs, supplement food, Medicinal plants and cultural plants as well as ecological functions to societies in the region.

- Timber and Fuel: about 1500-1800 tree species are found in the area, notable timber species about 120spp. such as *Pinus khasya, Gmelina arborea, Anthocephalus chinesis, Acrocarpus fraxifolius, Pometia tomentosa, Dalbergia fusca var. enneandra, Melia toosanda, Toona ciliata, Lagerstromea tomentosa, Paramichelia baillonii, Cassia seamia, Alnus nepalensis*, etc.

Bamboo and Rattan: about 200spp of bamboo and 20spp of rattan (*Calamus* and *Plectrocomia*) are found in tropical forest ecosystems.

- **Medicinal and Aromatic Plants: about 1500spp of plants are used in traditional medicine and 40 aromatic plants e.g. *Panax notogenseng*, Chinese Cardamon; 'Dragon-blood' Source plant, *Dracaena* spp., *Dendronbium* Orchids, *Alstonia scholaris* and Eregiron herbal etc. contribute US$ 50million productive value per year.**

- **Supplement Food plants: wild fruits, nuts, vegetables and edible tubers totaling about 800spp of plants are being used by local people.**
- **Flower and Ornamental plants: about 1000 wild species of tropical plants are considered as ornamental, such as wild orchids, palms, Ficus etc.**
- **Cultural uses of plants: plants that are associated traditional cultures and religion purposes are commonly found in the region, e.g. Temple-yard plants 58spp.**

Bio-resources for Livelihoods of Local People

- Local people of different cultures use and preserve plants and wildlife in surrounding environments for livelihoods in a sustainable way of utilization. Therefore, modern development programme designed in-cooperation with local needs of livelihoods of local people and understanding traditional knowledge and management practices.
- The key issue is how to balance economy development requirements and the environment conservation in order to achieve the development goal while conservation of nature and biodiversity is not neglected.

Some managed by family, some managed by collective, some rent out to company or individual.

Problem

--*Low productivity.*

--*Farmers have low interests in forest.*

--*Rigid policies: high fees and taxation, have little right on forests (cut, plant and use)*

Tenure is one of the right thing

Collective forest Tenure System Reform?

1. Background

- The hilly areas account for 69% of the total land area and are home to 56% of the total population in China.
- Currently, rural community/collectives own 2.5 billion mu (15 mu =1 ha) of forestry land which accounts for 58% of the total forestland in China.
- Ownership of forests and forestland was divided into two types: state owned forest and community/collective owned forests.

- The forest tenure system has been changed several times since the early 1950's, but the rights to own, use and benefit from collective/community forests was still not clarified by those ambiguity tenure systems.
- The ambiguity of forest tenure system has been a main problem for community forest management and interfered with sustainable development of community forestry.
- As a result, either the village collectives or individuals had no clear incentives to manage collective forests efficiently.

What's necessary to make Individuals interested in?

- Harmonize society construction – pay attention to income disparity
- New countryside – more emphasis on rural area. 5 aspects-Income, living, surrounding, civilized, democracy
- To Meet forest product demand: timber or non-timber products and ecological products.

2. Review on historical changes of forest tenure system in China

2.1 Forest allocation to individual households in the early 1950s (1st rural land reform)

2.2 Highly centralized system from 1958 to early 1980s (collective period)

2.3 "Linyesangding " and "liangshandaohu" started in 1982 next to lead contracted responsibility system in 1979.

2.4 Current ongoing reform on rural collective forest tenure system (formally started from 2008).

3. Current (ongoing) reform for rural collective forest tenure system

3.1 Initiatives

- The forest reform of "Linyesangding"and "liangshandaohu" in early 1980s improved collective forest management, but the collective forest tenure was still intangible or abstract for local people.
- Individual households lack a real ownership on rights to allocated forests, and also lack necessary laws to protect benefits from forest resources under their management.

3.2 Objectives

- The ongoing RCFTS aims to increase the confidence, initiative, and ability of local communities to participate in the sustainable community forestry management than before.
- Improving the previous forest management mechanism by clarifying and transferring of forestland tenure and ownership of forests from collectives to individual households with the fixed duration of seventy years by issued tenure certificate based on the contract of forest allocation.

3.3 Targets

- The reform targets all collective commercial forest and waste hills/fallow suitable for forestation. The collective forests recognized as nature reserves, and forests under the national natural forest protection program are excluded from the reform.
- An emphasis is focused on the equal allocation of forestland among individual households based on the family number. The allocation of ownership over a fixed number of the family size will not increase as the growth of the family size.

3.4 Tasks

The current reform ensures individual farmer's "four rights as following:

- the right to information regarding forest ownership and use arrangements;
- the right to ndependently manage forest resources;
- the right to transfer ownership of use rights to forest resources;
- and the right to benefit economically from ownership of those resources.

3.5 Guide principles for reform

- Respect for customary community tenure arrangements, as well as consistence with previous policy provisions on forest tenure;
- Ensuring the transparent processes for tenure reform in order to let local people understand the rights and responsibilities associated with forest ownership and management.
- More attention is paid to timing and careful management of the tenure transfer process.
- Extensive community participation in all stages of the tenure allocation decision-making process;

4. Progress of the ongoing reform

- Presently, the reform for rural collective forest tenure system is fully spreading throughout the rest provinces of country based on the experiences from the previous eight pilot provinces where the reform is nearly completed.
- There are 290.16 million mu of community forestland which accounted for 80% of total forestland in Yunnan. In which, there were 235.87 million mu, accounted for 80.7% of total community forestland, was allocated to 6.2987 million individual farmer households with the certificate issued officially by government up to date.

- The reform is popularly accepted by individual households because farmer not only receive the actual use right of forestland for seventy years, but also gain the ownership of forest resources in the contracted forestland, such as trees, timber and NTFPs and so on. Individual farmers have now possessed additional resources for further development of their livelihoods.
- According to the government planning, the current round of reform nationwide will be completed in five years.

What's the result?

- **90% farmers satisfied with the reform**
- **Positive aspects**
  - *--Incentive motivated*
  - *--Forests resources increased*
  - *--Farmers' income increased*

Example 1: Mr. Long Youlu

A farmer from Dadaochong village in Shiping County, he did not invest any thing on his waste hills contracted from collective in 1999 until the contact was renewed and forest tenure certificate was issued by the reform in April 2008. RMB180, 000 yuan was invested for forestation on his forestland. He said that he will make the waste hills become useful forests and leave them to his young generation as a valuable property.

Example 2: Mr. Hang Yongqiang

A farmer of Beidou village in Yongping County, he has received a loan of RMB 500,000 yuan from bank by using his certificate of forest tenure as mortgage in 2007. He said that it was impossible to gain a bank loan without the certificate of forest tenure as mortgage before the reform. He was using the loan for the development of walnut plantation on his contracted forestland.

Example 3: Nanluo village

Because lack of clear right forest management, there was no income from collective forests for farmer households before the reform in Nanluo village in Jinggu County. Presently, each household has earned RMB 2,000 yuan by collecting rosin from the pine trees allocated by reform 2007. Most farmers is now paying more attention on forest management than before.

Example 4: Nanhua County

Forest management has been improved with clear tenure rights and responsibilities after forestland for wild mushroom cultivation was allocated to individual farmers by reform in Nanhua County, the output of fresh wild mushrooms has increased up to 3,100 tons in 2008 which is 1,000 tons more than the output before reform in 2007.

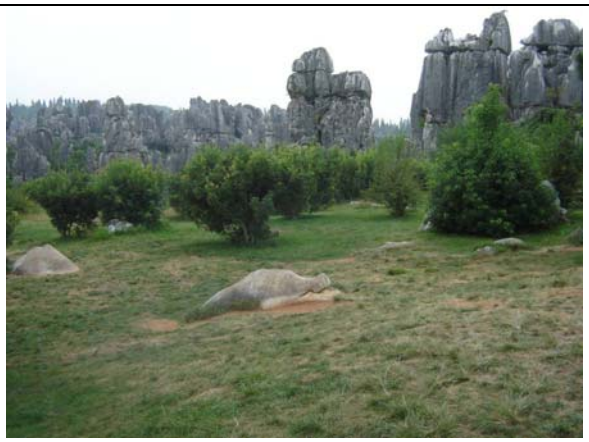
5. Issues for discussion

- There is a difficulty to allocate forestland evenly to individual households due to the quality differences of collective forestland and value difference of trees on forestland. The distribution forestland takes place through random lottery for the equal size of land area while the volume and value of trees, quality and accessibility of forestland are not considered. Some farmers obtain better forestland than others.
- Those villages where collective forests were recognized as nature reserves and forests under the national natural forest protection program can not benefit as much as others despite of government compensation for the ecological functions of these natural forests. The current compensations of RMB50 yuan /per hectare each year is quite low.

- Under the condition of market oriented economy, many companies and enterprises hope to obtain large areas of forests from rural areas. The current reform allows individual households to sell or transfer both forestland and forests tenure to the outsiders like commercial companies and private sectors. A new challenge is that there is no a set of reasonable standard or assessment approach/system to handle the transfer. Another worry is that more and more villages and farmer households will lose their forests resource in future with the increasing transfer of forest tenure to outsiders, especially for those poor rural areas, some farmers have sold their forests immediately after forests was allocated in order to make money for their surviving .
- Others.....

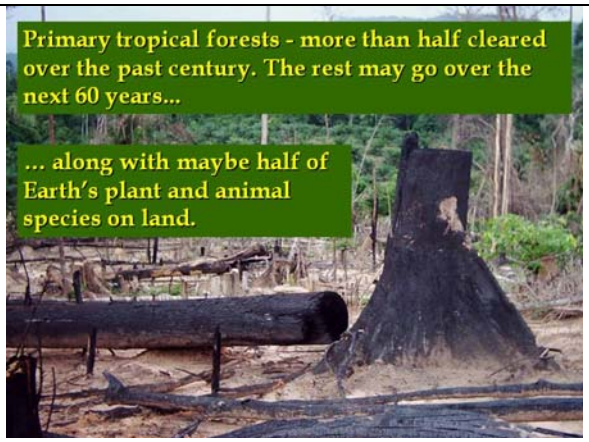
Why success?

- Government support.
- Respecting people's will.
- Advancing the reform according to law.
- Careful designing the reform
- Advancing reform in light of realities of specific regions.
- Right time



Species Selection

The Framework Species Method of Forest Restoration



Other Consequences

- Soil erosion
- Floods
- Droughts
- Rural poverty

Reforestation

"Restablishment of any kind of tree cover"

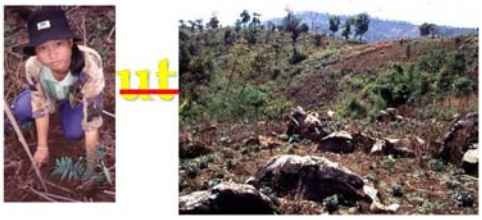
Includes commercial plantations,

agro-forestry,

community forestry etc.

Forest Restoration

Restore original levels of species diversity, ecosystem structure and ecosystem function, by planting tree species present before deforestation



BY DEVELOPING METHODS WHICH ARE...

- Scientifically sound
- Cost effective and
- Socially and politically acceptable

Planting 20-30 indigenous forest tree species, which enhance natural forest regeneration and accelerate biodiversity recovery

The Framework Species Concept

Planting the minimum number of indigenous forest tree species for maximum recovery of biodiversity.

Framework Tree Species: Accelerate Natural Forest Regeneration

Macaranga denticulata

- High survival rates
- Rapid growth rates
- Dense spreading crowns to shade out weeds and "re-capture" the site

Framework tree species accelerate natural forest regeneration

Native forest tree species with high survival rates and rapid growth when planted out in deforested sites –

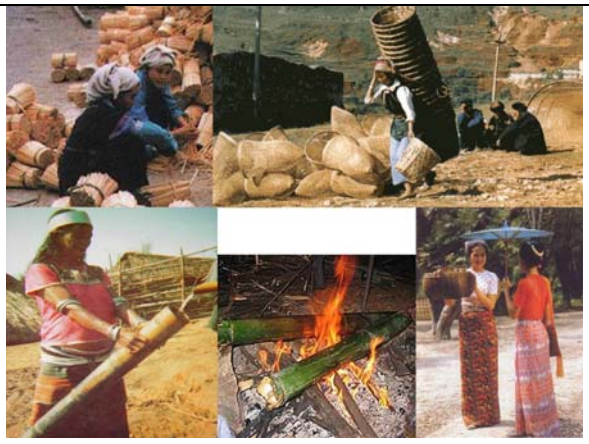
to restore forest structure and ecological function…

8 years 5 months after planting 30 framework tree species in Chiang Mai, Thailand.

Attract seed-dispersing wildlife into planted plots, with fruit, nectar, perching sites etc.


中国石化 SINOPEC

竹子民生用途 Bamboo products for daily use



竹材产业——竹编产品

竹编产品 **Bamboo basket**

云南竹编产品

Weave bamboo products in Yunnan

Basket , Container and package

Bamboo Tea package

Bamboo Tea package

Bamboo weave training course 开展竹编培训

华宁竹编工艺培训

中国竹文化节竹业博览会


Bamboo Sector Provides Employment Opportunities for poor farmers, especially women


Xinyi bamboo weaving products


3. 竹建筑


傣族的竹文化与
热性大型丛生竹
相联系
Bamboo buildings of Dai people

竹茶情结Bamboo Tea cup

Thanks for attention

b. Principle Marketed Value Chains in Sundarbans Reserve Forest by Dr. Nabiul Islam, Senior Research Fellow, BIDS

Integrated Protected Area Co Management (IPAC)

A Study of the Principal Marketed Value Chains Derived from the Sundarbans Reserve Forest

DR. K M NABIU L ISLAM
Senior Research Fellow
Bangladesh Institute of Development Studies (BIDS)

Few study on Economics of SRF Extraction

- ***Major Objectives:***

:to understand and, where possible, quantify the economics of extraction marketed from the SRF through VCA

:to provide a foundation upon which economic & other interventions can be efficiently designed

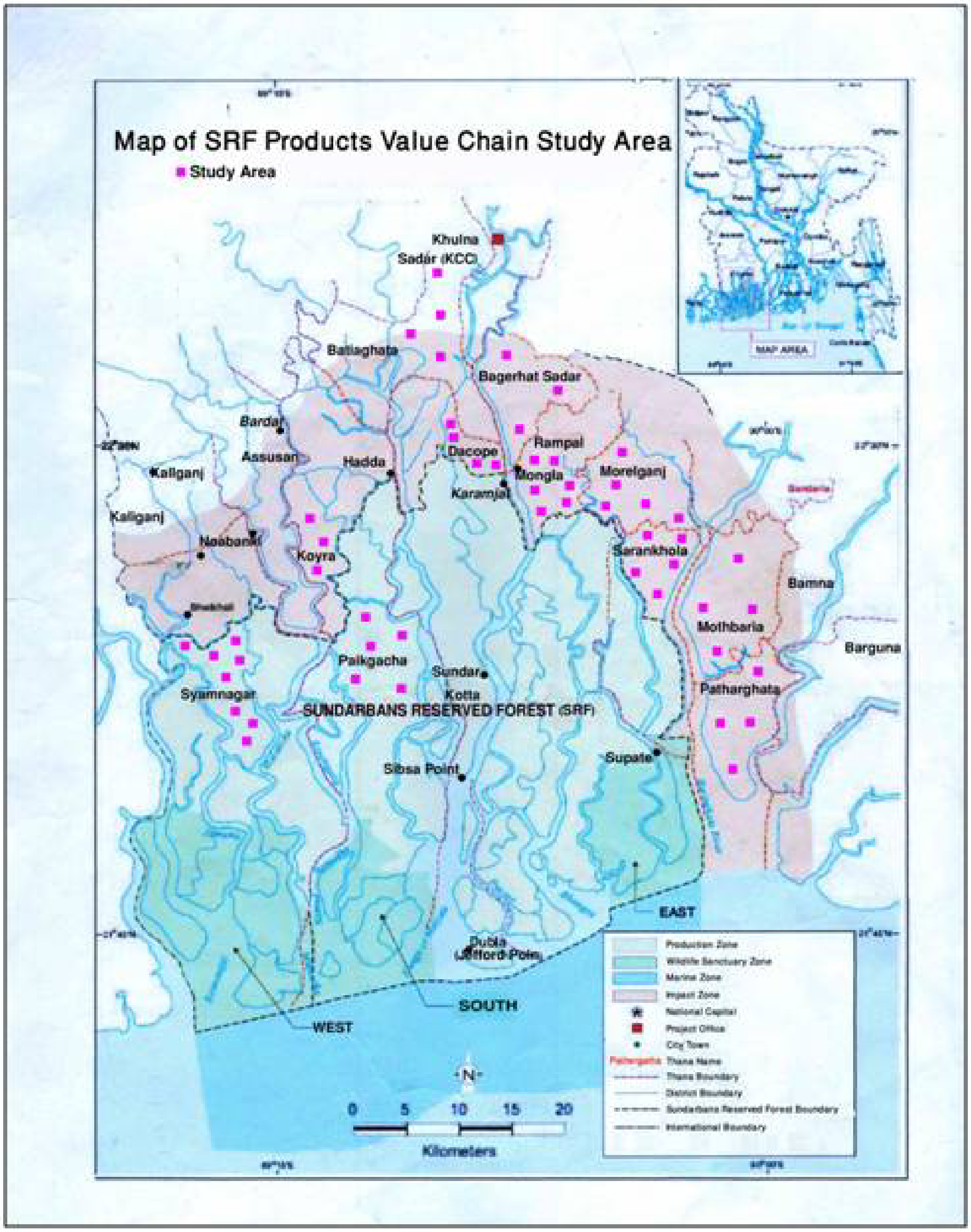
Sundarbans Impact Zone (SIZ)

District	SIZ - UZ	Unions	Village
Bagerhat	Sadar, Mongla, Morrelganj, Sarankhola	151	1302
Khulna	Dacope, Koyra, Paikgacha		
Satkhira	Shymnagar		
Pirojpur	Mathbaria		
Barguna	Patharghata		
5 Dist	10 UZs		

Methodology

- ***Structured questionnaire survey***
- ***PRA tools (e.g., FGDs, KIs, community survey, consultations, & case studies).***

- ***Have identified 159 Landing places***
- ***48 out of 159 Landing places covering***
  - ***237 actors, 12 SRF Products***
  - ***47 FGDs apart from KIs and Case Studies***
- ***Spatial sampling is adopted from SIZ***

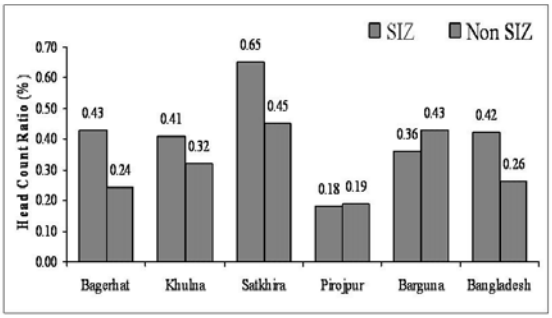

Map of SRF Products Value Chain Study Area
Study Area
Khulna
Sadar (KCC)
Batiaghata
Bagerhat Sadar
Bardal
Assusan
Hadda
Dacope
Rampal
Mongla
Morelganj
Karamjal
Kaliganj
Kaliganj
Noabanki
Koyra
Sarankhola
Bamna
Mothbaria
Barguna
Paikgacha
Sundar
Kotta
Syamnagar
Patharghata
SUNDARBANS RESERVED FOREST (SRF)
Sibsa Point
Supate
EAST
Dubla
(Jafford Point)
SOUTH
WEST
N
0 5 10 15 20
Kilometers

Poverty mapping SIZ and Non-SIZ upazilas

SIZ District	SIZ Non-SIZ Upazila	Head Count Ratio (%) (Extreme poverty)
Bagerhat	SIZ Bagerhat	0.43
	Non-SIZ Bagerhat	0.24
Khulna	SIZ Khulna	0.41
	Non-SIZ Khulna	0.32
Satkhira	SIZ Satkhira (Shyamnagar)	0.65
	Non-SIZ Satkhira	0.45
Pirojpur	SIZ Pirojpur (Mathbaria)	0.18
	Non-SIZ Pirojpur	0.19
Barguna	SIZ Barguna (Patharghata)	0.36
	Non-SIZ Barguna	0.43
Bangladesh	SIZ upazilas	0.42
	Non-SIZ upazilas (Bangladesh)	0.26

BBS-483 UZs – unpublished data- Refers to 2005- Extreme poverty
Bdesh ovreall poverty=40%

Dismal Poverty : SIZ and Non-SIZ upazilas



Some Background Information:

- Socio-economic
- Collection system
- Payment system
- Working for other actors
- Catch in sanctuaries
- Distance harvest place from home and markets
- Days spent in collection
- Working months
- Occupation
- Capital
- CC
- Impact of Moratorium

Land ownership & operation by actor types

Actor type	Land holding (decimals)	
	Owned	Operated
Collector	17.7	6.4
Fariha/Bepari	42.5	15.0
Choto Mahajan	99.4	60.2
Baro Mahajan	221.7	125.9
Aratdar	162.7	101.8
Wholesaler	112.9	102.0
Retailer	107.2	30.2
Total	87.5	48.7
Chai Square	Highly significant	

Higher level actors have larger land holdings

Capital structure of SRF actors

Actor type	Capital structure (Tk)			Dadon Received (Tk)	Dadon as % of WC
	Fixed capital	Working capital	Total capital		
Collector	-	4,365	4,365	4,178	95.72
Fariha/Bepari	16,977	40,955	57,932	23,727	57.93
Choto Mahajan	86,766	87,043	173,809	53,170	61.08
Baro Mahajan	217,250	511,500	728,750	180,250	35.24
Aratdar	151,879	466,424	618,303	119,394	25.60
Wholesaler	37,500	396,250	433,750	140,833	35.54
Retailer	15,278	201,389	216,667	106,389	52.83
All	64,032	169,470	233,503	63,129	37.25

Actors involved in Value Chains have innumerable combinations, having, again, multiple roles and dealing with multi-products.

Awareness of the respondents about sanctuaries of aquatic resources

	n	%
Yes	47	42.7
No	60	54.5
No response	3	2.8
Total	110	100.0

Frequency of harvesting in restricted aquatic sanctuaries

Frequency of harvesting	n	%
Always	1	2.1
Often	9	19.1
Rarely	18	38.3
Never	19	40.5
Total	47	100.0

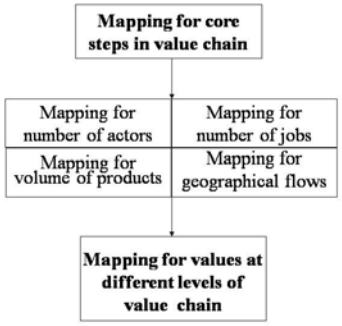
Nearly 12% of total aquatic catches are made from sanctuaries.

Estimates of trend growths of saw mills/furniture units by Range

Range	Estimates of trend growths						
	Local raw materia	SRF timber product	Fixed capita	Workin g capital	Gross incom	Net income	Number of enterprise
Sarankhola	.16*	-.21*	.08*	.17*	.08*	.06***	.20*
Chandpai	.15*	-1.62**	.16*	.17*	.13*	.14*	.19*
Khulna	.21**	-1.70**	.34**	.32*	.20**	.16***	.29*
Satkhira	.01***	No use	.12**	.16**	-.10***	-02***	.13**
Total	.14*	-.24*	.19**	.20*	.11*	.09***	.24*

Note: Exponential growth rate; Log linear models used to estimate trend estimates. *=Statistically significant at 99 per cent significance level. **=Statistically significant at 95 per cent significance level. ***= Not statistically significant
Trends estimated for 5 years 2005-2009

6 Stages for mapping value chain



Estimates of total No. of collectors by SIZ district

District	Estimate of SIZ collectors		
	Total No. of collectors whole year (000)	% of Total	Rank
Bagerhat	240	22.3	2
Khulna	526	48.7	1
Satkhira	44	4.1	5
Pirojpur	132	12.3	4
Barguna	137	12.7	3
Total	1080	100.0	-

Assuming 1.8 prod whole yr, total collectors =6 Lacs

Estimates of total no. Actors by SIZ district

District	Total NO. of actors by SIZ district		
	Total (000)	% of total	Rank
Bagerhat	236	17.6	3
Khulna	531	39.7	1
Satkhira	142	10.6	4
Pirojpur	318	23.8	2
Barguna	110	8.2	5
TOTAL	13,37	100.0	-

Assuming 1.8 prod whole yr, total actors = 7.4 Lacs

GEOGRAPHICAL FLOWS

% of SRF products moved (first stage movement) from primary centers by product

Product	% of products moved from primary centers			
	SIZ - UZ	Khulna Chittagong Dhaka	Other places	Outside country
Golpata	29.38	42.47	28.15	-
Gura fish	21.26	58.78	-	19.96
White large	46.20	53.52	0.27	-
Hilsha	43.24	47.9	8.86	-
Crab	32.55	63.69	3.77	-
Honey	29.65	66.84	3.51	-
Average	34.08	55.80	7.86	2.25

Note: Other places include elsewhere in the country (other than mentioned above); movements represent at the first stage. Figures under "outside country" represent exports directly from the current primary centers.

GEOGRAPHICAL FLOWS

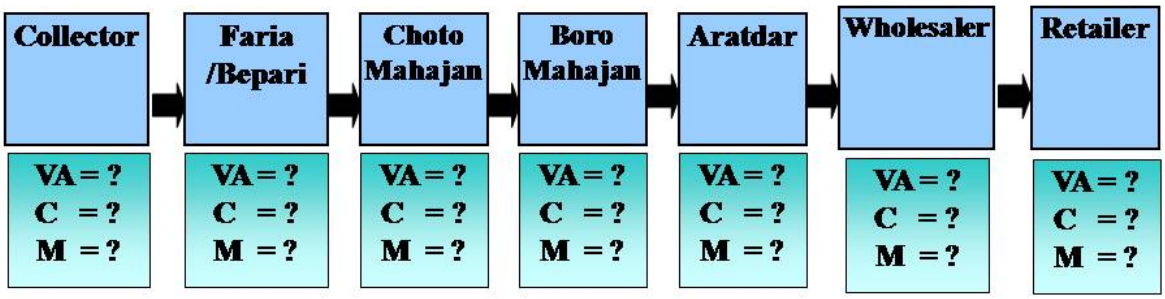
% of SRF products moved (first stage movement) in this harvest season from primary centers by Range

Range	Proportions of products moved from selected primary center (%)			
	SIZ Range	Khulna Chittagong Dhaka	Other places	Outside country
Sarankhola	51.98	43.07	4.95	-
Khulna	32.19	55.24	12.57	-
Chandpai	15.91	73.75	10.34	-
Satkhira	33.3	55.71	2.20	8.78
Average	34.08	55.80	7.86	2.25

Note: Other places include elsewhere in the country (other than mentioned above); movements represent at the first stage. Figures under "outside country" represent exports directly from the current primary centers.

VALUE CHAIN ANALYSIS

A simplified SRF marketing system & VC of the actors (% of retail price)



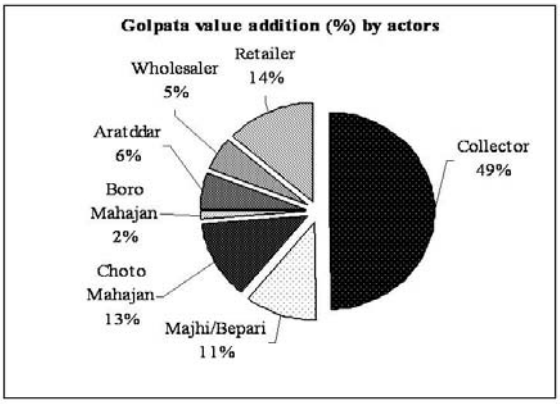
VA = Value addition; C = costs; M = Margin = VA – C

In practice, Actors involved in Value Chains have innumerable combinations, having, again, multiple roles and dealing with multi-products- poses problem with individual value chain calculation

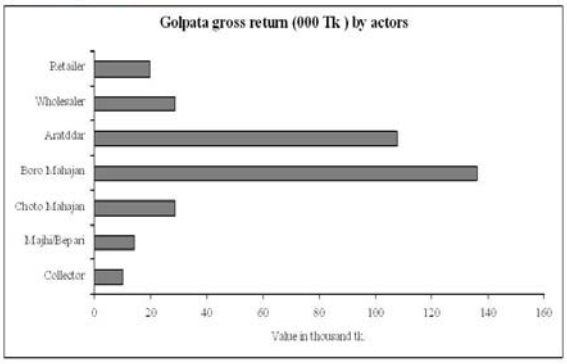
Value Addition & Return for golpata

Actor type	Cost and return for golpata			
	VA (%)	Gross Return (% of total)	Net Return (% of total)	Net Return as % WC
Collector	49.7	2.9	2.7	-
Majhi/Bepari	11.2	4.1	4.2	121.97
Choto Mahajan	12.7	8.3	9.0	22.67
Boro Mahajan	1.5	39.4	36.8	23.31
Aratdar	6.1	31.2	33.5	25.18
Wholesaler	5.1	8.3	8.2	7.51
Retailer	13.7	5.8	5.5	12.67
Total	100.0	100.0	100.0	-

Golpata VA by actors



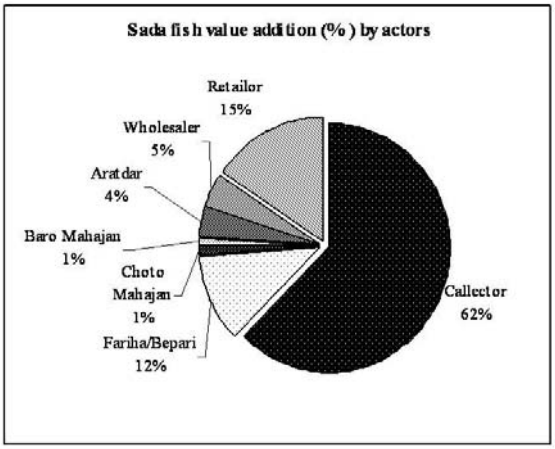
Golpata gross return (000Tk- monthly)



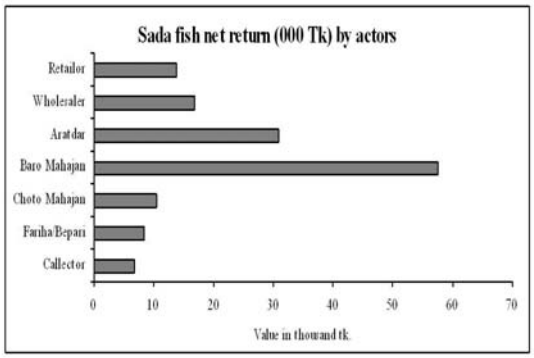
VA & Return for *Sada* (large) fish

Actor type	Cost and return for *Sada* (large) fish			
	Value Addition (%)	G. Return (% of total)	Net Return (% of total)	Net Return as % WC
Collector	62.5	4.6	4.6	-
Fariha/Bepari	11.5	5.2	5.8	56.0
Choto Mahajan	1.0	5.9	7.2	66.6
Baro Mahajan	1.0	30.6	39.8	45.4
Aratdar	4.0	23.1	21.4	6.4
Wholesaler	4.5	15.7	11.7	12.0
Retailer	15.5	14.6	9.5	103.4
Total	100.0	100.0	100.0	-

Sada fish VA by actors



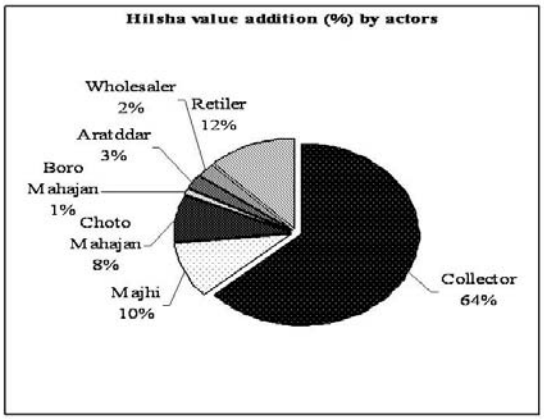
Sada fish net return (000 Tk- monthly)



Value Addition & Return for hilsha

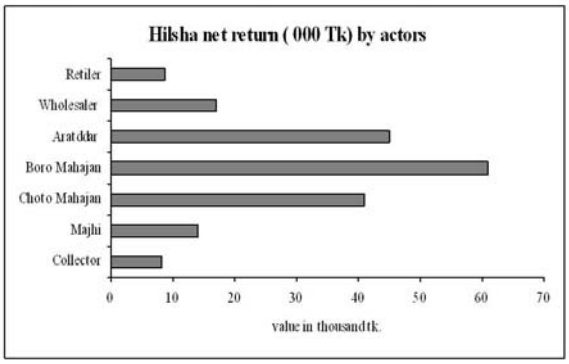
Actor type	Cost and return for hilsha			
	Value Addition (%)	G. Return (% of total)	Net Return (% of total)	Net Return as % WC
Collector	63.3	5.3	4.2	-
Majhi	10.0	8.2	7.3	91.2
Choto Mahajan	8.3	18.0	21.0	59.8
Boro Mahajan	1.0	28.5	31.3	21.3
Aratdar	2.7	27.1	23.1	12.3
Wholesaler	2.3	8.3	8.7	NA
Retailer	12.3	4.5	4.5	NA
Total	100.0	100.0	100.0	-

Hilsha value addition (%) by actors



Source: BIDS-IPAC VC Analysis Study (2010)

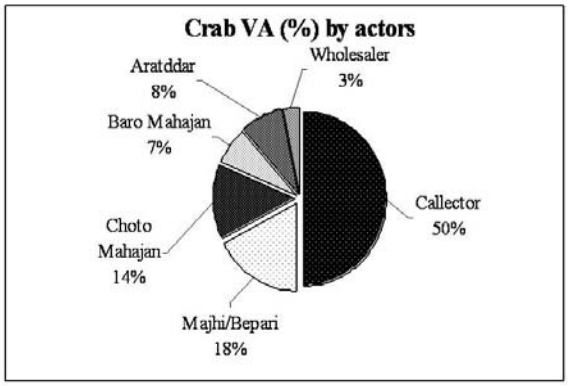
Hilsha net return (monthly) by actors



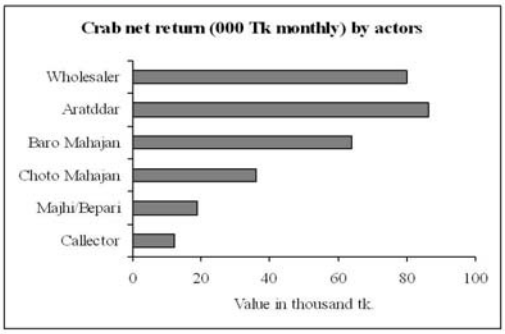
Value Addition & Return for crab

Actor type	Costs and return for crab			
	VA (%)	G. Return (% of total)	Net Return (% of total)	Net Return as % WC
Collector	50.0	3.4	4.1	-
Majhi/Faria	17.6	6.5	6.3	27.0
Choto Mahajan	13.8	15.5	12.1	17.6
Boro Mahajan	6.9	21.0	21.5	4.6
Aratdar	8.3	32.5	29.0	24.6
Wholesaler	3.4	21.1	26.9	5.3
Total	100.0	100.0	100.0	-

Crab Value Addition (%) by actors



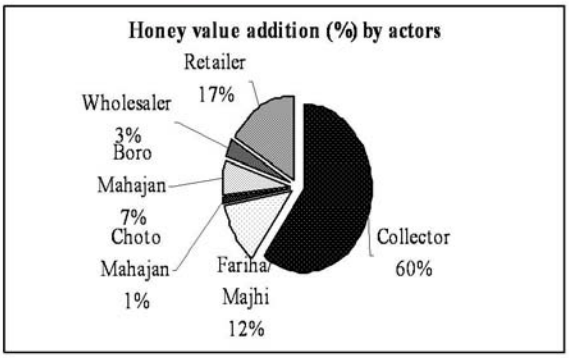
Crab net return (Monthly) by actors



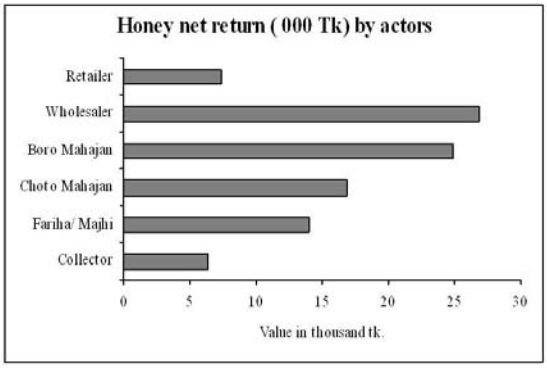
VA and Returns (%) for honey

Actor type	Cost and return for honey			
	VA (%)	G. Return (% of total)	Net Return (% of total)	Net Return as % WC
Collector	60.0	9.6	6.7	-
Faria/ Majhi	12.0	13.1	12.9	64.82
Choto Mahajan	1.3	17.9	17.8	29.25
Boro Mahajan	6.7	25.1	26.3	12.44
Wholesaler	3.3	27.0	28.4	8.94
Retailer	16.7	7.9	7.8	18.50
Total	100.0	100.0	100.0	-

Honey VA (%) by actors



Honey net return (Monthly) by actors



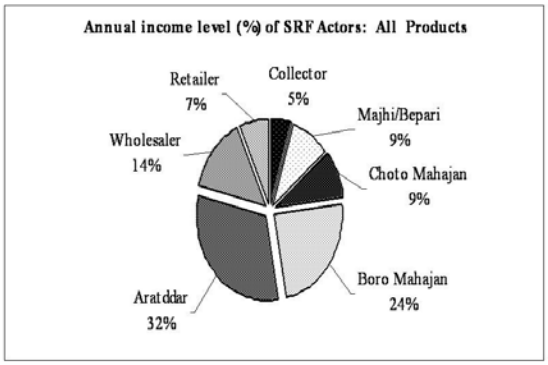
ANNUAL INCOME

Annual income of SRF Actors: SRF products

Actors	% of total income					
	Golpata	Sada fish	Hilsha	Crab	Honey	All products
Collector	2.33	4.39	3.51	3.58	5.78	4.9
Majhi/Bepari	3.38	5.92	8.45	6.58	12.76	9.1
Choto Mahajan	7.65	6.17	16.29	9.60	20.07	9.2
Boro Mahajan	32.23	44.97	27.46	20.22	19.40	23.9
Aratdar	36.65	18.84	26.53	33.76	-	31.9
Wholesaler	9.69	10.88	11.53	26.25	20.92	14.5
Retailer	8.07	8.84	6.23	-	21.08	6.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

Note : Peak-Non-peak months/days standardized

Annual income level (%) of SRF actors: All products



Income distribution and income inequality in SIZ area

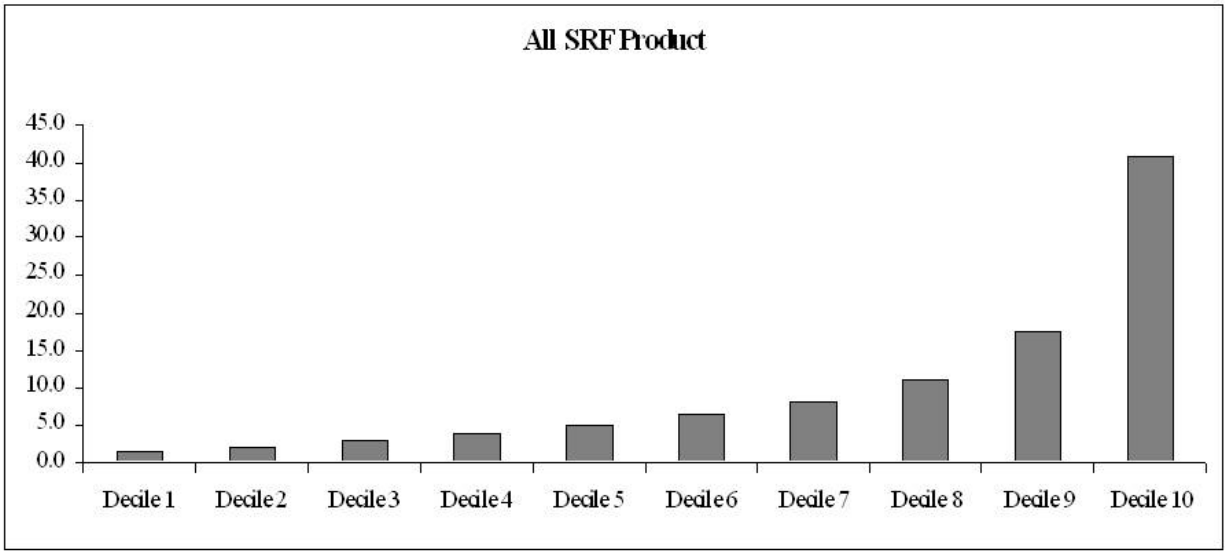
SRF Products	Proportion of income (%)t		Proportion of Decile 1 to 10	Gini coefficient
	Bottom half (Decile 1 to 5)	Top half (Decile 6 to 10)		
Golpata	16.6	83.4	1 : 21	0.51
Gura fish	14.2	85.8	1 : 34	0.53
Sada (white) large fish	20.3	79.7	1 : 19	0.44
Hilsha	16.4	83.6	1 : 43	0.48
Crab	15.5	84.5	1 : 35	0.52
Honey	22.2	77.8	1 : 17	0.40
All products	15.5	84.5	1 : 29	0.52

Income **inequality** (gini coefficients) for selected **coastal** districts (Islam et al 2008)

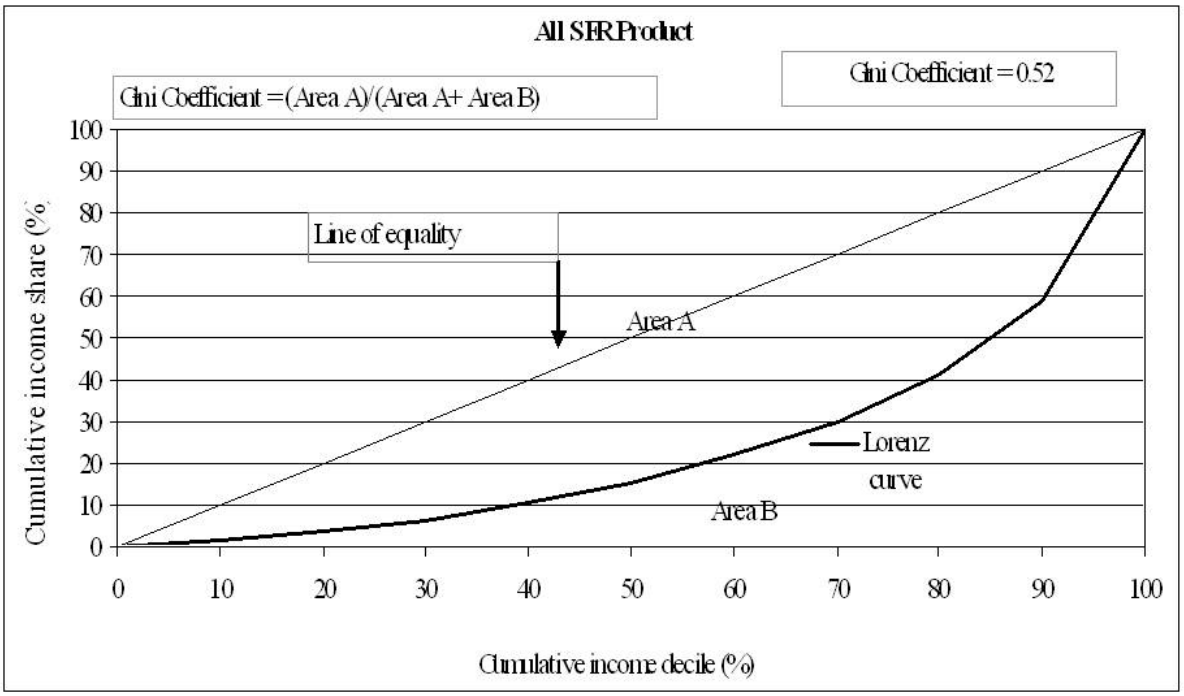
Coastal districts	Area 1 (2 villages)		Area 1 (1 village)	
	Proportion of Decile 1 to 10	Gini coefficient	Proportion of Decile 1 to 10	Gini coefficient
Jessore	1 : 6.5	0.34	1 : 4.5	0.26
Khulna	1 : 4.7	0.27	1 : 3.2	0.19
Barisal	1 : 9.1	0.36	1 : 5.4	0.26
Patuakhali	1 : 9.1	0.36	1 : 7.3	0.34
Gopalgonj	1 : 5.3	0.28	1 : 4.6	0.27
Laxmipur	1 : 9.8	0.36	1 : 8.2	0.36
Cox's Bazar	1 : 6.8	0.33	1 : 4.0	0.22

Even lowest gini(.40) in SIZ is higher than highest gini(.36) of coastal districts

Distribution of income SRF products



Lorenz curve: SRF product



POLICY IMPLICATIONS

- ***Income and Poverty in SIZ***
- ***SIZ, comprising 10 upazilas of 5 districts, is a severely poverty-stricken region.***
- ***Dismal picture on poverty - SIZ upazilas have a much higher (extreme) poverty rates (0.42) compared to a average non-SIZ upazilas in Bangladesh (0.26).***
- ***9 out of 10 SIZ-upazilas (except Patharghata), have a much higher extreme poverty levels than the corresponding non-SIZ upazilas***

- ***Av. monthly income of the SRF harvesters is in the range of Tk 5-6 Th. only during seasons***
- ***There are months when hardly any income.***
- ***Huge income inequality among actors. The monthly income of a higher level actor e.g. Aratdars is up to 25 times higher than a collector***
- ***top 10% of the SRF actors earn up to 34 times as much income as the bottom 10%***
- ***Thus, poverty in SIZ appear to be severe, which have immense policy implications.***

POLICY IMPLICATIONS

- ***The foremost policy, therefore, will be to address the poverty of the bottom layer forest resource actors which will effectively help the management and conservation of the SRF.***
- ***As our Problem Analysis demonstrates, this demands a special attention because of the following:***

- *Per cap quantity declined. Some species getting rarer. More so in fishery sector which demands a special focus.*
- *No. of harvesters (e.g., fishermen/golpata) increased many fold*
- *Displacement from agriculture through salinity*
- *Most SRF extractions are seasonal & high pressure on fishery for subsistence*
- *Major income share taken away by higher level intermed.e.g,Mahajans/Aratdars due to dadons. Dadons & poverty operate in vicious circle.*
- *Transportation cost very high. Time for transport/ collection long to make collectors more vulnerable.*
- *Major extraction costs due to tolls/ransom from pirates, & unofficial payments to officials of various departments.*

POLICY IMPLICATIONS

- ***Credit and Financial Support***
- *Access to capital most crucial issue esp. among the collectors. Although dadon is source of exploitation hardly they have any other choices.*
- *2 major reasons for which they take dadons; (1) dadons easily accessible in adequate amounts (2) dadons provide immense support in lean periods – sort of social safety net. Dadons act as physical, social & financial security.*
- *But, bottom layer actors are locked into contracts that crates cycle of debt.*

POLICY IMPLICATIONS

- *A pertinent question is how to break or whether to break informal credit system.*
- *As it is difficult to break deep-rooted dadon system the +ive and –ive sides to this business need to be considered when planning interventions geared at improving Value* Chains.

POLICY IMPLICATIONS

Access to Capital - Setting up of Specialized Banks and Specialized Programs

- *Gov. should recognize SRF as a separate econ. sector, just as Agriculture or Industries as SIZ consists of more than 9 million people.*
- *Specialized banks/micro-credit organizations are to be set up to save the harvesters. Like agri. Loans/share cropper/SME loans programs. credit prog. need to be designed to give SRF actors special attention. The central bank can take initiatives in this respect [ ].*

POLICY IMPLICATIONS

- ***Service Centers/Financial Support***
- *Pending establishment of Specialized Bank, selected public/private banks in SIZ should be requested to set up SRF service centers/SRF cells to channel funds to the SRF sector/to cater the special needs of the SRF actors, on softer terms.*
- *Important to simplify rules/procedures as SRF actors lack education.*
- *Collateral free loans*
- *Even Mahajans/other actors should access credits with boats/nets kept as collaterals, impacts of which are expected to be trickled down to collectors.*

POLICY IMPLICATIONS

- ***Targeting programs***
- *Banks should target programs to providing social securities and safety-nets to the collectors in lean periods/ crisis .*
- *Banks can also help promote effort of conservation while sanctioning loans.*
- *Repayment schedules should be flexible and reflect likely cash flows. Proper monitoring should be in place that would assess that their incomes are raised & debt burdens reduced.*
- *Like with SMEs, B Bank can take initiatives through, for example, launching refinancing schemes.*

- ***Improving Terms of Trade/ Marketing System***
- *Collectors have to sell products at a price reduced by 22.5% compared to market price.*
- *To pull the SRF harvesters out of poverty better contracting arrangements would be helpful. There can be several ways of improving terms of trade & marketing systems for SRF products.*

POLICY IMPLICATIONS

Transportation and Storage/Depot Facilities

- ***One way to minimize transportation costs is to expand spot markets/auctions, which will ensure lower level actors higher prices.***
- ***Increasing No. depots/landing places can increase returns by minimizing the transaction costs in value chains & transportation time to ensure that returns are evenly distributed [ ]. This helps particularly fishery/crab sectors. DoF needs to identify regions lacking depots/arrange accordingly.***

POLICY IMPLICATIONS

- ***Enhancing Bargaining Power of the Collectors***
- *Harvesters esp. fishermen/crab fishers cannot negotiate price*
- *Better access to the current market information has to be ensured. Poor infrastructure, inadequate communications,high transaction/ transport costs make the markets in favor of buyers.*

POLICY IMPLICATIONS

Formation of Groups/Cooperatives/Associations

- *One way of reducing vulnerability of lower layer actors of value chains is to organize Groups or Cooperatives. This would help create storage, post-harvest processing, and refrigeration facilities and help shared transportation on a collective basis [ ].*
- *Cooperatives will prove beneficial in income generation but also it contributes to their confidence building, empowerment, awareness and overall sustainable harvest management of SRF and in coping with natural disasters.*

POLICY IMPLICATIONS

Improving Socio-economic Conditions of Bottom Layer Actors

- ***A major policy concern. A range of options may be available:***
- ***Food subsistence to the poor collectors: Rationing system for foods/designing VGD, VGF/Food for Employment in lean seasons may be good initiatives. Obviously, this also facilitates sustainable resource management of SRF via Co-management.***

POLICY IMPLICATIONS

- *Work Opportunities and IGAs*
- *Enable collectors to switch over to other econ. activities. Less investment oriented activities may include closed fisheries, handicrafts, closed crab culture, crab fattening, fish feed production, hogla and mat making, bee-keeping, coir industry, tree plantation, horticulture, tailoring, knitting, livestock, SMEs & social forestry. Developing a welfare fund for collectors would be a step forward.*
- *In this context, mention may be made of this year's harvest of honey which has fallen drastically by 50 % [ ]. One of the reasons is Mawalis have chosen to be employed in repair works of Sidr and Aila affected embankments, which has just started in this honey seasons. This gives a clear message that Mawalis/Bawalis would not exert pressure on SRF providing they get alternative opportunities for employment & income.*

POLICY IMPLICATIONS

Leasing Canals/Khals

- *Khals/canals are leased out to big companies who also use trawling ships, using medicines/ poisonous (chemicals) which kill all living beings in those leased-out canals. Strict regulations needed to check this type of activities so that the reproduction of fishes/other species are not hampered.*

CO-MANAGEMENT

- SRF actors, by and large, appear to be not yet much aware of the co-management initiative nor do they have much interest in it. Given their poverty conditions, they have one and only one concern in front of them, that is, their concern of livelihood.
- *However, only a few who know about it recognizes that co-management approach is likely to equip the poor in resisting pressure from the powerful who destroy natural resources often for personal benefits.*
- *According to some, however, this would not give them direct benefits to people at large but this might ultimately benefit a group of political and powerful section in stead. The refutation culture of a current government's activities by another new government in turn may not be helpful for co-management. Hence, formation of Co-management Forums, Councils and Committees needs to be made with utmost care.*
- *Co-management is appreciated by some of the SRF actors – the only issue was their skepticism about its appropriate implementation and sustainability .*

CO-MANAGEMENT

- *Unsustainable use of forest would be 'extremely damaging, not only to current population's welfare but for the future generations' [ ]. This merely highlights the importance of protecting the SRF.*
- *While IPAC has enthusiastically initiated the process, further mobilization of grass-root level local people is necessary for the success of the approach.*
- *Effective integration of interests & priorities of local people & above all, coordinated efforts are important. More importantly, particularly bottom layer actors have to be offered adequate compensation and livelihoods.*

CO-MANAGEMENT

- *Most are aware that SRF act like a 'wall against natural calamities'.*
- *SRF actors observed that increased population, loss of aquatic/other species, increased pressure on SRF, demand for fuel woods, climate change & disasters & lack of coordination of gov. bodies would make conservation complex. These need to be taken in perspectives while designing co-management.*
- *While more than two-fifths of SIZ population are in extreme poverty, of all issues, poverty has to be tackled first for success of co-management.*

CO-MANAGEMENT

- ***Role of local Gov. Institutions***
- *LGIs (e.g.UP & UZ Parishad) need to be strengthened as their role is crucial both protecting forest & improving situation of collectors. Politicization & lack of integrity are major bottlenecks to managing and conserving the forest. Strong policies are needed for UP's capacity building..*
- ***Natural hazards***
- *Extreme poverty situation further deteriorated by natural calamities, which inevitably make the poor hungry, only to make them angry & get involved in indiscriminate extraction from SRF, often illegally.*
- ***Alternative livelihood means for fish fry collectors***
- *Provide allowance/alternative means (interest-free micro-credit, skill dev. training) for collectors of fish fries to reduce dependency. Special allowance for education of children involved may also be helpful. Issuing licenses to fry catcher would allow seasonal capture of fry only.*

CO-MANAGEMENT

Social Forestry Issues

- *Beneficiaries of social forestry programs should include those who take part in plantation and nurture them from the time of commencement. But the reported politicization at times in changing the list of beneficiaries at a time when income is generated is a concern posed by FGD participants. Such activities will simply dismantle effort of conservation through social forestry programs. This gives a message that co-management of SRF would also be jeopardized if potential political interference is not removed.*

Other Policy Implications

Insurance for SRF collectors

- *Collectors take heavy financial & life risks during collection as act of pirates (demanding ransom) & tigers has been cited by a large number (30%) of SRF collectors as major problem of extraction. Insurance schemes esp. for SRF harvesters will minimize risks in this respect.*

Other Policy Implications

Exploitation and Unemployment

- *Unemployment getting more crucial in SIZ areas, esp. due to destruction of agri. lands. Natural calamities have also contributed much.*
- *The study reveals dismal picture of harvesters profitability as they earn net returns at best in range of 4 to 6% while they undertake VA by as high as 50 -75%. High interest rate, never-ending dadon repayment, abuse by Mahajans & lack of working capital are major reasons that contribute to exploitations.*

Capacity of FD

- *Ransom & other unofficial payments to officials dramatically increases the costs of harvests, accounting for more than 20% of total costs of production [ ]. As recognized (eg, SEALS), shortage of personnel/equipments in FD is a major constraint in protecting forest from illegal harvests & protecting collectors from forest and river pirates.*
- *Once Security is improved this will have some bearing on the production costs; and some benefits are likely to be trickled down to the harvesters. The FD has to be given more advanced equipments and technology. More trainings/exercises jointly by FD & Navy will benefit the effort to fight the pirates.*

Capacity of FD

Low cost equipments/adoption of computer technology:

Low cost equipments are to be installed for the conservation of the forest. Digital technology will bring low cost option for the FD in protecting and monitoring sanctuaries & overall conservation.

Increase awareness on conservation & forest rules

- ***The actors community appears to be not much aware of the conservation issues, risk of degradation. Appropriate authority in collaboration with local NGOs to undertake more campaign programs regarding conservations & related forest rules.***

Capacity of FD

- ***Increase awareness on sanctuaries & fishing***
- *A large no. actors not aware of the prevailing sanctuaries of fish/aquatic resources. Campaigns on public awareness needed.*
- *Use of IT can be adopted in protecting the sanctuaries. Some experts suggest allocation of special budget for FD to incorporate IT in monitoring mechanism. IGAs for those living surrounding sanctuaries should be targeted.*

- **Provide ID card to collectors**
- Will improve status of collectors. FD can ascertain total no. of collectors & amount of annual catch they are allowed & provide info.on certain species.
- **Lifting restriction on goran**
- Pressure on fuel wood comes mainly from poor SRF actors. Such actors also supplement incomes through its sales. Following this, it is difficult to stop illegal harvest of goran. In this pretext, the poor community may also get involved in illegal logging. So, ban on goran needs to be withdrawn at least for a temporary period.

Climate Change and Adaptation Measures

- Like co-management, CC& adaptations was also not much related topic in the context of the current VCA study. Generally, SRF actors perceived that climate change has already resulted in abnormal increase in salinity.
- Genially perceived that SRF, which gives natural protection against cyclone & tidal surge, will be threatened due to inundation. Entire ecosystem with their few hundred species is at stake. Mention was made on degradation of honey extraction, in terms of both quantity/ quality.

Climate Change & Adaptation Measures

- **Adaptation/Mitigations/Preparedness Taken/Suggested**
- Dykes/embankments at present condition can hardly provide defense against tidal surges due to the possible CC & resulting SLR. One of the top priorities would be to strengthen these dykes, construct much needed new ones, including cyclone shelters with basic facilities, in order to reduce vulnerability. Homestead raising is generally practiced by higher layer SRF actors.

Climate Change & Adaptation Measures

- **Ensuring access to safe water supply**
  While rainwater harvesting & PSF techniques are currently practiced it is important to re-excavate ponds/khals for water conservation. This will at the same time help reduce water logging which is a major issues in SIZ areas.
- Specialized crops eg, salt-tolerant/soil-less species should be promoted. Although planting more trees (especially coconut trees, and even mangrove plantations) along embankments/roads is already practiced further efforts need to be stepped up in this respect.

Climate Change & Adaptation Measures

- **Public awareness campaigns**
- The SRF actors suggested that massive public awareness campaigns be undertaken including preparedness training on potential sea-level rise and its impacts.

THANK YOU
FOR YOUR ATTENTION