

## **Baseline Survey Report**

### **Name of the project**

Itchari Community Reserve Forest Conservation Project (ICRFC)

### **Implementing entity**

BIRAM, Khagrachari

Partner NGO of Arannayk Foundation

### **Prepared by**

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## Introduction:

This report describes the baseline survey result designed to establish the initial conditions of the project “**Itchari Community Reserve Forest Conservation Project (ICRFC)**” implemented by **Biram**, Khagrachari, partner NGO of Arannayk Foundation. Forests and forest lands play a pivotal life-supporting role in the lives of tribal community across the Chittagong Hill Tracts (CHTs). They provide them all with many benefits including their livelihoods, vital ecosystem services, raw materials, fuel and goods for trading. Yet these benefits are being seriously eroded by the mounting momentum of deforestation. The survey was designed to observe the socio-economic conditions of the local indigenous people and current status of the biodiversity resources especially timber, fuel, medicinal plants, wildlife and their uses in Khagrachari Hill District. The CHT is now one of the most backward regions in Bangladesh. Most of the forestlands are hilly and un-classed. The people of this region are indigenous. Most of them are poor and residing in Govt. Khas (unregistered) Land or on Indigenous King’s Property. On the other hand, a large number of peoples are still nomad and practicing jhum/sifting cultivation in fallow hills, villages and becoming the victim of total adverse situation. It was observed that the problems of the target people are mostly interlinked with land and its agro-ecological situation. Since, their resettlement is now a major issue; further, income, fruits-based nutrition and non timber, medicinal plants and indigenous species are also now essential to fulfill their primary needs. It is true that most of the village peoples (about 80%) are living under poverty level. It is not that they are idle or afraid of doing works but they are not that much aware of minimum use of their traditional agro-forest resources that they have at least specifically with their surrounding slope farmland. Forest destruction is a continuous process in the hilly areas as indigenous people depend on forests for their survival and cut trees, occupies forest lands and other underhand activities at the forest areas. So, most of the forests resources, non-timber forest products, medicinal plants and biodiversity resources are being destroyed day by day in the study area. One community reserve forest/village common forest (VCF) dependent communities have been involved in the proposed project. Community reserve forests or VCFs are usually managed under the leadership of village karbaries and mouza headman or run by elected committees. Both male and female member of the community are involved in the conservation of the VCFs, but female do not generally have any role in major decision-making processes. Itchari community reserve forest is rich in biodiversity and under extreme threat of loss due to illegal logging and fuel wood collection. The project initially assumed that food insecurity including declining access to land, forest products and income from agricultural products is the most important constraints for livelihood security in Chittagong Hill Tracts (CHTs). At present unavailability of forest products (Bamboo, Cane, Timber, and Non-timber etc.) causes unyielding of the production of natural resources based production. This situation arises due to pressure of increasing population, over-use of land for cultivation, allotment of hill-lands at private ownership and improper management of the government sponsored plantation/forestation projects or through declaring reserved forests. The majority of the indigenous people in CHTs have low incomes and most of the trade and commerce are controlled by outsiders and political elites linked to national political parties. Once jhum or swidden (shifting) cultivation was highly productive and jhum technology had been helpful to sustain life and livelihood of the hill people. The indigenous people were once self sufficient to

meet their demand for food, clothes and shelter. But now the situation has changed due to population pressure, over exploitation of natural resources, shortening of the fallow period from 15-20 years to 3-4 years for jhum, political unrest etc. and the indigenous people are facing food insecurity that in a sense destroying the biodiversity and the natural resource base of the CHTs. In this connection the proposed base line survey tried to gather information on the current status of the homesteads and owned or leased hilly lands to which the local people depend for their food, timber, fuel and medicinal products and income. The survey also tried to appraise the biodiversity of the homesteads and the hills.

#### **Objectives of the baseline survey:**

- To assess the socioeconomic conditions of the people living in the study area.
- To identify the biodiversity available in the homesteads and hilly areas of the study area.
- To identify the lost/endangered biodiversity from homesteads and hilly areas.

#### **Methodology of the baseline survey:**

The baseline survey was conducted at the homesteads and hilly areas of the proposed project area of Biram in 260 no Itchari Mouza, 2 no Kamolchari Union, Khagrachari Sadar Upazila of Khagrachari Hill District, a hill forest zone with semi-evergreen and sub-tropical forest types, to assess the forest resources, households' economic status, their dependence on forest resources & agricultural products and gender role in agro-forestry practices. The proposed project includes one community reserve or village common forest (VCF) of Itchari community forest reserve. The baseline survey was conducted in two phases. First, a homestead survey was conducted with a pre-structured questionnaire in the study area. A total of 20 households were surveyed from two villages/paras, namely, Itchari Moidday Para and Itchari Vitor Para from where project participants will be selected by Biram. The head of each selected household was interviewed to gather required information. Then a forest survey was conducted by passing through the forest reserves of Itchari community reserve forest with a group of experts to identify and list the plant species present in the forests. The collected data were analyzed and presented in the result section.

#### **Description of the study area:**

**Itchari Moidday Para** and **Itchari Vitor Para** are located under 260 no Itchari Mouza, 2 no Kamolchari Union, Khagrachari Sadar Upazila of Khagrachari Hill District. The number of families in Itchari Moidday Para is 36 and in Itchari Vitor Para 129 with 165 families in total. The study area is located under 23° 30' and 23.32' North latitude and 92° 21' and 92.22' East longitude. Average altitude of the area is 950-970 m above mean sea level. Total population of the study area is 810 with average family size of 5. The main source of income of the community people is mainly agriculture and jhum. Both male and female members of the community work in agricultural lands and hilly areas. But there is discrimination in wage rate. Woman usually gets lower rate (80 Tk/day) compared to man (120 Tk/day). Community people do not have any ownership right or any sort of registration of the hilly lands they stay or occupy but they have

some sort of ownership on the agricultural lands (Photo 1). Area of the community reserve forest of Itchari is 105 acre which is managed as community reserve since 1970. Community reserve forests or Village common forests (VCF) are usually managed by the community people. Usually one committee formed from the community people is responsible for the management of this reserve. The community people usually do not cut trees or bamboos from the reserve. But if someone cut or extract any resource without prior permission of such committee or steal any resource from the reserve then he is fined for his action. However poor people are allowed to extract any resource from the reserve to meet their emergency need if they seek permission from the management committee.



(a)



(b)

**Photo 1:** Typical homesteads in (a) Itchari Moidday Para and (b) Itchari Vitor para

## Results:

### Part I: Homesteads survey

#### ***Respondents' age, sex and education level***

The result of the survey shows that the average age of the respondent is 44 years and they are most responsible person of the community. Among the respondents all of them are male (100%) (Table 1). Educational status of the respondents' show that most of the respondents are literate (75%) having primary level education (25%), secondary level education (25%), S.S.C. (20%) and H.S.C. level education (5%) (Table 1). It is found that all the families (100%) are engaged in agriculture and tree farming as primary occupation. However, majority of them (65%) are also involved in secondary occupation that includes mainly other category (40%) including daily labourer followed by business (20%) and service (5%) (Table 2).

**Table 1:** Distribution of respondent households by respondents' age, sex and educational level (Note: M= male; F= Female; Illi= Illiterate; Pri.= Primary; Secon.= Secondary) (values in the parentheses denote percentages).

Para name	Age	Sex			Education					
		M	F	Total	Illi	Pri.	Secon.	S.S.C.	H.S.C.	Total
<b>Itchari Moidday Para (n= 10)</b>	46.6	10 (100)	-	10 (100)	3 (30)	1 (10)	3 (30)	2 (20)	1 (10)	10 (100)
<b>Itchari Vitor Para (n= 10)</b>	41.7	10 (100)	-	10 (100)	2 (20)	4 (40)	2 (20)	2 (20)	-	10 (100)
<b>Total (n= 20)</b>	<b>44.15</b>	<b>20 (100)</b>	-	<b>20 (100)</b>	<b>5 (25)</b>	<b>5 (25)</b>	<b>5 (25)</b>	<b>4 (20)</b>	<b>1 (5)</b>	<b>20 (100)</b>

**Table 2:** Distribution of respondent households by occupation (values in the parentheses denote percentages).

Para name	Primary Occupation		Secondary Occupation			
	Agriculture	Total	Business	Service	Other	Total
<b>Itchari Moidday Para (n= 10)</b>	10 (100)	10 (100)	3 (30)	-	4 (40)	3 (30)
<b>Itchari Vitor Para (n= 10)</b>	10 (100)	10 (100)	-	1 (10)	4 (40)	2 (20)
<b>Total (n= 20)</b>	<b>20 (100)</b>	<b>20 (100)</b>	<b>4 (20)</b>	<b>1 (5)</b>	<b>8 (40)</b>	<b>5 (65)</b>

### **Family size, sex and earning member**

Average family size in the study area is 5.35 of which 2.8 (52%) are female and the rest 2.6 (48%) are male (Table 3). Among the family members most of them were found in the younger age category of 0-30 years (64%). On average each family has 1.55 (29% of the total family size) earning members of which 1.05 are male (20% of the total family size) and 0.50 are female (9% of the total family size) (Table 3). This result shows that both male and female are earning members of the family meaning women are more or less equally involved in income generating or livelihood activities. But women are usually deprived of their labour compared to male. If women work as daily labourer they get less wage compared to the male member of the community.

**Table 3:** Distribution of respondent households by family size, sex and total earning members (values in the parentheses denote percentages) (Note: M= Male, F= Female, T= Total).

Para name	Sex	Family size (age class)							Earning member (% of total family size)
		<10	10-20	20-30	30-40	40-50	>50	Total	
Itchari Moidday Para (n=10)	M	0.3 (6)	0.50 (10)	0.60 (12)	0.50 (10)	0.30 (6)	0.40 (8)	2.6 (51)	1.1 (22)
	F	0.4 (8)	0.50 (10)	0.60 (12)	0.50 (10)	0.20 (4)	0.30 (6)	2.5 (49)	0.6 (12)
	<b>T</b>	<b>0.7 (14)</b>	<b>1.0 (20)</b>	<b>1.2 (24)</b>	<b>1.0 (20)</b>	<b>0.5 (10)</b>	<b>0.7 (14)</b>	<b>5.1 (100)</b>	<b>1.7 (33)</b>
Itchari Vitor Para (n=10)	M	0.70 (13)	0.50 (9)	0.50 (9)	0.30 (5)	0.20 (4)	0.30 (5)	2.5 (45)	1.00 (18)
	F	0.80 (14)	0.90 (16)	0.60 (11)	0.30 (5)	0.20 (4)	0.30 (5)	3.1 (55)	0.40 (7)
	<b>T</b>	<b>1.50 (27)</b>	<b>1.40 (25)</b>	<b>1.10 (20)</b>	<b>0.60 (11)</b>	<b>0.40 (7)</b>	<b>0.60 (11)</b>	<b>5.6 (100)</b>	<b>1.40 (25)</b>
Total (n=20)	M	0.50 (9)	0.50 (9)	0.55 (10)	0.40 (7)	0.25 (5)	0.35 (7)	2.6 (48)	1.05 (20)
	F	0.60 (11)	0.70 (13)	0.60 (11)	0.40 (7)	0.20 (4)	0.30 (6)	2.8 (52)	0.50 (9)
	<b>T</b>	<b>1.10 (21)</b>	<b>1.20 (22)</b>	<b>1.15 (21)</b>	<b>0.80 (15)</b>	<b>0.45 (8)</b>	<b>0.65 (12)</b>	<b>5.35 (100)</b>	<b>1.55 (29)</b>

### **Land resources**

Land resources occupied by each family in the study area are 422.35 decimals of which most of the lands are hilly (69%) including homesteads (41%) and adjacent hills (28%). The community people also have some plain agriculture land (31%) (Table 4). Hilly lands are usually used for jhum or tree plantation. The situation in Itchari Moidday Para is different from Itchari Vitor Para

in that in Moidday Para most of the areas are occupied by homesteads (61%) of which 56% are tree areas compared to Vitor Para where most of the lands (45%) are hilly which is used for trees and jhum. However, average land resources occupied by each family are higher in Itchari Moidday Para (467.40 decimals) compared to Itchari Vitor Para (377.30 decimals) (Table 4).

**Table 4:** Distribution of respondent households by land resources (in decimals) (DU= Dwelling unit; AS= Animal shed) (values in the parentheses denote percentages).

Para name	Homestead land					Agricultural land			Hilly land	Total land	
	DU	Trees	AS	Yard	Pond	Sub total	Own	Lease			Sub total
<b>Itchari Moidday Para (n=10)</b>	4.50 (1)	108.95 (23)	1.00 (0.2)	3.95 (0.8)	-	118.40 (25)	77.00 (16)	60.00 (13)	137.00 (29)	212.00 (45)	467.40 (100)
<b>Itchari Vitor Para (n=10)</b>	5.60 (1.5)	212.60 (56)	2.60 (0.7)	4.30 (1.1)	4.20 (1.1)	229.30 (61)	107.00 (28)	16.00 (4)	123.00 (33)	25.00 (7)	377.30 (100)
<b>Total (n=20)</b>	5.05 (1.2)	160.78 (38)	1.80 (0.4)	4.13 (1)	2.10 (0.5)	173.85 (41)	92.00 (22)	38.00 (9)	130.00 (31)	118.50 (28)	422.35 (100)

### **Family income**

Analysis of the family income of the respondent households' shows that average family income in the study area is 43330 Taka/year of which maximum amount of the income (71%) comes from farming including 40% income from crops or jhum products (paddy, vegetables, spices etc.), 16% income from tree products (fruits and timber) and 15% income from agricultural labour followed by business (14%), other category (11%) and service (3%). However, average family income was found higher in Itchari Moidday Para (49560 Taka/year) compared to Itchari Vitor Para (37100 Taka/year) (Table 5).

**Table 5:** Distribution of households' family income (Taka/year) in the study area (values in the parentheses denote percentage of total income)

Para name	Agricultural products	Fruits	Timber	Labour	Service	Business	Others	Total income
<b>Itchari Moidday Para (n=10)</b>	12360 (25)	5400 (11)	3300 (7)	13200 (27)	-	12500 (25)	2800 (6)	49560 (100)
<b>Itchari Vitor Para (n=10)</b>	22600 (61)	-	5200 (14)	-	3000 (8)	-	6300 (17)	37100 (100)
<b>Total (n=20)</b>	17480 (40)	2700 (6)	4250 (10)	6600 (15)	3000 (3)	6250 (14)	4550 (11)	43330 (100)

### **Plant diversity**

Table 6 list the plant species and Table 7 shows the plant diversity measures present in the homesteads of the study area. A total of 69 different plant species were found in the homesteads and hills of the study area of which 60 different plant species were found in Itchari Moidday Para and 34 species were found in Itchari Vitor Para (Tables 6 & 7). Table 6 lists the plant species present in the study area with their local and scientific names. Usually the community people are more dependent on crops and tree products that are grown in and around the homesteads, agricultural land and hilly areas occupied or owned by them. Among plant diversity different timber, fruit and medicinal species are found growing. It is evident that **Kantal** (100%), **Am** (90%), **Banana** (90%), **Litchi** (90%), **Papaya** (90%) and **Gamar** (80%) were found dominating in the homesteads and hills of Itchari Moidday Para and on the other hand **Am** (80%), **Jambura** (80%), **Kantal** (80%), **Litchi** (80%), **Segun** (80%), **Gamar** (70%) and **Narikel** (70%) were found dominating in the homesteads and hills of Itchari Vitor Para (Table 7). Species density was found higher for **Segun** (936) followed by **Bamboo** (796), **Pineapple** (212), **Banana** (81), **Gamar** (37) and **Am** (28) in Itchari Moidday Para. Again, species density was found higher for **Segun** (2716) followed by **Garjon** (600), **Banana** (148), **Chatian** (120) and **Gamar** (61) in Itchari Vitor Para (Table 7). In total species density was found higher for Itchari Vitor Para (4084) compared to Itchari Moidday Para (2396). However both the measures are good from bio-diversity point of view. In case relative density highest percentage was also observed for **Segun** (39%) followed by **Bamboo** (33%), **Pineapple** (9%) and **Banana** (3%) in Itchari Moidday Para and on the other hand, in Itchari Vitor Para higher relative density was observed for **Segun** (67%) followed by **Garjon** (15%), **Banana** (4%) and **Chatian** (3%) (Table 7).

**Table 6:** List of plant species present in the study area.

Sl. No.	Species name/ Local name	Scientific name
1	Am	<i>Mangifera indica</i>
2	Amloki	<i>Phyllanthus emblica</i>
3	Amra	<i>Spondias pinnata</i>
4	Arhar	<i>Cajanus cajan</i>
5	Ata	<i>Annona squamosa</i>
6	Bagan bilash	<i>Bougainvillea glabra</i>
7	Bait begun	<i>Solanum spp.</i>
8	Bamboo	<i>Bambusa spp.</i>
9	Banana	<i>Musa sapientum</i>
10	Bohera	<i>Terminalia bellerica</i>
11	Bot	<i>Ficus bengalensis</i>
12	Chalta	<i>Dillenia indica</i>
13	Chapalish	<i>Artocarpus chaplasha</i>
14	Chatian	<i>Alostonia scholaris</i>
15	Dharmara	<i>Stereospermum personatum</i>
16	Dumor	<i>Ficus spp</i>
17	Dutara (Sada)	<i>Datura stramonium</i>



18	Fonimanasha	Unknown
19	Fuljumuri	<i>Anogeissus acuminata</i>
20	Gada ful	<i>Togetes erecta</i>
21	Gamar	<i>Gmelina arborea</i>
22	Garjon	<i>Dipterocarpus turbinatus</i>
23	Goda	<i>Vitex glabrata</i>
24	Gora neem	<i>Melia sempervirens</i>
25	Gritakumari	<i>Aloe vera</i>
26	Guiful	Unknown
27	Holdu	<i>Adina cordifolia</i>
28	Hona gula	<i>Oroxylum indicum</i>
29	Jaba	<i>Hibiscus rosa-sinensis</i>
30	Jadena	Unknown
31	Jaganna gula	<i>Ficus racemosa</i>
32	Jam	<i>Syzygium cumini</i>
33	Jambura	<i>Citrus grandis</i>
34	Kala bashak	Unknown
35	Kalputra ful	Unknown
36	Kantal	<i>Artocarpus heterophyllus</i>
37	Kaogula	<i>Garcinia cowa</i>
38	Karpas tula	<i>Gossypium herbaceum</i>
39	Khejur	<i>Phoenix sylvestris</i>
40	Komola	<i>Citrus sinensis</i>
41	Konai	Unknown
42	Konak	<i>Schima wallichii</i>
43	Koroi	<i>Albizia procera</i>
44	Koroti pata	Unknown
45	Kul	<i>Zizyphus mauritiana</i>
46	Kusumgola	<i>Schleichera oleosa</i>
47	Lebu	<i>Citrus spp.</i>
48	Litchi	<i>Litchi chinensis</i>
49	Mahagoni	<i>Swietenia mahagoni</i>
50	Malta	<i>Citrus sinensis</i>
51	Muliful	Unknown
52	Narikel	<i>Cocos nucifera</i>
53	Nayantara	<i>Vinca rosea</i>
54	Painnagola	<i>Flacourtia jangomas</i>
55	Papaya	<i>Carica papaya</i>
56	Peara	<i>Psidium guajava</i>
57	Pineapple	<i>Ananas sativus</i>
58	Safeda	<i>Manilkara zapota</i>
59	Sajne	<i>Moringa oleifera</i>

60	Sarpogandha	<i>Rouwolfia serpentina</i>
61	Sebarung lata	Unknown
62	Segun	<i>Tectona grandis</i>
63	Simul tula	<i>Bombax ceiba</i>
64	Sorbet	<i>Toona ciliata</i>
65	Supari	<i>Areca catechu</i>
66	Tetul	<i>Tamarindus indica</i>
67	Tooth	<i>Morus indica</i>
68	Tulshi	<i>Ocimum sanctum</i>
69	Udal	<i>Sterculia colorata</i>

**Table 7:** Analysis of the plant diversity present in the study area (Note: Nos.= Number of trees/culms; HH%= Percentage households; SD= Species density; RD= Relative density)

Sl. No.	Species name	Itchari Moidday Para				Itchari Vitor Para			
		Frequency		SD	RD (%)	Frequency		SD	RD (%)
		Nos.	HH%			Nos.	HH%		
1	<b>Am</b>	<b>249</b>	<b>90</b>	<b>27.67</b>	1.15	<b>259</b>	<b>80</b>	32.38	0.79
2	Amloki	22	30	7.33	0.31	16	10	16.00	0.39
3	Amra	4	10	4.00	0.17	5	10	5.00	0.12
4	Arhar	108	20	54.00	2.25	-	-	-	-
5	Ata	7	50	1.40	0.06	-	-	-	-
6	Bagan bilash	3	10	3.00	0.13	-	-	-	-
7	Bait begun	4	10	4.00	0.17	-	-	-	-
8	<b>Bamboo</b>	<b>3981</b>	50	<b>796.20</b>	<b>33.23</b>	1	10	1.00	0.02
9	<b>Banana</b>	<b>730</b>	<b>90</b>	<b>81.11</b>	<b>3.39</b>	<b>740</b>	50	<b>148.00</b>	<b>3.62</b>
10	Bohera	9	20	4.50	0.19	5	10	5.00	0.12
11	Bot	4	10	4.00	0.17	-	-	-	-
12	Chalta	7	30	2.33	0.10	-	-	-	-
13	Chapalish	-	-	-	-	12	20	6.00	0.15
14	<b>Chatian</b>	-	-	-	-	120	10	<b>120.00</b>	<b>2.94</b>
15	Dharmara	22	30	7.33	0.31	-	-	-	-
16	Dumor	6	20	3.00	0.13	-	-	-	-
17	Dutara	1	10	1.00	0.04	-	-	-	-
18	Fonimanasha	5	10	5.00	0.21	-	-	-	-
19	Fuljumuri	-	-	-	-	16	20	8.00	0.20
20	Gada ful	3	10	3.00	0.13	-	-	-	-
21	<b>Gamar</b>	<b>294</b>	<b>80</b>	<b>36.75</b>	1.53	<b>430</b>	<b>70</b>	<b>61.43</b>	1.50
22	<b>Garjon</b>	-	-	-	-	600	10	<b>600.00</b>	<b>14.69</b>
23	Goda	18	30	6.00	0.25	62	20	31.00	0.76
24	Gora neem	4	10	4.00	0.17	-	-	-	-
25	Gritakumari	3	10	3.00	0.13	-	-	-	-

26	Guiful	3	10	3.00	0.13	-	-	-	-
27	Holdu	10	10	10.00	0.42	-	-	-	-
28	Hona gula	-	-	-	-	5	10	5.00	0.12
29	Jaba	3	20	1.50	0.06	-	-	-	-
30	Jadena	2	10	2.00	0.08	-	-	-	-
31	Jaganna gula	-	-	-	-	1	10	1.00	0.02
32	Jam	90	80	11.25	0.47	80	30	26.67	0.65
33	<b>Jambura</b>	8	30	2.67	0.11	57	<b>80</b>	7.13	0.17
34	Kala bashak	10	10	10.00	0.42	-	-	-	-
35	Kalputra ful	1	10	1.00	0.04	-	-	-	-
36	<b>Kantal</b>	<b>84</b>	<b>100</b>	8.40	0.35	<b>364</b>	<b>80</b>	45.50	1.11
37	Kaogula	1	10	1.00	0.04	-	-	-	-
38	Karpastula	5	10	5.00	0.21	25	10	25.00	0.61
39	Khejur	6	30	2.00	0.08	-	-	-	-
40	Komola	17	30	5.67	0.24	117	50	23.40	0.57
41	Konai	2	10	2.00	0.08	-	-	-	-
42	Konak	52	20	26.00	1.09	24	30	8.00	0.20
43	Koroi	5	40	1.25	0.05	130	20	65.00	1.59
44	Koroti pata	2	10	2.00	0.08	-	-	-	-
45	Kul	1	10	1.00	0.04	3	20	1.50	0.04
46	Kusungola	5	10	5.00	0.21	-	-	-	-
47	Lebu	13	50	2.60	0.11	14	40	3.50	0.09
48	<b>Litchi</b>	<b>90</b>	<b>90</b>	10.00	0.42	<b>109</b>	<b>80</b>	13.63	0.33
49	Mahagoni	-	-	-	-	1	10	1.00	0.02
50	Malta	-	-	-	-	25	10	25.00	0.61
51	Muliful	2	10	2.00	0.08	-	-	-	-
52	<b>Narikel</b>	20	70	2.86	0.12	33	<b>70</b>	4.71	0.12
53	Nayantara	5	10	5.00	0.21	-	-	-	-
54	Painnagola	3	20	1.50	0.06	1	10	1.00	0.02
55	<b>Papaya</b>	32	<b>90</b>	3.56	0.15	14	20	7.00	0.17
56	Peara	15	50	3.00	0.13	43	50	8.60	0.21
57	<b>Pineapple</b>	1060	50	<b>212.00</b>	<b>8.85</b>	-	-	-	-
58	Safeda	1	10	1.00	0.04	-	-	-	-
59	Sajne	4	20	2.00	0.08	-	-	-	-
60	Sarpoganda	3	10	3.00	0.13	-	-	-	-
61	Sebarang lata	10	10	10.00	0.42	-	-	-	-
62	<b>Segun</b>	<b>5615</b>	60	<b>935.83</b>	<b>39.06</b>	<b>21731</b>	<b>80</b>	<b>2716.38</b>	<b>66.52</b>
63	Simultula	6	10	6.00	0.25	-	-	-	-
64	Sorbek	-	-	-	-	106	20	53.00	1.30
65	Supari	26	30	8.67	0.36	9	20	4.50	0.11
66	Tetul	10	40	2.50	0.10	14	40	3.50	0.09
67	Toth	5	10	5.00	0.21	-	-	-	-

68	Tulshi	10	10	10.00	0.42	-	-	-	-
69	Udal	10	10	10.00	0.42	-	-	-	-
Total		12731	-	2396	100	25172	-	4084	100

The respondent households also grow turmeric, zinger and some vegetables especially beans, brinjals, barbati, misti kumra, lau, etc. for their own use and to get some extra income in their homesteads and hills.

### ***Income from tree and agricultural products***

The respondents in the study area were asked to know the cost and benefit from plant products grown by them annually. It is found that on average each family earns a total net benefit of 15685 Taka/year from plant products including fruits (2670 Taka/year), timber (4300 Taka/year), vegetable (5666 Taka/year) and spices (3050 Taka/year) (Table 8).

**Table 8:** Distribution of respondent households by income from plant products (Taka/year/household) grown by them.

Para name	Fruits			Timber			Vegetables			Spices			Total NB
	Benefit	Cost	NB	Benefit	Cost	NB	Benefit	Cost	NB	Benefit	Cost	NB	
<b>Itchari Moidday Para (n=10)</b>	2800	536	2264	3950	650	3300	12823	4437	8386	730	210	520	14470
<b>Itchari Vitor Para (n=10)</b>	3275	200	3075	5500	200	5300	3810	865	2945	7500	1920	5580	16900
<b>Total (n=20)</b>	3038	368	2670	4725	425	4300	8317	2651	5666	4115	1065	3050	15685

### ***Collection of forest resources***

The respondent households were asked to know the type and quantity of forest resources they usually collect from the neighbouring forests. It is observed that respondent households usually collect fuel wood and sometimes sungrass. Each family in the study area was found to collect 131 mounds of fuel wood and 3 bundles of sungrass per year travelling a distance of 0.78 kilometres. They usually spend about 6.05 hours a day on average in collecting forest resources (Table 9).

**Table 9:** Distribution of respondent households by the collection of forest resources.

Para name	Fuel (Mound)	Sungrass (Bundle)	Distance (Km)	Time spent (hours/day)
Itchari Moidday Para (n=10)	87.0	6	0.95	5.90
Itchari Vitor Para (n=10)	174.3	0	0.61	6.20
<b>Total (n=20)</b>	<b>130.7</b>	<b>3</b>	<b>0.78</b>	<b>6.05</b>

**Lost Species**

The homestead survey tried to find out the species that are lost from the homesteads and hilly regions of the study area. The respondent households were asked to identify the name(s) of the lost species from their homesteads and hilly lands. It is found that a total of 10 tree species were identified by the respondents of the study area that were lost from the locality. Among the lost species **Koroi (40%), Jaganna gula (20%), Telsur (20%)** and **Garjon (20%)** are the mostly answered plant species that are lost from the study area (Table 10).

**Table 10:** Frequency distribution of respondents' perception about lost species in the study area (Note: HH= Number of households responded).

Sl. No.	Species name	Scientific name	Itchari Moidday Para (n=10)		Itchari Vitor Para (n=10)		Total (n=20)	
			HH	%	HH	%	HH	%
1	<b>Jaganna gula</b>	<i>Ficus racemosa</i>	3	30	1	10	4	20
2	<b>Koroi</b>	<i>Albizia spp.</i>	6	60	2	20	8	40
3	<b>Telsur</b>	<i>Hopea odorata</i>	3	30	1	10	4	20
4	Dharmara	<i>Stereospermum personatum</i>	2	20	1	10	3	15
5	Latkon	<i>Baccaura ramiflora</i>	2	20	0	0	2	10
6	Goda	<i>Vitex glabrata</i>	2	20	0	0	2	10
7	Achar gula	<i>Microcos paniculata</i>	1	10	0	0	1	5
8	Jarul	<i>Lagerstroemia speciosa</i>	1	10	0	0	1	5
9	Gutguttiya	<i>Protium serratum</i>	3	30	0	0	3	15
10	<b>Garjon</b>	<i>Dipterocarpus turbinatus</i>	3	30	1	10	4	20

**Causes of and problems faced due to loss of species**

The respondents were also asked to identify the causes of and problems faced due to loss of plant species from the study area. It is found that population pressure (85%) is identified as the major cause of biodiversity loss followed by building houses (55%) and jhum/shifting cultivation (45%) in the study area (Table 11). The respondent households were also identified a lot of problems they are facing due to biodiversity loss from the study area. Most of them (80%)

answered that they face problems due to biodiversity loss (Table 11). Some of the mentionable problems identified by majority of the respondents are less rainfall (65%), lower production (65%), and increased temperature (45%) (Table 11).

### **Recommendation for biodiversity conservation**

The respondent households were asked to know their perception about how to overcome the loss of biodiversity from the study area. It is evident that most of the households responded to plant trees with jhum or shifting cultivation (85%) followed by mixed plantation (45%) (Table 11).

### **Distribution of labour in homestead agro-forestry activities**

The household survey also tried to identify the labour involvement in homestead agro-forestry activities especially on women involvement. Table 12 shows the different agro-forestry activities in the homesteads with the labour involvement based on sex. It is found that both male and female member(s) of the household are performing most of the activities where male (62%), female (35%) and hired labour (3%) perform the total agro-forestry activities in the study area (Table 12). It is evident that most of the agro-forestry works including nursing, planning and choice of species are performed at more or less equal percentage by both male and female member(s) of the respondent households. However selling of agro-forestry products is mostly performed (90-95%) by male members of the households in both the communities although very few female members (5%) and hired labours (3%) were also seen to perform this job (Table 12).

**Table 11:** Frequency distribution of respondent households by the reason (s) and difficulty faced for biodiversity loss and recommendation for biodiversity conservation in the study area (values in the parentheses denote percentages).

<b>Reasons, difficulties and recommendations</b>	<b>Respondents' perceptons</b>	<b>Itchari Moidday Para (n=10)</b>	<b>Itchari Vitor Para (n=10)</b>	<b>Total (n=20)</b>
<b>Reason for biodiversity loss from the homesteads or forests</b>	<b>Population pressure</b>	<b>7 (70)</b>	<b>10 (100)</b>	<b>17 (85)</b>
	Natural calamities	3 (30)	-	3 (15)
	Lack of money	2 (10)	-	2 (5)
	<b>Jhum cultivation</b>	<b>5 (50)</b>	<b>4 (40)</b>	<b>9 (45)</b>
	Fuel wood collection	4 (40)	-	4 (20)
	<b>Building houses</b>	<b>3 (30)</b>	<b>8 (80)</b>	<b>11 (55)</b>
<b>Difficulty occurred due to Biodiversity loss</b>	<b>Yes</b>	<b>8 (80)</b>	<b>8 (80)</b>	<b>16 (80)</b>
	No	2 (20)	2 (20)	4 (20)
<b>Types of difficulties occurred due to biodiversity loss</b>	<b>Less rain fall</b>	<b>6 (60)</b>	<b>7 (70)</b>	<b>13 (65)</b>
	Reduced water in the stream	4 (40)	1 (10)	5 (25)
	<b>Lower production</b>	<b>7 (70)</b>	<b>6 (60)</b>	<b>13 (65)</b>
	<b>Increased temperature</b>	<b>6 (60)</b>	<b>3 (30)</b>	<b>9 (45)</b>

	Increased soil erosion in hilly areas	1 (10)	-	1 (5)
<b>Recommendation for biodiversity conservation</b>	<b>Tree planting with jhum</b>	<b>10 (100)</b>	<b>7 (70)</b>	<b>17 (85)</b>
	Mixed plantation	5 (50)	4 (40)	9 (45)

**Table 12:** Distribution of labour (%) in homestead agro-forestry activities.

Para name → Agro-forestry activities↓	Itchari Moidday Para (n=10)			Itchari Vitor Para (n=10)			Total (n=20)		
	M	F	H	M	F	H	M	F	H
<b>Planning</b>	62	38	0	55	45	0	59	42	0
<b>Choice of species</b>	62	38	0	55	45	0	59	42	0
<b>Seedling collection</b>	62	38	0	60	40	0	61	39	0
<b>Propagation</b>	62	38	0	60	40	0	61	39	0
<b>Planting</b>	62	38	0	60	40	0	61	39	0
<b>Nursing</b>	54	46	0	50	45	5	52	43	5
<b>Fertilizer application</b>	54	46	0	50	50	0	52	48	0
<b>Weeding</b>	54	46	0	50	40	10	52	38	10
<b>Harvesting</b>	54	26	20	51	35	14	53	33	14
<b>Trees</b>	54	32	14	53	35	12	54	34	13
<b>Fruits</b>	54	33	13	53	35	12	54	34	13
<b>Vegetable</b>	54	10	36	50	40	10	52	38	10
<b>Spices</b>	54	33	13	50	40	10	52	37	12
<b>Medicinal plants</b>	55	20	25	50	25	25	53	25	23
<b>Processing</b>	61	31	8	60	40	0	61	36	4
<b>Selling</b>	95	0	5	90	10	0	93	5	3
<b>Total</b>	<b>64</b>	<b>33</b>	<b>4</b>	<b>60</b>	<b>38</b>	<b>2</b>	<b>62</b>	<b>35</b>	<b>3</b>

### ***Social/Development organizations working in the study area***

The study also tried to find out the organisations working in the study area for social and/or other development. It is found that no government or nongovernmental organizations (NGOs) is working in the study area for the community people. Most of them are found not interested to take loans from any organisation as they have a fear in mind that the organisations may be fraud.

### **Group Discussion:**

The baseline survey also attempted to find out the opinion of the community people through Focus Group Discussion (FGD). The objective of the FGD was to identify how the community people think about biodiversity conservation and social development in general. The result of the FGD shows that people of the study area are considering different alternate income generating activities, such as, service, daily labour, cattle rearing, fish culture, fruit orchard etc.

(Table 13). FGD also suggest that the forest of the study area was once rich with biodiversity but now lost its richness due to population growth and poor economic condition of the community people. FGD concludes that **Garjon, Champa, Dup tree, Horitaki, Tali** and **Telsur** are some of the important tree species and **Shakun, Dudu bird, Tiger, Deer, Porcupine, Wild dog, Bon rui, Bagh dash, Fox** and **Monkey** are some of the important wildlife species that are lost from the reserve forest areas (Table 13). Planting trees, stop cutting trees and improving economic capacity of the people are some of the recommendations by the community people to conserve lost biodiversity (Table 13). **Am, Kul, Malta and Champa ful** are some of the preferred species to plant. According to FGD the government can take initiative to develop communication system and provide legal rights to land and NGOs can provide fund to improve the life style of the community people which will play positive role to conserve biodiversity (Table 13).

**Table 13:** Results of Focus Group Discussion (FGD)

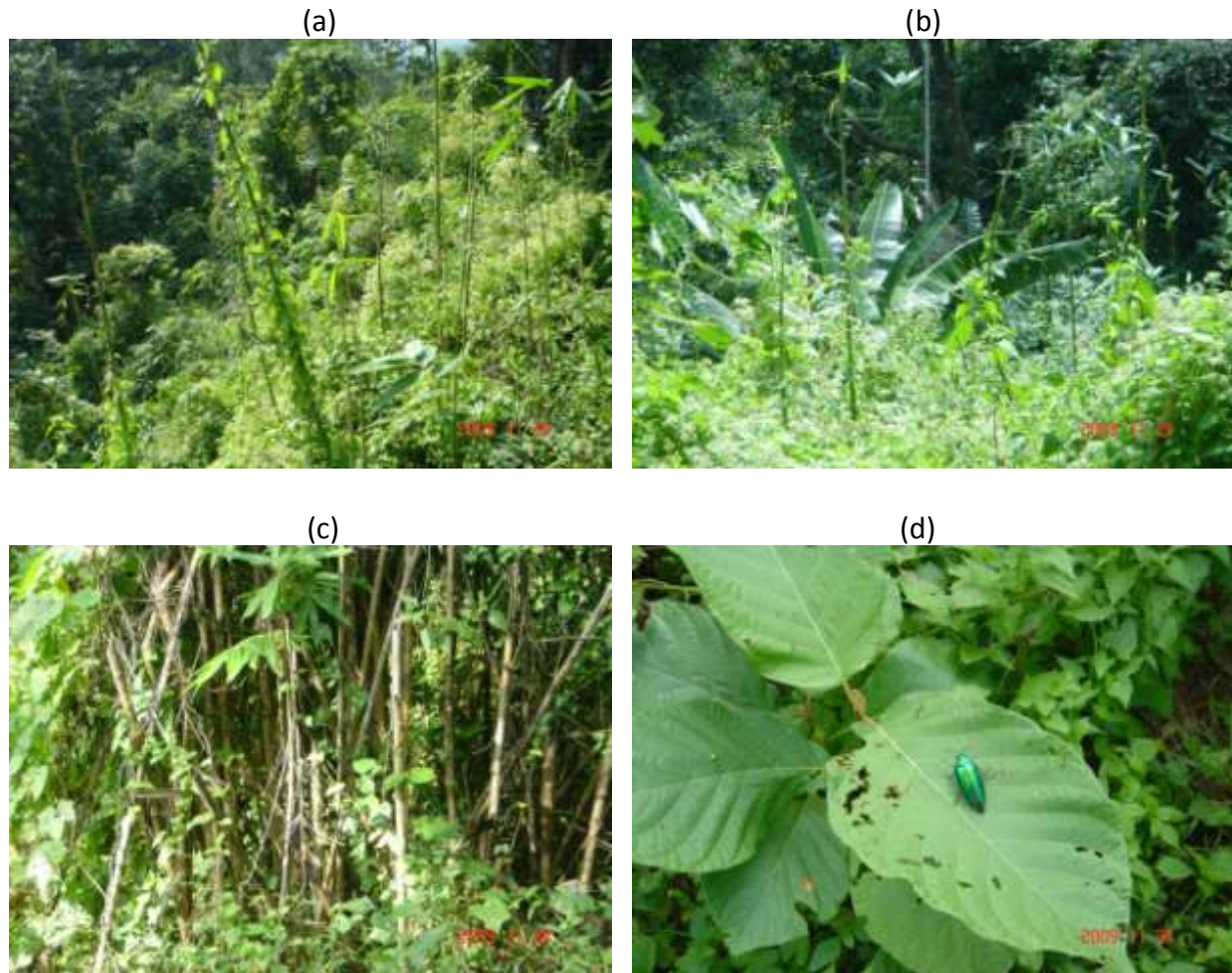
<b>Questions</b>	<b>Answers</b>
<b>Alternate income</b>	Service, daily labour, cattle raring, fish culture, fruit orchard
<b>Reasons for biodiversity loss</b>	Population growth; poor economic condition
<b>Lost plant species</b>	Garjon, Champa, Dup tree, Horitaki, Tali, Telsur
<b>Lost wildlife</b>	Shakun, Dudu bird, Leopard, Deer, Porcupine, Wild dog, Bon rui, Bagh dash, Fox, Monkey
<b>How to conserve biodiversity</b>	Planting trees, stop cutting trees, improve economic capacity
<b>Species preference to plant</b>	Am, Kul, Malta, Champa ful
<b>Govt. Initiative</b>	Develop communication system; provide legal rights to land
<b>NGO initiative</b>	May provide funds to the community people for different alternate income generating activities

## **Part II: Forest Survey**

Forest survey was conducted in Itchari community reserve forest in 260 no Itchari Mouza, 2 no Kamolchari Union, Khagrachari Sadar Upazila of Khagrachari Hill District. It is done by walking through the forest reserves with a group of experts and identifying and observing the species found in the forests and also identifying the regeneration status on the forest floor. The reserve forest is being managed since 1970 and the condition seems good. A management committee formed by the people from both Itchari Moidday para and Itchari Vitor para headed by a president manage the forest. The forests of the reserves seem very good with both natural and artificial plantations as this is maintained as community reserve or village common forest (VCF) for long and biodiversity are occurring naturally in these reserves (Photos 2). A total of 37 different species were seen or identified in the community reserve of the study area (Table 14). The regeneration status of the forests was found good as seen from Photo 2 with lots of herbs and shrubs species and huge number of Ulot kombal, Hona gola and Bhat. It is a matter of great



hope that the forest is rising again after the bamboo havoc that happened couple of years ago with mass flowering and dying of the total bamboo resources throughout the Chittagong Hill Tracts as evidenced from lots of bamboo regeneration in the forests (Photo 2a and Photo 2b). The forests are also rich in wildlife biodiversity including Deer, Porcupine, Wild dog, Fox, Monkey, Wild boar, Common birds, Snakes, Lizards, Bon murag, Dove, Bat, Owl, Leopard, etc.



**Photo 2:** Itchari community reserve forests showing regeneration status of bamboo after bamboo havoc in CHTs couple of years ago.

**Table 14:** List of species found in the village common forests of the study area.

Sl. No.	Species name/local name	Scientific name
1	Achar gola	<i>Microcos paniculata</i>
2	Bamboo	<i>Bambusa spp.</i>
3	Banana	<i>Musa sapientum</i>
4	Barmala	<i>Callicarpa tomentosa</i>
5	Bhadi	<i>Garuga pinnata</i>
6	Bhat	<i>Clerodendrum viscosum</i>
7	Biddri pata	Unknown
8	Bohera	<i>Terminalia bellerica</i>
9	Buddu narikel	<i>Pterygota alata</i>
10	Chakua koroi	<i>Albizia chinensis</i>
11	Chatian	<i>Alostonia scholaris</i>
12	Dakroom	<i>Mitragyna parvifolia</i>
13	Dharmara	<i>Stereospermum personatum</i>
14	Dumor	<i>Ficus hispida</i>
15	Elena goda	<i>Antidesma acidum</i>
16	Fuljhumuri	<i>Anogeissus acuminata</i>
17	Gamar	<i>Gmelina arborea</i>
18	Goda	<i>Vitex glabrata</i>
19	Hona gola	<i>Oroxylum indicum</i>
20	Jam	<i>Syzygium cumini</i>
21	Jaganna gola	<i>Ficus racemosa</i>
22	Kala koroi	<i>Albizia lebbek</i>
23	Kao	<i>Garcinia cowa</i>
24	Konak	<i>Schima wallichii</i>
25	Molaccana koroi	<i>Paraserianthes falcataria</i>
26	Meda	<i>Litsea monopetala</i>
27	Moida	Unknown
28	Pitali	<i>Trewia nudiflora</i>
29	Ramoni pata	Unknown
30	Rong gach	<i>Morinda angustifolia</i>
31	Sada koroi	<i>Albizia procera</i>
32	Sani sil gach	Unknown
33	Segun	<i>Tectona grandis</i>
34	Simul tula	<i>Bombax ceiba</i>
35	Sorbet gola	<i>Toona ciliata</i>
36	Sungrass	<i>Impereta cylindrica</i>
37	Ulot kombal	<i>Abroma augusta</i>

## **Conclusion:**

Finally, it can be said that the people of the study area are mainly dependent on agriculture and agro-forestry products (with 56% of total family income) they get from their agricultural lands, homesteads and hills (Tables 5 & 8). However, the people of Itchari Vitor para (with 75% of total family income) are more dependent on agro-forestry activities compared to Itchari Moidday para (with 43% of total family income) (Table 5). Kantal (100%), Am (90%), Banana (90%), Litchi (90%), Papaya (90%) and Gamar (80%) were found dominating in the homesteads and hills of Itchari Moidday Para and on the other hand Am (80%), Jambura (80%), Kantal (80%), Litchi (80%), Segun (80%), Gamar (70%) and Narikel (70%) were found dominating in the homesteads and hills of Itchari Vitor Para (Table 7). Koroï (40%), Jaganna gula (20%), Telsur (20%) and Garjon (20%) are the mostly answered plant species that are lost from the study area (Table 10). Population pressure (85%) is identified as the major cause of biodiversity loss followed by building houses (55%) and jhum/shifting cultivation (45%) in the study area. Most of the respondents (80%) answered that they face problems due to biodiversity loss. Some of the mentionable problems identified by majority of the respondents are less rainfall (65%), lower production (65%), and increased temperature (45%) (Table 11). Planting trees with jhum or shifting cultivation (85%) followed by mixed plantation (45%) are some of the recommendations for biodiversity loss by the respondents (Table 11). It is found that both male and female member(s) of the household are performing most of the activities where male (62%), female (35%) and hired labour (3%) perform the total agro-forestry activities in the study area (Table 12). According to community people the government can take initiative to develop communication system and provide legal rights to land and NGOs can provide fund to improve the life style of the community people which will play positive role to conserve biodiversity (Table 13). From the forest survey it is evident that the forests of the reserves seem very good with both natural and artificial plantations as these are maintained as community reserve or village common forest (VCF) for long and biodiversity are occurring naturally in these reserves. It is a matter of great hope that the forest is rising again after the bamboo havoc that happened couple of years ago with mass flowering and dying of the total bamboo resources throughout the Chittagong Hill Tracts as evidenced from lots of bamboo regeneration in the forests (Photo 2a and Photo 2b). The forests are also rich in wildlife biodiversity including Deer, Porcupine, Wild dog, Fox, Monkey, Wild boar, Common birds, Snakes, Lizards, Bon murag, Dove, Bat, Owl, Leopard, etc. If this project can successfully implement their planned activities in the study area including supported tree planting, providing training and supporting alternative income generating (AIG) activities it will bring a positive impact on the biodiversity of the region and help people earn extra income from producing plant resources and reducing dependency on forests which will enrich the biodiversity of the region and certainly improve the environmental quality of the study area.