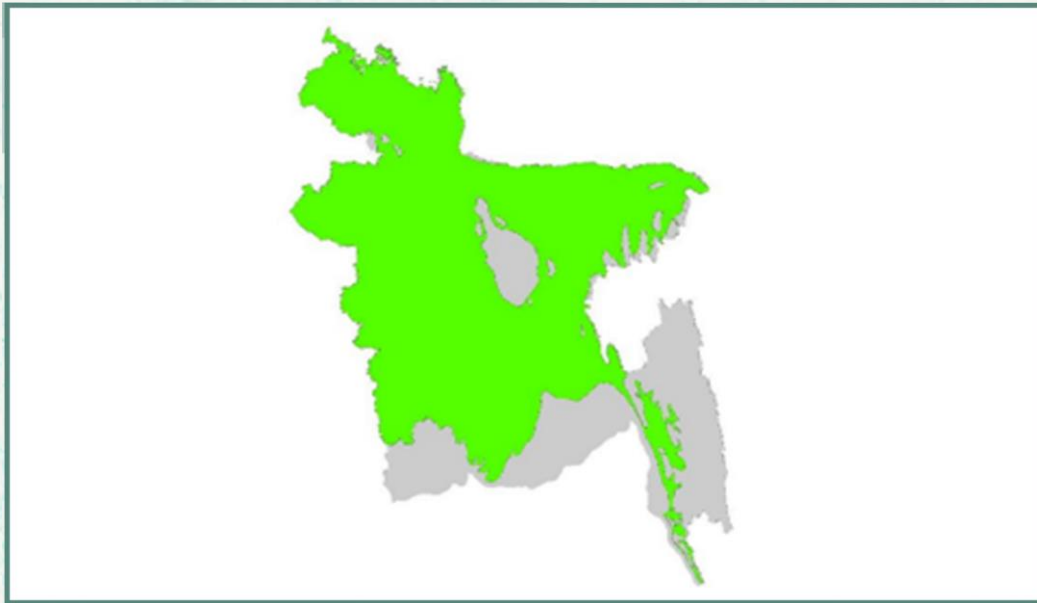




# Socioeconomic survey design of the Bangladesh Forest Inventory



**Bangladesh Forest Department**  
**January 2017**



The Forest Department of Bangladesh leads actions to improve forest management and conservation, adopting forward thinking, innovative approaches in its management of approximately 1.55 million hectares of land across the country.

In 2015, the Forest Department began a process to establish a National Forest Inventory and Satellite Land Monitoring System for improved forest and natural resource management. The process supports national objectives related to climate change mitigation and provides information in support of the UN-REDD programme aimed at Reducing Emissions from Deforestation and Forest Degradation (REDD+). The process also addresses domestic information needs and supports national policy processes related to forests and the multitude of interconnected human and environmental systems that forests support.

The activities implemented under the Bangladesh Forest Inventory process are collaboration between several national and international institutions and stakeholders. National partners from multiple government departments and agencies assist in providing a nationally coordinated approach to land management. International partners, including the United States Agency for International Development (USAID) and the Food and Agriculture Organization of the United Nations (FAO) are supporting the development of technical and financial resources that will assist in institutionalizing the process.

The results will allow the Forest Department to provide regular, updated information about the status of trees and forests for a multitude of purposes including for assessment of role of trees for firewood, medicines, timber, and climate change mitigation.

**CONTACTS:**

**Md. Zaheer Iqbal**

National Project Coordinator  
Bangladesh Forest Department  
Email: [z.iqbal60@gmail.com](mailto:z.iqbal60@gmail.com)

**Matieu Henry**

Chief Technical Advisor  
Food & Agriculture Organization of The United Nations  
Email: [matieu.henry@fao.org](mailto:matieu.henry@fao.org)

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**Disclaimer**

This report is designed to reflect the activities and progress related to the project GCP/GD/058/USAID “Strengthening National Forest Inventory and Satellite Forest Monitoring System in support of REDD+ in Bangladesh”. This report is not authoritative information sources – it does not reflect the official position of the supporting international agencies including USAID or FAO and should not be used for official purposes. Should readers find any errors in the document or would like to provide comments for improving its quality they are encouraged to contact one of above contacts.

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## SECTION 1: BACKGROUND

### 1.1 INTRODUCTION

Forests in tropical countries are facing multifold problems. Not only the forest cover is dropping down, quality loss, environmental degradation, biodiversity loss, loss of cultural assets and knowledge, loss of livelihoods are some common problems the tropical forests across the world are facing these days. As results, the climate change is taking heavy tolls on developing and tropical nations. Bangladesh is probably at the top of the list of these tropical countries with quite a low percentage of forest cover. At this situation, it has been a common concern across all the nations of the earth that a clear framework for Sustainable Forest Management (SFM) is something we must put on our agenda for survival. At the international political level, the public concern has been translated into a need for monitoring and reporting on the shifts in forestlands and the quality of the forests. The issue of SFM is built on defining hierarchic levels for the quality of trees and forests in a country. The hierarchic keys are likely to help develop a system of monitoring the quality and quantity of forest resources measured on a number of indicators and attributes.

Bangladesh is in its process of inventorying its forest resources. The National Forest Inventory (NFI) is likely to focus on the principles, criteria, indicators, and variables of the SFM so that efforts can be made to monitor the status of forest health over time from a SFM view. Along with the inventory of its forest resources, the underlying factors (both drivers and agents) affecting the status of forest resources are also to be listed and estimated. With this view, the NFI has made it integral to conduct a countrywide socioeconomic study. This document is aimed at identifying the potential principles, criteria, indicators, and variables of the SFM, which the socioeconomic study will be based on. The identification of the criteria, indicators, and verifiers of the SFM will be followed by the development of the detailed sampling framework of the socioeconomic study.

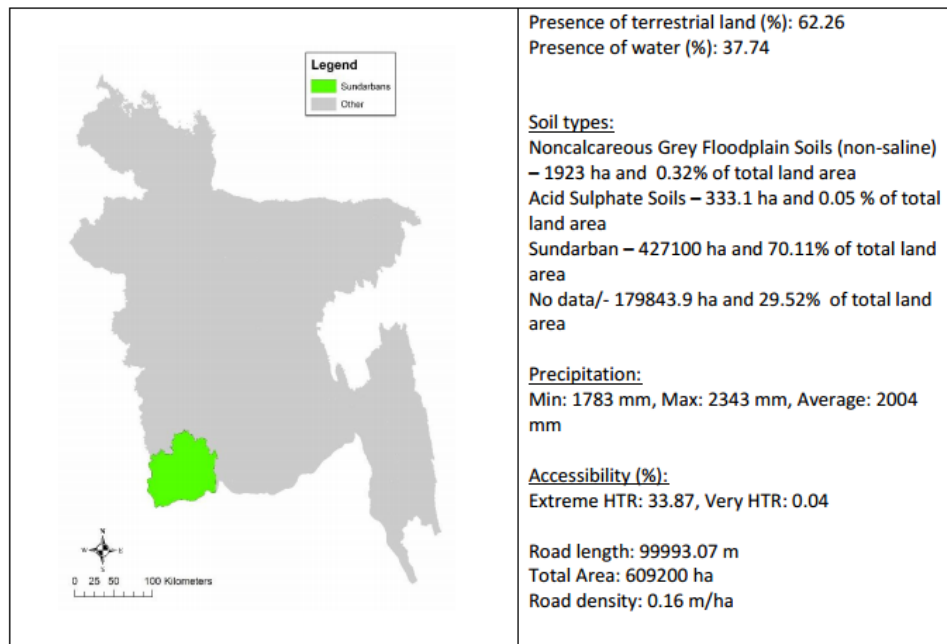
The sampling framework is expected to be specific to a number of attributes including forest region, administrative region, forest division, demography, and ethnicity. The ‘Population and Household Census - 2011’ dataset has been consulted to identify the sample size at household level. The study designed to be conducted across the nation. Thus, the socioeconomic survey will be conducted at all the upazilas in the country. Multistage random sampling has been planned for identifying unions (or wards), villages (or Moahllas), and finally households to be interviewed.

In the third and final step, we will develop a questionnaire to be tested in the field. Each of the questions (focused on specific variables) is likely to link the sustainable forest criteria via the underlying indicators. The variables will be selected in such a way that each of the objectives of the socioeconomic study can sufficiently be met. Variables with seemingly having strong correlations would not be repeated in the questionnaire. However, the study is expected to be completed with the testing of the questionnaire at the field and incorporating all the suggestions and comments obtained from the field in the final version of the questions.

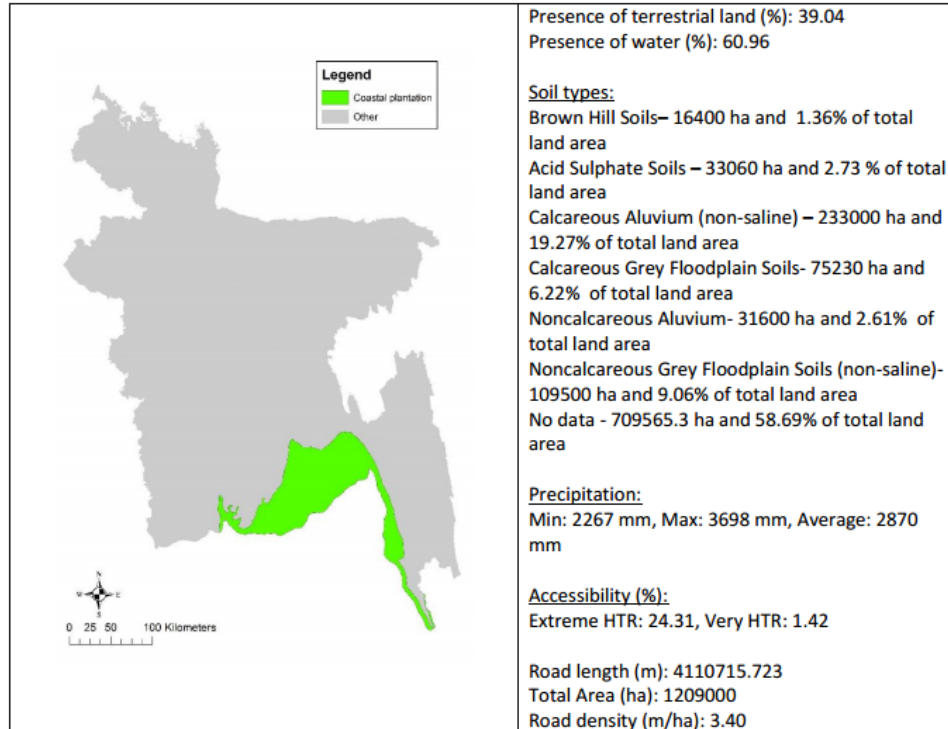
## 1.2 THE ZONATION OF THE BANGLADESH TREE AND FOREST AREAS

To conduct national forest inventory, FAO has identified five land zones in the country based on a number of biophysical criteria. Brief descriptions on identified land zones (Akhter et al. 2016) are given below:

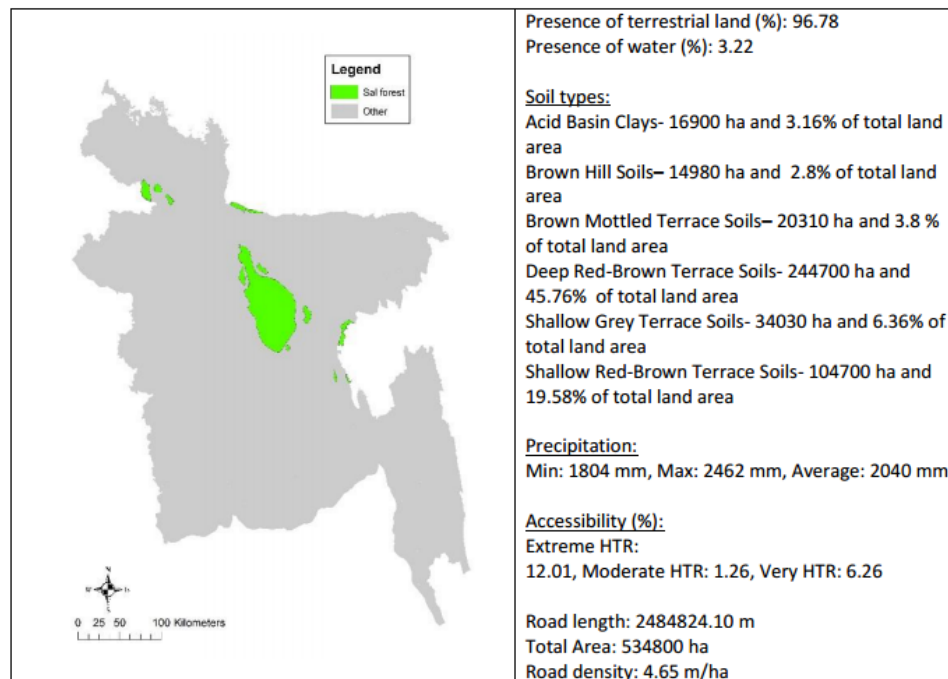
### A. Sundarbans Zone



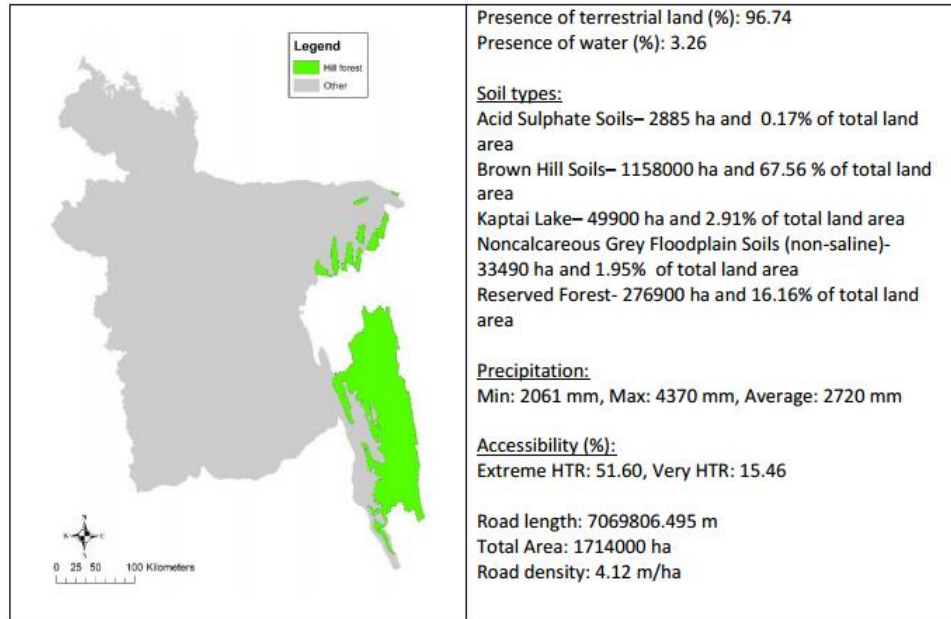
### B. Coastal Zone



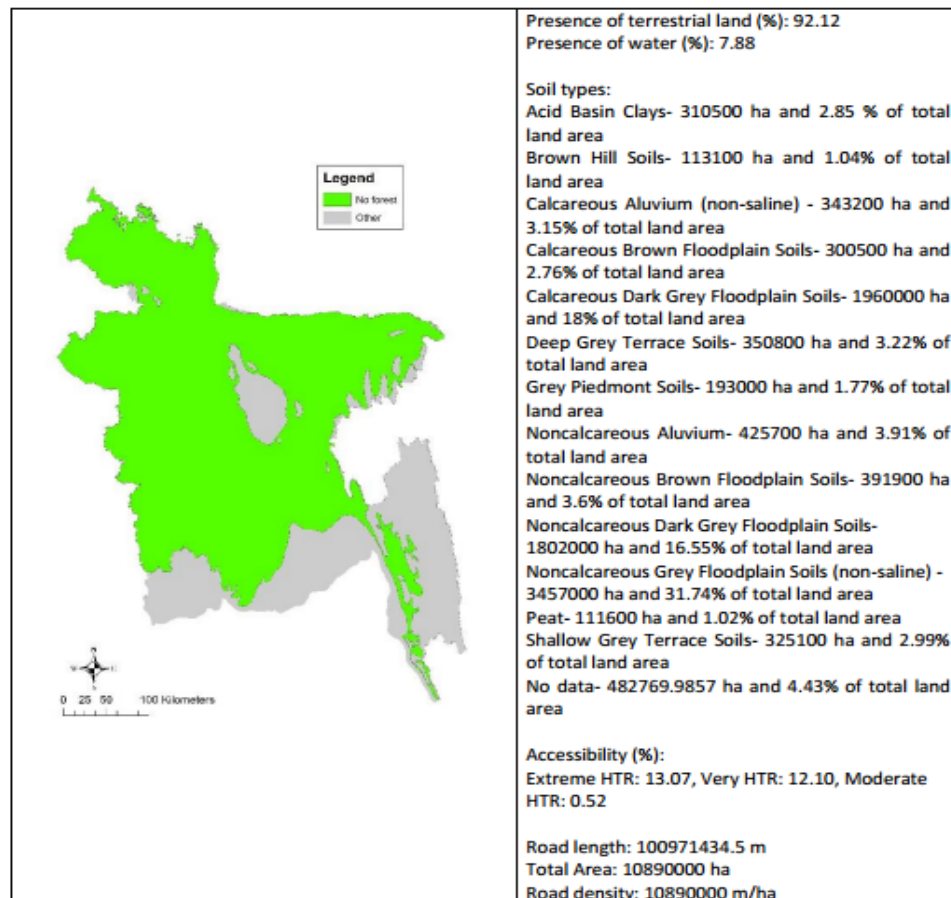
### C. Sal Zone



### D. Hill Zone



### E. Village Zone





### **1.3 OBJECTIVES OF THE STUDY**

- To identify Principle, Criteria, Indicators and Variables of sustainable forest management
- To develop sampling design for socioeconomic monitoring of the Bangladesh Forest Inventory
- To test of survey design (pilot) in every zone to capture zone specific issues for better forest management
- To provide technical modalities for implementation of socioeconomic survey

## SECTION-2: SURVEY DESIGN

### 2.1 DOMAIN OF THE SAMPLING FRAMEWORK

To keep the pace with the system of the Bangladesh Bureau of Statistics (BBS), the ‘Population and Household Census’ dataset has been used to design this study. Given the structure of this dataset, the sampling mechanism has been suggested for all the five zones of the country.

1. Hill Zone
2. Sal Zone
3. Coastal Zone
4. Sundarbans Zone, and
5. The village zone.

Thus, the sampling domain has been identified as the zones of Bangladesh as identified by FAO. That is, the socioeconomic information thus available through this sampling design would be zone-specific. The distribution of the unions and biophysical resources across the zones is given in Table 2.1.

Table 2.1. Biophysical information of the five land zones of Bangladesh

Land Zones	Total Area (ha)	Total Union	Tree Cover (ha)	Households (No.)	Tree Cover (% area)	Road density (m/ha)	Household density (No./ha)	Water cover (% area)
Coastal Zone	854955	249	76129	7214	0.09	5.22	0.01	22.4
Hill Zone	1784919	290	911672	864462	0.51	4.84	0.48	1.80
Sal Zone	530649	395	113171	3586947	0.21	4.82	6.76	4.23
Sundarbans Zone	601285	5	379815	4375	0.63	0.13	0.01	27.53
Village Zone	10827166	6978	1090668	24345009	0.10	9.21	2.25	6.00
Total	14598973	7917	2571455	30051462	--	--	--	-

### 2.2 SCOPE OF ADMINISTRATIVE ZONES AS DOMAINS

Since the survey design has been prepared segregating the country into specific and distinct zones, the outcomes so obtained would represent the country as a whole. Yet, the survey outcomes can be restructured through a post-stratification exercise to retrieve socioeconomic information for a certain administrative unit, District for example. However, the zone-specific results would be more efficient compared to administrative unit-specific results on a number of grounds: (1) The zones are quite distinctive from the view point of biophysical structures of the zones and socioeconomic & ethnic make of the communities living in those zones, (2) It is quite common that, a certain district or division has been splitted into two or more zones, or a single zone has been extended

into a couple of districts or divisions. So, administrative unit-wise information on biophysical and socioeconomic conditions might create confusion for that administrative zone, (3) finally, as seen from the previous instances that, bigger divisions/districts are getting smaller through their splitting into smaller divisions/districts. Thus, administrative unit-level information faces serious reliability problem. For example, suppose Division D has H hectares of forestland. If this division is splitted (someday) into two equal divisions E and F, it is unacceptable to conclude that each of the divisions E and F has 0.5H hectares of forestland since the type and distribution of forest resources are very heterogeneous.

## 2.3 STRATIFICATION

### 2.3.1 UNION LEVEL BIOPHYSICAL ATTRIBUTES FOR STRATIFICATION

We assume that, the choice of a household for potential socioeconomic interview is dependent on four factors. These are household density, road density, percentage tree cover, and the percentage coverage of water surface. We have adopted the land zoning as identified by FAO. According to this zonation, we have considered five zones across the country: Coastal Zone, Hill Zone, Sundarbans Zone, Coastal Zone, and Village zone.

The definitions of these attributes are as follows:

- (1) **Percentage tree cover:** The tree cover density of the zone that the house is belonged to. Tree cover has been defined as the percentage of land area in a given region that has forest and tree resources (% land of a union that is covered by forest and trees).
- (2) **Road density:** Our understanding is that, a region's socioeconomic status is predominantly determined by its communication network. Thus, we have considered road density of the specific region to select the households for interview. Road density is the length of road per ha of total land area (meter per ha).
- (3) **Household density:** This is the number of households per ha in a specific zone (No. of household per ha).
- (4) **Percentage water cover:** It has been defined as the percentage of land surface that is under water.

### 2.3.2 SPLITTING COUNTRY-LEVEL DATA INTO FIVE ZONES

The entire dataset was initially splitted into five parts – each for each of the five zones as stated earlier. Since the Sundarbans zone was quite small with only 5 unions in it, we dropped this zone from the primary stratification. The remaining four zones – Coastal, Hill, Sal, and Village – were brought under splitting into homogeneous strata.

### 2.3.3 SPLITTING ZONE-LEVEL BIOPHYSICAL ATTRIBUTES

Each zone-level data was first splitted into two sub-strata by road density. For this, we identified the quartiles of the road density using the *quantile* function of the statistical package R-3.3.2. The first two quartiles fell under first sub-strata, and the last two fell under the second sub-strata. Thus, for the ‘road density’, the total sub-strata were  $4*2=8$ . We named them C\_R1, C\_R2, H\_R1, H\_R2, S\_R1, S\_R2, V\_R1, and V\_R2.

Each of the eight sub-strata was further splitted into quartiles by their household density. As explained above, the first two quartiles formed the first sub-strata and the last two quartiles formed the second sub-strata. The same patterns of naming of the sub-strata were followed. For, example, C\_R1 was splitted into C\_RH1, and C\_RH2. Thus, at the second level of stratification, total strata became  $4*2*2 = 16$ . Following the same procedure - splitting by quartiles- each of the sub-strata thus obtained was stratified by tree density and thereafter by water surface density. Thus, total strata became  $4*2*2*2*2 = 64$ .

Since the Sundarbans (Sundarbans) is one of the most important, unique, and more important, the largest forest tract in the country, we assumed that the five unions under Sundarbans zone formed single strata. Thus, we estimated a total of  $(64+1)$  or 65 unique strata across the country. However, each of the 65 strata was given a unique name. For example, the final strata C\_RHTW5 indicates: this is the 5<sup>th</sup> strata of the Coastal Zone which has been resulted from the sequential stratification of the Coastal zone by R (road density), H (household density), T (tree density), and W (water surface density), respectively. The stratification has been explained by Figure 1.

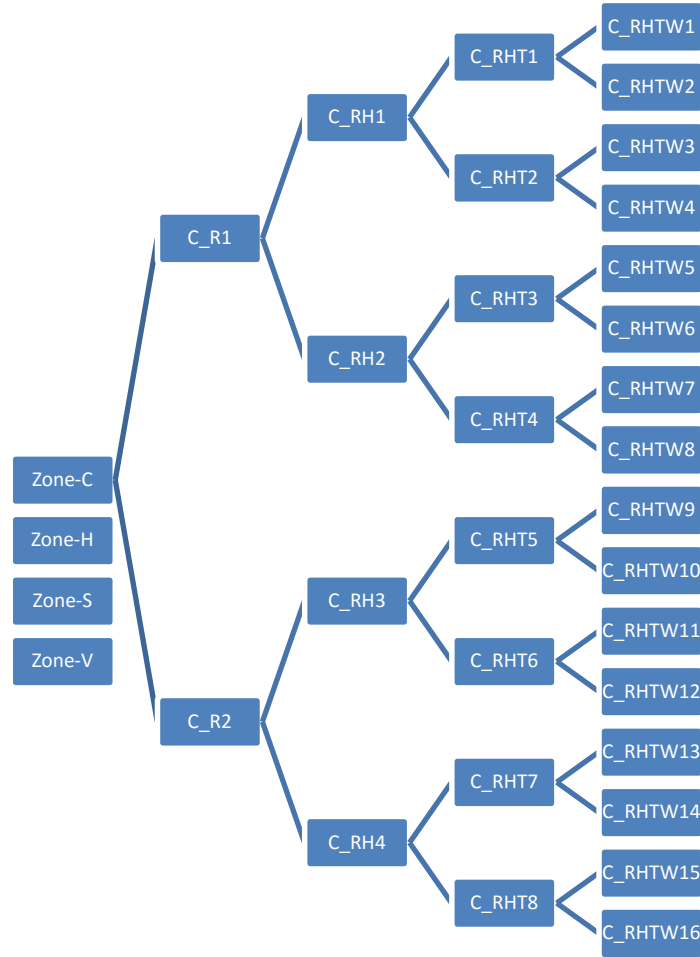


Figure 2.1. The stratification of the unions under each of the land zones based on four biophysical attributes (C\_ = Coastal, H = household density, R = road density, T = Tree coverage percentage, W = Parentage of land under water)

## 2.4 SAMPLE SIZE CALCULATION

Each of the final strata thus obtained was assumed to be homogeneous. Thus, in each stratum, the household could be selected randomly for socioeconomic evaluation. The number of household to be surveyed from each of the unions under each strata can be determined using the following framework. Without considering the finiteness of the population, the sample size can be calculated using the following equation:

$$n_0 = \frac{Z^2 p(1-p)}{e^2} \quad (2.1)$$

To estimate this equation, we need to consider the following concepts:

### *Population Size (N)*

It is the total number of household in each of the final strata. The main design question here is: how many of the N households should be selected for socioeconomic interview?

### *Margin of Error*

We considered a plus minus 10 percent close estimation of any common socio-economic characteristics.

### *Confidence Interval*

We considered a 95% confidence level 5% standard error. Thus, we assumed  $e = 0.05$ , and  $z = 1.96$ .

By using equation (1), the resulted sample size was found to be 138. However, in our case, the population size (number of households) in each of the 64 strata was finite. Thus, we used equation (2) to calculate our strata-specific sample size.

$$n = \frac{n_0 N}{n_0 + (N-1)} \quad (2.2)$$

The population specific sample size varied between 137-138 households from each unique stratum. It came up with total households of 8970. We assumed the design factor to be 2. Hence the total households to be surveyed were roughly  $8970 * 2 \approx 17940$ .

Now we assume that, we will survey 30 households from each of the unions. So, the number of unions to be surveyed =  $17940/30 = 598 \approx 600$ . However, the number of the unions to be selected from each of the strata would not be necessarily equal; rather it will be proportional - based on the total number of the unions in each stratum. The distribution of the 579 unions across the strata can be done using equation (3).

$$SU_i = \frac{TU_s}{TU_c} * TU_i \quad (2.3)$$

Where,  
 $SU_i$  = Number of unions to be sampled under strata  $i$ ,  
 $TU_s$  = Total number of Unions to be sampled across the country,  
 $TU_c$  = Total number of unions across the country,  
 $TU_i$  = Total number of unions under strata  $i$ ,

The outcomes of the sampling assignment have been summarized in the following tables (Table 2.2 through Table 2.6). The specific Union name, Ward name, household numbers are available through the MS Excel files. The files are arranged sequentially by strata.

Table 2.2. Total Strata, Unions, and Households to be studied in Coastal Zone, Bangladesh

Strata No	Total Unions	Total Households	Sample Union*	Sample Households**
C_RHTW1	16	24969	1	275
C_RHTW2	15	27065	1	275
C_RHTW3	16	8397	1	272
C_RHTW4	15	29288	1	275
C_RHTW5	16	150361	1	276
C_RHTW6	15	105599	1	276
C_RHTW7	16	112659	1	276
C_RHTW8	15	99884	1	276
C_RHTW9	16	8546	1	272
C_RHTW10	16	11602	1	273
C_RHTW11	17	7800	1	272
C_RHTW12	14	8715	1	272
C_RHTW13	16	71991	1	276
C_RHTW14	15	100324	1	276
C_RHTW15	16	84949	1	276
C_RHTW16	15	97629	1	276
Total	249	949778	16	4394

Note:

In Strata column: C= Coastal Zone, RHTW indicates that, R = Road Density (m/ha), H = Household density (# households/ha), T = Tree density (% tree cover in 2014), and W = Water surface coverage (%)

\*Sample union =  $(597/7916) \times$  Total number or union in each strata

\*\*Estimated assuming P=10%, e=5%, CI=95%, z= 1.96

Table 2.3. Total Strata, Unions, and Households to be studied in Hill Zone, Bangladesh

Strata No	Total Unions	Total Households	Sample Union*	Sample Households**
H_RHTW1	25	38036	2	276
H_RHTW2	13	19007	1	275
H_RHTW3	23	38247	2	276
H_RHTW4	14	21132	1	275
H_RHTW5	19	84130	1	276
H_RHTW6	18	101746	1	276
H_RHTW7	22	77290	2	276
H_RHTW8	15	68546	1	276
H_RHTW9	17	13963	1	274
H_RHTW10	19	23564	1	275
H_RHTW11	18	18909	1	275
H_RHTW12	17	17920	1	274
H_RHTW13	18	81911	1	276
H_RHTW14	17	101084	1	276
H_RHTW15	17	70969	1	276
H_RHTW16	17	93932	1	276
Total	289	870386	19	4408

Note:

In Strata column: H= Hill Zone, RHTW indicates that, R = Road Density (m/ha), H = Household density (# households/ha), T = Tree density (% tree cover in 2014), and W = Water surface coverage (%)

\*Sample union =  $(597/7916) \times$  Total number or union in each strata

\*\*Estimated assuming P=10%, e=5%, CI=95%, z= 1.96



Table 2.4. Total Strata, Unions, and Households to be studied in Sal Zone, Bangladesh

Strata No	Total Unions	Total Households	Sample Union*	Sample Households**
S_RHTW1	25	82134	2	276
S_RHTW2	25	108422	2	276
S_RHTW3	25	97542	2	276
S_RHTW4	24	79324	2	276
S_RHTW5	26	359208	2	276
S_RHTW6	24	551085	2	277
S_RHTW7	25	476441	2	277
S_RHTW8	24	551598	2	277
S_RHTW9	25	40618	2	276
S_RHTW10	25	30592	2	275
S_RHTW11	25	47097	2	276
S_RHTW12	24	33406	2	275
S_RHTW13	25	315339	2	276
S_RHTW14	24	475173	2	277
S_RHTW15	25	223062	2	276
S_RHTW16	24	281542	2	276
Total	395	3752583	32	4418

Note:

In Strata column: S= Sal Zone, RHTW indicates that, R = Road Density (m/ha), H = Household density (# households/ha), T = Tree density (% tree cover in 2014), and W = Water surface coverage (%)

\*Sample union =  $(597/7916) \times$  Total number or union in each strata

\*\*Estimated assuming P=10%, e=5%, CI=95%, z= 1.96

Table 2.5. Total Strata, Unions, and Households to be studied in Village Zone, Bangladesh

Strata No	Total Unions	Total Households	Sample Union*	Sample Households**
V_RHTW1	439	774462	33	277
V_RHTW2	434	981850	33	277
V_RHTW3	437	620736	33	277
V_RHTW4	435	665379	33	277
V_RHTW5	436	2806058	33	277
V_RHTW6	436	2730909	33	277
V_RHTW7	440	2780577	33	277
V_RHTW8	432	2839820	33	277
V_RHTW9	437	236563	33	276
V_RHTW10	436	200302	33	276
V_RHTW11	436	265901	33	276
V_RHTW12	436	265967	33	276
V_RHTW13	436	2390961	33	277
V_RHTW14	436	2441079	33	277
V_RHTW15	436	2190527	33	277
V_RHTW16	436	2281047	33	277
Total	6978	24472138	528	4428

Note:

In Strata column: V= Village Zone, RHTW indicates that, R = Road Density (m/ha), H = Household density (# households/ha), T = Tree density (% tree cover in 2014), and W = Water surface coverage (%)

\*Sample union =  $(597/7916) \times$  Total number or union in each strata

\*\*Estimated assuming P=10%, e=5%, CI=95%, z= 1.96

Table 2.6. Total Strata, Unions, and Households to be studied in Sundarbans Zone, Bangladesh

Strata No	Total Unions	Total Households	Sample Union*	Sample Households**
M_RHTW1	5	6577	1	271

## 2.5 FINAL SELECTION OF UNIONS AND WARDS

We did not want the design to be biased by either unions (rural area) or wards (urban area). The data biophysical data has been analyzed based on the four attributes of the data. As executed, we have found the wards are Strataed together. However, since the unions or wards in each stratum are homogeneous in terms of the biophysical attributes, the selection of the union(s) or ward(s) from each stratum was done completely randomly except for the Sundarbans zone. We used R statistical package to generate random numbers to select the expected union(s) or ward(s) to be surveyed.

Suppose, a stratum  $i$  contains  $n$  number of unions/wards from  $I$  though  $n$  and the number of unions/wards to be surveyed from the stratum was determined as  $k$  using Equation 3. We used R to generate  $k$  random number within the range of  $[I, n]$ . From the list of the unions/wards in stratum  $i$ , we selected the unions/wards as indicated by the generated random numbers.

The final sets of Unions or Wards are given in the following Tables.

Table 2.7. List of Unions or Wards in Coastal Zone in Bangladesh

Stratum	Division	District	Thana	Union/Ward	Code No.
COASTAL_1	Chittagong	Noakhali	Hatiya	Ward No-05	20753605
COASTAL_2	Barisal	Patuakhali	Kala Para	Ward No-05	10786665
COASTAL_3	Chittagong	Feni	Sonagazi	Ward No-07	20309407
COASTAL_4	Chittagong	Cox'S Bazar	Maheshkhali	Ward No-05	20224905
COASTAL_5	Chittagong	Chittagong	Halishahar	Ward No-26	20153526
COASTAL_6	Barisal	Patuakhali	Bauphal	Kalaiya	10783853
COASTAL_7	Chittagong	Lakshmipur	Ramgati	Char Algi	20517331
COASTAL_8	Barisal	Bhola	Lalmohan	Paschim Char Umed	10095470
COASTAL_9	Chittagong	Lakshmipur	Ramgati	Ward No-01	20517301
COASTAL_10	Chittagong	Cox'S Bazar	Maheshkhali	Dhalghata	20224923
COASTAL_11	Barisal	Bhola	Lalmohan	Ward No-04	10095404

COASTAL_12	Barisal	Bhola	Daulatkhan	Ward No-09	10092909
COASTAL_13	Chittagong	Cox'S Bazar	Kutubdia	Kaiyabil	20224554
COASTAL_14	Barisal	Patuakhali	Dashmina	Banshbaria	10785231
COASTAL_15	Chittagong	Cox'S Bazar	Maheshkhali	Bara Maheshkhali	20224911
COASTAL_16	Barisal	Barguna	Patharghata	Patharghata	10048571

Table 2.8. List of Unions or Wards in Hill Zone in Bangladesh

Stratum	Division	District	Thana	Union/Ward	Code No.
HILL_1	Chittagon g	Khagrachhar i	Ramgarh	Ward No-02	2046800 2
	Chittagon g	Khagrachhar i	Mahalchhari	Kayangghat	2046651 5
HILL_2	Chittagon g	Chittagong	Fatikchhari	Khiram	2015335 5
HILL_3	Chittagon g	Khagrachhar i	Panchhari	Amtali	2046701 3
	Chittagon g	Rangamati	Langadu	Gulshakhali	2084585 4
HILL_4	Chittagon g	Bandarban	Bandarban Sadar	Tankabati	2003147 9
HILL_5	Chittagon g	Rangamati	Langadu	Langadu	2084586 7
HILL_6	Chittagon g	Chittagong	Fatikchhari	Lelang	2015335 7
HILL_7	Chittagon g	Khagrachhar i	Dighinala	Merung	2046437 9
	Chittagon g	Khagrachhar i	Matiranga	Gumti	2046704 7
HILL_8	Chittagon g	Bandarban	Lama	Gajalia	2003514 7
HILL_9	Chittagon g	Rangamati	Baghai Chhari	Ward No-02	2084070 2
HILL_10	Chittagon g	Khagrachhar i	Khagrachhari Sadar	Ward No-05	2046490 5
HILL_11	Chittagon g	Khagrachhar i	Matiranga	Ward No-04	2046700 4
HILL_12	Chittagon g	Bandarban	Lama	Ward No-09	2003510 9
HILL_13	Sylhet	Maulvibazar	Sreemangal	Satgoan	6058836 6
HILL_14	Chittagon g	Cox'S Bazar	Chakaria	Khuntakhali	2022166 7

HILL_1 5	Chittagon g	Khagrachhar i	Ramgarh	Hapchhari	2046803 8
HILL_1 6	Sylhet	Maulvibazar	Juri	Dakshin Dakshinbhangh	6058143 1

Table 2.9. List of Unions or Wards in Sundarbans Zone in Bangladesh

Stratum	Division	District	Thana	Union/Ward	Code No.
SUNDARBANS_1	Khulna	Bagerhat	Mongla	Sundarban	40015889
	Khulna	Bagerhat	Sarankhola	Sharankhola Range	40017797
	Khulna	Khulna	Dacope	Khulna Range	40471797
	Khulna	Khulna	Koyra	Nalian Range	40475397
	Khulna	Satkhira	Shyamnagar	Satkhira Range	40878697

Table 2.10. List of Unions or Wards in Sal Zone in Bangladesh

Stratum	Division	District	Thana	Union/Ward	Code No.
SAL_1	Dhaka	Dhaka	Bangshal	Ward No-71(part)	30260571
	Dhaka	Dhaka	Sutrapur	Ward No-80 (part)	30268880
SAL_2	Dhaka	Gazipur	Gazipur Sadar	Ward No-02	30333012
	Dhaka	Dhaka	Khilgaon	Nasirabad	30263685
SAL_3	Dhaka	Tangail	Mirzapur	Banshtail	30936634
	Dhaka	Gazipur	Sreepur	Ward No-08	30338608
SAL_4	Dhaka	Gazipur	Kaliakair	Ward No-06	30333206
	Dhaka	Tangail	Mirzapur	Latifpur	30936667
SAL_5	Dhaka	Dhaka	Mohammadpur	Ward No-44	30265044
	Dhaka	Dhaka	Mirpur	Ward No-07 (part)	30264807
SAL_6	Dhaka	Dhaka	Khilgaon	Ward No-25	30263625
	Dhaka	Dhaka	Dhanmondi	Ward No-49	30261649
SAL_7	Dhaka	Dhaka	Kafrul	Ward No-16	30263016
	Dhaka	Gazipur	Gazipur Sadar	Mirzapur	30333067

SAL_8	Dhaka	Gazipur	Kaliganj	Moktarpur	30333494
	Dhaka	Dhaka	Savar	Ward No-01	30267201
SAL_9	Dhaka	Dhaka	Biman Bandar	Ward No-01(part)	30260601
	Dhaka	Gazipur	Kaliganj	Ward No-01	30333401
SAL_10	Dhaka	Dhaka	Savar	Ward No-04	30267204
	Dhaka	Narayanganj	Rupganj	Ward No-08	30676818
SAL_11	Chittagong	Brahamanbaria	Akhaura	Dakshin Akhaura	20120219
	Dhaka	Tangail	Mirzapur	Tarafpur	30936687
SAL_12	Dhaka	Narsingdi	Palash	Ward No-07	30686307
	Mymensingh	Mymensingh	Bhaluka	Ward No-05	35611305
SAL_13	Rangpur	Dinajpur	Parbatipur	Eluary	55273847
	Dhaka	Dhaka	Tejgaon	Ward No-39	30269039
SAL_14	Dhaka	Dhaka	Lalbagh	Ward No-59	30264259
	Dhaka	Dhaka	Darus Salam	Ward No-09	30261109
SAL_15	Dhaka	Dhaka	Sher-e-bangla Nagar	Ward No-40 (part)	30268040
	Dhaka	Tangail	Sakhipur	Kakrajan	30938567
SAL_16	Dhaka	Gazipur	Kaliakair	Sutrapur	30333285
	Dhaka	Dhaka	Savar	Ward No-06	30267206

Table 2.11. List of Unions or Wards in Village Zone in Bangladesh

Stratum	Division	District	Thana	Union/Ward	Code No.
VILLAGE_1	Dhaka	Kishoreganj	Hossainpur	Ward No-08	30482708
	Mymensingh	Netrakona	Madan	Ward No-04	35725604
	Khulna	Chuadanga	Damurhuda	Ward No-01	40183101
	Chittagong	Comilla	Comilla Adarsha Sadar	Ward No-15	20196715
	Dhaka	Tangail	Kalihati	Ward No-06	30934706
	Chittagong	Noakhali	Sonaimuri	Ward No-07	20758307
	Sylhet	Maulvibazar	Barlekha	Ward No-01	60581401
	Chittagong	Comilla	Comilla Sadar Dakshin	Ward No-05	20193305
	Rajshahi	Joypurhat	Akkelpur	Ward No-07	50381307
	Rajshahi	Rajshahi	Tanore	Ward No-06	50819406
	Chittagong	Comilla	Nangalkot	Ward No-02	20198702
	Chittagong	Comilla	Chauddagram	Ward No-09	20193109
	Rangpur	Dinajpur	Fulbari	Ward No-08	55273808
	Dhaka	Shariatpur	Naria	Rajnagar	30866594
	Dhaka	Gopalganj	Gopalganj Sadar	Nizra	30353264
	Rangpur	Lalmonirhat	Aditmari	Bhadai	55520210
	Rajshahi	Ch. Nawabganj	Nachole	Ward No-07	50705607
	Rangpur	Dinajpur	Parbatipur	Ward No-06	55277706
	Chittagong	Feni	Fulgazi	Munshirhat	20304181
	Chittagong	Comilla	Muradnagar	Paschim Bangara	20198118
	Rangpur	Lalmonirhat	Aditmari	Saptibari	55520283
	Dhaka	Faridpur	Nagarkanda	Ward No-01	30296201
	Dhaka	Manikganj	Singair	Singair	30568286
	Rajshahi	Pabna	Bera	Chakla	50761615
	Rajshahi	Rajshahi	Tanore	Badhair	50819427
	Dhaka	Munshiganj	Sreenagar	Tantar	30598494
	Chittagong	Comilla	Comilla Sadar Dakshin	Ward No-04	20193304
	Sylhet	Habiganj	Madhabpur	Bulla	60367134

	Dhaka	Madaripur	Madaripur Sadar	Dudkhali	30545423
	Mymensingh	Sherpur	Jhenaigati	Malijhikanda	35893750
	Dhaka	Gopalganj	Muksudpur	Kasalia	30355850
	Dhaka	Madaripur	Madaripur Sadar	Sirkhara	30545494
	Chittagong	Brahamanbaria	Nabinagar	Ibrahimpur	20128527
VILLAGE_2	Dhaka	Gopalganj	Gopalganj Sadar	Sahapur	30353277
	Dhaka	Rajbari	Balia Kandi	Jangal	30820766
	Khulna	Jessore	Sharsha	Ward No-06	40419006
	Dhaka	Kishoreganj	Mithamain	Ghagra	30485927
	Chittagong	Chittagong	Patiya	Kasiais	20156164
	Chittagong	Chittagong	Rangunia	Silok	20157094
	Sylhet	Sylhet	Golabganj	Shorifgonj	60913836
	Dhaka	Tangail	Tangail Sadar	Mahamudnagar	30939580
	Rajshahi	Bogra	Sonatola	Sonatala	50109573
	Mymensingh	Sherpur	Sherpur Sadar	Char Pakshimari	35898833
	Dhaka	Faridpur	Bhanga	Chandra	30291031
	Rajshahi	Rajshahi	Mohanpur	Royghati	50815381
	Chittagong	Chittagong	Hathazari	Garduara	20153747
	Dhaka	Kishoreganj	Mithamain	Mithamain	30485981
	Barisal	Barisal	Barisal Sadar (Kotwali)	Ward No-11	10065111
	Dhaka	Munshiganj	Tongibari	Panchgaon	30599487
	Dhaka	Shariatpur	Gosairhat	Nalmuri	30863671
	Mymensingh	Netrakona	Khaliajuri	Nagar	35723881
	Dhaka	Faridpur	Sadarpur	Char Manair	30298438
	Dhaka	Munshiganj	Munshiganj Sadar	Ward No-06	30595606
	Dhaka	Kishoreganj	Mithamain	Bairati	30485911
	Dhaka	Shariatpur	Zanjira	Bilaspur	30869429
	Rajshahi	Rajshahi	Tanore	Ward No-03	50819403
	Dhaka	Gopalganj	Kotali Para	Bandhabari	30355115
	Chittagong	Chandpur	Matlab Uttar	Kalakanda	20137932
	Rajshahi	Rajshahi	Tanore	Ward No-04	50819404
	Mymensingh	Jamalpur	Islampur	Kulkandi	35392963
	Barisal	Barisal	Mehendiganj	Dari Char Khajuria	10066263
	Dhaka	Shariatpur	Zanjira	Paler Char	30869473
	Chittagong	Comilla	Meghna	Chalibhanga	20197521
	Chittagong	Chandpur	Chandpur Sadar	Rajrajeshwar	20132276
	Barisal	Barisal	Hizla	Dhulkhola	10063627
	Chittagong	Chandpur	Haim Char	Char Bhairabi	20134735
VILLAGE_3	Chittagong	Comilla	Chauddagram	Ward No-08	20193108
	Chittagong	Feni	Feni Sadar	Ward No-06	20302906
	Chittagong	Brahamanbaria	Kasba	Ward No-06	20126306
	Chittagong	Feni	Daganbhuiyan	Ward No-01	20302501
	Rajshahi	Joypurhat	Panchbibi	Ward No-03	50387403
	Chittagong	Chandpur	Hajiganj	Dakshin Gandharbapur	20134930
	Chittagong	Feni	Daganbhuiyan	Ward No-06	20302506
	Rajshahi	Bogra	Bogra Sadar	Ward No-10	50102010
	Sylhet	Maulvibazar	Barlekha	Ward No-05	60581405
	Rajshahi	Pabna	Chatmohar	Ward No-04	50762204
	Chittagong	Chandpur	Shahrasti	Ward No-05	20139505
	Barisal	Barisal	Gaurnadi	Ward No-01	10063201
	Dhaka	Rajbari	Goalandaghat	Ward No-07	30822907
	Sylhet	Sylhet	Zakiganj	Ward No-06	60919406
	Khulna	Chuadanga	Alamdanga	Ward No-06	40180706
	Chittagong	Noakhali	Noakhali Sadar (Sudharam)	Binodpur	20758725
	Dhaka	Gopalganj	Kotali Para	Ward No-02	30355102
	Dhaka	Faridpur	Bhanga	Ward No-07	30291007
	Mymensingh	Sherpur	Sherpur Sadar	Ward No-03	35898803
	Khulna	Chuadanga	Chuadanga Sadar	Ward No-08	40182308
	Rajshahi	Natore	Lalpur	Ward No-09	50694409

	Chittagong	Lakshmipur	Roypur	Char Pata	20515852
	Dhaka	Dhaka	Dhamrai	Baisakanda	30261411
	Khulna	Jhenaidah	Kaliganj	Ward No-08	40443308
	Chittagong	Noakhali	Kabirhat	Ghoshbagh	20754755
	Dhaka	Manikganj	Saturia	Fukurhati	30567066
	Mymensingh	Mymensingh	Phulpur	Ward No-02	35618102
	Chittagong	Chittagong	Patiya	Dakhin D.bhurshi	20156191
	Dhaka	Madaripur	Kalkini	Ward No-05	30544005
	Chittagong	Comilla	Laksam	Ward No-03	20197203
	Dhaka	Shariatpur	Shariatpur Sadar	Chandrapur	30866928
	Mymensingh	Mymensingh	Nandail	Rajgati	35617279
	Khulna	Jessore	Jhikargachha	Ward No-05	40412305
VILLAGE_4	Chittagong	Lakshmipur	Lakshmipur Sadar	Ward No-05	20514305
	Khulna	Chuadanga	Chuadanga Sadar	Ward No-07	40182307
	Dhaka	Shariatpur	Damudya	Kaneshwar	30862547
	Mymensingh	Mymensingh	Nandail	Chandipasha	35617223
	Mymensingh	Mymensingh	Nandail	Musuli	35617263
	Dhaka	Madaripur	Kalkini	Ramjanpur	30544082
	Mymensingh	Mymensingh	Phulpur	Rupasi	35618176
	Rajshahi	Joypurhat	Panchbibi	Ward No-07	50387407
	Rajshahi	Natore	Baraigram	Ward No-06	50691516
	Chittagong	Chittagong	Satkania	Paschim Dhemsra	20158294
	Mymensingh	Mymensingh	Muktagachha	Tarati	35616594
	Chittagong	Lakshmipur	Roypur	Roypur	20515871
	Dhaka	Tangail	Dhanbari	Ward No-09	30932509
	Khulna	Magura	Magura Sadar	Gopalgram	40555733
	Dhaka	Gopalganj	Muksudpur	Ward No-01	30355801
	Dhaka	Tangail	Ghatail	Ward No-05	30932805
	Mymensingh	Jamalpur	Sarishabari	Ward No-04	35398504
	Dhaka	Rajbari	Pangsha	Ward No-04	30827304
	Dhaka	Kishoreganj	Hossainpur	Ward No-09	30482709
	Dhaka	Gopalganj	Kotali Para	Ghagar	30355123
	Chittagong	Chandpur	Hajiganj	Ward No-11	20134911
	Mymensingh	Sherpur	Nakla	Pathakata	35896766
	Khulna	Jessore	Sharsha	Ward No-02	40419002
	Chittagong	Lakshmipur	Roypur	Ward No-04	20515804
	Khulna	Jhenaidah	Kotchandpur	Ward No-01	40444201
	Barisal	Barisal	Muladi	Char Kalekhan	10066923
	Khulna	Jessore	Jhikargachha	Ward No-07	40412307
	Rajshahi	Bogra	Sherpur	Ward No-04	50108804
	Chittagong	Chittagong	Boalkhali	Sreepur Kharandwip	20151285
	Rajshahi	Pabna	Faridpur	Ward No-02	50763302
	Mymensingh	Mymensingh	Mymensingh Sadar	Char Ishwardia	35615233
	Mymensingh	Mymensingh	Phulpur	Ward No-09	35618109
	Barisal	Pirojpur	Kawkhali	Amrajuri	10794715
VILLAGE_5	Chittagong	Brahamanbaria	Brahmanbaria Sadar	Purba Talsahar	20121381
	Rajshahi	Bogra	Kahaloo	Jamgaon	50105428
	Dhaka	Shariatpur	Damudya	Dhankati	30862535
	Rangpur	Dinajpur	Nawabganj	Putimara	55276986
	Chittagong	Comilla	Burichang	Burichang	20191831
	Chittagong	Comilla	Nangalkot	Bakshaganj	20198734
	Khulna	Magura	Magura Sadar	Maghi	40555774
	Rangpur	Dinajpur	Biral	Rani Pukur	55271785
	Rajshahi	Pabna	Bhangura	Khan Marich	50761963
	Rajshahi	Natore	Singra	Sukash	50699194
	Khulna	Magura	Magura Sadar	Raghab Dair	40555788
	Rajshahi	Joypurhat	Panchbibi	Matrai	50385866
	Rajshahi	Joypurhat	Kalai	Matrai	50385866
	Chittagong	Comilla	Muradnagar	Akubpur	20198110



	Chittagong	Comilla	Manoharganj	Uttar Hawla	20197494
	Rajshahi	Bogra	Shajahanpur	Gohail	50108530
	Dhaka	Faridpur	Saltha	Atghar	30299010
	Rangpur	Dinajpur	Chirirbandar	Satnala	55273087
	Dhaka	Madaripur	Rajoir	Kadambari	30548066
	Khulna	Kushtia	Daulatpur	Refayetpur	40503994
	Rajshahi	Rajshahi	Tanore	Kalma	50819454
	Chittagong	Chittagong	Chandgaon	Ward No-04	20151904
	Chittagong	Chittagong	Bayejid Bostami	Ward No-03	20150603
	Rangpur	Lalmonirhat	Lalmonirhat Sadar	Harati	55525536
	Rajshahi	Naogaon	Atrai	Maniari	50640363
	Chittagong	Comilla	Brahman Para	Sidlai	20191550
	Dhaka	Shariatpur	Damudya	Purba Damudya	30862559
	Rajshahi	Naogaon	Atrai	Bhopara	50640321
	Dhaka	Faridpur	Saltha	Talma	30296294
	Rangpur	Dinajpur	Parbatipur	Rampur	55277786
	Chittagong	Chandpur	Matlab Dakshin	Dakshin Nayergaon	20137682
	Rajshahi	Rajshahi	Godagari	Rishikul	50813485
	Dhaka	Tangail	Kalihati	Bir Basunda	30934721
VILLAGE_6	Dhaka	Dhaka	Keraniganj	Taranagar	30263877
	Rajshahi	Pabna	Faridpur	Hadal	50763363
	Rangpur	Dinajpur	Biral	Farakkabad	55271766
	Rajshahi	Naogaon	Dhamoirhat	Khelna	50642877
	Rajshahi	Naogaon	Manda	Bhalain	50644712
	Dhaka	Manikganj	Ghior	Singjuri	30562283
	Dhaka	Tangail	Basail	Kaoaljani	30930983
	Rajshahi	Ch. Nawabganj	Gomastapur	Radhanagar	50703773
	Rajshahi	Ch. Nawabganj	Gomastapur	Gomastapur	50703752
	Rajshahi	Naogaon	Dhamoirhat	Alampur	50642821
	Dhaka	Tangail	Madhupur	Mirzabari	30935778
	Rangpur	Kurigram	Nageshwari	Narayanpur	55496163
	Dhaka	Manikganj	Singair	Chandhar	30568225
	Rajshahi	Rajshahi	Baghmara	Gobinda Para	50811244
	Dhaka	Tangail	Kalihati	Parki	30934783
	Rajshahi	Ch. Nawabganj	Nachole	Fatehpur	50705619
	Sylhet	Sunamganj	Sulla	Atgaon	60908623
	Rajshahi	Rajshahi	Mohanpur	Ghasigram	50815340
	Chittagong	Brahmanbaria	Nasirnagar	Nasirnagar	20129087
	Rangpur	Lalmonirhat	Lalmonirhat Sadar	Khuniagachh	55525543
	Dhaka	Kishoreganj	Itna	Mriga	30483386
	Sylhet	Sunamganj	Dharampasha	Chamardani	60903223
	Chittagong	Chittagong	Pahartali	Ward No-10	20155510
	Dhaka	Munshiganj	Munshiganj Sadar	Adhara	30595620
	Rangpur	Kurigram	Ulipur	Saheber Alga	55499475
	Rajshahi	Sirajganj	Chauhali	Gharjan	50882723
	Rajshahi	Sirajganj	Shahjadpur	Kaijuri	50886736
	Dhaka	Gopalganj	Kotali Para	Kushla	30355155
	Dhaka	Narayanganj	Sonargaon	Shambhupura	30670486
	Dhaka	Munshiganj	Gazaria	Hossaindi	30592463
	Barisal	Barisal	Mehendiganj	Jangalia	10066271
	Dhaka	Tangail	Bhuapur	Nikrail	30931981
	Dhaka	Rajbari	Goalandaghat	Daulatdia	30822938
VILLAGE_7	Chittagong	Noakhali	Senbagh	Kadra	20758057
	Chittagong	Chandpur	Hajiganj	Dakshin Kalocho	20134955
	Chittagong	Chandpur	Kachua	Dakshin Gohat	20135831
	Barisal	Barisal	Wazirpur	Bamrail	10069410
	Chittagong	Noakhali	Noakhali Sadar (Sudharam)	Kadir Hanif	20758760
	Chittagong	Noakhali	Companiganj	Char Kakra	20752135
	Chittagong	Lakshmipur	Lakshmipur Sadar	Uttar Joypur	20514395

	Chittagong	Comilla	Comilla Adarsha Sadar	Kalir Bazar	20196768
	Chittagong	Comilla	Nangalkot	Peria	20198780
	Chittagong	Comilla	Debidwar	Elahabad	20194071
	Chittagong	Chandpur	Kachua	Karaia	20135863
	Chittagong	Noakhali	Begumganj	Rajganj	20750780
	Chittagong	Chittagong	Raozan	Pahartali	20157469
	Barisal	Jhalokati	Rajapur	Rajapur	10428454
	Dhaka	Tangail	Tangail Sadar	Magra	30939577
	Dhaka	Manikganj	Harirampur	Gala	30562851
	Chittagong	Feni	Daganbhuiyan	Purba Chandrapur	20302569
	Rajshahi	Pabna	Chatmohar	Haripur	50762260
	Khulna	Kushtia	Daulatpur	Khalishakundi	40503947
	Dhaka	Tangail	Gopalpur	Hadira	30933858
	Dhaka	Narsingdi	Narsingdi Sadar	Nuralla Pur U/c	30686053
	Khulna	Kushtia	Kumarkhali	Chandpur	40507117
	Rajshahi	Bogra	Bogra Sadar	Namuja	50102060
	Chittagong	Chittagong	Satkania	Eochia	20158214
	Khulna	Jhenaidah	Kaliganj	Niamatpur	40443361
	Dhaka	Faridpur	Bhanga	Kaolibera	30291063
	Dhaka	Tangail	Kalihati	Sahadebpur	30934794
	Chittagong	Lakshmipur	Lakshmipur Sadar	Chandraganj	20514320
	Rajshahi	Bogra	Shajahanpur	Chopinagar	50108519
	Rajshahi	Naogaon	Manda	Ganeshpur	50644727
	Rajshahi	Rajshahi	Mohanpur	Maugachhi	50815367
	Khulna	Magura	Mohammadpur	Digha	40556642
	Rangpur	Lalmonirhat	Lalmonirhat Sadar	Mahendranagar	55525573
VILLAGE_8	Dhaka	Kishoreganj	Hossainpur	Gobindapur	30482727
	Khulna	Chuadanga	Alamdanga	Kalidashpur	40180751
	Chittagong	Chittagong	Fatikchhari	Daulatpur	20153338
	Dhaka	Kishoreganj	Karimganj	Niamatpur	30484277
	Chittagong	Chittagong	Satkania	Keochia	20158254
	Rajshahi	Natore	Natore Sadar	Dighapatia	50696336
	Rajshahi	Bogra	Shajahanpur	Khotta Para	50108543
	Khulna	Jessore	Kotwali	Ward No-07	40414707
	Chittagong	Chandpur	Hajiganj	Hajiganj	20134935
	Khulna	Jessore	Chaugachha	Hakimpur	40411125
	Dhaka	Tangail	Kalihati	Salla	30934787
	Chittagong	Comilla	Comilla Adarsha Sadar	Uttar Durgapur	20196794
	Dhaka	Faridpur	Madhukhali	Dumain	30295621
	Khulna	Magura	Magura Sadar	Chaulia	40555727
	Rajshahi	Rajshahi	Durgapur	Maria	50813171
	Chittagong	Comilla	Chauddagram	Shubhapur	20193185
	Dhaka	Kishoreganj	Pakundia	Char Faradi	30487928
	Khulna	Chuadanga	Chuadanga Sadar	Begampur	40182323
	Khulna	Kushtia	Mirpur	Bahalbaria	40509421
	Dhaka	Kishoreganj	Kuliar Char	Gobaria Abdullahpur	30485435
	Khulna	Jessore	Kotwali	Haibatpur	40414747
	Dhaka	Faridpur	Alfadanga	Moyna	30291860
	Rajshahi	Rajshahi	Baghmara	Kismat Gankair	50813159
	Dhaka	Kishoreganj	Kishoreganj Sadar	Mahinanda	30484969
	Chittagong	Lakshmipur	Roypur	South Char Bangshi	20515838
	Rajshahi	Pabna	Ishwardi	Dashuria	50763921
	Barisal	Barisal	Babuganj	Jahangir Nagar(agarpur)	10060313
	Barisal	Barisal	Babuganj	Rahmatpur	10060381
	Chittagong	Chandpur	Haim Char	Dakshin Algi Durgapur	20134723
	Barisal	Barisal	Mehendiganj	Ulania	10066294
	Barisal	Pirojpur	Bhandaria	Telikhali	10791483
	Khulna	Jessore	Keshabpur	Panjia	40413857
	Khulna	Jessore	Keshabpur	Gaurighona	40413819

VILLAGE_9	Barisal	Barisal	Barisal Sadar (Kotwali)	Ward No-09	10065109
	Khulna	Satkhira	Kalaroa	Ward No-01	40874301
	Rajshahi	Ch. Nawabganj	Chapai Nawabganj Sadar	Ward No-08	50706608
	Dhaka	Narayanganj	Sonargaon	Ward No-04	30670404
	Rangpur	Thakurgaon	Ranisankail	Ward No-07	55948607
	Rangpur	Dinajpur	Hakimpur	Ward No-02	55274702
	Rangpur	Nilphamari	Saidpur	Ward No-06	55738506
	Rajshahi	Natore	Singra	Ward No-04	50699104
	Rangpur	Panchagarh	Panchagarh Sadar	Ward No-09	55777309
	Rangpur	Nilphamari	Saidpur	Ward No-04	55738504
	Rajshahi	Bogra	Sherpur	Ward No-07	50108807
	Chittagong	Noakhali	Senbagh	Ward No-04	20758004
	Sylhet	Habiganj	Chunarughat	Ward No-03	60362603
	Rajshahi	Bogra	Dhupchanchia	Ward No-06	50103306
	Rajshahi	Bogra	Adamdighi	Ward No-06	50100606
	Rajshahi	Joypurhat	Panchbibi	Ward No-09	50387409
	Sylhet	Sylhet	Golabganj	Ward No-05	60913805
	Rajshahi	Ch. Nawabganj	Nachole	Ward No-05	50705605
	Dhaka	Munshiganj	Munshiganj Sadar	Ward No-08	30595618
	Chittagong	Chandpur	Matlab Uttar	Ward No-07	20137907
	Rangpur	Thakurgaon	Thakurgaon Sadar	Ward No-03	55949403
	Mymensingh	Sherpur	Jhenaigati	Hatibandha Malijhikanda	35893717
	Rangpur	Dinajpur	Fulbari	Ward No-04	55273804
	Rangpur	Thakurgaon	Thakurgaon Sadar	Ward No-10	55949410
	Chittagong	Chittagong	Patiya	Bhatikhain	20156119
	Rangpur	Nilphamari	Jaldhaka	Ward No-06	55733606
	Rangpur	Kurigram	Bhurungamari	Bhurungamari	55490619
	Rangpur	Kurigram	Bhurungamari	Joymanirhat	55490657
	Chittagong	Chittagong	Chandanaish	Ward No-04	20151804
	Chittagong	Chittagong	Patiya	Ward No-01	20156101
	Mymensingh	Netrakona	Kalmakanda	Lengura	35724059
	Sylhet	Habiganj	Chunarughat	Ward No-01	60362601
	Mymensingh	Jamalpur	Jamalpur Sadar	Ward No-10	35393610
VILLAGE_10	Mymensingh	Netrakona	Kendua	Mashka	35724761
	Mymensingh	Jamalpur	Melandaha	Ghosher Para	35396147
	Rajshahi	Bogra	Dhupchanchia	Ward No-04	50103304
	Mymensingh	Netrakona	Atpara	Teligati	35720483
	Chittagong	Feni	Feni Sadar	Ward No-14	20302914
	Mymensingh	Netrakona	Durgapur	Kullagora	35721886
	Rangpur	Kurigram	Char Rajibpur	Char Rajibpur	55490819
	Khulna	Chuadanga	Alamdanga	Ward No-02	40180702
	Rangpur	Nilphamari	Jaldhaka	Ward No-03	55733603
	Mymensingh	Jamalpur	Madarganj	Sidhuli	35395883
	Mymensingh	Jamalpur	Sarishabari	Kamrabad	35398542
	Mymensingh	Netrakona	Mohanganj	Ward No-06	35726306
	Mymensingh	Jamalpur	Melandaha	Nayanagar	35396195
	Mymensingh	Jamalpur	Melandaha	Durmut	35396128
	Mymensingh	Jamalpur	Islampur	Shaympur	35396197
	Mymensingh	Mymensingh	Haluaghat	Swadeshi	35612494
	Mymensingh	Netrakona	Atpara	Sonai	35720471
	Dhaka	Munshiganj	Munshiganj Sadar	Ward No-09	30595619
	Mymensingh	Netrakona	Barhatta	Roypur	35720959
	Rajshahi	Bogra	Sonatola	Ward No-07	50109507
	Sylhet	Habiganj	Madhabpur	Ward No-09	60367109
	Mymensingh	Netrakona	Kalmakanda	Bara Kharpan	35724011
	Dhaka	Gopalganj	Gopalganj Sadar	Ward No-05	30353205
	Khulna	Narail	Lohagara	Ward No-01	40655201
	Rangpur	Kurigram	Bhurungamari	Bangasonahat	55490638
	Mymensingh	Jamalpur	Jamalpur Sadar	Ward No-04	35393604

	Rajshahi	Pabna	Faridpur	Ward No-08	50763308
	Chittagong	Cox'S Bazar	Chakaria	Lakhyarchar	20221672
	Rajshahi	Pabna	Ishwardi	Ward No-04	50763904
	Rajshahi	Ch. Nawabganj	Gomastapur	Ward No-06	50703706
	Rajshahi	Rajshahi	Charghat	Ward No-03	50812503
	Khulna	Khulna	Paikgachha	Ward No-06	40476406
	Barisal	Barguna	Amtali	Ward No-07	10040907
VILLAGE_11	Rangpur	Dinajpur	Fulbari	Ward No-05	55273805
	Rangpur	Kurigram	Ulipur	Ward No-08	55499408
	Chittagong	Feni	Chhagalnaiya	Ward No-03	20301403
	Barisal	Patuakhali	Kala Para	Ward No-08	10786608
	Mymensingh	Jamalpur	Madarganj	Ward No-01	35395801
	Rajshahi	Rajshahi	Paba	Ward No-03	50817203
	Mymensingh	Netrakona	Kendua	Ward No-03	35724703
	Chittagong	Cox'S Bazar	Chakaria	Ward No-04	20221604
	Mymensingh	Jamalpur	Dewanganj	Ward No-01	35391501
	Sylhet	Maulvibazar	Maulvi Bazar Sadar	Ward No-02	60587402
	Chittagong	Noakhali	Senbagh	Ward No-01	20758001
	Sylhet	Sylhet	Zakiganj	Ward No-01	60919401
	Dhaka	Tangail	Dhanbari	Ward No-04	30932504
	Mymensingh	Netrakona	Kendua	Ward No-06	35724706
	Chittagong	Chittagong	Raozan	Ward No-05	20157405
	Rajshahi	Rajshahi	Puthia	Ward No-03	50818203
	Dhaka	Kishoreganj	Kuliar Char	Ward No-04	30485404
	Chittagong	Noakhali	Kabirhat	Ward No-07	20754707
	Barisal	Bhola	Bhola Sadar	Ward No-06	10091806
	Chittagong	Noakhali	Companiganj	Ward No-01	20752101
	Khulna	Jhenaidah	Shailkupa	Ward No-08	40448008
	Rangpur	Rangpur	Rangpur Sadar	Cantonment	55854998
	Dhaka	Rajbari	Goalandaghat	Ward No-05	30822905
	Barisal	Barisal	Mehendiganj	Ward No-05	10066205
	Chittagong	Noakhali	Chatkhil	Ward No-03	20751003
	Barisal	Pirojpur	Pirojpur Sadar	Ward No-02	10798002
	Rajshahi	Bogra	Dhunat	Ward No-07	50102707
	Rajshahi	Rajshahi	Bagha	Ward No-08	50811018
	Dhaka	Dhaka	Dohar	Ward No-08	30261808
	Dhaka	Rajbari	Goalandaghat	Ward No-08	30822908
	Chittagong	Chittagong	Chandanaish	Ward No-09	20151809
	Khulna	Jessore	Keshabpur	Ward No-02	40413802
	Dhaka	Gopalganj	Kotali Para	Ward No-04	30355104
VILLAGE_12	Barisal	Pirojpur	Mathbaria	Ward No-01	10795801
	Sylhet	Maulvibazar	Maulvi Bazar Sadar	Ward No-09	60587409
	Sylhet	Sylhet	Kanaighat	Ward No-09	60915909
	Mymensingh	Mymensingh	Ishwarganj	Atharabari	35613111
	Rajshahi	Rajshahi	Bagha	Ward No-01 (arani)	50811011
	Khulna	Kushtia	Mirpur	Ward No-02	40509402
	Chittagong	Chittagong	Banshkhali	Ward No-09	20150809
	Barisal	Patuakhali	Bauphal	Ward No-09	10783809
	Khulna	Narail	Lohagara	Ward No-09	40655209
	Dhaka	Tangail	Gopalpur	Ward No-05	30933805
	Rangpur	Panchagarh	Panchagarh Sadar	Ward No-01	55777301
	Khulna	Narail	Lohagara	Ward No-07	40655207
	Rajshahi	Pabna	Pabna Sadar	Ward No-03	50765503
	Rajshahi	Sirajganj	Ullah Para	Ward No-01	50889401
	Rangpur	Rangpur	Kaunia	Ward No-08	55854208
	Mymensingh	Jamalpur	Dewanganj	Ward No-03	35391503
	Barisal	Patuakhali	Galachipa	Ward No-02	10785702
	Rajshahi	Pabna	Faridpur	Ward No-06	50763306
	Khulna	Jessore	Bagher Para	Ward No-01	40410901

	Mymensingh	Mymensingh	Mymensingh Sadar	Ward No-04	35615204
	Dhaka	Gopalganj	Kotali Para	Ward No-08	30355108
	Mymensingh	Mymensingh	Gaffargaon	Barabaria	35612211
	Dhaka	Manikganj	Manikganj Sadar	Ward No-09	30564609
	Dhaka	Shariatpur	Damudya	Ward No-03	30862503
	Mymensingh	Jamalpur	Islampur	Ward No-04	35392904
	Khulna	Narail	Lohagara	Ward No-05	40655205
	Dhaka	Shariatpur	Damudya	Ward No-02	30862502
	Rajshahi	Natore	Gurudaspur	Ward No-03	50694103
	Rajshahi	Natore	Baraigram	Ward No-02	50691512
	Khulna	Narail	Narail Sadar	Ward No-09	40657609
	Sylhet	Sunamganj	Derai	Ward No-01	60902901
	Barisal	Jhalokati	Nalchity	Ward No-04	10427304
VILLAGE_13	Khulna	Khulna	Khalishpur	Ward No-10	40474510
	Chittagong	Chittagong	Panchlaish	Ward No-08(part)	20155708
	Rangpur	Dinajpur	Dinajpur Sadar	Ward No-08	55276408
	Rangpur	Panchagarh	Boda	Sakoa	55772594
	Dhaka	Madaripur	Madaripur Sadar	Bahadurpur	30545410
	Rangpur	Panchagarh	Boda	Panchpir	55772587
	Rangpur	Thakurgaon	Thakurgaon Sadar	Debipur	55949436
	Rangpur	Panchagarh	Atwari	Radhanagar	55770467
	Chittagong	Brahmanbaria	Kasba	Badair	20126318
	Rangpur	Nilphamari	Saidpur	Ward No-11	55738511
	Rangpur	Thakurgaon	Thakurgaon Sadar	Balia	55949421
	Chittagong	Brahmanbaria	Nabinagar	Satmura	20128583
	Rangpur	Panchagarh	Panchagarh Sadar	Haribhasa	55777347
	Dhaka	Narayanganj	Araihazar	Haizadi	30670247
	Khulna	Meherpur	Gangni	Shaharbari	40574773
	Dhaka	Shariatpur	Naria	Muktarer Char	30866569
	Rangpur	Panchagarh	Debiganj	Teprikanj	55773495
	Rangpur	Nilphamari	Domar	Boragari	55731528
	Dhaka	Shariatpur	Naria	Palong	30866966
	Rangpur	Gaibandha	Sundarganj	Sreepur	55329188
	Sylhet	Sunamganj	Dharampasha	Selborash	60903276
	Rangpur	Thakurgaon	Haripur	Haripur	55945181
	Rangpur	Nilphamari	Kishoreganj	Magura	55734560
	Dhaka	Munshiganj	Serajdikhan	Latabdi	30597461
	Chittagong	Cox'S Bazar	Pekua	Bara Bakia	20225611
	Rangpur	Rangpur	Kaunia	Haragachh	55854223
	Rangpur	Thakurgaon	Thakurgaon Sadar	Rahimanpur	55949468
	Rangpur	Gaibandha	Gobindaganj	Darbasta	55323010
	Sylhet	Habiganj	Chunarughat	Chunarughat	60362619
	Khulna	Narail	Kalia	Bhadrabila	40657620
	Rangpur	Panchagarh	Boda	Banagram	55772514
	Sylhet	Habiganj	Nabiganj	Kalair Banga	60367758
	Rangpur	Thakurgaon	Pirganj	Kusha Raniganj	55948269
VILLAGE_14	Rangpur	Panchagarh	Tentulia	Tentulia	55779081
	Rangpur	Gaibandha	Saghatta	Muktanagar	55328895
	Sylhet	Sylhet	Kanaighat	Jhingrabari	60915938
	Dhaka	Kishoreganj	Bhairab	Shimulkandi	30481183
	Rangpur	Panchagarh	Panchagarh Sadar	Dhakkamara	55777336
	Sylhet	Sunamganj	Derai	Rajanagar	60902976
	Chittagong	Brahmanbaria	Brahmanbaria Sadar	Ward No-04	20121304
	Chittagong	Comilla	Brahman Para	Bara Shalghar	20194010
	Rajshahi	Bogra	Sonatola	Madhupur	50109552
	Rangpur	Nilphamari	Dimla	Khalisa Chapani	55731247
	Rangpur	Kurigram	Phulbari	Shimulbari	55491881
	Rangpur	Rangpur	Pirganj	Tukuria	55857695
	Rangpur	Gaibandha	Gaibandha Sadar	Gidari	55322443

	Dhaka	Narayanganj	Narayanganj Sadar	Ward No-02	30675812
	Sylhet	Sunamganj	Tahirpur	Balijuri	60909210
	Sylhet	Habiganj	Baniachong	Pukhra	60361182
	Rangpur	Kurigram	Nageshwari	Ballabher Khas	55496111
	Sylhet	Sylhet	Sylhet Sadar	Mogalgaon	60916255
	Khulna	Khulna	Khulna Sadar	Ward No-30	40475130
	Khulna	Narail	Lohagara	Itna	40655218
	Barisal	Barisal	Barisal Sadar (Kotwali)	Ward No-10	10065110
	Dhaka	Narayanganj	Narayanganj Sadar	Ward No-09	30675819
	Chittagong	Chittagong	Double Mooring	Ward No-28	20152828
	Khulna	Bagerhat	Morrelganj	Nishanbaria	40016071
	Khulna	Khulna	Dumuria	Dumuria	40473027
	Khulna	Satkhira	Satkhira Sadar	Baikari	40878220
	Khulna	Satkhira	Shyamnagar	Kaikhali	40878647
	Khulna	Khulna	Dumuria	Magurkhali	40473047
	Khulna	Satkhira	Satkhira Sadar	Dhulihar	40878254
	Khulna	Satkhira	Debhata	Noapara	40872547
	Khulna	Bagerhat	Mollahat	Kulia	40015685
	Rajshahi	Sirajganj	Sirajganj Sadar	Ward No-11	50887811
	Khulna	Satkhira	Assasuni	Kadakati	40870456
VILLAGE_15	Rajshahi	Bogra	Bogra Sadar	Ward No-15	50102015
	Sylhet	Sylhet	Sylhet Sadar	Ward No-03	60916203
	Chittagong	Chittagong	Kotwali	Ward No-15	20154115
	Rajshahi	Rajshahi	Boalia	Ward No-27 (part)	50812227
	Chittagong	Chittagong	Boalkhali	Popadia	20151257
	Barisal	Barisal	Barisal Sadar (Kotwali)	Ward No-13	10065113
	Rajshahi	Sirajganj	Sirajganj Sadar	Ward No-01	50887801
	Chittagong	Cox'S Bazar	Cox'S Bazar Sadar	Ward No-12	20222412
	Chittagong	Chittagong	Hathazari	Chikandandi	20153717
	Chittagong	Brahamanbaria	Kasba	Kherera	20126365
	Rangpur	Kurigram	Rajarhat	Nazimkhan	55497752
	Dhaka	Narsingdi	Narsingdi Sadar	Ward No-03	30686013
	Chittagong	Chittagong	Patiya	Janglukhain	20156152
	Dhaka	Munshiganj	Munshiganj Sadar	Rampal	30595685
	Rajshahi	Joypurhat	Joypurhat Sadar	Mohammadabad	50384776
	Rangpur	Rangpur	Rangpur Sadar	Ward No-13	55854913
	Chittagong	Lakshmipur	Lakshmipur Sadar	Shak Char	20514385
	Rajshahi	Natore	Lalpur	Arbab	50694417
	Rajshahi	Bogra	Sherpur	Mathurapur	50102785
	Rajshahi	Rajshahi	Charghat	Bhaya Lakshmipur	50812531
	Khulna	Chuadanga	Chuadanga Sadar	Alokdia	40182311
	Sylhet	Sylhet	Dakshin Surma	Silam	60913175
	Dhaka	Kishoreganj	Kishoreganj Sadar	Ward No-09	30484909
	Rangpur	Gaibandha	Sadullapur	Kamar Para	55328277
	Rangpur	Rangpur	Kaunia	Shahidbagh	55854267
	Rajshahi	Bogra	Bogra Sadar	Nishindara	50102064
	Dhaka	Tangail	Tangail Sadar	Ward No-16	30939516
	Dhaka	Manikganj	Harirampur	Balla	30562814
	Khulna	Meherpur	Mujib Nagar	Monakhali	40576085
	Rangpur	Kurigram	Rajarhat	Ghariaidanga	55497742
	Sylhet	Sylhet	Balaganj	Tajpur	60910888
	Rajshahi	Sirajganj	Ullah Para	Hatikumrul	50889436
	Sylhet	Sunamganj	Jagannathpur	Patali	60904766
VILLAGE_16	Khulna	Jhenaidah	Jhenaidah Sadar	Naldanga	40441963
	Rajshahi	Bogra	Sherpur	Shimabari	50108885
	Rangpur	Gaibandha	Palashbari	Manoharpur	55326766
	Sylhet	Sylhet	Kanaighat	Kanaighat	60915947
	Chittagong	Cox'S Bazar	Cox'S Bazar Sadar	Islampur	20222438
	Barisal	Patuakhali	Patuakhali Sadar	Badarpur	10789511

	Chittagong	Comilla	Debidwar	Paschim Nabipur	20198163
	Rajshahi	Bogra	Bogra Sadar	Shakharia	50102082
	Rangpur	Rangpur	Pirgachha	Kaikuri	55857338
	Rajshahi	Sirajganj	Royganj	Dhangara	50886138
	Sylhet	Sylhet	Balaganj	Omarpur	60910851
	Khulna	Kushtia	Kumarkhali	Nandalalpur	40507169
	Rajshahi	Sirajganj	Royganj	Ghurka	50886157
	Rangpur	Gaibandha	Sadullapur	Damodarpur	55328225
	Rangpur	Rangpur	Mitha Pukur	Bhangni	55855837
	Sylhet	Sunamganj	Chhatak	Kalaruka	60902357
	Sylhet	Sylhet	Balaganj	Boaljur Bazar	60910813
	Sylhet	Maulvibazar	Maulvi Bazar Sadar	Khalilpur	60587458
	Chittagong	Chittagong	Anowara	Barakhain	20150428
	Rajshahi	Bogra	Bogra Sadar	Ward No-18	50102018
	Dhaka	Faridpur	Bhanga	Nasirabad	30291079
	Sylhet	Sunamganj	Sunamganj Sadar	Ward No-01	60908901
	Barisal	Patuakhali	Mirzaganj	Kakrabunia	10787640
	Khulna	Satkhira	Kalaroa	Kushadanga	40874379
	Barisal	Barisal	Barisal Sadar (Kotwali)	Ward No-24	10065124
	Sylhet	Sylhet	Sylhet Sadar	Ward No-12	60916212
	Khulna	Satkhira	Kalaroa	Kaila	40874387
	Khulna	Khulna	Khan Jahan Ali	Jugipole	40474875
	Khulna	Satkhira	Tala	Jalalpur	40879023
	Rajshahi	Sirajganj	Sirajganj Sadar	Ward No-12	50887812
	Rajshahi	Sirajganj	Sirajganj Sadar	Ward No-09	50887809
	Khulna	Bagerhat	Bagerhat Sadar	Shat Gambuj	40010894
	Khulna	Bagerhat	Chitalmari	Bishnupur	40010834

## 2.6 RATIONALE OF IMPLEMENTATION

We have a number of suggestions for implementation of the survey in the field condition. For the real world data collection, we suggest making the surveying a bit flexible to the field condition rather than just strictly following the theoretical sampling we normally prescribe.

### 2.6.1 VILLAGE ZONE

Most of the unions are situated in the Village Zone. However, this zone actually doesn't represent the real forest condition of the country in a true sense. If we consider what we call a forest, it is limited to the remaining four zones - Coastal, Hill, Sundarbans, and Sal. The concentration of survey should be much higher in these four zones compared to that in the Village zone.

Each stratum is homogeneous based on the attributes we considered. So, the households can be chosen randomly. However, for village zone, we suggest to distribute the households in each stratum (277) equally among the unions (33) in that stratum. Thus, in the Village zone, in each of the selected unions number of household could be  $277/3 \approx 92$ . However, the Unions can be randomly chosen.

### 2.6.2 SUNDARBANS ZONE

This zone is unique for a number of reasons such as, but is not limited to, (a) total forest stock is bigger than any other forest, (b) distributed comparatively to a smaller area – it has only five unions in it, (3) concentration of socioeconomic activities is more here compared to other zones, (4) it is healthier than all other zones, and so forth. Based on all these considerations, we suggest covering all the five unions rather than only one that this study design suggests. Thus, from each union, the number of households to be surveyed should be  $271/5 \approx 54$

### 2.6.3 COASTAL, HILL, AND SAL ZONES

This design structure can be followed directly. That is, the unions and households can be randomly chosen from the strata identified.

### 2.6.4 URBAN AND RURAL AREA

As already mentioned that, each stratum is more or less homogeneous within it given the variability factors considered. The survey design is efficient enough to clearly putting the urban Wards together. So, a balance is already made through the stratification procedure. So, following the study design will ensure full consideration on both urban and rural areas.

### 2.6.5 STRATIFYING HOUSEHOLDS – CONDUCTING FGDS

Which households to be surveyed is a big challenge at the field-level data collection. However, to reduce time and other resources, FGDs could be a better tool to cope with. The FGD will focus on the socioeconomic attributes of the households in an area/union, so that the selection of households ensures the representation of all kinds of households in that area. An effective FGD can be conducted in the following manner.

- (1) **Introducing everyone:** A typical FGD starts with the self-introduction of all people present in the discussion. Even though, this group should be composed of people from all corners of the society, forest dependent people should dominate the group.
- (2) **An Introductory lecture:** The speaker or facilitator must deliver a preliminary lecture to the focus group (FG) detailing the objectives of the FGD. Local dialect and zone-specific example and interpretation are likely to help much in this regard.
- (3) **Guiding the discussion:** The FG would be requested to classify the households based on a number of socioeconomic factors such as household's income, forest-dependence, local and political power etc.



- (4) **The method**: We normally suggest adopting the ‘**snowball**’ method where the facilitator provokes the participants to speak out on the issues being discussed. At certain point after repeated efforts, the FG’s intension to describe the issues diminishes almost to zero – it indicates the completion of the FGD responses.
- (5) **Time**: FGD should be a fixed-timed exercise. Allowing too much (or even too short) time might create a scope to yield biased and influenced information.
- (6) **Size of the FGD**: The size of the FGD should be kept limited to 10-15 people.
- (7) **Observation Checklist**: To produce identical information through FGDs across the zones and strata, a checklist could be used. The variable of such checklist should be Total Household Income. That is, the households of a given area under survey should be classified based on the total annual household income.

## SECTION-3: QUESTIONNAIRE FORMATION

### 3.1 PRINCIPLE, CRITERIA, INDICATORS, AND VARIABLES OF THE STUDY

Criteria and Indicators form parts of a hierarchy of forest assessment tools. The four levels of this hierarchy are Principles, Criteria, Indicators, and Verifiers. A **principle** is a fundamental truth or law as the basis of reasoning or action. A principle is commonly formulated around a core concept based on societal ethics, values, and tradition as well as on scientific knowledge about forest resources (FAO 2002). A **Criterion** defines the essential elements against which sustainability is assessed, with due consideration paid to the productive, protective and social roles of forests and forest ecosystems. Each criterion relates to a key element of sustainability, and may be described by one or more indicators. **Indicators** are parameters which can be measured and correspond to a particular criterion. They measure and help monitor the status and changes of forests in quantitative, qualitative and descriptive terms that reflect forest values as seen by those who defined each criterion. Finally, a **variable** is established by data or information that enhances the specificity or the ease of assessment of an indicator. At the fourth level of specificity, variables provide specific details that would indicate or reflect a desired condition of an indicator. They add meaning, precision and site-specificity to an indicator (FAO 2002).

We plan to establish a simple linear link among the criteria, indicators, and variables of trees and forest resource with the major principle of sustainable forest management to meet the societal demand for ecosystem services from trees and forest resources. The idea can be quantitatively modeled as follows:

To meet the sustainability principle, suppose, our criteria are identified as  $C_l$ , which is a function of a number of measurable (both observed and unobserved and of course, qualitative and quantitative) indicators,  $I_m$ . That is,

$$C_l = f(I_m) \quad (3.1)$$

However, each of the  $I_m$  is resulted from a number of socioeconomic and biophysical verifiers or variables,  $V_n$ , which are also measurable and both observed and unobserved.

$$I_m = g(V_n) \quad (3.2)$$

Thus, each of the major criteria of sustainability principle can be translated into measurable variables through a composite function as follows:

$$C_l = f(g(V_n)) \quad (3.3)$$

Thus, our final socioeconomic survey instrument will focus mainly on socioeconomic and biophysical variables (questions) that are ***non-overlapping and uncorrelated***. Given this plan, we are in line with linking the set of criteria, indicators, and variables.

### **3.2 IDENTIFYING PRINCIPLE, CRITERIA, INDICATORS, AND VARIABLES**

Since the United Nations Conference on Environment and Development (UNCED) of Rio 1992, several international processes and initiatives have developed criteria and indicators (C&I) as a framework for Sustainable Forest Management (SFM). C&I provide a framework that characterizes the essential components of SFM and recognizes forests as ecosystems that provide a wide range of environmental, economic and social benefits to society. About 150 countries have been participating in one or more of the nine regional criteria and indicator processes (FAO 2016):

- i. African Timber Organization (ATO) Process
- ii. Dry Forest in Asia Process
- iii. Dry-Zone Africa Process
- iv. Forest Europe Process
- v. International Tropical Timber Organization (ITTO) Process
- vi. Lepaterique Process
- vii. Montreal process
- viii. Near East Process
- ix. Tarapoto Process

Several of these processes established regional and (or) coordinated national reporting mechanisms on status and progress towards SFM, based on the C&I. The United Nations Forum on Forests (UNFF) developed the non-legally binding instrument on ***all types of forests*** adopted in 2007 by the UN General Assembly based on the most common criteria of SFM of C&I processes (FAO 2016). These criteria are given below:

1. Biological diversity
2. Extent of forest resources

3. Forest health and vitality
4. Protective functions of forests
5. Productive functions of forests
6. Socioeconomic functions of forest
7. Legal policy and institutional framework

The above criteria have been elaborated and defined by underlying ***Indicators*** by USDA-FS in 2011 (USDAFS 2011). However, the C&I have been critically studied and scrutinized in a number of studies including (Raison et al. 2001), (Wijewardana 2008), (Hall 2001), (Duinker 2001), and (Mendoza and Prabhu 2000). ***To keep pace with the international system of C&I processes***, we have developed the following C&I with potential verifiers (variables) that are likely to explain the sustainability status of trees and forests in Bangladesh over time and space.

### 3.3 SOCIOECONOMIC QUESTIONNAIRE

#### 3.3.1 QUESTIONNAIRE DEVELOPMENT

Specific structured questionnaire will be developed for each of five land zones FAO has already identified the zones: Hill, Sal, Sundarbans, Coastal, and Village. The formation of the questionnaire for socioeconomic survey, the following matter have been carefully considered:

**Finding potential variables:** The questionnaire has been prepared with the identification of potential socioeconomic variables that are deemed important in explaining people's uses of forest and tree resources.

**Establishing the link across criteria, indicators, and variables:** The direct or indirect link among criteria, indicator, and variables has been considered.

**Avoiding multicollinearity issues among variables:** The questions have been chosen in such a way that potential correlation among variables could be minimized. This will later on help eliminate the problem of multicollinearity during data analysis.

**Maintaining optimal size of the questionnaire:** The number of questions in each questionnaire has been kept as minimum as possible. However, it should be large enough to cover up the

objectives of the study sufficiently. The ground for preparing a non-lengthy questionnaire is that, people get agitated when interviewed on a large questionnaire for a longer period, which ultimately result into spurious information. Again, since the countrywide socioeconomic study would be the widest of its kind in the country, it will gather information from thousands of respondents. A longer questionnaire might make the entire process inefficient.

### 3.3.2 QUESTIONNAIRE VALIDATION

The prepared questionnaire is undergoing field testing. The tentative schedule for testing the questionnaire in the field is given below:

Table 3.3. Tentative Field visit schedule for testing the questionnaire

Dates	Strata	Location
13.02.2017	SAL_3	Dhaka, Tangail, Mirzapur, Banshtail
	VILLAGE_6	Dhaka, Tangail, Basail, Kaoaljani
14.02.2017	VILLAGE_1	Sylhet, Habiganj, Madhabpur, Bulla
	VILLAGE_9	Sylhet, Habiganj, Chunarughat, Ward No-03
21.02.2017	HILL_7	Chittagong, Khagrachhari, Matiranga, Gumti
	HILL_10	Chittagong, Khagrachhari, Khagrachhari Sadar, Ward No-05
02.03.2017	VILLAGE_15	Chittagong, Cox'S Bazar, Cox's Bazar Sadar, Ward No-12
03.03.2017	COASTAL_15	Chittagong, Cox'S Bazar, Maheshkhali, Bara Maheshkhali
	COASTAL_4	Chittagong, Cox'S Bazar, Maheshkhali, Ward No-05
06.03.2017	SUNDERBANS_1	Khulna, Bagerhat, Mongla, Sundarban
		Khulna, Khulna, Dacope, Khulna Range
08.03.2017	SAL_8	Dhaka, Dhaka, Savar, Ward No-01

### 3.3.3 QUESTIONNAIRE TESTING

The questionnaire so formed would be tested in the field. The socioeconomic consultant team will visit all the five forest regions of Bangladesh to interview people on the prepared questionnaire. During the testing, the consultation team will try to find how well the questions would be fitting to the field condition. All possible notes and comments would be recorded to be considered later on to finalize the questionnaire.

### 3.3.4 FINALIZING THE QUESTIONNAIRE

The questions, comments of the interviewees, and vagueness of the questionnaire itself as identified during the field-testing would be carefully addressed to reach the final version of the questionnaire.

**Table 3.4. Criteria, Indicators, and Variables for Sustainable Forest Management to meet the societal needs for forest resources**

Criteria	Indicators	Variables
1. Status of tree and forest resources	1.1 Tree cover changes in land cover classes and in zones (Ref years 2000, 2014, ..... for all the subsequent indicators)	1.1.1 Land cover classes (list) 1.1.2 Land cover area by classes (ha) 1.1.3 Tree cover (%)
	1.2 Tree biomass stock changes by land cover classes/uses and by zones	1.2.1 Land cover classes (list) 1.2.2 Land cover area by classes (ha) 1.2.3 Tree/forest aboveground biomass stock (t/ha)
	1.3 Carbon stock changes by land cover classes and by zones	1.3.1 Land cover classes (list) 1.3.2 Land cover area by classes (ha) 1.3.3 Carbon stock above ground (tC) 1.3.4 Carbon stock below ground(tC) 1.3.5 Total carbon stock below ground(tC)
	1.4 Tree volume changes by land cover classes and by zone	1.4.1 Land cover classes (list) 1.4.2 Land cover area by classes (ha) 1.4.3 Total tree volume (m <sup>3</sup> /ha)
	1.5 Changes in timber and non-timber products by land cover classes and zones	1.5.1 Land cover classes (list) 1.5.2 Land cover area by classes (ha) 1.5.3 Types (list) and quantity (cft) of timber products 1.5.4 Types (list) and quantity (m <sup>3</sup> ) of non-timber forest products 1.5.5 Removal of timber products (m <sup>3</sup> /ha/yr) 1.5.6 Removal of non-timber products (m <sup>3</sup> /ha/yr) 1.5.7 Economic value of timber products (BDT) 1.5.8 Economic value of Non-timber products (BDT) 1.5.9 Area (ha or %) of land available for production of timber products 1.5.10 Area (ha or %) of land available for production of non-timber products
	1.6 Changes in the degree of tree and forest fragmentation by land cover classes and by zone	1.6.1 Land cover classes (list) 1.6.2 Land cover area by classes (ha) 1.6.3 Fragmented land (ha)
	1.7 Area of forest affected by disturbances by land cover classes and zones	1.7.1 Land cover classes (list) 1.7.2 Land cover area by classes (ha) 1.7.3 Forest area affected by natural disturbances (ha) 1.7.4 Area of forest affected by anthropogenic disturbances (ha)

	1.8 Changes number of plant and animal species by land cover classes and zones	1.8.1 Land cover classes (list) 1.8.2 Land cover area by classes (ha) 1.8.3 Indigenous plant species (List and No.) 1.8.4 Exotic plant species (list and No.) 1.8.4 Age class distribution by forest type (%) 1.8.5 Site quality (m <sup>3</sup> /ha/yr) 1.8.6 Animal diversity (List and No.)
	1.9 Changes of endangered species in different land cover classes (hill and Sundarbans zones)	1.9.1 Endangered tree species (List and No.) 1.9.2 Reason for being endangered (List) 1.9.3 Endangered animal species (List and No.) 1.9.4 Reason for being endangered (List)
	1.10 Tree growth rate in different land tenure by zones	1.10.1 Land cover classes (list) 1.10.2 Land cover area by classes (ha) 1.10.3 Tree growth by type (m <sup>3</sup> /ha/yr) 1.10.4 Age distribution (yr) 1.10.5 Owner group (List) 1.10.6 Legal status (list)
2. Actors involved in tree and forest resources	2.1 Actors involved in tree and forest management by land cover classes and zones and by public and private sectors	2.1.1 Land cover classes (list) 2.1.2 Land area (ha) 2.1.3 Managers (No. by ethnicity, gender, age, and education – a complete listing) 2.1.4 Population (No.) 2.1.5 Manager-population ration(ratio)
	2.2 Actors involved in forest use	2.4.1 Land cover classes (list) 2.4.2 Land area (ha) 2.4.3 Users (No. by ethnicity, gender, age, and education – a complete listing) 2.4.4 Population (No.) 2.4.5 Population density (No./ha)
	2.3 Total economic revenue of tree and forest resources by zone	2.2.1 Economic activities (List) 2.2.2 Economic revenue from forest and tree related activities (BDT) 2.2.3 Economic revenue from other activities (BDT) 2.2.4 Proportion of economic revenue from tree and forest resources (Ratio or %) 2.2.5 Workforce in forest industry in an area (%) 2.2.6 Gender balance in the workforce (Ratio)
	2.4 Actors from research institutions by zones	2.4.1 Type of research theme (List) 2.4.2 Tree and forest research and education entities (No.) 2.4.3 Human capacity in research and development, and education (No.) 2.4.4 Gender balance (Ratio) 2.4.5 Population density (No./ha) 2.4.6 Proportion of tree and forest research education entities (%) 2.4.9 Capacity of tree and forest research and education entities (No.)

	2.9 Investment in tree and forest research, development and education entities	2.9.1 Annual financial capacity of tree and forest research and education entities (BDT) 2.9.2 Investment in research and development, and education (BDT) 2.9.3 Land area of different land cover classes/uses (ha)
	2.10 Estimated value of forest industry production by zone	2.10.1 Land area of different land cover classes/uses 2.10.1 Type of forest industry (list) 2.10.2 Value of forest industry production (BDT)
3. Factors influencing tree and forest resources	3.1 Changes in extraction of tree and forest resources by zones	3.1.1 Land area (ha) of land cover classes (ha) 3.1.2 Types of tree and forest harvester (List) 3.1.3 Methods of extraction (List by technology) 3.1.4 Amount extracted (m <sup>3</sup> /ha by type and season) 3.1.5 Mode of transportation (List) 3.1.6 Geographic location of extraction (Geo-point) 3.1.7 Proximity to transportation network (km) 3.1.8 Average distance to market (km)
	3.2 Economic value of product extraction by zone	3.2.1 Economic value of products extracted (BDT) 3.2.2 Labor cost (Labor rate* man days) 3.2.3 Contribution of tree and forest products to annual revenue (BDT) 3.2.4 Types of Managers (List)
	3.3 Environmental disturbances by zone	3.3.1 Land area of different land cover classes (ha) 3.3.2 Type & frequency of disturbances (List by time) 3.3.3 Geographic location disturbances (Geo-point) 3.3.4 Types of tree and forest managers, users, and enterprise impacted (List) 3.3.5 Changes in abundance and distribution of native species known to be susceptible to such disturbance
	3.4 Recreation by zones	3.4.1 Types of recreations by seasons (list) 3.4.2 Number of visitors per recreation type (No.) 3.4.3 Geographic location of recreation (Geo-point or physical address)
	3.5 Ecotourism by zones (Mangrove and Sal)	3.5.1 People employed in Ecotourism (No.) 3.5.2 Number of visitors by seasons (No.) 3.5.3 Potentiality of Ecotourism area (list) 3.5.4 Type of benefits receive from Ecotourism (List) 3.5.5 Economic revenue from Ecotourism (BDT)
	3.6 Management practices	3.6.1 Management regimes (List)



		3.6.2 Temporal frequency of management activities (List) 3.6.3 Types of tree and forest managers (List) 3.6.4 Source of information of management activities (List)
	3.7 Effectiveness of Social forestry (village zone)	3.7.1 Land area allotted under social forestry (ha per capita) 3.7.2 Number of beneficiaries (No.) 3.7.3 Duration of involvement 3.7.4 Benefits received (list and monetary returns)
	3.8 Tree/Forest damaged by Human activities	3.8.1 Types of human disturbances (List) 3.8.2 Area damaged in each type (ha)
	3.9 Encroachment by zones (Hill and Sal)	3.9.1 Land area of different land cover classes/uses 3.9.2 Types of encroachment (List) 3.9.3 Area of encroachment in each type (ha)
	3.10 Displacement by zones (Coastal and Hill Zone)	3.10.1 Land area of different land cover classes/uses 3.10.2 Total population (No.) 3.10.3 People displaced (No.) 3.10.4 Reason for displacement (List) 3.10.5 Geographic location of displacement (Geo-point)
	3.11 Infrastructure development	3.11.1 Land area of different land cover classes/uses 3.11.2 Type of infrastructure (List) 3.11.3 Land occupied by each type (ha) 3.11.4 Level of impact on tree and forest resources(Categorical list)
	3.12 Occurrence of social conflict by zones	3.12.1 Land area of different land use classes 3.12.2 Population density 3.12.3 Type of conflict (list) 3.12.4 Frequency of conflicts (By type and time) 3.12.5 Conflict management (List by type)
	3.13 Shifting and betel leaf cultivation (Hill zone)	3.13.1 Area of land per cover class 3.13.2 Total population (No.) 1.13.3 People involved (No. by gender and cultivation type) 3.13.4 Area of cultivation (ha) 3.13.5 Economic return (BDT per season and per year)
4. Sustainability of tree and forest management	4.1 Conservation of plant diversity by zones	4.1.1 Land area of different land cover classes 4.1.2 Density of vulnerable, threatened or endangered plant species (n/ha by type) 4.1.3 Plant diversity in conservation areas (diversity indices) 4.1.4 Vulnerability to environmental changes (List)
	4.2 Conservation of animal diversity by zones	4.2.1 Land area of different land cover classes

		<p>4.2.2 Density of vulnerable, threatened or endangered wildlife species (n/ha by type)</p> <p>4.2.3 Wildlife diversity in conservation areas (diversity indices)</p> <p>4.2.4 Vulnerability to environmental changes (List)</p>
	4.3 Fragmentation of forest ecosystems	<p>4.3.1 Land area of different land cover classes</p> <p>4.3.2 Area of forest converted to non-forestry uses (ha)</p> <p>4.3.3 Area of habitat available for indicator species (ha)</p> <p>4.3.5 Reasons for forest fragmentation (List)</p> <p>4.3.5 Management initiatives to minimize fragmentation (List)</p>
	4.4 Maintenance of productive capacities	<p>4.4.1 Land area of different land cover classes/uses</p> <p>4.4.2 Tree covers areas (%)</p> <p>4.4.3 Net annual growth (m<sup>3</sup> per ha)</p> <p>4.4.4 Annual extraction rate (m<sup>3</sup> per ha)</p> <p>4.4.5 Annual biomass productivity (t/ha/yr)</p> <p>4.4.6 Disturbances type (List)</p>
	4.5 Maintenance of ecosystem health and vitality	<p>4.5.1 Land cover classes</p> <p>4.5.1 Disturbances type (List by type, area and frequency)</p> <p>4.5.9 Regeneration (%)</p> <p>4.5.10 Social impact (List)</p>
	4.6 Contribution to the carbon cycle	<p>4.6.1 Land cover classes</p> <p>4.6.2 Forest ecosystem biomass (t/ha by tree diameter classes, Dead wood materials, Seedling, palms, climbers, shrubs, nypa etc.)</p> <p>4.6.3 Carbon content in biomass (t/ha)</p> <p>4.6.4 Soil types</p>
	4.7 Maintenance of long term multiple socioeconomic benefits	<p>4.7.1 Tree/plant products (List)</p> <p>4.7.2 Tree products value (BDT)</p> <p>4.7.3 Social importance of tree products extracted (List)</p> <p>4.7.4 Contribution of tree and forest products to GDP (BDT/yr)</p> <p>4.7.5 Investment in tree and forest management (BDT/Yr)</p>
	4.8 Sustainability of newly accreted tree plantation (Coastal)	<p>4.8.1 Area of coastal plantation per land cover classes (ha)</p> <p>4.8.2 Investment and expenditure in coastal tree management (BDT/Yr)</p> <p>4.8.3 Annual revenue (BDT/Yr)</p> <p>4.8.4 Disturbances (List by type and frequency)</p>
5. Equity of tree and forest resources allocation	5.1 Access to energy	<p>5.1.1 Energy sources (List)</p> <p>5.1.2 Price of energy (BDT by type)</p> <p>5.1.3 Tree species used for energy purposes (List)</p> <p>5.1.4 Household energy consumption (Kg or Liter per year)</p>

		<p>5.1.5 Fuelwood collection (Kg/month by season)</p> <p>5.1.6 Use of improve cooking stove (Yes or No, and BDT if yes)</p> <p>5.1.7 Type of access to energy (List)</p>
	5.2 Access to timber	<p>5. 2.1 Timber sources (List – domestic and international)</p> <p>5.2.2 Price of timber (BDT by type of species)</p> <p>5.2.3 Household timber consumption (m<sup>3</sup> per year)</p> <p>5.2.4 Major consumers (List by demand size - m<sup>3</sup> per year )</p> <p>5.2.5 Timber demand factors (List)</p> <p>5.2.6 Management of demand factors (List)</p>
	5.3 Access to non-timber forest products	<p>5. 3.1 NTFPs (List)</p> <p>5.3.2 NTFP sources (List)</p> <p>5.3.3 Price of NTFPs (BDT by type)</p> <p>5.3.4 Household proportion (Kg/yr) and consumption (Kg/yr)</p> <p>3.3.5 Frequency of NTFPs collection (times/yr)</p>
	5.4 Rights to access to tree and forest products	<p>5. 4.1 Tree and forest products</p> <p>5.4.2 Tree and forest user type</p> <p>5.4.3 Type of user's rights</p> <p>5.4.4 Limiting factor to access tree and forest resources</p> <p>5.4.5 Owner of tree and forest resources</p> <p>5.4.6 Security of access</p> <p>5.4.7 Social status</p> <p>5.4.8 Tree and forest product users</p>
	5.5 Rights to manage tree and forest products	<p>5.5.1 Land area of different land cover classes/uses</p> <p>5.5.2 Tree and forest managers</p> <p>5.5.3 Type of management</p> <p>5.5.4 Limiting factor to manage tree and forest resources</p> <p>5.5.5 Owner of tree and forest resources</p> <p>5.5.6 Security of manage</p> <p>5.5.7 Social status</p>
	5.6 Land tenure rights	<p>5.6.1 Land ownership type</p> <p>5.6.2 Tree and forest product</p> <p>5.6.3 Type of tree and forest users</p> <p>5.6.4 Clarity of land ownership</p>
	5.7 Access to capital for investment	<p>5.7.1 Tree and forest managers</p> <p>5.7.2 Tree and forest enterprise</p> <p>5.7.3 Annual revenue</p> <p>5.7.4 Type of access to credit</p> <p>5.7.5 Interest rate</p>
	5.8 Access to market	<p>5.8.1 Tree and forest managers</p> <p>5.8.2 Tree and forest enterprise</p> <p>5.8.3 Tree and forest users</p> <p>5.8.4 Distance to road</p> <p>5.8.5 distance to market</p> <p>5.8.6 Market value</p>

		5.8.7 Size of Market
	5.9 Allocation of tree and forest resources	5.9.1 Tree and forest managers 5.9.2 Land tenure where tree and forest products are extracted 5.9.3 Amount of extraction 5.9.4 Economic value of tree and forest products extracted 5.9.5 Percentage of income from tree and forest products 5.9.6 Participation in forest management activities 5.9.7 Benefit received from forestry participation 5.9.8 level of share of benefits 9.9 Gender of beneficiaries 5.9.10 Social status 5.9.11 Ethnicity 5.9.12 Presence of conflict 5.9.13 Type of conflict 5.9.14 Sources of conflict 5.9.15 Frequency of conflict
	5.10 Access to resources by indigenous people (in all zones)	10.1 Forest land area accessible to Indigenous people for subsistence purposes 10.2 Forest land area accessible to Indigenous people for continued cultured use 10.3 Forest land area accessible to Indigenous people for continued resource use 10.4 Indigenous people rights to access forest lands 10.5 Regime for indigenous people rights protection 10.6 Importance of cultural values for indigenous people 10.7 Evolution of indigenous people rights 10.8 Disturbances affecting indigenous people rights 10.9 Proportion of indigenous people involved in tree and forest economic activities 10.10 Dependence of indigenous people on tree and forest products 10.11 Seasonality of indigenous people dependence on tree and forest products 10.12 tree and forest products used by indigenous people 10.13 Accessibility of tree and forest products used by indigenous people 10.14 Total Full Time Equivalent and number of jobs indirectly and directly employed in the forest sector 10.15 Age of employment in the forestry sector 10.16 Gender profile of employment in the forestry sector 10.17 Participation of indigenous people in forestry decision making process

		<p>10.18 Involvement in tree and forests related network</p> <p>10.19 Major source of conflict indigenous people vs state</p> <p>10.20 Existence of conflict for harvesting of product</p> <p>10.21 Solving the conflict</p> <p>10.22 Capacity to manage tree and forest management</p> <p>10.23 Type of institutions involvement for forestry activities</p>
	5.11 Indigenous and non-Indigenous property rights	<p>5.11.1 Appropriate land tenure arrangements</p> <p>5.11.2 Recognition of cultural heritage rights of Indigenous peoples</p> <p>5.11.3 Level of satisfaction of Indigenous peoples involvement</p>
	5.12 Services received from tree and forest resources	<p>5.12. 1 Type of services received from tree and forests</p> <p>5.12.2 Economic value of the services</p> <p>5.12.3 Land area of different land cover classes/uses</p> <p>5.12.4 Importance of forest services</p> <p>5.12.5 Land area of the 5 zones</p> <p>5.12.6 Land area of the 4 administrative zones</p> <p>5.12.7 Land area of the 4 Forest administrative zones</p>
6. Resilience of tree and forest resources activities	6.1 Type of disturbances	<p>6.1.1 Type of disturbances</p> <p>6.1.2 Frequency of disturbances</p> <p>6.1.3 Intensity of disturbances</p> <p>6.1.4 Most three environmental disturbances</p> <p>6.1.5 Impacted tree and forest manager types</p> <p>6.1.6 Impacted tree and forest enterprise types</p> <p>6.1.7 Impacted tree and forest users types</p> <p>6.1.8 Proportion of annual revenue loss</p> <p>6.1.9 Impact of disturbances on annual revenue</p> <p>6.1.10 Major changes in household due to environmental disturbances</p> <p>6.1.11 Environmental threat to household's welfare in the future</p>
	6.2 Tree and forest cover changes	<p>6.2.1 Reason for changes</p> <p>6.2.2 Trend of changes tree/forest cover</p>
	6.3 Capacity to react to disturbances	<p>6.3.1 Type of disturbances</p> <p>6.3.2 Rank the three most significant disturbances</p> <p>6.3.3 Type of reaction through social organization</p> <p>6.3.4 Type of reaction by legal authority</p> <p>6.3.5 Type of reaction by tree and forest managers</p> <p>6.3.6 Type of reaction by tree and forest enterprises</p> <p>6.3.7 Coping strategies to react the disturbances</p>

	6.4 Adaptation to disturbances	6.4.1. Type of disturbances 6.4.2 Adaptation practices 6.4.3 Cost of adaptation practices 6.4.4 Income invested to adaptation practices
	6.5 Resilience of forest dependent communities to changing social and economic conditions	6.5.1 forest dependent communities' annual income 6.5.2 Sources of income 6.5.3 ability to come back original status 6.5.4 strategy to come back original stage 6.5.5 Importance of tree and forest products during emergency 6.5.6 Most three tree and forest product used during emergency 6.5.7 Constraint for not being able to adapt 6.5.8 Contribution of tree and forest products to total income 6.5.9 evolution of the contribution of tree and forest products to total income 6.5.10 drivers of the evolution of the contribution of tree and forest products to total income 6.5.11 Migration rate 6.5.12 tenure offered to forest dependent communities 6.5.13 evolution of tenure offered to forest dependent communities
7. Resilience of tree and forest resources activities	7.1. Impact of disturbances on tree and forest	7.1.1. Type of disturbances (List) 7.1.2. Temporal frequency of disturbances (days yr-1) 7.1.3. Intensity of disturbances (List) 7.1.4. Impacted tree and forest manager types (List) 7.1.5. Impacted tree and forest enterprise types (List) 7.1.6. Impacted tree and forest users types (List) 7.1.7. Impact of disturbances on annual revenue (Taka yr-1) 7.1.8. Proportion of annual revenue impacted (%)
	7.2. Capacity to react to disturbances	7.2.1. Type of disturbances (List) 7.2.2. Type of reaction through social organization (List) 7.2.3. Type of reaction by legal authority (List) 7.2.4. Type of reaction by tree and forest managers (List) 7.2.5. Type of reaction by tree and forest enterprises (List)
	7.3. Adaptation to disturbances	7.3.1. Type of disturbances (List) 7.3.2. Adaptation practices List) 7.3.3. Cost of adaptation practices (Taka yr <sup>-1</sup> ) 7.3.4. Percentage income invested to adaptation practices (%)

8. Equity of tree and forest resources allocation	8.1. Access to energy	8.1.1. Energy sources (list) 8.1.2. Price of energy sources (Taka) 8.1.3. Proportion of tree energy sources (%) 8.1.4. Household energy consumption (Taka yr <sup>-1</sup> ) 8.1.5. Tree and forest user type (List) 8.1.6. Distance to tree and forest resources (km) 8.1.7. Source of tree and forest energy (List)
	8.2. Access to timber	8.2.1. Timber sources (list) 8.2.2. Price of timber sources (Taka) 8.2.3. Proportion of timber in construction (%) 8.2.4. Household timber consumption (Taka yr <sup>-1</sup> ) 8.2.5. Tree and forest user type (List) 8.2.6. Distance to tree and forest resources (km) 8.2.7. Source of tree and forest timber (List)
	8.3. Access to non-timber forest products (NTFPs)	8.3.1. NTFPs (list) 8.3.2. Price of NTFPS (Taka) 8.3.3. Proportion of NTFPS in household consumption (%) 8.3.4. Household NTFPS consumption (Taka yr <sup>-1</sup> ) 8.3.5. Tree and forest user type (List) 8.3.6. Distance to tree and forest resources (km) 8.3.7. Source of NTFPs (List)
	8.4. Rights to access to tree and forest products	8.4.1. Tree and forest products (List) 8.4.2. Tree and forest user type (List) 8.4.3. Type of access (List) 8.4.4. Limiting factor to access tree and forest resources (List) 8.4.5. Owner of tree and forest resources (List)
	8.5. Rights to manage tree and forest products	8.5.1. Land use/cover (ha) 8.5.2. Tee and forest managers (list) 8.5.3. Type of management (List) 8.5.4. Limiting factor to manage tree and forest resources List) 8.5.5. Owner of tree and forest resources (List)
	8.6. Land tenure rights	8.6.1. Land ownership type (List) 8.6.2. Tree and forest products (List) 8.6.3. Clarity of land ownership
	8.7. Access to capital for investment	8.7.1. Type of access to credit (List) 8.7.2. Interest rate– IR (%)
	8.8. Access to market	8.8.1. Tree and forest managers (List) 8.8.2. Tree and forest enterprise (List) 8.8.3. Tree and forest users (List) 8.8.4. Distance to road (km) 8.8.5. Distance to market km) 8.8.6. Size of market (Taka)

	<p>8.9. Access to resources by indigenous people</p>	<p>8.9.1. Forest land area accessible to Indigenous people for subsistence purposes</p> <p>8.9.2. Forest land area accessible to Indigenous people for continued cultural use</p> <p>8.9.3. Forest land area accessible to Indigenous people for continued resource use</p> <p>8.9.4. Forest land area accessible to Indigenous people for continued resource use</p> <p>8.9.5. Indigenous people rights to access forest lands</p> <p>8.9.6. Regime for indigenous people rights protection</p> <p>8.9.7. Importance of cultural values for indigenous people</p> <p>8.9.8. Evolution of indigenous people rights</p> <p>8.9.9. Disturbances affecting indigenous people rights</p> <p>8.9.10. Proportion of indigenous people involved in tree and forest economic activities</p> <p>8.9.11. Dependence of indigenous people on tree and forest products</p> <p>8.9.12. Seasonality of indigenous people dependence on tree and forest products</p> <p>8.9.13. Tree and forest products used by indigenous people</p> <p>8.9.14. Accessibility of tree and forest products used by indigenous people</p> <p>8.9.15. Total Full Time Equivalent and number of jobs indirectly and directly employed in the forest sector</p> <p>8.9.16. Age of employment in the forestry sector</p> <p>8.9.17. Gender profile of employment in the forestry sector</p>
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### 3.4 QUESTIONNAIRE

#### Socio-economic Survey Data Sheet

#### Strengthening Capacity on Socioeconomic Components for National Forest Monitoring System in Bangladesh

##### 1. Location

Stratum:                      Lat:                                      Long:  
 District:                      Upazila:                                      Union:                                      Village:

##### 2. Respondent's profile

(a) Age(Yrs):                                      (b) Sex (Tick): MF                      (c) Education:  
 (d) Family Size (Number) : M=                      , F=                      (e) Household size (ha)                      (f) Household Ownership: (Own/Lease/Rent/BFD)  
 (g) Household income (BDT)                      (h) Ethnicity (tick) : Bengali                      Tribal,                      If Tribal, name it:  
 (i) Actor type(tick): user/manager/both

##### 3. List of tree and forest products (tick)

1. Timber                      2. Poles                      3. Fuelwood                      4. Tree leaves                      5. Logs  
 6. Fruits                      7. Nuts and Seeds                      8. Rubber (latex)                      9. Bamboo shoots                      10. Bamboo  
 11. Lianas & vines                      12. Reeds                      13. Medicinal plants                      14. Mushrooms                      15. ornamental  
 16. Fodder grass                      17. Fish and crabs                      18 Honey and wax                      19 Rattan                      20. Others (specify)

##### 4. Value of the annual removal of tree and forest products

Products	Frequency of extraction/year	Removal (Unit)	Unit Price (BDT)	Total Value (BDT)	Products	Frequency of extraction/year	Removal (Unit)	Unit Price (BDT)	Total Value (BDT)

##### 5. Fuelwood

Type (Branch=1, Leaves=2, Agri-residues=3, Bamboo=4, Log=5, other=6)	Collection frequency Weekly=2, Monthly=3, Yearly=4)	Amount per collection (Unit)	Total annual collection(Unit)	Major Fuelwood Species

##### 6. Quantity of and expenditure on Energy (annual)

User Type (Household=1, Brickfield=2, Commercial=3, Other=4)	Types (Fuelwood=1, Charcoal=2, Gas=3, Kerosene=4, Electricity=5, Biogas=6, Others =7)	Supply status (Increasing=1, decreasing=2, Unchange=3)	Demand (Unit)	Unit Price (BDT)	Total Cost (BDT)

##### 7. Method extraction and transportation

Extraction (Clear cut=1, Group selection=2, Single tree=3, Other=4)	Technology (Traditional=1, Chain saw=2, Other=3)	Transportation (Water=1, Road=2, Rail=3, Animal=4, Other=5)

##### 8. Total annual economic revenue (BDT) from forest and tree related sources

Tree and Forest Products (from 4 above) X	Forest Enterprises (Sawmill, Ecotourism, Carpentry, nursery etc.) Y	Forest related activities (Professional service, trade and transportation, labor wage etc.) Z	Total Forest related income (BDT) X+Y+Z

### 9. Diversity of tree and forest resources

List of indigenous species			List of exotic species		
Seedling	Sapling	Tree	Seedling	Sapling	Tree

### 10. Diversity of wildlife (List)

Animal type (mammal, aves, reptiles, amphibian)	Population trend (Increase=1, Decrease=2, Stable=3)	Reasons for decrease (Poaching=1, trade=2, habitat loss=3, others=4)	Vulnerability (1= high, 2=medium, 3=low)

### 11. List of disturbances (Starting from the most important cause)

Rank	Natural Causes (List)	Annual frequency (No.)	Rank	Anthropogenic Causes (list)	Annual frequency (No.)
1			1		
2			2		
3			3		
4			4		
5			5		

### 12. Impacts of natural or environmental disturbances

Disturbances (List of reasons)	Type of Impacts on (Hi=1, Moderate =2, Low=3, No Impact=4, Don't know =5)			Capacity to respond to such disturbances (Hi=1, Moderate =2, Low=3, No Impact=4, Don't know =5)		
	Native SP	Forest Enterprise	Households	Social Org	Legal Authority	Forest Enterprise

### 13. Displacement

Displaced (Yes=1, No=2)	Reasons (If yes) (socioeconomic deprivation=1, Natural calamities=2, Development=3, Forced=4, Other=5)	Possibility (if No) (Very high=1, High=2, Moderate=3, Low=4, No=5)

#### 14. Encroachment and development

Encroachment		Development		
Type (Agriculture=1, Grazing=2, Settlement=3, Others=4)	Tendency (Very high=1, High=2, Medium=3, Low=4)	Type (Communication=1, Embankment=2, Gas and power plants=3, Brickfield=4, Building Const=5, Other=6)	Trend (Increase=1, Decrease=2, Constant=3)	Type of Impacts (Hi=1, Moderate=2, Low=3, No Impact=4)

#### 15. Recreation and ecotourism

Recreation			Ecotourism		Potentials	
Type(list)	No. of Visitors/year	Location	Type (list)	No. of Visitors/year	No. of employment	(1=low, 2=medium, 3=high)

#### 16. Social forestry

Beneficiary (Yes=1, No=0)	Social status (Extreme poor=1, Poor=2, Middle=3, Rich=4)	Land allotted (unit)	Support Received (cash=1, seedlings=2, land=3, training=4)	Duration (Yrs)	Shares (No)	Benefit (BDT)

#### 17. Shifting Cultivation

Family members involved (No.)	Land Tenure (Own=1, BDF=2, Lease=3, Other=4)	Reason (No alternative=1, Profitable=2, Tradition=3, Other=4)	Area (ha)	Annual income (BDT/ha)	Total annual income (BDT)

#### 18. Betel Leaf Cultivation

Family members involved (No.)	Land Tenure (Own=1, BDF=2, Lease=3, Other=4)	Reason (No alternative=1, Profitable=2, Tradition=3, Other=4)	Area (ha)	Annual income (BDT/ha)	Total annual income (BDT)

#### 19. Presence of conflicts

Type (Land tenure=1, Access to forest=2, Agriculture=3, community dominance=4 Other=5)	Level (Very high=1, high=2, medium=3, low=4)	Management body (Community=1, BFD=2, Local administration=3, Traditional institution=4, Other=5)

#### 20. Legal Access to tree and forest resources

User type (Household=1, Commercial=2, Others=3)	Security of access (Permanent=1, Temporary=2, Seasonal=3, No security=4)	Limiting factors to access (Regulation=1, Ecotourism=2, Biodiversity conservation=3, Community rules=4, Others=5)	Clarity of land ownership (records of Right=1, Registered=2, Not reg=3, 4=Apply for registered, 5=Headman report, 6=Others (specify))	Type of access to credit (1=Government institutions (e.g. BRDB)_, 2=Banks_, 3=NGOs_, 4=Moneylenders_, 5=Relatives_, 6=Friends_, 7=Savings groups_, 8=Grants_, 9=Others )

#### 21. Rights of indigenous people

<b>Access to forest resources</b> (Yes=1, On permit=2, No=3)	<b>Importance of cultural value</b> (Very high=1, moderate=2, low=3, Very poor=4)	<b>Evolution of Rights</b> (Reduced=1, Increased=2, no change=3)	<b>Involvement in tree forest mgmt</b> (Yes=1, No=0)	<b>Sources of Info</b> (TV=1, Radio=2, Mobile=3, Newspaper=4, Other=5)

## 22. Policy:

<b>Information about policy</b> (Good=1, medium=2, poor=3, no idea=4)	<b>Capability of national policy</b> (Good=1, medium=2, poor=3, no idea=4)	<b>Level of understanding</b> (Good=1, medium=2, poor=3, no idea=4)	<b>Legislation awareness</b> (Yes=1, Otherwise=2)

## 23. Importance of community involvement in tree and forest management

<b>Community involvement</b> (Very good=1, good=2, moderate=3, bad=4)	<b>Female involvement (%)</b>	<b>Presence of co-management group</b> (1=Yes, 2=No)	<b>Reduction of illegal activities due to co-management</b> (strongly agree=1, somewhat agree=2, disagree=3, strongly disagree=4)	<b>Social forestry reduced poverty</b> (strongly agree=1, somewhat agree=2, disagree=3, strongly disagree=4)

**24. Illegal activities:** Illegal logging, Poaching, Arson, Wildlife trading, Corruption, Stone collection, hill cutting, Conversion of forest land into agriculture etc.

<b>Major five</b> (List from above)	<b>Rank</b> (1 to 5)	<b>Frequency</b> (No./Yr)	<b>Type of person</b> (Local=1, outsider=2, middlemen=3, Others4)

## 25. Compliance with laws and penalty

**Frequency of incidents of, and fines for noncompliance (Nos./yr):** \_\_\_\_\_

**Law enforcers of formal rules:** 1=Village head\_\_, 2=community forest/customary institutions\_\_, 3=forest officer (FD)\_\_, 4=Other (specify)\_\_\_\_\_

**Type of penalty:** 1=fee (cash payment), 2=warning\_\_, 3=temporary exclusion from resource use\_\_, 4=permanent exclusion from resource use\_\_, 5=court (jail)\_\_, 6=No punishment

**Frequency of government official visit:** 0=never\_\_, 1=Hardly ever\_\_, 2=regularly (>1 time /month)\_\_, 3=Frequently (>1 time/week)\_\_\_

## 26. Acceptability of present forest management

**Acceptability of management (Co-management, Social forestry, Ecotourism):** 1=Highly acceptable\_\_, 2=Moderately acceptable\_\_, 3=Less acceptable\_\_, 4=Not acceptable

**Benefit sharing of social forestry:** 1=equally distributed\_\_, 2=Not equality distributed\_\_, 3=Don't know\_\_

**Participation of forestry practices (social forestry, co-management, Ecotourism):** 1=Highly participation\_\_,  
2=Moderately participation\_\_, 3=Less participation\_\_, 4=No participation\_\_