



Training materials for the socio-economic component of the Bangladesh Forest Inventory- concepts, planning and procedures

Training materials for the socio-economic component survey of the Bangladesh Forest Inventory-concepts, planning and procedures

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FOREWORD

Trees and forests play an important role for the livelihood of the people by providing food, energy, income as well as other ecosystem services to the society. The services are regulating services (e.g., climate regulation, flood regulation, water purification), supporting services (e.g., nutrient cycling, soil formation), and cultural services (e.g., aesthetic, spiritual, educational and recreational). At the current stage, the available resources and demand related to tree and forest products are not well known, and thus tree and forest related services are not properly reflected in the national statistics in Bangladesh. For regular monitoring the interaction between people and tree and forest resources, a consistent, replicable and cost-effective methodology is required to quantify the value of ecosystem services.

The Bangladesh Forest Inventory (BFI) aims at providing robust estimates of the interdependency between human activities, and trees and forests through regularly assessing the status of trees and forests and human interactions. It provides forest resource related information for national policy and strategy processes and forestry planning. BFI collects both biophysical and socioeconomic data to assess the functional relationship between people, tree and forest resources and the role of tree and forests for the livelihood of the community people.

These training materials will inform teams on methods to collect, process and analyze tree and forest information on an annual basis. The materials cover all aspects required to implement a continuous socioeconomic survey in forestry under BFI, including definitions, designs, methodologies and instruments needed to ensure that the BFI remains a relevant and up to date tool.

The training materials have been prepared through consultative process, drawing on national expertise from BFD, BBS, Dhaka and Chittagong University, Arannyak Foundation and international experts working with the Food and Agriculture Organization of the United Nations and United States Forest Service. This is made possible by the support of the American People through the United States for International Development (USAID). This document provides a foundation based on international best practices for improving forest monitoring and conservation and quidding sustainable development in Bangladesh.

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Disclaimer

This document is designed to reflect the activities of the Bangladesh Forest Inventory. This report is not authoritative information sources – It does not reflect the official position of the national entities including Bangladesh Forest Department, Bangladesh Bureau of Statistics, Chittagong University, Dhaka University and Arannayk Foundation and supporting international agencies including USAID, FAO and USFS. Should readers find any errors in the documents or would like to provide comments for improving its quality they are encouraged to contact above contact.

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- Chapter 1: Bangladesh Forest Inventory (BFI)
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**Chapter 1
Bangladesh Forest Inventory**

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Contents

- 1. Background
- 2. Bangladesh Forest Inventory (BFI)
- 3. Objectives
- 4. Zones: definition and zoning for inventory
- 5. Expected outcome of socioeconomic component of BFI

1. Background

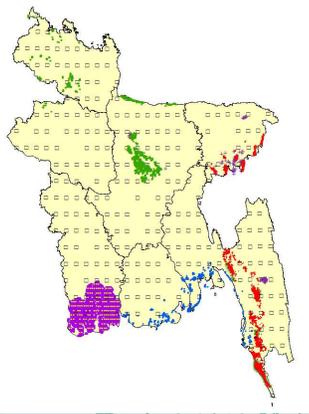
1.1 Forest inventories in Bangladesh

Sub-national Level:

- Sundarbans: 1958, 1983, 1997 and 2010
- Hill Forest of Chittagong and Sylhet: 1997
- Coastal Plantation: 1997
- Sal Forest: 2001
- Reserve Forest of CHT: 1959

National Level:

- National Forest Assessment (NFA)-2005-07 – 299 plot



2. Bangladesh Forest Inventory

Bangladesh Forest Inventory Project (BFI) has two components

- Biophysical and
- Socio-economic

Biophysical component

- Nationwide forest inventory started in 2016
- The biophysical data and information are currently being collected
- The whole country is divided into five forest zones, namely, Hill, Sal, Coastal, the Sundarbans and Village for inventory purpose

Socio-economic component

- Will be conducted in the same zones
- A total of 6400 households and 100 community survey (through focus group discussions (FGDs))



3. Objectives

3.1 Forest monitoring and assessment at national level

- To provide information on current status and trends of forest and tree resources
- To provide a baseline information for national forest monitoring
- To assist national scale management planning, policy decisions and international reporting requirements including UN REDD
- Identify links between forest resource use and forest status to assist in valuation of ecosystem services.
- Support management objectives within sub-national Eco-zones.

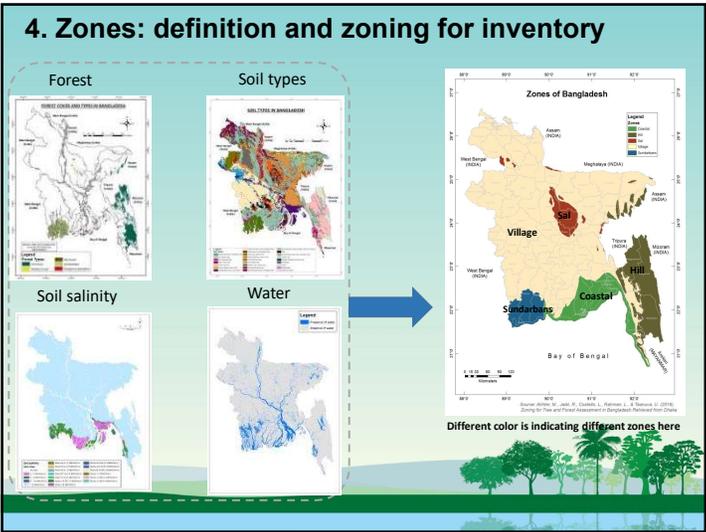


3. Objectives

3.2. Sub-National objectives – an example of presenting how the collected data would be used to guide actions

Hill	Biodiversity conservation - Bring the barren hills/lands under tree cover through social forestry practice and plantation - Watershed management
Sundarbans	Biodiversity conservation, Revenue collection from the non-timber forest product, Tourism development
Sal	Reduce deforestation & forest degradation through social forestry, Biodiversity conservation
Coastal	Stabilize newly accreted land through plantation, Bring more lands under plantation to make a coastal green belt to protect lives and livelihoods of coastal community from natural disaster
Villages	Bring marginal land under tree cover; Reduce pressure on the resources of government forest land, Livelihood for marginal and rural community, Encourage and empower women in forestry activities





- ### 5. Expected outcome of socio-economic component of BFI
- Estimation of tree and forest ecosystem (provisioning) services
 - Demand of wood fuel at national scale
 - Income dependency of tree and forest resources
 - Estimation of potable water at zone level
 - Estimation of protection value at zone level
 - Monitoring the changes of forest resources over time
 - Implement of suitable/sustainable management plan for the forest

Chapter 2
Ecosystem services from tree and forest resources

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Contents

1. Definition
2. Classification
3. Ecosystem services and socio-economic survey
4. Important ecosystem services in Bangladesh
5. Conclusion

1. Definition

- ❑ **An ecosystem** is a community of living (biotic) organisms – animals, plants and micro-organisms – interacting with the physical environment (e.g. air, water and mineral soil) as an interdependent system
 - ❑ Terrestrial or marine, inland or coastal, rural or urban
 - ❑ They can stretch over global to very local scales and very often overlap and interact
 - ❑ Forests represent the examples of ecosystems

Source: Odum, E.P. 1971. *Fundamentals of Ecology*. New York, USA, Saunders.



1. Definition

- ❑ **Ecosystem services (ES)** are the direct and indirect contributions of ecosystems to human well-being
- ❑ Ecosystems and their functions generate services that give rise to goods and services that people value because they derive benefits from them



Source: Visit Bangladesh (base photo)

2. Classification

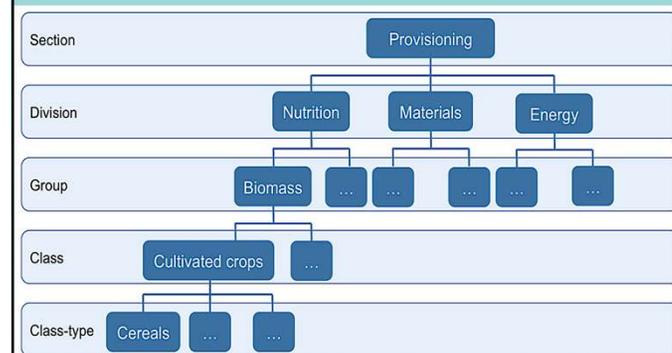
Provisioning Services	Regulating Services	Cultural Services	Supporting Services
<i>Products obtained from ecosystems</i>	<i>Benefits obtained from regulation of ecosystem processes</i>	<i>Nonmaterial benefits obtained from ecosystems that enrich lives</i>	<i>Underpinning services that enable other services to function</i>
<ul style="list-style-type: none"> • Food • Fresh water • Fuel wood • Fibre • Biochemicals • Genetic resources 	<ul style="list-style-type: none"> • Climate regulation • Disease regulation • Water regulation • Water purification • Pollination 	<ul style="list-style-type: none"> • Spiritual & religious • Recreation & ecotourism • Aesthetic • Inspirational • Educational • Sense of place • Cultural heritage 	<ul style="list-style-type: none"> • Soil formation • Nutrient cycling • Primary production
			

Source: Mauro Masiero, Davide Pettenella, Marco Boscolo, Sepul Kanti Barua, Ilias Animon and Rao Matta- Valuing forest ecosystem services: A training manual. Forthcoming in FAO publication series.



2. Classification

2.1. Hierarchical

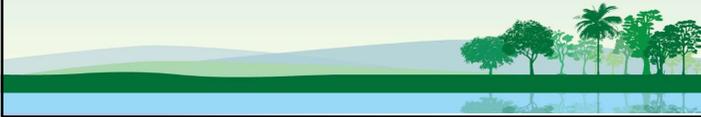


Source: CICES 2017a. CICES structure. (Available at: <https://cices.eu/cices-structure/>). Accessed 30th October 2017.

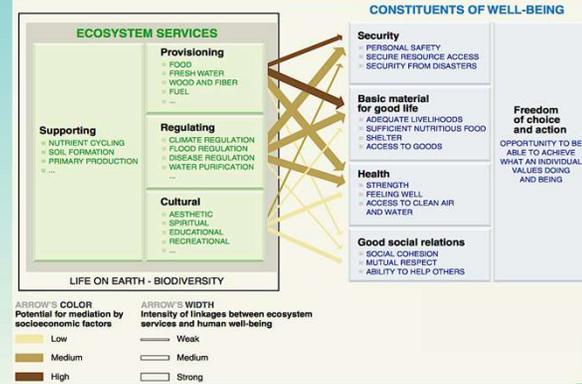


3. Ecosystem services and socio-economic survey

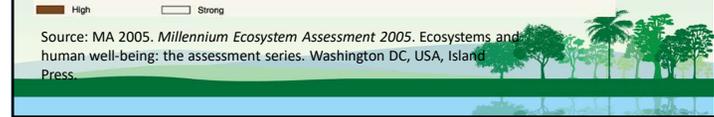
- ❑ The main goal of the socio-economic survey is to define relationship between trees and forests, and people of Bangladesh
- ❑ The relationship establishes through ecosystem services provided by trees and forests
- ❑ Economic valuation of ecosystem services are important



3. Ecosystem services and socio-economic survey

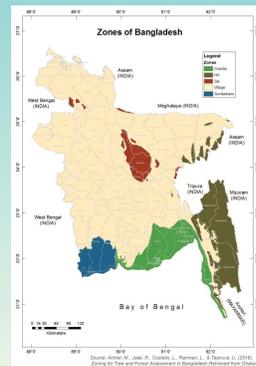


Source: MA 2005. *Millennium Ecosystem Assessment 2005*. Ecosystems and human well-being: the assessment series. Washington DC, USA, Island Press.



4. Important ecosystem services (ES) in Bangladesh

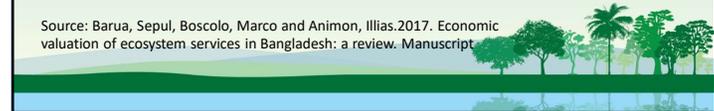
- ❑ Zones
 - ❑ The Sundarbans
 - ❑ The Coastal
 - ❑ The Hill
 - ❑ The Sal
 - ❑ The Village



4. Important ecosystem services (ES)-provisioning

Section	Division	Services [level of importance: * = low, ** = medium, *** = high]				
		Sundarbans	Coastal	Village	Sal	Hill
Provisioning	Nutrition	Honey, fish, shrimps & carb [**]	None	Cultivated fruits, vegetables and spices [**]	Cultivated fruits, vegetables and spices [**]	Potable water [***] Cultivated & wild fruits, vegetables and spices [**]
	Materials	Wax, thatching materials & medicinal plants [*]	Timber, medicinal plants, fodder & thatching material [**]	Timber, bamboo, medicinal plants & handicraft-making materials (e.g. cane, murta & hogla) [***] Ground water & fodder [**]	Medicinal plants & ground water [**] Timber & bamboo [*]	Timber, bamboo, medicinal plants, cane, gum & ground water [**]
	Energy	Fuelwood & biomass [**]	Fuelwood & biomass [**]	Fuelwood & biomass [***]	Fuelwood & biomass [*]	Fuelwood & biomass [**]

Source: Barua, Sepul, Boscolo, Marco and Anonim, Ilias. 2017. Economic valuation of ecosystem services in Bangladesh: a review. Manuscript



4. Important ecosystem services (ES)- regulations

Section	Division	Services [level of importance: * = low, ** = medium, *** = high]				
		Sundarbans	Coastal	Village	Sal	Hill
Regulation and maintenance	Mediation of waste, toxics and other nuisances	Nutrient cycling [*]	None	Nutrient cycling [*]	Nutrient cycling [*]	Nutrient cycling [***]
	Mediation of flows	Protection from sea storms & tidal surges [***] Stabilization of newly accreted land & control of salinity intrusion [**]	Protection from sea storms & tidal surges, & stabilization of newly accreted land [****] Control of salinity intrusion [**]	Soil erosion control [*]	Soil erosion control [*]	Soil erosion control & watershed regulation [***]
	Maintenance of physical, chemical and biological conditions	Biodiversity conservation & carbon sequestration [***]	Carbon sequestration [**] Biodiversity conservation [*]	Carbon sequestration [***] Pollination & biodiversity conservation [**]	Pollination & biodiversity conservation [**] Carbon sequestration [*]	Carbon sequestration, pollination & biodiversity conservation [**]

Source: Barua, Sepul, Boscolo, Marco and Animon, Illias.2017. Economic valuation of ecosystem services in Bangladesh: a review. Manuscript

4. Important ecosystem services (ES) - cultural

Section	Division	Services [level of importance: * = low, ** = medium, *** = high]				
		Sundarbans	Coastal	Village	Sal	Hill
Cultural	Physical and intellectual interaction with biota, ecosystem and landscape	Tourism, education & research, cultural heritage value [**]	Education & research [**] Tourism [*]	Education & research [**]	Tourism [**] Education & research [*]	Tourism, education & research [**]
	Spiritual, symbolic and other interaction with biota, ecosystem and landscape	Symbolic value of Tiger [***] Wilderness [*]	Wilderness [*]	Wilderness & bequest values [**]	Wilderness [*]	Wilderness [*]

Source: Barua, Sepul, Boscolo, Marco and Animon, Illias.2017. Economic valuation of ecosystem services in Bangladesh: a review. Manuscript

- ### 4. Important ecosystem services (ES) – in line with national plan and strategies
- SDG Goal-15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse
 - Value of goods and services provided by ecosystem and biodiversity to accomplish integration of these values into the national accounting system
 - National Sustainable Development Strategy 2013**
 - Improved nutrition
 - Forest and biodiversity
 - Coastal and marine resources
 - Natural disasters and climate change
 - Bangladesh Biological Biodiversity Act 2012**
 - Wildlife Protection and Security Act 2012**
 - National Biodiversity Strategy and Action Plan (NBSAP): 2016-2021**

- ### 5. Conclusion
- Tree and forest plays an important role for the livelihood of the people
 - The value of tree and forest resources is important to reflect the national accounting system
 - To fulfill the national and international requirements/plans and strategies

Chapter 3
Criteria and Indicators:
Integration between biophysical
and socio-economic information

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Content

1. Background
2. C&I framework
3. Purpose of integration
4. Illustration of integration

1. Background

- Criteria and indicators (C&I) are used to monitor process towards sustainable forest management (SFM)
- There are several international initiatives to develop C&I:
 - Montreal process, Forest Europe and ITTO Process
- SFM emphasized in 7th Five Year Plan, SGDs and Country Investment Plan for Environment, Forestry and Climate Change
 - Developing C&I framework for Bangladesh is important
- BFI has developed such a framework by integrating biophysical and socio-economic information collected by
 - Inventory of tree and forest resources (biophysical survey)
 - Socio-economic survey

2. BFI's C&I Framework

- C&I Framework is developed through:
 - extensive literature review and
 - stakeholder consultation
- It includes:
 - Eight criteria and
 - 79 indicators

Criteria 1:	Biodiversity and conservation
Criteria 2:	Disturbance, forest degradation and resilience
Criteria 3:	Economics and livelihood
Criteria 4:	Forest area and characteristics
Criteria 5:	Measuring progress towards sustainable forest management (SFM)
Criteria 6:	Ownership
Criteria 7:	Forest productivity
Criteria 8:	Protective functions

2. BFI's C&I Framework

Examples

Criteria	Indicators		Relevant reporting mechanisms
	Name	Unit	
Biodiversity and conservation	Number of tree species from the Red List whose products are traded	Number	SDG, CBD, CITES
	Number of animal species from the Red List whose products are traded	Number	SDG, CBD, CITES
Disturbance, forest degradation and resilience	Level of severity of anthropogenic disturbances most cited by HHS in each zone	%	7FYP, CIP EFCC
Economics and livelihood	Quantity of each primary product collected	Quantity/ha/yr	SDG, 7FYP, CIP EFCC
	Share of collected primary products sold	%	7FYP, CIP EFCC

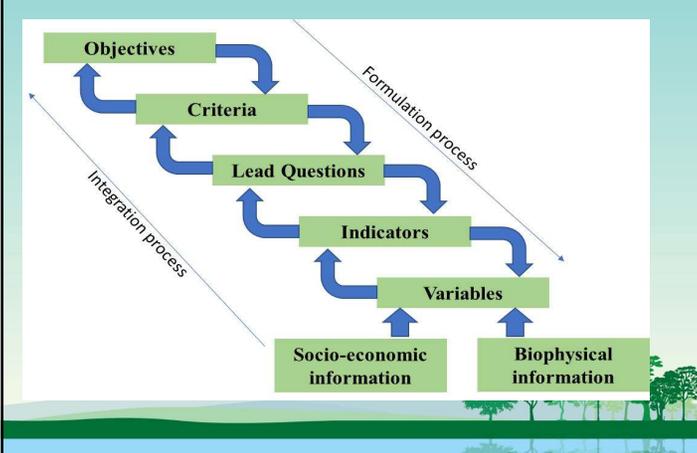
3. Purpose of integration

- Socio-economic survey aims to define relationship between trees and forests , and people of Bangladesh
 - Valuation of important ecosystem services
- Indicators represents the relationship
 - Both biophysical and socio-economic information is needed
 - Integration of biophysical and socio-economic variables

Socio-economic information will be collected through the survey

3. Purpose of integration

Formulation and integration process

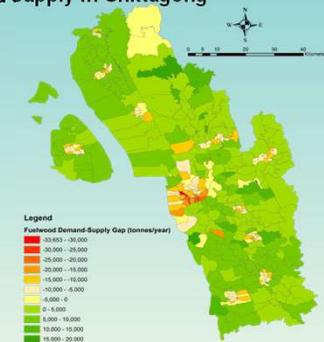


4. Illustration of integration

Gap between fuelwood demand and supply in Chittagong

Information required

- Biophysical
 - Unions and wards, and their area
- Socio-economic
 - Amount of fuelwood collected and consumed in each union/ward

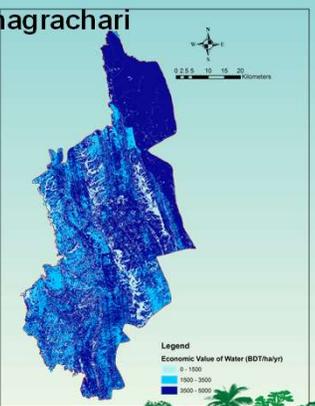


4. Illustration of integration

Value of potable water in Khagrachari

Information required

- Biophysical
 - Land cover classes (LCC) and their area
- Socio-economic
 - Amount of water collected from each LCC
 - Time spent by HH
 - Monetary costs involved

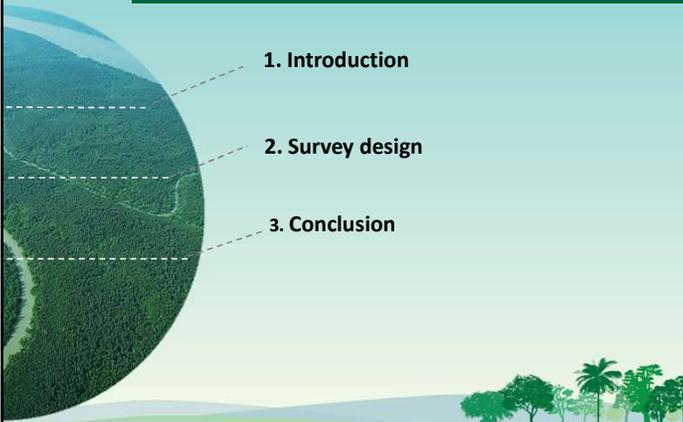



Chapter 4

Socio-economic survey design of BFI




Contents



1. Introduction
2. Survey design
3. Conclusion

1. Introduction

- A cost effective, consistent and replicable survey design is important any socio-economic survey
- Conducted two consultations for developing the socio-economic survey design of Bangladesh Forest Inventory
- The design will help to monitor the interaction between human and tree and forests as well as estimation of ecosystem value of tree and forest resources



2. Survey design

2.1. Data used for designing the survey

Data used for survey design

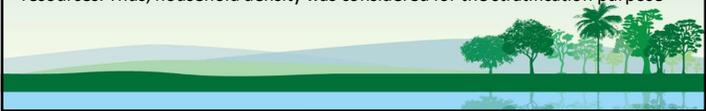
Tree cover/households/area indicator was generated using the BBS household and population census 2011 and Tree cover in 2014 from the forest department

Tree Cover in 2014 (ha)

The tree cover of the union that the house is belonged to. At the scale of the polygons of the union/ward map, zonal statistics of the 2000-2014 tree cover data (Potapov, Hansen et al. 2016) are computed.

Household density (household/ha)

Household density is considered to have a direct impact on forest and tree resources. Thus, household density was considered for the stratification purpose

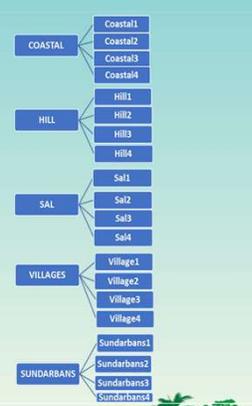


2. Survey design

2.2 Stratification on Zones

Domain of the survey:
Zone is the domain of the survey and represent at nation scale

Stratification:
Each zone is divided by 4 strata using quartile function




2. Survey design

2.3. Sample size

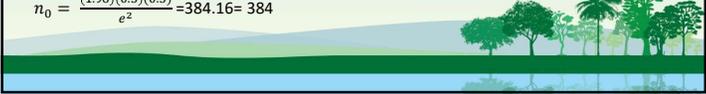
Cochran (1977) formula

$$n_0 = \frac{z^2 pq}{e^2} \dots\dots\dots (3.1)$$

Where,

- n_0 = is the sample size
- z = is the statistics that defines the level of confidence (at 95% confidence level the value of $z = 1.96$)
- p = is the estimated proportion of an attribute proportion that is present in the population ($p = 0.5$) and q is $1-p$
- e = Margin of error to be attained (here $\pm 5\%$)

For example, to calculate the equation 3.1, the required sample size will be as follows

$$n_0 = \frac{(1.96)(0.5)(0.5)}{e^2} = 384.16 = 384$$


2. Survey design

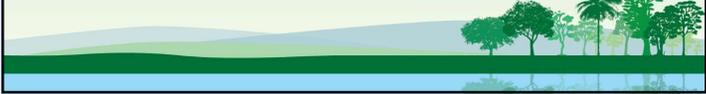
2.4. Zone wise sample size

Equation (3.1), the resulted sample size was found to be 384.

- Non-response rate (k) of the survey is 1.1%.
- Design effect (f) is considered 3 for getting safer sample size.

Assuming that the population size (number of households) in each of the 5 zones was infinite, the total number of households to be surveyed in each zone is 1268 ($384 * 3 * 1.1$), which corresponds to a total of 6340 ($1268 * 5$) households at a national level.

It was assumed that 20 households would be surveyed from each of the union/wards resulting in $6340/20 = 317$ union/wards to be surveyed. To give the equal allocation of union to each stratum, the number of unions to be selected in each stratum is $317/20 = 15.85 \sim 16$. The unions are selected randomly from each of the stratum using R software. Therefore, total number of unions to be surveyed is 320 ($16 * 20$). Similarly, total number of household to be interviewed is 6400.



2. Survey design

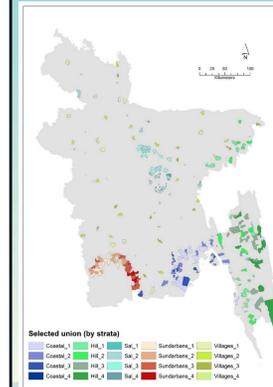
2.5. Stratum wise sample distribution

Strata	Household (numbers)	No. of Union/Ward	Equal allocation		Rounded Sample union	Total number of HHs to be sampled
			Number of unions to be sampled	Number of HH to be sampled		
Coastal1	400463	62	15.85	317	16	320
Coastal2	333082	61	15.85	317	16	320
Coastal3	180531	61	15.85	317	16	320
Coastal4	26908	61	15.85	317	16	320
Hill1	363538	73	15.85	317	16	320
Hill2	268280	72	15.85	317	16	320
Hill3	164658	72	15.85	317	16	320
Hill4	73910	72	15.85	317	16	320
Sal1	1427337	99	15.85	317	16	320
Sal2	1543363	99	15.85	317	16	320
Sal3	753728	98	15.85	317	16	320
Sal4	237453	99	15.85	317	16	320
Villages1	9730970	1723	15.85	317	16	320
Villages2	9721374	1723	15.85	317	16	320
Villages3	5922459	1722	15.85	317	16	320
Villages4	1528129	1723	15.85	317	16	320
Sundarbans1	114596	23	15.85	317	16	320
Sundarbans2	103470	22	15.85	317	16	320
Sundarbans3	107197	22	15.85	317	16	320
Sundarbans4	51276	22	15.85	317	16	320
Total	33052722	7909	15.85	6340	320	6400

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2. Survey design

2.6. Distribution of Unions according to Zones and HHs to be interviewed



Zone	Number of unions	Number of HHs
Coastal	64	1280
Hill	64	1280
Sal	64	1280
Sundarbans	64	1280
Villages	64	1280
Total	320	6400

2. Survey design

2.7. Number of HHs in each union

- 20 HHs to be surveyed from each union
- Ten GPS coordinates will be provided in each union, there will be odd and even number from 1-10.
- Enumerator will survey five GPS points based on their choices of odd or even numbers
- Four HHs (North-1, South-1, East-1 and West -1) to be interviewed in the selected GPS point/location
- Enumerators will put the coordinates into the GPS device To locate the place

2. Survey design

2.8. Community survey

- Qualitative techniques are used to collect in-depth information on selected indicators related to the survey.
- Five unions were randomly selected out of 16 unions in each stratum i.e. 100 unions (5 unions*20 strata) to represent the qualitative (community) survey at national scale. Thus, distribution of community survey in each zone would be 20.
- A total 100 FGDs will be carried out across the country
- 8-10 participants will be attended in the selected union or ward
- The target groups of the community survey were forest resource users in the society that are believed to have important impacts on forest and tree resources of the country.

3. Conclusion

- This survey provides accurate and precise information both a national and a regional scale, and, particularly, for each of the 5 zones adopted by the Bangladesh Forest Inventory (BFI).
- The amount of data which will be collected in the field will provide a meaningful insight on the multifaceted interactions among people, trees and forests.
- This information also constitutes the basis for the development of adequate environmental policies and for national forestry planning.




Chapter 5 Operationalization and Planning



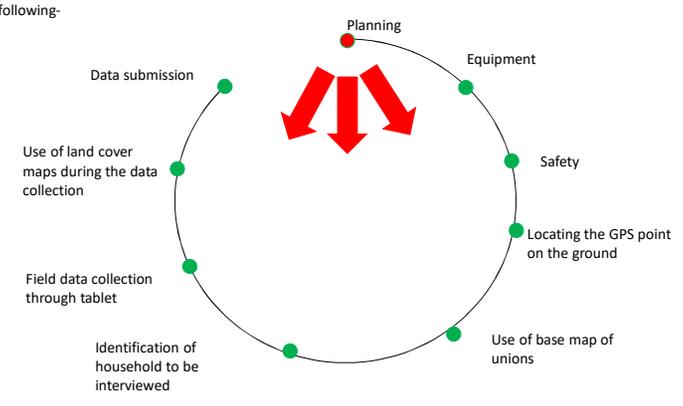

Contents

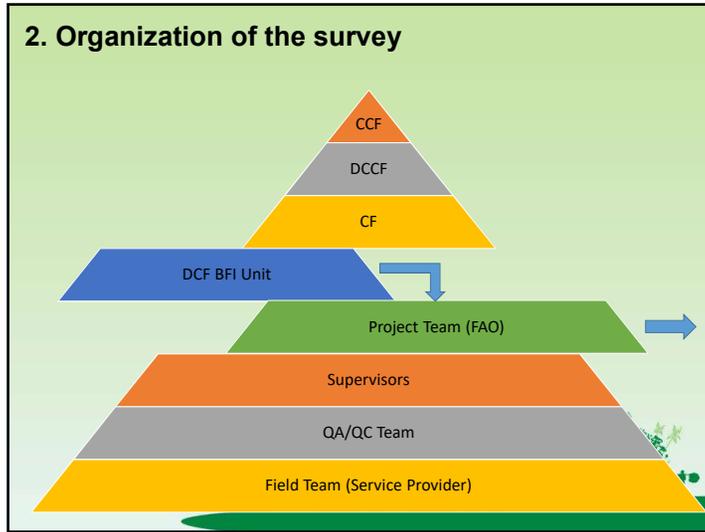
1. Introduction
2. Organization of the survey
3. Operational planning: preparation of the field inventory
4. Responsibilities of field inventory team
5. Responsibilities of QA/QC team
6. Reporting channel
7. Team communication
8. Administrative procedures
9. Travel preparation
10. Target setting
11. Contact in the field
12. Safety



1. Introduction

A socioeconomic survey of BFI manual has developed. The BFI operationalization and planning considering the different elements are following the guideline of the manual. The process of BFI field team operation is following-





3. Operational planning: preparation of the field inventory

BFI Unit
The BFI Unit is located at BFD and responsible for the centralization of all information for the national forest inventory, coordination and communication of other national institutions, dissemination of information through the national information system, and reporting.

Supervisors in Forest division office (FD) – 5 Nos.
Five Conservator of Forests (CF) posted in the field will be responsible for monitoring the socioeconomic data collection, Checking accuracy and completeness of survey

QA/QC Team: 5 Nos. - 2 members in each
QA/QC team is independent, comprising of 2 technical expert. They will ensure the field data quality collected by field teams through different checks.

Field Inventory Team (FIT): 5 Nos.-5 members in each
Socioeconomic HH survey: Total 25 members , composed of 5 team leader and 20 field enumerators
Community survey: Total 6, composed of 3 moderators and 3 Rapporteur

4. Responsibilities of field inventory team

Position	Nos.	Organization	Responsibility
Team Leader (TL)	5	CNRS	Responsible for coordination and monitoring the field enumerator for data collection, checking and coordinating the field survey - Check the work done by enumerators and interact with BFI unit about any problems or needs that arise - Responsible for monitoring effective use of equipment and ensure the equipment is not damaged - Daily communication with BFI team located in Dhaka as well as submission of activity report daily via mobile tablet to the BFI unit - Record keeping all the collected socioeconomic questionnaire (paper based) - Ensuring the sending of collected socioeconomic data through tablet - Checking up on all the enumerators in the field during the data collection - Maintaining strong relationships with local leaders and government offices for effective data collection
TOTAL	5		

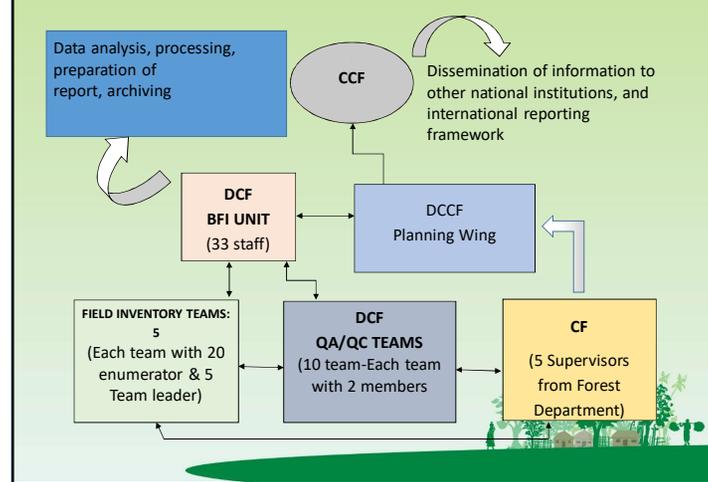
4. Responsibilities of field inventory team

Position	Nos	Organiza n	Responsibility
Field enumerator	20	CNRS	<ul style="list-style-type: none"> Responsible for socioeconomic data collection through interview with the randomly selected households Ensure clear and authentic data collection from the households Responsible to send the daily collected data from the households through tablet computers Responsible to record all the paper-based data (questionnaires) Work under the leadership of team leader Enumerators must check over surveys upon completion and sign the survey to verify its accuracy Enumerators will be required to return to the households to collect accurate information, if data is found to be inaccurate Work as per direction of BFI team and team leader Responsible for keeping the equipment in good condition Maintaining strong relationships with local leaders (Union Parishad Council) and the government office (Forest Department) for identifying the households
TOTAL	20		

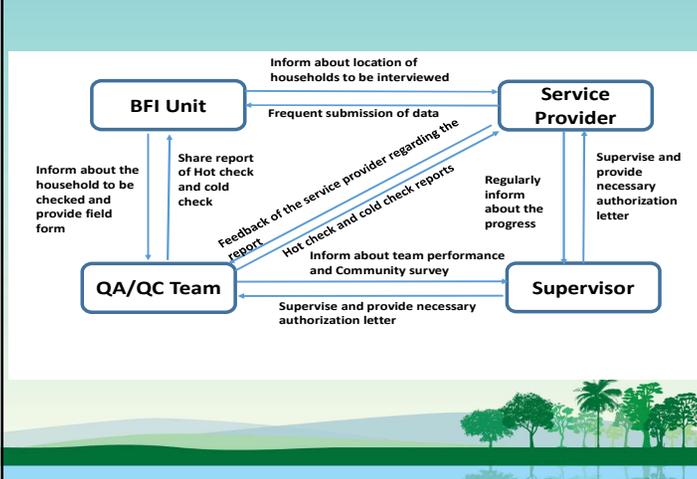
5. Responsibilities of QA/QC team

Position	Nos.	Status	Responsibility
Member	10	University teacher, representative from BBS, BFD and civil society institution	<ul style="list-style-type: none"> Quality control of the overall work and maintain liaison with BFI Unit The responsibilities of QA/QC teams also include spot visits during the data collection, check the coding, interview process while entering data in the tablet They will perform both hot and cold checks of data collection They will prepare and submit the hot and cold checks reports to the BFI unit
TOTAL	10		

6. Reporting channel



7. Team communication

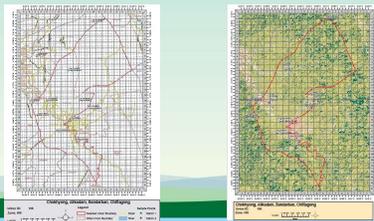


8. Administrative procedures

- ✓ Letter from the CCF to field authorities (CF, DFO)
- ✓ DFO will follow up dispatch of letters
- ✓ Inform UNO and Upazila Chairman of the respective upazilas regarding socioeconomic data collection
- ✓ Contact CHT Regional Council for their cooperation
- ✓ Inform local forest offices for field data collection
- ✓ Meeting with UP chairman, members, Headmen, Karbari via FD field officials before field survey

9. Travel preparation

- The GPS coordinates are provided by the BFI unit.
- Use different maps (land cover and base maps).
- **Field team should review available maps to plan the most direct route to the GPS plots.**
- **THIS SHOULD BE DONE THE DAY BEFORE VISITING THE GPS points.**
- Also the GPS co-ordinates of plot locations will be uploaded to each team's GPS.



10. Target setting

- Four households per day per enumerator can be a good target for household interview in an ideal condition.
- However, the target may vary with situation and site condition.

11. Contact in the field

Team must establish contact with the local representatives, local leader, *Headman, Karbari* or relevant contacted persons (BO, RO, DFO, CF) or other potential persons.

An introductory meeting should be organized to explain the aim of the visit to avoid misunderstandings. Some key points about the activities introduction are mentioned below:

- *This assessment is part of a larger programme of socioeconomic monitoring of tree and forest resources at national level.*
- *The information will be used to address issues related to the use of natural resources.*
- *The field information will be use by the country and the international community to assist sustainable natural resource management decisions.*
- *The information will remain confidential and will be used data analysis*

12. Safety

Personnel will work in the field are subject to many safety hazards. These can be minimized by considering the following measures:

- **First Aid Kit:** Any item used from the kit should be replaced as soon as possible. Contact the BFI Unit when replacement items are needed.
- **Take shelter in bad weather:** Wait till severe weather has passed before resuming work.
- **Protect from hot and humid condition.** Ensure bottles with drinks are full prior to departing for the field. Drink plenty of water to avoid dehydration during high temperatures.
- **Inform your presence to villagers and local community people:** Take information from nearby communities about the possible remote conditions. Also provide information on the objectives of the inventory to avoid misguided assumptions of the work.





Chapter 6

Socio-economic field survey protocol

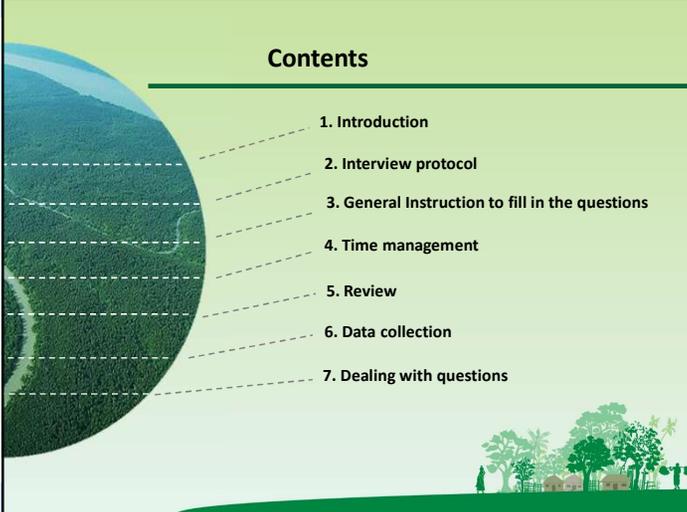


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Food and Agriculture Organization of the United Nations

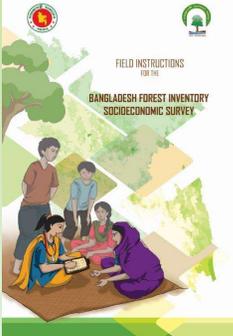
Contents

1. Introduction
2. Interview protocol
3. General Instruction to fill in the questions
4. Time management
5. Review
6. Data collection
7. Dealing with questions



1. Introduction

- The household will be chosen by the team leaders and assigned to the enumerator. The enumerator identify the HH using GPS coordinate
- The enumerator will brief the interviewee as to the objective of the survey to build rapport as well as introduce himself/herself.
- Receive consent from the interviewee, then enumerator will continue to ask questions and fill the questionnaire as well as in the OpenForis collect mobile




2. Interview protocol

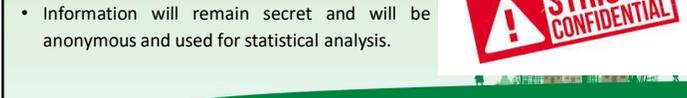
Interview settings

- It is very important that the interview is carried out privately without external presence or influences since other people could bias the output and thus the result of the survey.
- To avoid other persons' presence that can interfere with the interview, the enumerator will need to explain the importance of confidentiality to the interviewee with tact.



Confidentiality

- Information will remain secret and will be anonymous and used for statistical analysis.

2. Interview protocol

Time management

- Time is a crucial thing that should be considered before starting a face to face survey.
- If the face-to-face survey process goes on for longer than expected, the respondent might get bored or irritated. In such a situation the respondent may



- Provide incomplete information to save his/her time or
- False information in order to speed up the process
- Biased information out of fear or anger and so on.

About 45-55 minutes

2. Interview protocol

Review

- The enumerator should evaluate the survey and double check that nothing is missing and that there are no incomplete answers in the tablet.
- Team leaders receive the survey, he/she will check that nothing is missing, everything is clear and understandable and there are no mistakes.



3. General instruction to fill in the questions

Each section of the field guide begins with a general overview of the data elements to be collected and provides necessary background to prepare Field team for data collection.

Descriptions of data elements follow the format provided below:

ITEM NUMBER; DATA ITEM NAME:

[table_column name]

When collected	Specific criteria for when variable is recorded
Field width	X digits
Tolerance	Acceptable range of measurement
Values	Legal values/codes variables

3. General instruction to fill in the questions

Coding option

When collected:	All
Field Width:	1 digit
Tolerance:	No errors
Values:	Code Description
	1 Firewood- is any wooden material that is gathered and used for fuel.
	2 Leaves and other tree biomass
	3 Charcoal- a porous black solid, consisting of an amorphous form of carbon, obtained as a residue when wood, bone, or other organic matter is heated in the absence of air
	4 Briquette- a block of compressed charcoal or coal dust used as fuel
	5 LP gas- Liquefied petroleum gas used as fuel in heating appliances, cooking equipment, and vehicles.
	6 Kerosene- a light fuel oil obtained by distilling petroleum, used especially in jet engines and domestic heaters and lamps and as a cleaning solvent.
	7 Biogas- Biogas typically refers to a mixture of different gases produced by the breakdown of organic matter in the absence of oxygen. Biogas can be produced from raw materials such as agricultural waste, manure, municipal waste, plant material, sewage, green waste or food waste. Biogas is a renewable energy source.
	8 Cow dung-is animal feces that has been dried in order to be used as a fuel source
	9 Agricultural residues-straw and other materials collected from agricultural field for fuel purposes
	96 Other (specify)

3. General instruction to fill in the questions

Handling the other type of questions

When collected:	All	
Field Width:	1 digit	
Tolerance:	No errors	
Values:	Code	Description
	1	Land ownership
	2	Access to tree and forest resources
	3	Forest land boundaries
	96	Other (specify)

Rating questions

When collected:	All	
Field Width:	1 digit	
Tolerance:	No errors	
Values:	Code	Description
	1	Very low
	2	Low
	3	Medium
	4	High
	5	Very high

3. General instruction to fill in the questions

Dealing with if questions

- Interviewer will find some conditional questions in the HH and community survey questionnaire. There is an instruction in the questionnaire to deal with if questions.
- For example, HH survey questionnaire no 8.6.16. Are you involved with any social forestry activities? The options are 0= No, 1= Yes. If the answer is no, then proceed to question no. 8.6.21 and if answer is Yes, then please asking the questions 8.6.17.



Dealing with critical questions

- Enumerator will find some questions without coding for example-How many months per year are they employed?
- In this case an enumerator should try to get exact answer from the respondents.






Chapter 7

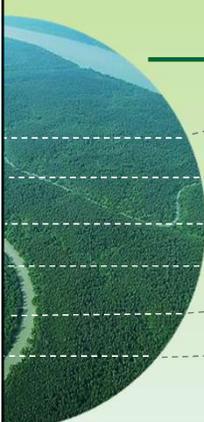
Use of GPS






Food and Agriculture
Organization of the
United Nations

Contents



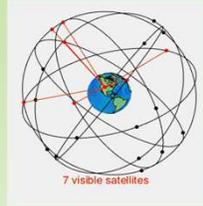
1. Introduction to GPS
2. Use of GPS in the field
3. Knowing GPS
4. Steps for inserting coordinates
5. Navigation
6. Maintenance



1. Introduction to GPS

GPS stands for **Global Positioning System**

➤ **Global Positioning System (GPS)** is a network of about 30 satellites orbiting the Earth at an altitude of 20,000 km.



➤ The **GPS** receiver gets a signal from each **GPS** satellite. The satellites transmit the exact time the signals.

2. Use of GPS in the field

GPS: Global Positioning System

- Main use of GPS is navigation and identification of coordinates of any location
- They can be used to map forests
- GPS systems are used in military applications
- Navigate airplanes on the ground or in the air.
- Emergency crews use it to locate people in need of assistance.
- Help farmers harvest their fields



2. Use of GPS in the field

The **GPS** unit is used to:

- Navigate to the plot location
- Record coordinates of reference points
- Determining location of subplots if Plot Centre is not accessible
 - Note: Plot coordinates are only provided for plot center. In case plots center is not accessible (e.g. under water) the distance and bearing function on the GPS can be used

All coordinates are to be taken with the GPS. The tablet is not used to record coordinates because it is not accurate enough

The coordinate system used is Degree Decimal

Degree Decimal	Deg/Min/Sec
92.8525245	92°53'37"
24.5052585	-24°43'44"

Maintenance:

- Batteries should be removed after use
- Batteries should be charged every evening
- The device should be switched off after use



2. Use of GPS



- Navigate to the plot location
- Record coordinates of the household (which is taken for interview)

3. Knowing GPS

Labels on the left side:

- Satellite signal receiver
- Display
- Zoom In
- Find
- Mark
- Quit

Labels on the right side:

- Power
- Zoom out
- Page
- Menu
- Enter
- Scroll Button
- Battery Cover

4. Steps for inserting coordinates

Press power button once and wait for the interface of the GPS to open

Press page button and continue clicking until **Main Menu** come

Main Menu options: Alarm lock, Sun and Moon, Menu, Map, Com, Satellite

4. Steps for inserting coordinate

Step: 1

- After entering the main menu scroll down and try to find the satellite tab.

Step: 2

- Enter the satellite tab and wait for a window to appear showing some bar.
- Wait until you get more than five satellite and a correction factor +/- 3m (acceptable range is 0 to +/-7m)

Coordinates: N 47°21.966', E 008°49.139'

GPS: 4m

Signal strength bars: 0411, 12, 13, 17, 20, 23, 24, 31, 32, 37

4. Steps for inserting coordinates

Step: 3

Press Mark button and use the scroll key to select the field to be edited.

Step: 4

Give necessary inputs and finally choose done at the bottom of the window to ensure storage of the change.

Step: 5

After selecting the required tab press Enter button to activate the field.

Coordinate entry fields: Location, W 094 47.341, Elevation, 1531, Depth, N, G, Map, Done

5. Steps for navigation

Step 1

- ❖ Press find button on the GPS
- ❖ Select waypoint tab and press enter

Step 2

- ❖ Select the desire point using the scroll arrow
- ❖ Press enter for selecting the point

5. Steps for navigation

Step 3

In the bottom of the screen you will get GO button. Press enter

Step 4

- ❖ Press page and select compass
- ❖ In the window you will get the distance bearing, estimated time of arrival.

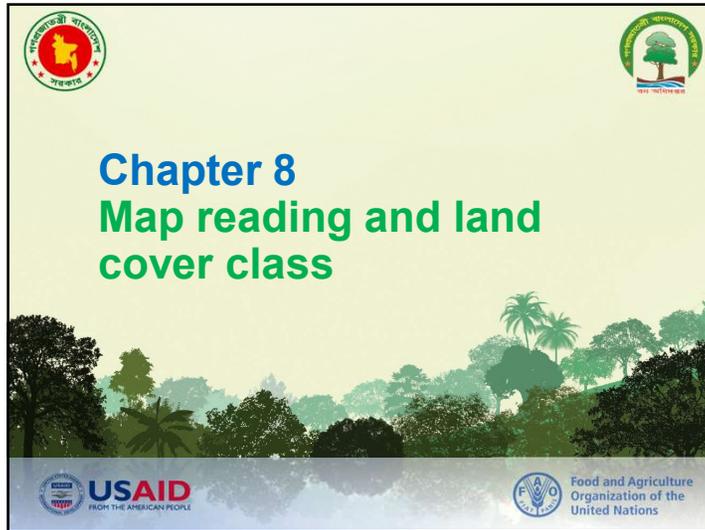
❖ Navigator will hear a beep sound after he reach within 10 meter radius of the exact location.

6. Maintenance of GPS

- ✓ Keep the GPS in dry place.
- ✓ Try to avoid tree shed, building structure, cloudy environment as it deter receiving satellite signal
- ✓ Check battery every morning before starting for new location.
- ✓ Remove battery after everyday work

6. Maintenance of GPS

- Correct use of instruments and proper data recording are key indicators of a good quality inventory work
- The Team Leader is responsible for the preparation and maintenance of the equipment
- All equipment should be tagged and well marked
- Check the workable condition of the equipment before going to the field
- Proper care and maintenance of the equipment must be ensured



Chapter 8
Map reading and land cover class

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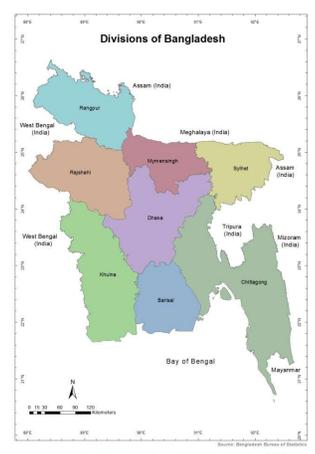
Food and Agriculture Organization of the United Nations

Contents

1. What is a map?
2. Basic components of a map
3. Getting information from map
4. Overview of land cover class
5. Land cover classification

1. What is a map?

- A map is simply a drawing or picture of a landscape or location
- Maps usually show the landscape as it would be seen from above, looking directly down
- Its a scaled representation of the earths surface shown on a plane surface
- Graphic representation of information with geographic location

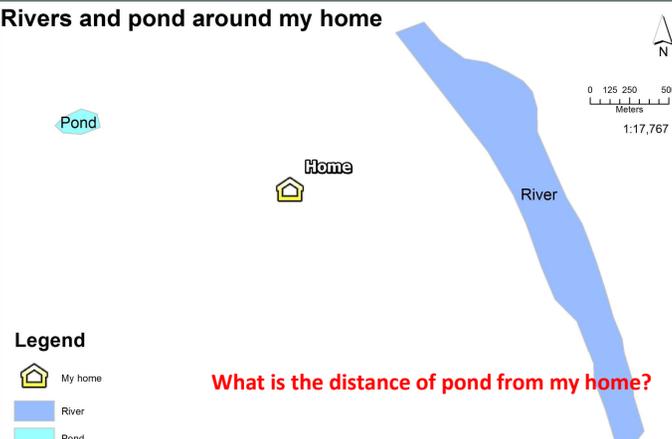


Divisions of Bangladesh

Map showing the divisions of Bangladesh: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Rangpur, Mymensingh, Sylhet, Assam (India), West Bengal (India), Meghalaya (India), Tripura (India), Mizoram (India), and Mayanar. The Bay of Bengal is also labeled.

2. Basic components of a map

Rivers and pond around my home

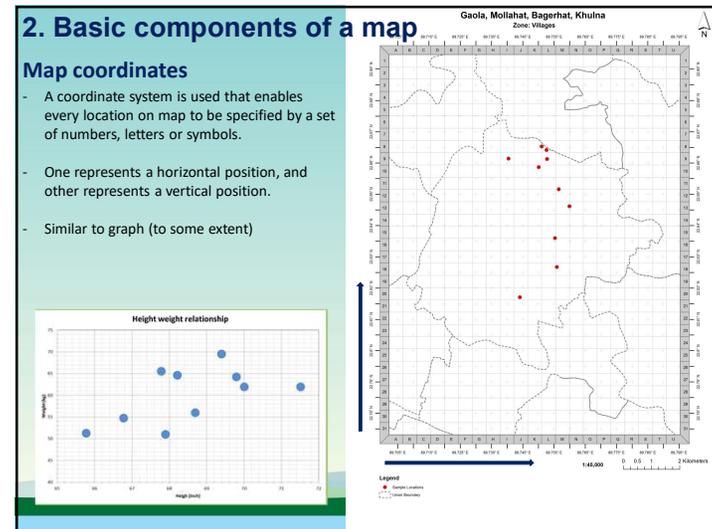
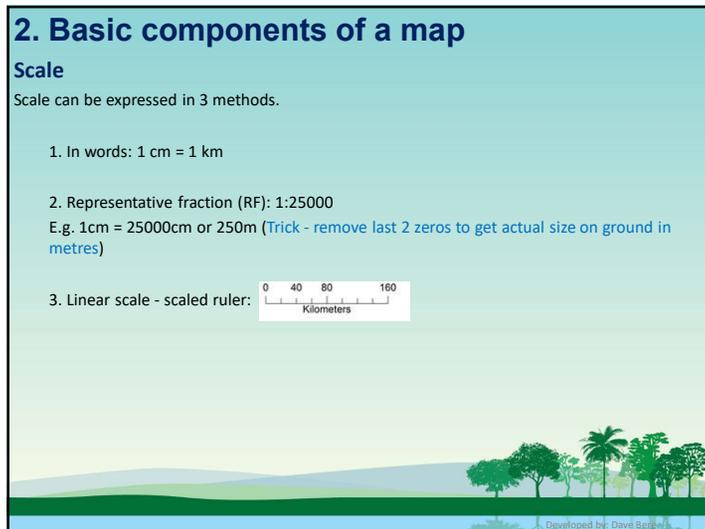
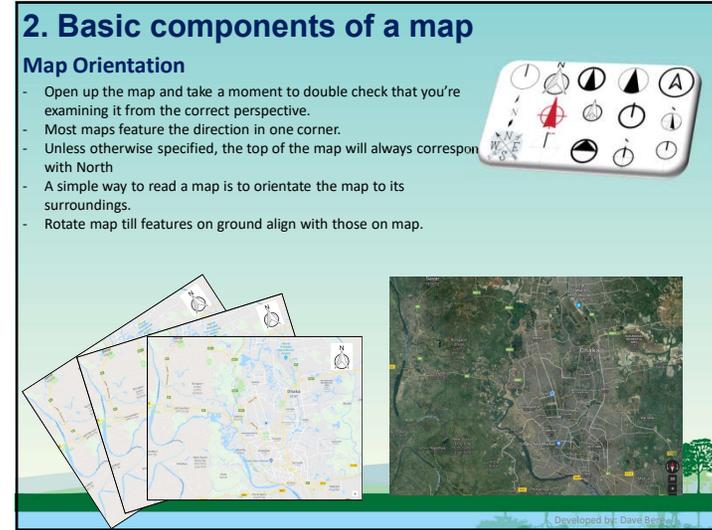
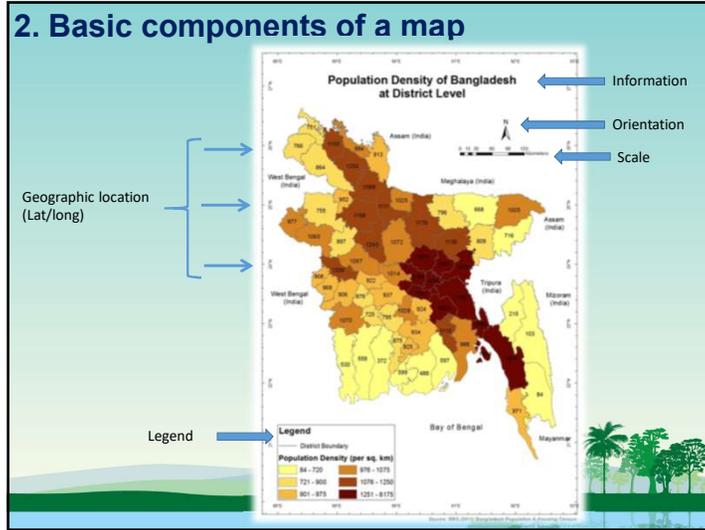


Map showing a pond, home, and river. Includes a scale bar (0, 125, 250, 500 Meters) and a north arrow. Scale: 1:17,767.

Legend

- My home
- River
- Pond

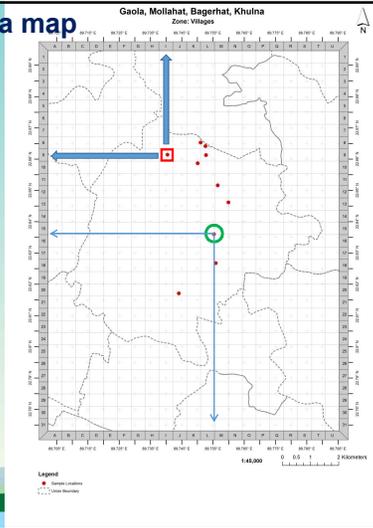
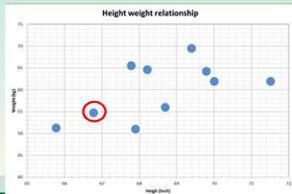
What is the distance of pond from my home?



2. Basic components of a map

Map coordinates (practice)

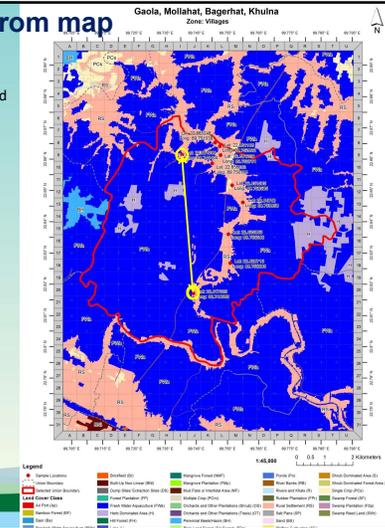
- What is the weight of the person of height 66.8 inches?
 - ~ 55 Kg
- Coordinates of the green highlighted point?
 - 89.755E, 22.835N
- In which grid box the point 89.74E, 22.862N located?
 - I9



3. Getting information from map

Practice

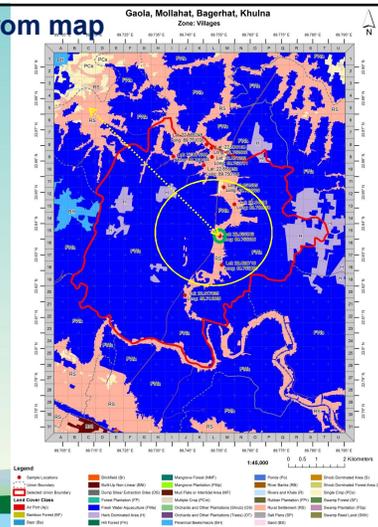
- What is the distance between the highlighted points?
 - ~5 km



3. Getting information from map

Practice

- What is the land cover of the location 2km north-west of green highlighted point?
 - Herb dominated Area (H) or Fresh Water Aquaculture (FWa)?
- Verification of land cover according to the question.
- Land cover map is for 2015



4. Overview of land cover

- Land Cover is the observed (bio)physical cover on the earth's surface (FAO).
- Often described as what can be seen on land viewed from above (EPA).
- It includes Trees, grass, soil, water, asphalt etc.

Source: FAO, EPA



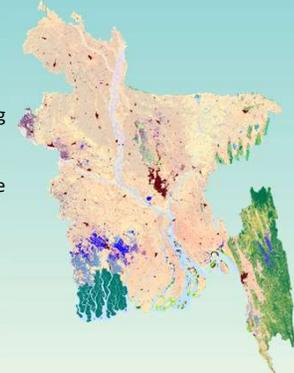
4. Overview of land cover



Source: Visit Bangladesh (base photo)

4. Overview of land cover

- ❑ **Thirty four (34) land cover classes**
- ❑ **Necessity of understanding**
 - For clear and consistent understanding of the land covers.
 - Properly read the map with code.
 - Verify the information collected from the surveyed people.



Land Cover Classification

■ Air Port (Ap)	■ Mangrove Forest (NMF)	■ Rural Settlement (RS)
■ Bamboo Forest (BF)	■ Mangrove Plantation (FMp)	■ Salt Pans (SP)
■ Baor (Ba)	■ Mud Flats or Intertidal Area (MF)	■ Sand (BS)
■ Brackish Water Aquaculture (BWa)	■ Multiple Crop (PCm)	■ Shifting Cultivation (SC)
■ Brickfield (Br)	■ Orchards and Other Plantations (Shrub) (OS)	■ Shrub Dominated Area (S)
■ Built-Up Non-Linear (BNl)	■ Orchards and Other Plantations (Trees) (OT)	■ Shrub Dominated Forest Area (ShF)
■ Dump Sites/ Extraction Sites (DS)	■ Perennial Beels/Haors (BH)	■ Single Crop (PCa)
■ Forest Plantation (FP)	■ Plain Land Forest (Sal Forest) (FDp)	■ Swamp Forest (SF)
■ Fresh Water Aquaculture (FWa)	■ Ponds (Po)	■ Swamp Plantation (FSp)
■ Herb Dominated Area (H)	■ River Banks (RB)	■ Swamp Reed Land (SWr)
■ Hill Forest (FH)	■ Rivers and Khals (R)	
■ Lake (L)	■ Rubber Plantation (FPr)	

Source: GoB (2017). Land cover of Bangladesh



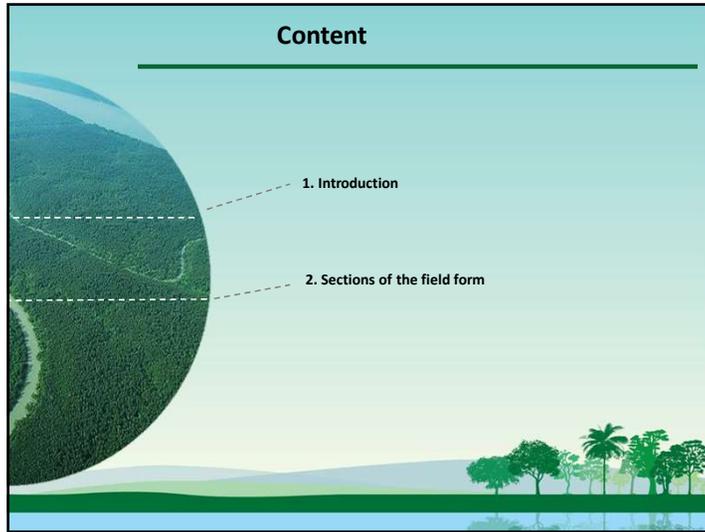

Chapter 9

Socio-economic survey field form






Food and Agriculture Organization of the United Nations



1. Introduction

Why using paper field form?

- Second data entry in case of technological failure
- Quality control
- To provide information that cannot be provided easily using the tablet
- Sometimes, there is nothing better than a paper and a pencil

2. Sections of the field form

There are eight sections in the socioeconomic field. The sections are linked with Bangladesh Forest Inventory (BFI) criteria and indicators and variables

- 8.1. AREA IDENTIFICATION
- 8.2. DEMOGRAPHIC INFORMATION
- 8.3. BIODIVERSITY AND CONSERVATION
- 8.4. DISTURBANCES, FOREST DEGRADATION AND RESILIENCE
- 8.5 ECONOMICS AND LIVELIHOOD
- 8.6. MEASURING PROGRESS TOWARDS SFM
- 8.7 OWNERSHIP
- 8.8 ZONE SPECIFIC QUESTIONS
- 9. FINALIZATION

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
 BANGLADESH FOREST DEPARTMENT
 Bani Bhaban, Agargaon, Dhaka

NATIONAL SOCIOECONOMIC SURVEY IN FORESTRY
 HOUSEHOLD (HH) MODULE

2. Sections of the field form

8.1. AREA IDENTIFICATION

VARIABLES	CODES
8.1.1. HH unique number	
8.1.2. Interview date (DD-MM-YY)	
8.1.3. Division	
8.1.4. District	
8.1.5. Upazila	
8.1.6. Union	
8.1.7. Mauza	
8.1.8. Ward	
8.1.9. Village	
8.1.10. Zone	
8.1.11. Stratum	
8.1.12. Forest Division	
8.1.13. Forest Range	
8.1.14. Forest Beat	
8.1.15. HH survey point	
8.1.16. GPS Coordinate	Latitude (N) Longitude (E)
8.1.17. Starting time of interview (HH:MM)	
8.1.18. Name of interviewer	

2. Sections of the field form

8.2. DEMOGRAPHIC INFORMATION

8.2. DEMOGRAPHIC INFORMATION

8.2.1. Name of the respondent (in years)
 8.2.2. Age of the respondent (in years)
 8.2.3. Gender of the respondent 1= Male 2= Female 3= Third gender

8.2.4. Which ethnic group does the HH belong to?

<input type="checkbox"/> 1=Bagli	<input type="checkbox"/> 11=Hajong	<input type="checkbox"/> 21=Mahali	<input type="checkbox"/> 31=Palhan	<input type="checkbox"/> 41=Tripara
<input type="checkbox"/> 2=Barman	<input type="checkbox"/> 12=Osoti	<input type="checkbox"/> 22=Mahalo	<input type="checkbox"/> 32=Palhan	<input type="checkbox"/> 42=Osoti
<input type="checkbox"/> 3=Bawm	<input type="checkbox"/> 13=Karmakar	<input type="checkbox"/> 23=Malu	<input type="checkbox"/> 33=Palia	<input type="checkbox"/> 96=Other (please specify)
<input type="checkbox"/> 4=Bengali	<input type="checkbox"/> 14=Khassia	<input type="checkbox"/> 24=Manungam	<input type="checkbox"/> 34=Parangam	
<input type="checkbox"/> 5=Bhumali	<input type="checkbox"/> 15=Kheyang	<input type="checkbox"/> 25=Marma	<input type="checkbox"/> 35=Pangkhoa	
<input type="checkbox"/> 6=Bhumj	<input type="checkbox"/> 16=Khumi	<input type="checkbox"/> 26=Malgahan	<input type="checkbox"/> 36=Rabdas	
<input type="checkbox"/> 7=Bonaj	<input type="checkbox"/> 17=Koch	<input type="checkbox"/> 27=Mo or Marong	<input type="checkbox"/> 37=Rabangha	
<input type="checkbox"/> 8=Chak	<input type="checkbox"/> 18=Kole	<input type="checkbox"/> 28=Munda	<input type="checkbox"/> 38=Rakham	
<input type="checkbox"/> 9=Chakma	<input type="checkbox"/> 19=Laha	<input type="checkbox"/> 29=Mushhor	<input type="checkbox"/> 39=Sanjal	
<input type="checkbox"/> 10=Date	<input type="checkbox"/> 20=Lushai	<input type="checkbox"/> 30=Chapon	<input type="checkbox"/> 40=Lanchangya	

8.2.5. How many members are there in this HH? People

8.2.6. What is the age distribution of your HH members according to gender?

Gender	Age class			
	<15 years	15-29 years	30- 64 years	>64 years
<input type="checkbox"/> 1=Male				
<input type="checkbox"/> 2=Female				
<input type="checkbox"/> 3=Third gender				



2. Sections of the field form

8.3. BIODIVERSITY AND CONSERVATION

8.3. BIODIVERSITY AND CONSERVATION

8.3.1. Are there any **plant species** that were **abundantly** available in the past, but rarely seen now-a-days in your union?
 0=No (then please ask question 8.3.3.1)
 1=Yes (then please ask the question 8.3.2-8.3.3)
 99=Do not know (then please ask question 8.3.3.1)

8.3.2. What are the plant species not found abundantly like before in the union? <i>(please write down the maximum five local names)</i>	8.3.3. In your opinion, what are the main reasons of reduction in number of these species? 1=Land use change 2=Over harvesting 3=Lack of proper management 4=Natural disasters 99= Others (please specify)
1	
2	
3	
4	
5	

8.3.4. Are there any **animal species** that were **abundantly** available in the past, but rarely seen now-a-days in your union?
 0=No (then please ask question 8.3.7)
 1=Yes (then please ask the question 8.3.5-8.3.6)
 99=Do not know (then please ask question 8.3.7)

8.3.5. What are the animal species not found abundantly like before in the union? <i>(please write down the maximum five local names)</i>	8.3.6. In your opinion, what are the main reasons of reduction in number of these species? 1=Loss of habitat 2=Hunting 3=Lack of proper management 4=Natural disasters 99= Others (please specify)
1	
2	
3	
4	
5	



2. Sections of the field form

8.4. DISTURBANCES, FOREST DEGRADATION AND RESILIENCE

8.4. DISTURBANCES, FOREST DEGRADATION AND RESILIENCE

8.4.1. Are there any disturbances that have affected trees and forest resources in your union in past ten years?

0=No (then please ask question 8.5.1)
 1=Yes (then please ask question 8.4.2)
 99= Don't know (then please ask question 8.5.1)

8.4.2. What types of disturbances have occurred in your union?

1=Human made (then please ask questions 8.4.3-8.4.5)
 2=Natural (then please ask questions 8.4.6-8.4.6)

Human made disturbances

8.4.3. What are the human made disturbances that have occurred in your union? <i>(Please read out the below options and make the respondent understand these)</i>	8.4.4. What is the severity of disturbances? 1=Very low, 2=Low, 3=Medium, 4=High, 5=Very high	8.4.5. Where have these disturbances occurred? <i>(Please note down the code of land cover class according to manual)</i>
<input type="checkbox"/> 1=Encroachment <input type="checkbox"/> 2=Illegal logging <input type="checkbox"/> 3=Legal conversion of forest land to other uses <input type="checkbox"/> 4= Excessive collection of fuelwood <input type="checkbox"/> 5=Excessive collection of NWFP <input type="checkbox"/> 6= Grazing <input type="checkbox"/> 7= Fire <input type="checkbox"/> 8= Oil spill <input type="checkbox"/> 9= Gas exploration <input type="checkbox"/> 10= Sandstone quarry <input type="checkbox"/> 11= Hill cutting <input type="checkbox"/> 12= Other mining activities <input type="checkbox"/> 13=Infrastructure development (e.g. building, road, bridge and dam) <input type="checkbox"/> 99= Others (please specify)		



2. Sections of the field form

8.5. ECONOMIC AND LIVELIHOOD

8.5. ECONOMIC AND LIVELIHOOD

8.5.1. Does your HH **collect** forest and tree products or **generate income** from them in the past 12 months?

0= No, (then please ask question 8.5.2)
 1= Yes, (then please ask question 8.5.4)

8.5.2. What is the nature of products collected or income generated?

1= Primary tree and forest products (i.e. traditionally collected from tree and forest resources i.e. provisioning services), (then please ask question 8.5.3)
 2= Processed tree and forest products, (then please ask the questions 8.5.19)
 3= Employment in an institution or business related to tree and forest activities, (then please ask questions 8.5.40)

Primary tree and forest products (i.e. traditionally collected from tree and forest resources i.e., provisioning ecosystem services)

8.5.3. What are the tree and forest products collected by your HH?	8.5.4. What was the amount your HH collected in the past 12 months?	8.5.5. How many members of your HH are involved in the collection of primary tree and forest products?	8.5.6. How many months a year does your HH usually collect these products?	8.5.7. How many days a month do your HH members collect the forest products?	8.5.8. How many hours a day does your HH spend in collecting forest products?	8.5.9. How many hours a day does your HH spend in collecting forest products?	8.5.10. What amount is usually sold in the past 12 months?	8.5.11. How many months a year does your HH sell the products?	8.5.12. What is the unit price?	8.5.13. What is the cost of selling the products?	8.5.14. From where the product was collected?	8.5.15. What is the ownership of the land from where the product was collected?
	(quantity/year)	(if more than one member involved in tree and forest products collection, list total members and write the average monthly)	(if more than one member involved in tree and forest products collection, list total months and write the average monthly)	(if more than one member involved in tree and forest products collection, list total days and write the average monthly)	(if more than one member involved in tree and forest products collection, list total hours and write the average hourly)	(if more than one member involved in tree and forest products collection, list total hours and write the average hourly)	0=No, please go to 8.5.14 1=Yes, please continue to question 8.5.10	(quantity/year)	month/year	(BDT/unit)	(BDT/month)	1=Private- Owned by individuals or family 2=Forest Department 3=Government land 4=Community cover 5=Other institutions 99=Other (please specify) 99=Unknown
<input type="checkbox"/> 1=Teak <input type="checkbox"/> 2= Pine <input type="checkbox"/> 3= Bamboo <input type="checkbox"/> 4= Bamboo <input type="checkbox"/> 5= Larch <input type="checkbox"/> 6=Larch and pine <input type="checkbox"/> 7=Brooms	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 <input type="checkbox"/> 21 <input type="checkbox"/> 22 <input type="checkbox"/> 23 <input type="checkbox"/> 24 <input type="checkbox"/> 25 <input type="checkbox"/> 26 <input 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2. Sections of the field form

8.6. MEASURING TOWARDS SUSTAINABLE FOREST MANAGEMENT

8.6. MEASURING PROGRESS TOWARDS SFM

Conflicts related to trees and forests

8.6.1. Have you observed any conflicts related to land and forest tenure in your union in past 12 months?
 0=No (then please ask question 8.6.5)
 1=Yes (then please ask questions 8.6.2- 8.6.4)

8.6.2. What are the conflicts usually associated with? <input type="checkbox"/> 1= Land ownership <input type="checkbox"/> 2= Access to tree and forest resources <input type="checkbox"/> 3= Forest land boundary related disputes <input type="checkbox"/> 96= Other (please specify ----)	8.6.3. What is the frequency of conflicts? <input type="checkbox"/> 1=1 times/yr <input type="checkbox"/> 2=2 times/yr <input type="checkbox"/> 3=3 times/yr <input type="checkbox"/> 4=4 times/yr <input type="checkbox"/> 5= < 4 times/yr	8.6.4. Who normally solves the conflicts? 0=Nobody solves, conflicts remained unsolved 1=Community leader 2=BFD officials 3=Local administration 4=Police 5=Local government 96=Other (please specify)
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Participation in tree and forest management

8.6.9. Are there any community or co-managed forests in your union?
 0=No (then please ask question 8.6.16)
 1=Yes (then please ask question 8.6.10)

8.6.10. Is your HH members involved with community or co-management of forests?
 0=No (then please ask question 8.6.12)
 1=Yes (then please ask question 8.6.11)

8.6.11. How many years has your HH been involved in community or co-management of forests?
 years

8.6.12. How far is the community or co-management of forests from your house?
 Kilometre (km)

8.6.13. Have you got any benefits through involving in tree and forest management/co-management?
 0=No (then please ask question 8.6.16)
 1=Yes (then please ask question 8.6.14)

8.6.14. If yes, what types of benefits did you receive?
 1=Cash, please ask question no. 8.6.15
 2=Trainings
 3=Exposure visits
 4= In kind support on alternative income generation activities
 96=Others (please specify).....

8.6.15. How much money does your HH received since involved in community or co-management forests?
BDT

2. Sections of the field form

8.8. ZONE SPECIFIC QUESTIONS

8.8 ZONE SPECIFIC QUESTIONS

The Sundarbans and Coastal Zone: Protective functions of trees and forests – value of forests and plantations against protection from tropical storms

For control HHs (i.e. that are located in areas where there are no Sundarbans or coastal plantations), please ask questions 8.8.1, 8.8.3 and 8.8.4
For treatment HHs (i.e. that are located in areas where there are the Sundarbans or coastal plantations), please ask questions 8.8.2 - 8.8.4

8.8.1. Where are HH's assets (e.g. house, agricultural land, livestock, trees, fish ponds and shrimp farm) located in relation to the coast line?
 1= Within one kilometre (km), 2 = Between one and two km 3= Between two and three km, 4 = Beyond three km (to be verified in the land cover class map)

8.8.2. Where are HH's assets (e.g. house, agricultural land, livestock, trees, fish ponds and shrimp farm) located in relation to the inner boundary of the Sundarbans or coastal plantations?
 1= Within one kilometre (km), 2 = Between one and two km 3= Between two and three km, 4 = Beyond three km (to be verified in the land cover class map)

8.8.3. Are there any cyclones that damages your HH assets in the past 10 years?
 0=No, please proceed to the question 8.8.6
 1=Yes, please proceed the question no.8.8.4.-8.8.5

8.8.4. What damages/losses have occurred to HH's assets due to cyclone?
 0=No loss or damages
 1=Loss of/damage to house BDT
 2=Loss of agricultural crops BDT
 3=Loss of/damage to trees BDT
 4=Loss of/damage to fish ponds BDT
 5=Loss of /damage to shrimp farms BDT
 6=Loss of livestock BDT
 96= Other losses or damages BDT

8.8.5. What was the economic cost of damages/losses due to cyclone in last 10 years?
 BDT



2. Sections of the field form

8.7 OWNERSHIP

HH land ownership

8.7.1. Does your HH have any lands?
 0=No, please proceed to the question 8.8.1
 1=Yes, please proceed the question no.8.7.2-8.7.3

8.7.2. What types of lands does your HH have? <input type="checkbox"/> 1= Own homestead land <input type="checkbox"/> 2= Leased or rented homestead land <input type="checkbox"/> 3= Own tree and bamboo plantations outside of homestead land <input type="checkbox"/> 4= Leased or rented tree and bamboo plantations outside of homestead land <input type="checkbox"/> 5= Own agricultural land <input type="checkbox"/> 6= Leased, rented or share-cropped agricultural land <input type="checkbox"/> 96=Other (please specify:-----)	8.7.3. What is the approximate size of the land? (decimal)
---	--



2. Sections of the field form

VALUE OF POTABLE WATER

Hill, Coastal and Sundarbans Zone: Economics and livelihood - value of potable water

8.8.10. What are the sources of your HH's drinking water? <input type="checkbox"/> 1= Seepage water from hills <input type="checkbox"/> 2= Natural streams <input type="checkbox"/> 3= Wells <input type="checkbox"/> 4 = Ponds <input type="checkbox"/> 5 = Rain water <input type="checkbox"/> 96=Other sources (Please specify)	8.8.11. Where are the locations of your water sources? (please note down the code of land cover class according to manual or map)	8.8.12. How many members of your HH collect water? (no. of members)	8.8.13. How many months a year (in total) do they collect? (months/yr)	8.8.14. How many days a month do they collect? (days/month)	8.8.15. On average, how many hours a day does HH members spend in collection? (hours/day)	8.8.16. On average, how much water does HH members collect per day? (liters/day)	8.8.17. If any of your HH member need to transport the collected water from, how much is the transportation cost? (BDT/month)
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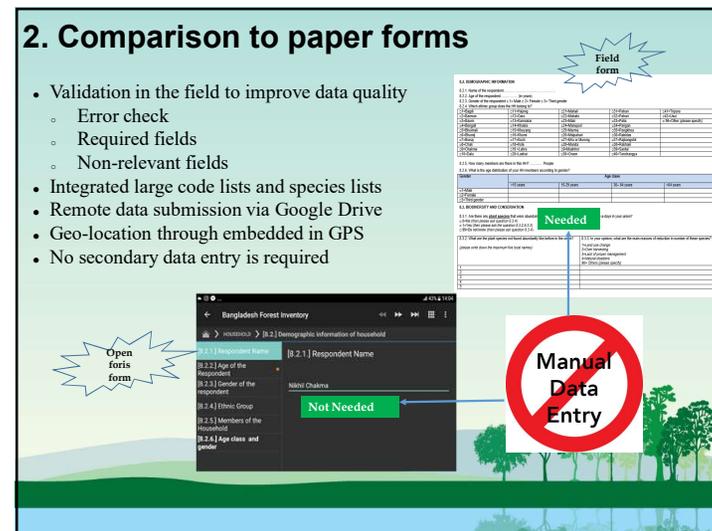
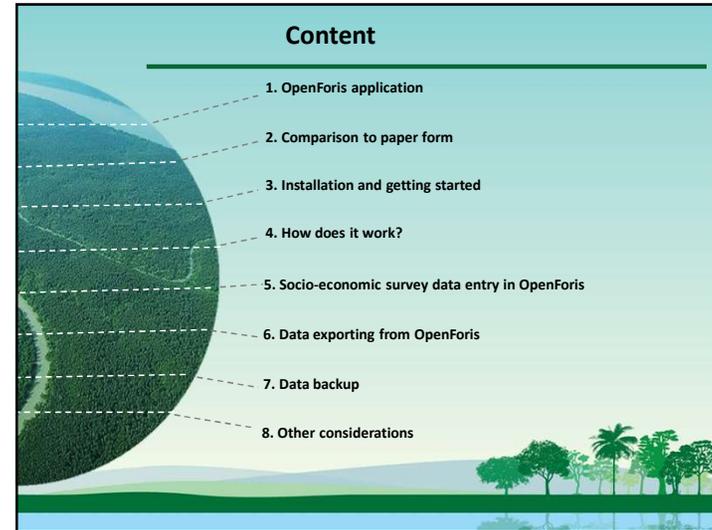
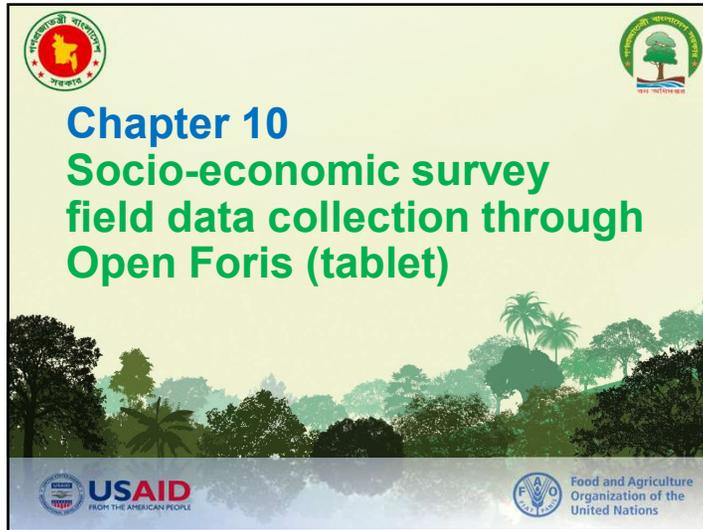
8.8.18. Do you need to treat the collected water before drinking?
 0=No, 1=Yes (then please ask questions 8.8.19 - 8.8.20)

8.8.19. How does your HH treat the collected water?
 0= No money is required
 1= Natural means (e.g. using stones and sand) BDT/10 litre
 2=Using chemicals BDT/10 litre
 96=By other means (Please specify) BDT/10 litre

8.8.20. What is the cost of treatment, if any?
 BDT/10 litre

9. Picture of HH location
 Please take a photo of the location of HH, if allowed
 9.1. Picture taken: 0=No, 1=Yes
 9.2. Interviewer comments (if any):
 9.3. End time of interview (HHMM):

Reviewed by: Signature: _____ Name: _____ Position: _____ Date: _____



3. Installation and getting started

It is free

Download and Install collect Desktop

- Downloaded desktop collect version from : www.openforis.org/tools/collect.html
- Run the .exe file and follow the instructions on screen
- Collect will be installed by default into C:\OpenForis\Collect

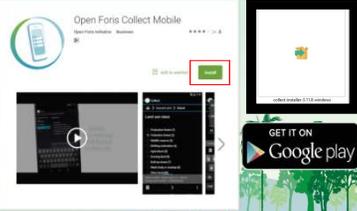
Startup Collect Desktop

Start menu → All programs → Open Foris folder → Launch Open Foris Collect

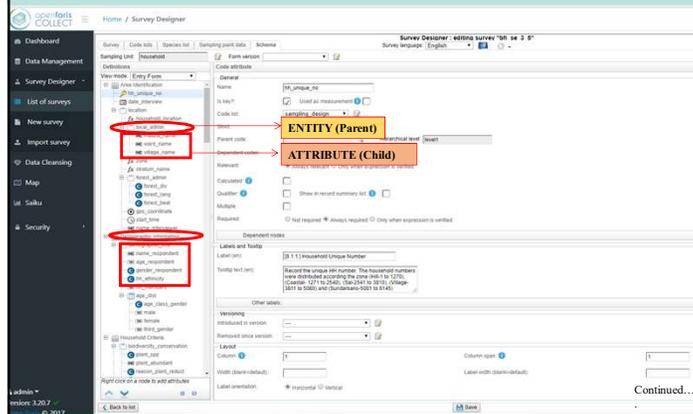
Setup Collect Mobile

Mobile collect version is available in Google play store

- Type "Open foris" in the search bar
- Install the app directly
- After installation a logo will be added to your device home screen
- To open collect click on open foris logo from the home screen of your android device

4. How does it work?



4. How does it work?

Open foris form is consistent with the field form

Open foris form (points to the Survey Designer interface)

Field form (points to the printed form)

8.2. DEMOGRAPHIC INFORMATION

8.2.1 Name of the respondent (in years)

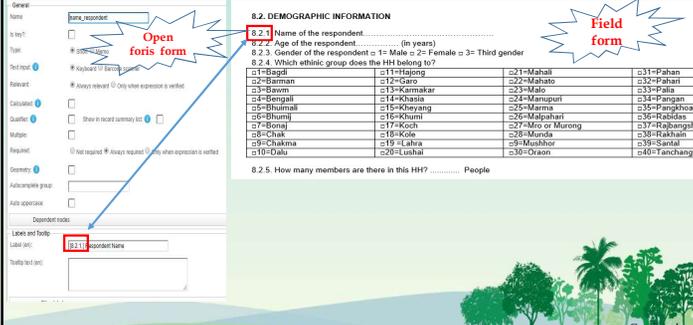
8.2.2 Age of the respondent (in years)

8.2.3 Gender of the respondent = 1= Male = 2= Female = 3= Third gender

8.2.4 Which ethnic group does the HH belong to?

01=Telugu	011=Mahali	021=Pahari
02=Barmari	012=Garro	022=Mahabo
03=Khasi	013=Khasi	023=Pahari
04=Bengali	014=Khasia	024=Manupuri
05=Orissani	015=Khasi	025=Khasi
06=Bihami	016=Khasi	026=Khasi
07=Bhumi	017=Khasi	027=Khasi
08=Chak	018=Khasi	028=Khasi
09=Chakma	019=Laha	029=Khasi
10=Jaintia	020=Khasi	030=Khasi
	021=Khasi	031=Khasi
	022=Khasi	032=Khasi
	023=Khasi	033=Khasi
	024=Khasi	034=Khasi
	025=Khasi	035=Khasi
	026=Khasi	036=Khasi
	027=Khasi	037=Khasi
	028=Khasi	038=Khasi
	029=Khasi	039=Khasi
	030=Khasi	040=Khasi

8.2.5 How many members are there in this HH? People



4. How does it work?

Open foris form is in line with the field data collection manual

Open foris form (points to the Survey Designer interface)

Socio-economic Manual (points to the printed manual)

8.1.1 Respondent name

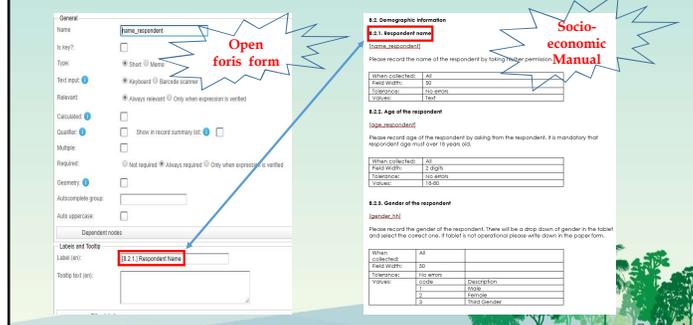
Please record the name of the respondent by taking the permission.

8.1.2 Age of the respondent

Please record age of the respondent by asking from the respondent. If a mandatory that respondent age must over 18 years old.

8.1.3 Gender of the respondent

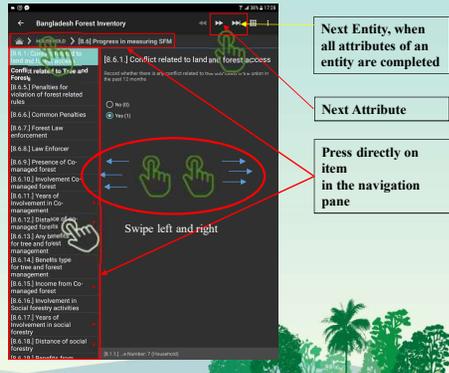
Please record the gender of the respondent. There will be a drop-down of gender in the tablet and select the correct one. It should be not operational please write down in the paper form.



4. How does it work?

Navigation

- Press ⇨ to go to the next question/ attribute
- Press ⇨⇨ to navigate to the next entity; when all attributes of an entity are checked
- To navigate any desired item press directly on item in navigation pane (left and Up)
- Swipe left to navigate pervious attribute and swipe right to navigate next attribute

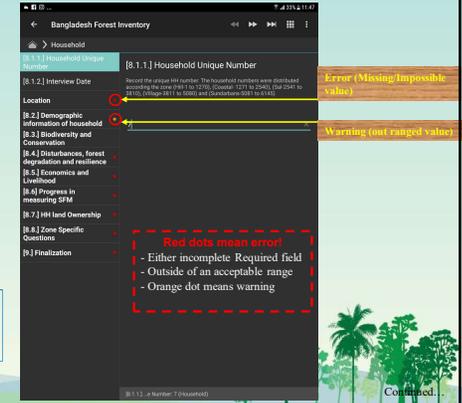


4. How does it work?

Errors and validation

- ✓ Errors for missing values of required field
- ✓ Errors for impossible values
- ✓ Warnings for improbable values
- ✓ Always correct errors
- ✓ Double-check warnings

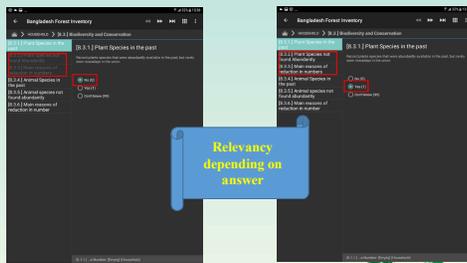
At the end of a survey ensure there are no red dots and double check orange dots



4. How does it work?

Relevance checks

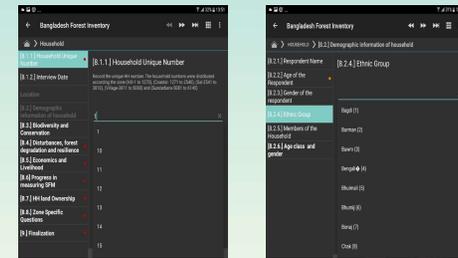
- ✓ Only relevant attributes will be visible depending on answer
- ✓ Irrelevant attributes will be blacked out
- ✓ The form will navigate automatically to the next relevant attribute



4. How does it work?

Providing the list

Open foris application provides intuitive lists that are accessed by pressing the space bar



5. Socio-economic survey data entry in Open Foris

Data entry type:

- Enter Number
- Enter Text
- Single selection
- Multiple selection
- Enter Code from code list
- Capture Image

The diagram shows a central box labeled "Data entry type:" with six arrows pointing to a list of data entry types: "Enter Number", "Enter Text", "Single selection", "Multiple selection", "Enter Code from code list", and "Capture Image". The background features a stylized landscape with green hills, trees, and a blue sky.

5. Socio-economic survey data entry in Open Foris

Data Entry

Two screenshots of the Open Foris mobile application. The left screenshot shows a screen titled "Enter Number" with a numeric keypad. The right screenshot shows a screen titled "Enter Text" with a QWERTY keyboard. Both screens are part of a survey form for "Bangladesh Forest Inventory".

5. Socio-economic survey data entry in Open Foris

Data entry

Two screenshots of the Open Foris mobile application. The left screenshot shows a screen titled "Single selection" with a list of radio button options. The right screenshot shows a screen titled "Multiple selection" with a list of square checkboxes. Both screens are part of a survey form for "Bangladesh Forest Inventory".

5. Socio-economic survey data entry in Open Foris

Data Entry

Type the first letter of the code so the related codes will be automatically visible

Press space bar to see all codes

Just click on the right code to select

To read code description please press "SHOW CODE DESCRIPTION"

Entry Code from code list

To capture a new image, press "CAPTURE IMAGE" to open the camera

To select a previously captured image from the device

Remove image if not taken correctly and capture again

Capture Image

Two screenshots of the Open Foris mobile application. The left screenshot shows a screen titled "Entry Code from code list" with a list of codes and a "SHOW CODE DESCRIPTION" button. The right screenshot shows a screen titled "Capture Image" with a "CAPTURE IMAGE" button and a "SELECT PREVIOUSLY CAPTURED IMAGE" button. Both screens are part of a survey form for "Bangladesh Forest Inventory".

5. Socio-economic survey data entry in Open Foris

Starting a household survey data entry

Data Entry

Press the "+" sign to start a new household

Open foris data entry interface for socio-economic survey

After pressing +

Insert unique household number

Inserting HH number will unlock the blacked out attributes

Data entry form for a household

Start data entry for other attributes

5. Socio-economic survey data entry in Open Foris

Insert date, time and open up a specific entity

Data Entry

Insert the survey date

Insert time

Opening specific entity for data entry

Press to open calendar, just select date and press "ok"

Press to open clock, just press "ok" if the clock is set

Press "EDIT" to open specific entities

5. Socio-economic survey data entry in Open Foris

Data entry for specific tabular entities comprising multiple attributes

Data Entry

Press "+" to open the entity

Single selection

When all necessary codes are entered press >> to navigate next entity

- First select a specific code
- Go through the next questions and fill all attributes data for that specific code
- When all attributes are checked press >>>
- It will take you back to the start page of the entity
- The entered data for that specific code will be listed
- To add data another code again press "+" and do the same

This multi-attributes tabular entities are common in this survey and enumerators have to those frequently. For a single code all listed attributes have to be checked sequentially. Then pick another code and complete all attributes in the same way. In this way information for every single code will remain in separate groups.

6. Data exporting from Open Foris

1. Access the options via the three small dots on the top right
2. Select "Export" option from the list displayed
3. From popup window press "Export" to export the data
4. Press "Add to Dropbox" to export the data in to Dropbox
5. Other options like Mail, Bluetooth etc. can be used based on requirements.

Press to access options

Select Export

Press Export

Press Add to Dropbox

During data export all the households data will be exported together by creating a single collect file.

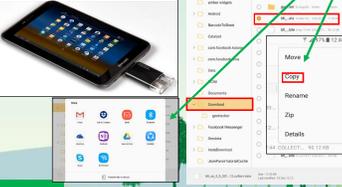
7. Data backup

Data back ups are taken after every day's data collection



- Access the options via the three small dots on the top right
- Select **Export** from menu list
- In the pop-up window, select the "Save to Android device Download directory"
- Press **Export** button to take a backup into the device
- The backup file will be exported to the "Download" folder of the internal storage of the device

- Plug a USB pen drive into the device
- Open "My Files" and go to "Internal storage" open "Download" folder
- File Path: My Files > Internal storage > Download
- The file has a .collect-data file extension
- To select the file press and hold the file
- To access options press the three small dots on the top right corner
- Select copy option from the menu list
- From the popup window select the external storage (pen drive, SD card etc.)
- Press paste



Files can be exported from this folder also

- To export after selecting a file click on "SHARE" button
- Select suitable option from the popup window and share the file

8. Other considerations

- **Ensure there are no red dots at the end of the household assessment**
- **Screen brightness**
 - *During full sunlight the screen can be difficult to see*
- **Battery life**
 - *Batteries will last one full-day use*
 - *Turn "flight mode" on to increase battery life*
 - *Must charge every night*
- **Back up**
 - *To be taken at the regional office*
- **Removing data from the device**
 - *Only to be done in coordination with the BF1 unit*
- **Protection**
 - *To be kept clean, dry and safe*





Chapter 11

Definition and concepts

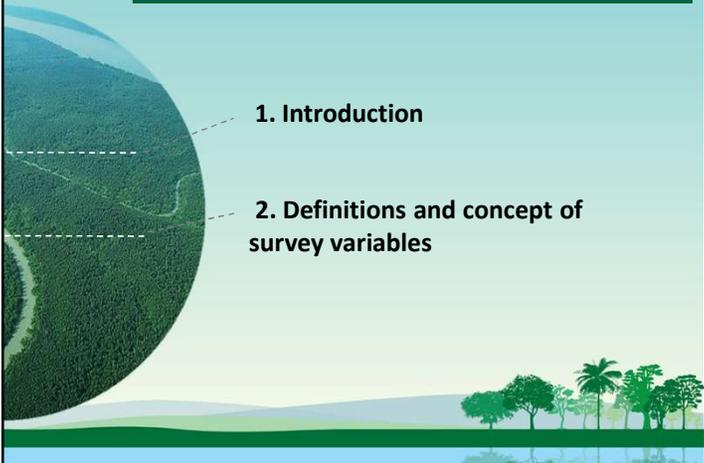




Food and Agriculture Organization of the United Nations

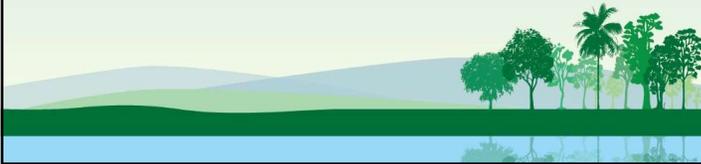
Content

1. Introduction
2. Definitions and concept of survey variables



1. Introduction

- Understanding the survey variables is important for quality data collection from the field
- It helps to avoid any confusions of the questions



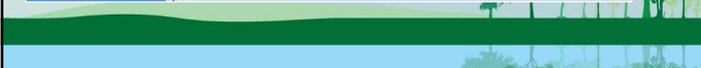
2. Definitions and concept of survey variables

Afforestation	Establishment of forest through planting and/or deliberate seeding on land that, until then, was not classified as forest
Agroforestry	A collective name for land use systems and technologies where woody perennials (trees, shrubs, palms, bamboos) are deliberately used on the same land management units as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence
Biological diversity	The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, among species and of ecosystem
Carbon sequestration	The removal and storage of carbon from the atmosphere in carbon sinks (such as oceans, forests or soils) through physical or biological processes, such as photosynthesis.
Cash products	Products intended for sale to generate cash income for the household
Communal land tenure	A right of commons may exist within a community where each member has a right to use independently the holdings of the community. For example, members of a community may have the right to graze cattle on a common pasture
Conflicts	Existence of conflicts (disagreement) between different users of the product and services
Contribution of forestry to Gross Domestic Product (GDP)	Gross value added from forestry
Crop production	Livelihood and income generation provided by cropping activities
Customary	The household is part of a collective, a group of co-owners, a community who own the land, hold exclusive rights and share duties
Customary or common rights	Rights to harvest/use the product/service based on tradition or habit. To satisfy local people's needs or a specific group. Might be regulated through permits and licenses
Deforestation	The conversion of forest to other land use or the permanent reduction of the tree canopy cover below the minimum 10 percent threshold



2. Definitions and concept of survey variables

Demand	Desire for certain good or service supported by the capacity to purchase it or The amount of particular economic good or service that a consumer or group of consumers will want to purchase at a given price.
Disturbance	Damaged caused by any factor (biotic or abiotic) that adversely affects the vigour and productivity of the forest and which is not a direct result of human activities
Disturbances by other abiotic agents	Disturbance caused by abiotic factors such as air pollution, snow, storms, draught etc
Disturbances by other biotic agents	Disturbance caused by biotic agents other than insects or diseases such as wildlife browsing, grazing, physical damage by animals etc.
Ecosystem services, cultural or spiritual values	Forest area designed or managed for selected ecosystem services or cultural or spiritual values
Ecotourism	Responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education
Employment in Forestry	Includes all persons in paid employment or self-employment. Paid employment refers to persons who during a specified reference period performed some work for wage or salary in cash or in kind. Self-employment refers to persons who during a specified reference period performed some work for profit or family gain in cash or in kind (employers, own account workers, members of producers' cooperatives, contributing family workers
Employment in forestry and logging	Employment in activities related to production of goods derived from forests.
End use	The ultimate specific use to which a manufactured product (such as paper) is put or restricted. It may be domestic, commercial or both
Fallow land	Idle crop land which is part of an agricultural (cropping or pastoral) rotation system, but which is temporarily not being cultivated. To qualify as fallow the rotation period should be below 15 years



2. Definitions and concept of survey variables

Family member	A family member is a person who makes up part of a family. A family member can be a head of household, spouse, unmarried sons and daughters, married sons who are direct dependents, parents, unmarried sisters, divorced or separated daughters or sisters. Servants, labourers and lodgers who have no other usual place of residence but live and eat together within the household with or without payments are not considered as family members.
Field team	The field team is in charge of the paper and tablet survey through questionnaire.
Fishing	Livelihood and income generation provided by fishing
Forest	Lands of more than 0.5 ha., with a tree canopy cover of more 10 percent, where the trees should be able to reach a minimum height of 5 m in situ, and which are not primarily under agricultural or urban land use
Forest degradation	The reduction of the capacity of a forest to provide goods and services
Forest ownership	Generally, refers to the legal right to freely and exclusively use, control, transfer or otherwise benefit from a forest. Ownership can be acquired through transfer such as sales, donations and inheritance
Forest products	Goods collected or harvested from forests including old growth natural forest, secondary and regenerating natural forest, plantation forest and include timber and a wide range of NTFPs, including tree-based (e.g. some fruits), various plants (tubers), and fauna (bush pig). Also include tree-based products from non-market systems including trees on farms, woodlots and agroforestry
Forest revenue	All government revenue collected from the domestic production and trade of forest products and services. For this purpose revenue include: Goods, roundwood, sawnwood, biomass, wood based products, pulp an paper and non-wood forest products
Forestry	Livelihood and income generation provided by the forest and related activities, including processing and marketing of forest products
Gathering	Livelihood and income generation provided by collecting fruits, plants, nuts, fibre from a wild area



2. Definitions and concept of survey variables

Handicraft	Livelihood and income generation provided by handicraft
Head of Household	Head of the household means a member of the household who is the decision-maker regarding the different activities of the household. This household is also being run under his/her command. Generally, the eldest male or female earner of the household or the main decision-maker is considered to be the head of household
Homestead area	This includes land under household residence with all its structures, entrance and exit passage. The land adjacent to residence and used for temporary or perennial crops, ponds and tanks and compact plantation is excluded from homestead area
Household	A household means a group of persons normally living together and with common arrangement of cooking) with their dependents, relatives, servants, and other members. A household may be a one-person household or may have more persons.
Hunting	Livelihood and income generation provided by hunting
Income	The return to the labour and capital owned, used in production and other value Added activities (self-employment or business), for own use or sold in a market (e.g. wage labour). Transfers are also included in the income definition, e.g in the form of remittances or pensions, as well as resource rent, e.g. from oil, minerals or payments for environmental services
Individual ownership	Land owned by the household
Industrial roundwood removals	The wood removed (volume of roundwood over bark) for production of goods and services other than energy production (woodfuel)
Industry	Work in the industrial sector
Informal rules	The usually unwritten social norms, customs or traditions that shape thought and behaviour
Institution	The set of rules actually used by individuals or a set of individuals and potentially affecting others

2. Definitions and concept of survey variables

Land, cultivable	Land under temporary agricultural crop such as paddy, jute, robi crop, Kharif crop, etc is termed as cultivable land. It also includes fallow land
Land, Lease in	Land taken from other household or institution for the purpose of habitation, farming fishery etc. in lieu of fixed rent or on share cropping basis or on mortgage or in any other term is considered as land leased-in
Legislation awareness	Awareness of the legislation regarding product and service related to the harvester/user.
Legislation compliance	Compliance to legislation for the product/service (any user).
Livestock / Herding	Livelihood and income generation provided by livestock, pasture, herding
Mahalla	Mahalla is the smallest informal unit in the urban area and its equivalent unit in the rural area is a village. Each Mahalla is a part of ward, which is a part of a Paurashava or City Corporation in the urban area
Management rights by communities	Forest management rights and responsibilities are transferred from the public administration to local communities (including indigenous a tribal communities) through long-term leases or management practices
Management rights by individuals/households	Forest management rights and responsibilities are transferred from the public administration to individuals or households through long-term leases or management agreements.
Management rights by private companies	Forest management rights and responsibilities are transferred from the public administration to corporation, other business entities, private co-operative, private non-profit institutions and associations, etc. through long-term leases or management agreements.
Management rights by public administration	The public administration (or institutions or corporations owned by the public administration) retains management rights and responsibilities within the limits specified by legislation
Mauza	Mauza is the smallest revenue collection unit in the country. Each Mauza has distinct demarcated map called Cadastral Survey (CS map) and Jurisdiction list Number (JL No). A Mauza may consist of one or more villages. It is a popular unit in the village and is called revenue village

2. Definitions and concept of survey variables

Multiple use	Forest area designated primarily for more than one purpose and where none of these alone is considered as the predominate designated function
Natural forest (or old growth natural forest)	Forest that consists of indigenous (native) tree species. It is managed only to a very limited degree, i.e. practising "tolerant forest management in which the native vegetation is largely conserved or reconstructed through successional processes"
Non-forest tree-based cultivated system	Areas that do not classify as forest or agriculture but are characterized by planted/cultivated perennial wood vegetation, e.g. woodlots, trees on farms, agroforestry
Non-wood forest product (NWFP)	Goods derived from forest that are tangible and physical objects of biological origin other than wood (generally includes non-wood plant and animal products collected from areas defined as forests or plantation). Generally, excludes products collected in tree stand in agricultural production systems such as fruit tree plantation, oil palm plantation and agroforestry system when crops are grown under tree cover. Specifically excludes woody raw materials and products such as chips, charcoal, fuelwood and wood used for tools, households equipment and carvings, grazing in the forests
Occupation	Occupation is generally the acceptable means of income to fulfil the financial requirement. It can be defined as a means associated with the activities from which the individual earns livelihood. Occupation may be a major or a minor, according to the greater or smaller share in income
Open access	Specific rights are not assigned to anyone and no-one can be excluded. This typically includes marine tenure where access to the high seas is generally open to anyone; it may include rangeland, forests, etc., where there may be free access to the resources for all. (An important difference between open access and communal system is that under a communal system of non-members of the community are excluded from using the common areas
Others private ownership	When the household has an agreement with the owner to use the land
Owned land	Owned land means the land owned by holder including members of his/her family having a title to the land with right to determine nature and extent of its use and to transfer the same
Ownership	Legal title that couple with exclusive legal right to possession
Payment for environmental services	A voluntary transaction for all a well-defined ecological service, with a least one buyer, at least one provider, and based on the condition that the buyers only pay if the providers

2. Definitions and concept of survey variables

Plantation forest	Forest stands established by planting or/and seeding in the process of afforestation or reforestation. They are either of introduced species (all planted stand), or intensively managed stands of indigenous species which meet all the following criteria: one or maximum two species when established, even age class, regular spacing
Private land tenure	The assignment of rights to a private party who may be an individual, a married couple, a group of people or a corporate body such as a commercial entity or non-profit organization. For example, within a community, individual families may have exclusive rights to residential parcels, agricultural parcels and certain trees. Other members of the community can be excluded from using these resources without the consent of those who hold the rights
Private Ownership	Forest owned by individuals, families, communities, private co-operative, corporation and other business entities, private religious and educational institutions, pension and investment funds, NGOs, nature conservation associations and other private institutions
Private Ownership by local, tribal and indigenous communities	Forest owned by a group of individuals belonging to the same community residing within or in the vicinity of a forest area or forest owned by communities of indigenous or tribal people. The community members are co-owners that share exclusive rights and duties, and benefits contribute to the community development
Protected areas	Areas especially dedicated to the protection and maintenance of biological diversity and of natural and associated cultural resources and managed through legal or other effective means

2. Definitions and concept of survey

Protection of soil and water	Forest are designed primarily for protection of soil and water. Harvesting of wood and non-wood forest products may (sometimes) be allowed, but with specific restrictions aimed at maintaining the tree cover an dnot damaging the vegetation that protects the soil.
Public ownership	Forest owned by the State or administrative units of the Public Administration or by institutions or corporations owned by the public administration
Public recreation	Forest area designed or managed for public recreation
Reforestation	Re-establishment of forest through planting and/or deliberate seeding on land classified as forest
Rent	The household rents the land (lease)
Rural area	The area outside those of City Corporations, Paurashava and Upazila Headquarters in the country constituted the rural area
Services	Income generated from services (doctor, lawyer, teacher...)
Shrub	Woody perennial plant, generally more than 0.5 meters and less than 5 meters in height at maturity and without a definite crown
Subsistence products	Products intended to meet the basic consumption needs of the household
Supply	The total amount of a good or service available for purchase; along with demand, one of the two key determinants of price

2. Definitions and concept of survey variables

Tourism	Income generated from tourism or activities related to recreation.
Trade	Livelihood and income generation provided by trade in goods or services
Tree	A woody perennial with a single main stem, or in the case of coppice with several stems, having a more or less definite crown
Urban area	There are three components of the urban area. The area within the jurisdiction of City Corporation, Paurashava and Upazila Headquarters are treated as urban area
User rights	Right to harvest/use of the products and services or the permission that are granted to a user
Value of NWFP removals	Value is defined as the market value at the site of collection or forest border.
Ward	Ward is part of a Paurashava or City Corporation. A ward is an urban unit and its equivalent unit in the rural area is a union
Wood fuel removals	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use. It includes all wood collected or removed for energy purposes, includes removals of fuelwood for household use




Chapter 12

Socio-economic QA/QC procedures



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United Nations

Contents

1. Introduction and Definition of QC
2. Criteria for Data Quality and organizational structure.
3. QA/QC Oorganizational Structure
4. BFI QA/QC procedures (Quality Control-planning, before, during and after field work)
5. Improvement plan
6. Final Thoughts

1. Introduction and Definition of QC

Quality Control (QC) is a system of routine technical activities, to measure and control the quality of the inventory as it is being developed. The QC system is designed to:

- Provide routine and consistent checks to ensure data integrity, correctness, and completeness;
- Identify and address errors and omissions;
- Document and archive inventory material and record all QC activities.

From the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories

2. Criteria for Data Quality

1. **Precision**—the ability of a method to reproduce the same value
2. **Accuracy**—the ability of a method to yield the “true” value
3. **Completeness**—the amount of valid, usable data produced by a method
4. **Comparability**—the ability to combine data collected in different locations, and by different data collectors

2. Criteria for Data Quality

Quality assurance and quality control (QA/QC) are fundamental for the Bangladesh Forest Inventory (BFI) to reach its objectives.

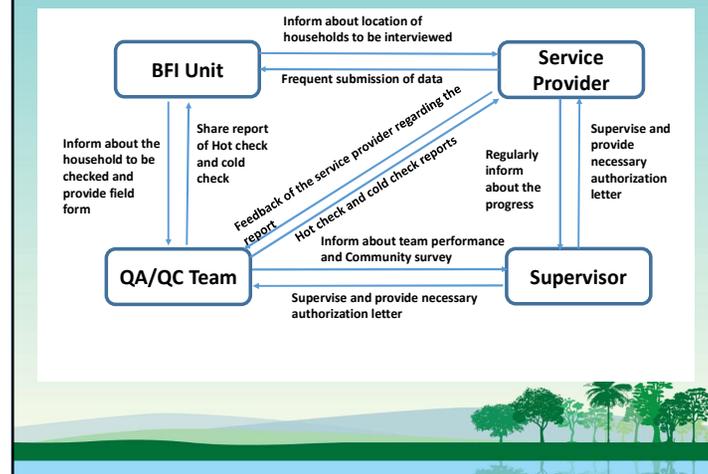
Optimal situation



Failure



3. Monitoring process



4. BFI QA/QC procedures

QA Phases in the BFI:

1. Inventory planning phase
2. Before field work (pre-field)
3. During field work (including hot checks & cold checks)
4. After field work (post-field)



4.1 Quality Control: Inventory planning phase

1. Development of a field manual
2. Establishment of Measurement Quality Objectives (MQOs)
3. Designation of QA/QC specialists
4. Training of field crews



4.1 Quality Control: Inventory planning phase

Database validation rules

While designing the database a set of validation rules can be defined to check for correctness, consistency and accuracy of the data collected. Validation rules for the BFI includes:



- Data type validation
- Errors checks and constraint validation
- Cross checks



4.2 Quality Control: before field work

Each variable has a Measurement Quality Objectives (MQOs) composed by 2 parts: (1) a **tolerance**, and (2) a **compliance standard**.

- (1) **Tolerance** is the maximum measurement error accepted, expressed in percentage on the real value, and
- (2) **Compliance standard** is the maximum number of errors accepted, expressed in percentage on the number of measured individuals.



Examples:

For variable "income" :

Tolerance = .2 Tolerance = $\pm 20\%$

Compliance standard = at least 80% of measurements



4.3 Quality Control : during field work

Hot checks

- *Objective:* To assess the precision of data collection of a Field crew, and provide immediate feedback that will improve the precision of future data collection.
- *A QA/QC team accompanies a field team to a household (HH). The QA/QC team observes how the regular team works paying attention to data collection techniques, communication, and efficiencies.*

Cold checks

- *Objective:* To assess the precision of the collected data of a field crew by re-survey a household (HH) after 1-2 weeks.
- *A QA/QC team re-survey a HH which has previously been surveyed by a field crew, compare the results and produce a scoring report*



Hot checks



Hot Checks are a great opportunity to:

- Offer comments and answer questions on an item by item basis
- Point out techniques to be used when conventional methodology does not work
- Relate past experiences that have helped in future decision making
- Point out good work as well as areas for improvement



Cold checks



- At the time of inspection, the QA/QC team has the completed data in hand so direct comparisons can be made in the field.
- Implemented such that the crews do not know when or if a given HH will be checked
 - With this, the field crew cannot alter their performance because of knowledge that the HH is a QC HH.



The QA/QC team will check the random variables of the socioeconomic survey questionnaire



4.3 Quality Control : during field work



At least 2% of the plots are cold checked.



At least 3% of the plots are hot checked.



4.3 Quality Control : during field work



QA/QC member during the HH data collection

Check for errors in the field, during data collection

- *Objective:* To avoid unexpected, invalid, and missing values
- Use of checklist: socioeconomic random variables such as tree and forest income, tree and forest products, fuelwood consumption
- Check the tablet: QA/QC members check the collected HH data in the tablet

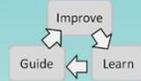


4.4 Quality Control : after field work

- a) Check for errors in the office
 - For example, check for unexpected values
 - This is typically done by a central QC specialist and/or database specialist (with forestry expertise).
- b) Transfer of all data, either before or after error-checking, to a central database.



5. Improvement plan



Objective: Identification of the necessary actions to improve the next national forest inventory cycle

Definition: To improve the quality of next inventory necessary actions needs to be inventories.

The improvement plan will be developed by the BFI unit.

The improvements areas will mainly center around three issues:

- (1) identifying source of errors,
- (2) coordination between institutions especially for data collection,
- (3) building capacity.



5.1 Improvement of the Data Quality

- Data collected provides feedback for realistic MQOs
- Revise methods to reduce errors
- Improve training
- Aid in interpretation of results



6. Final Thoughts

The QA crew should take care in evaluating errors.

- Differences in HH data are only considered "errors" when they are greater than the tolerance set for the variable in question.

A minimum number of Hot and Cold checks should be done on every member.

Take care on your Hot and Cold Check checklist pointing out what the field crew should work on as well as pointing out positive aspects of their work



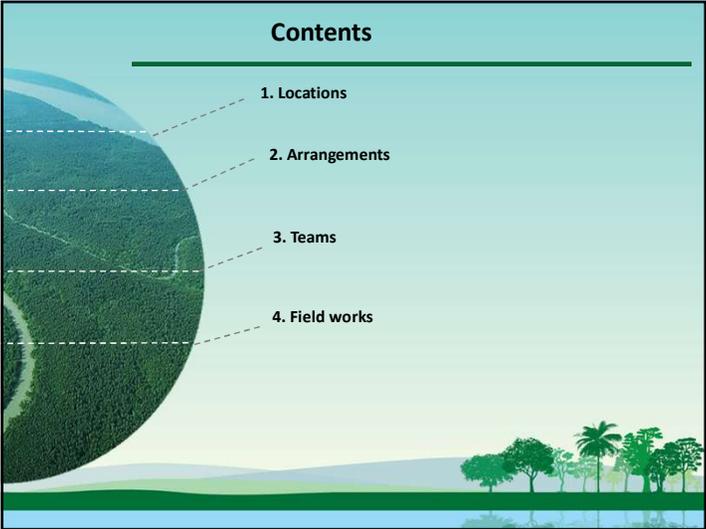
Chapter 13

Socio-economic survey field test



Contents

- 1. Locations
- 2. Arrangements
- 3. Teams
- 4. Field works



1. Locations

- Sal zone
- Mirzapur union of Gazipur Sadar upazila of Gazipur District



2. Arrangements

- Clearance from Forest Department
- Contact with local forest official
- Hiring four vehicles
- Contact with local people
- Start at 7.30 AM from Forest Department, Agargaon, Dhaka

3. Teams

- Total participants-40
- Four enumerator teams formed-each of six members
- Four QA/QC team formed-each of three members

4. Field works

- ✓ Use of GPS
 - Entering coordinates
 - Marking a waypoint
 - Navigation
- ✓ Map reading



4. Field works

- Households interview
 - Using tablets
 - Using paper form
 - Using land cover class



Chapter 14
Lessons learned from field testing of questionnaires

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Contents

1. Background
2. Lessons learned
3. Challenges and possible solutions
4. Feedback session

1. Background

- Socio-economic survey questionnaires were field tested two times
- First in Coxes Bazar district
 - Pokkhali union of Cox's Bazar Sadar upazila
 - Dahksin Mitachari union of Ramu upazila, Cox's Bazar
- Second in Koyra upazila of Khulna district
 - Maheswaripur union
 - Bagali union

2. Lessons learned

- Talking with the union parisad chairman and members as well as the Bangladesh Forest Department officials made conducting the survey easier
- It took enough time to get respondent answers at the first time

The enumerators should

- Take some time before starting the survey to introduce themselves to the respondents and also ask about them, and their families and wellbeing
- Then explain the purpose of the survey
- To ask the questions as per questionnaire and response the interviewee queries politely
- Both male and female respondents are equally participated during the interview

2. Lessons learned

- Most HHs and community members were not familiar with the standard terms on trees and forests used in socio-economic survey questionnaires
 - It was necessary to interpret the questions in the local languages in locally understood terms
- When the same HH survey respondents also participated in the community surveys there were higher risks of getting biased answers
- The participation of the female members both in HH and community surveys helped get more comprehensive answers



3. Challenges and possible solutions

- Challenge**
- During the survey, member of village police, UP members, and local elders tried to influence or give answers on behalf of the respondents
- Possible solution**
- Politely ask other people to not to give answers on behalf of the respondents

- Challenge**
- Presence of more people during the interview may create the risks of having biased responses

- Possible solution**
- Enumerators should:
 - Encourage the respondents to give the answers by themselves or request to sit another place



3. Challenges and possible solutions

- Challenge**
- The respondents felt discouraged or frightened to provide accurate information in the presence of

- Police, and
- Forest Department people

Possible solution



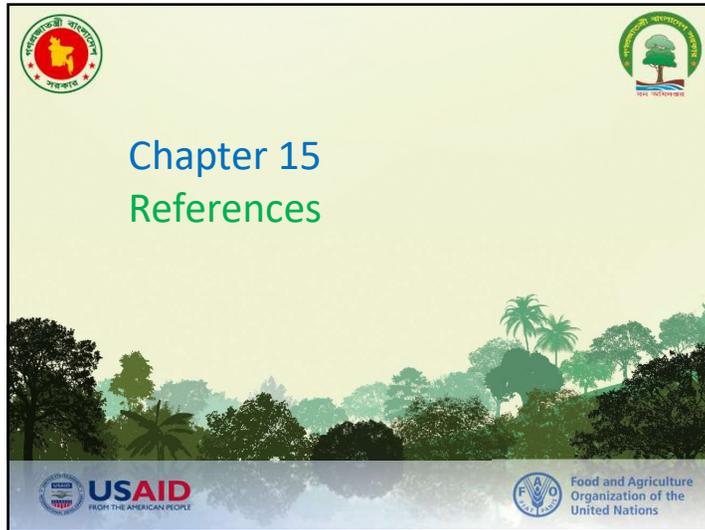
To avoid presence of police while interviewing



4. Feedback

- Participants learned use of GPS and tablets for household data collection
- Latest Bengali version of land cover class is required
- To make some changes of the OpenForis data for smooth operation of tablets
- Issue letter from Forest Department for field data collection
- To provide additional GPS to the survey enumerators



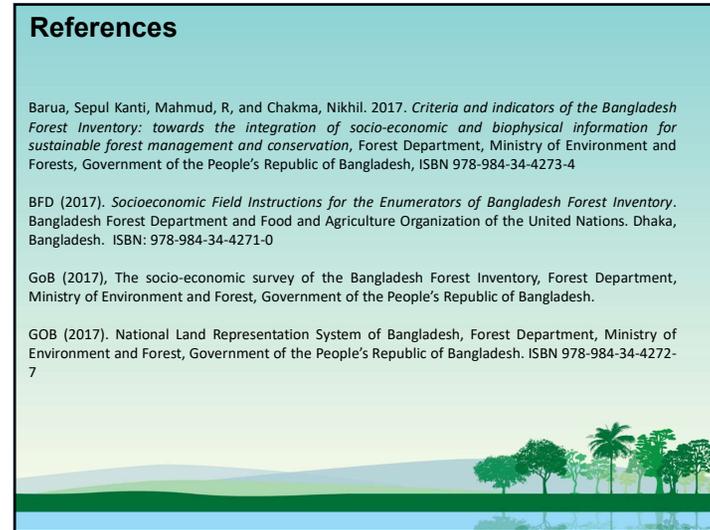


Chapter 15
References

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References

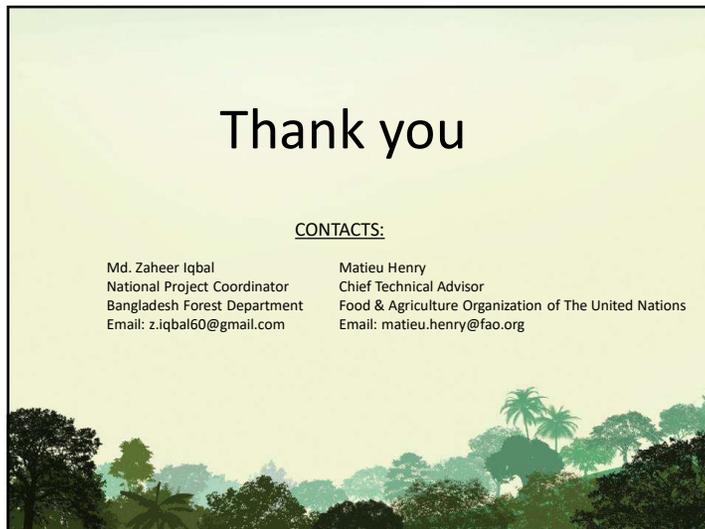
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Thank you

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