

# **Site-level Field Appraisal for Protected Area Co-management: Teknaf Game Reserve Cox's Bazar**



**Teknaf Site  
IPAC – Southeastern Cluster  
Cox's bazar, July 2009**

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## 1. Introduction

Responding to the needs to address forest conservation and related economic opportunities Nishorgo Support Project (2004-2008) in 2004 conducted a Participatory Rural Appraisal (PRA) in Teknaf Game Reserve (TGR). The study encompasses assessing biophysical features, threats and potentialities of biodiversity conservation in the TGR. The Nishorgo Support Project aimed at demonstrating a replicable case for promoting good governance system that would ensure sustainable management of protected areas in Bangladesh. A follow up project entitled 'Integrated Protected Area Co-management (IPAC) has been undertaken for the duration of June 2008 to May 2013. The study focused on the progress and achievements made in the Nishorgo sites during NSP and updated the baseline information for IPAC. It also includes the ecologically critical areas (ECA) in the Teknaf peninsula.

## 2. Methodology

This study mainly based on series of meetings/discussions with FD personnel, CMCs, CPGs, key informants, local community members and extensive field site visits. Further, secondary information, particularly based on various case studies, research papers and other documents published during NSP period concerning the TGR and ECA. PRA up gradation tools used in the study during March-July 2009 are as follows:

Table 1: Major field activities and PRA tools used for the study.

Study events	Number of Events	Remarks
CMC meetings	14	Monthly CMC meetings
CPG meetings	52	Regular meetings with community patrol groups
Federation meetings	3	
FUG meeting	1	
Eco-tour guide meeting	1	
Co-management council meeting	1	
Co-management Day observation	1	
World Environment Day observation	1	
Student hiking	1	

Nishorgo Library follow-up activity	23	
Nishorgo club meetings	2	With local youths and students
Field visits	Regularly arranged	On-site visit in the local community with FD personnel
Key informant interviews	10	Local elites, FD and members of resource user groups
News publication	4	
Miking program	2	
Spot based IPAC orientation meeting	3	

### 3. Status Assessment of TGR

Teknaf Game Reserve has been broadly classified as a tropical evergreen forest. The vegetation of the reserve originally considered of tall mixed evergreen trees, which primarily occurred in deep valleys and shaded slopes, dominated by unique Garjan trees. Now the hills are mainly denuded, dominated by sun grass, herbs and shrubs and brush woods. Teknaf Game Reserve is a part of the former Teknaf Reserve Forest and established through a gazette notification in 1983. The TGR covers approximately an area of 11,615 ha.

### 4. Biophysical condition of TGR

The Teknaf Game Reserve represents the only one game reserve in the country. By the government notification, it covers a comparatively larger area of 11,615 ha to preserve the unique habitat of majestic Asian Elephants. Discussions with local community personnel, meeting with different SHs, field visits and based on PRA of TGR in 2004 by Nishorgo Support Project (NSP) trends of quality and uses forest resources with relevant causes are assessed. The study shows that forest coverage in TGR has been decreasing since 90's and the shift in forest management, with the advent of NSP, resulted in coverage and density, especially in the lower canopy. As a result, habitat for wildlife has improved and caused more abundance of wild animals. Encroachment, illegal timber poaching and fuel wood collection has recently decreased remarkably at a stage whereby no further encroachment is visible. However, a segment of local people still heavily dependent on forest land for housing and fuel. Overall, Teknaf Game Reserve (TGR) is

still suffering from several pressures namely encroachment, illegal removal of forest produces, and transformation of lands due to political influence and lack of law enforcement. Local people and forestry personnel opined that over the NSP duration, number of wildlife has increased remarkably, particularly jungle fowl, pig, elephant, monkey, deer etc. A recent analysis on abundance and uses of forest resources is given below:

Table 2: Trend analysis (forest quality and resource use matrix)

Issue	Pre-1971	25 years ago	Before NSP (1998-2004)	Before IPAC (present 2009)	Major causes for change
Forest cover	0	0	0	0	Excessive exploitation/ tree felling/tree poaching/ expansion of settlement and agricultural activities & betel leaf cultivation, land encroachment and conversion/ problem in regeneration caused gradual decline. NSP interventions brought a positive change in forest coverage.
Forest thickness	0	0	0	0	Excessive exploitation/ tree felling/tree poaching/ expansion of settlement and agricultural activities & betel leaf cultivation, land encroachment and conversion/ problem in regeneration caused gradual decline. NSP interventions brought a positive change in forest coverage.
Tall trees	0	0	0	0	Due to illegal removal of mature trees over decades no tall trees are left in the TGR; however, community involvement under NSP lights a promising future.
Herbs and shrubs/ undergrowth	0	0	0	0	Due to reduced human interference recently shrub coverage is more visible in the TGR

<b>Issue</b>	<b>Pre-1971</b>	<b>25 years ago</b>	<b>Before NSP (1998-2004)</b>	<b>Before IPAC (present 2009)</b>	<b>Major causes for change</b>
Wildlife	0	0	0	0	TGR habitat was largely degraded before 1990s; habitat restoration and fodder plantation raised under NSP facilitate to increase of wildlife in the TGR.
Hunting	0	0	0	0	Due to mass awareness and strict patrolling by FD-CPG and communities, hunting has reduced; But in TGR range area some incidents of hunting (pig, deer, jungle fowl etc) are reported.
Illegal tree felling	0	0	0	0	Lack of suitable timber trees, mass awareness and strict patrolling by FD-CPG and communities, illegal tree felling is reduced; however, in TGR range illegal tree felling incidents are often unreported by FD.
Fuel wood collection	0	0	0	0	Due to lack of fuel wood in HH levels, less protection, unemployment and increasing population pressure fuel wood collection is increased; on the other hand availability of fuel wood in the forests is significantly decreased.
Land encroachment	0	0	0	0	Though recently new encroachment is negligible, forest villagers and migrant encroachers are expanding their family sizes and consequently encroached area is increasing.
Bamboo and cane collection	0	0	0	0	Due to recent flowering in Bamboo grooves and subsequent dying, bamboo collection has decreased.
Fruit bearing trees in the wild.	0	0	0	0	New plantation with fruit bearing trees.

<b>Issue</b>	<b>Pre-1971</b>	<b>25 years ago</b>	<b>Before NSP (1998-2004)</b>	<b>Before IPAC (present 2009)</b>	<b>Major causes for change</b>
Betel leaf cultivation inside the WS	0	0	0	0	Due to lack of law enforcement and political influence in the area
Agricultural activities inside forest	0	0	0	0	Due to political pressure FD is unable to recover these areas. No further land use transformation occurred in the area.
Wildlife	0	0	0	0	A remarkable abundance of wildlife is reported.

Recent records exhibits that since 2003/04, FD has been continuing plantations in the hills of TGR and up to 2008-09 a total of 780.0 ha plantation has been raised as following table.

Table 3: Plantations in TGR

<b>Year</b>	<b>Name of Beat</b>	<b>Plantation Area (Ha)</b>	<b>Remarks</b>
2003-04	Whykong	70	
	Rokkong	60	
	Monkhali	20	
2004-05	Rokkong	55	
2005-06	Whykong	50	
	Rokkong	50	
	Monkhali	20	
2006-07	Whykong	71.5	
	Shamlapur	10	
	Teknaf	4	
	Mochani	20	
	Maddya Hnila	20	
	Hnila	10	
2007-08	Whykong	72	
	Monkhali	135	
	Mochani	2	
	Madda Nila	25	

2008-09	Whykong	80	Participatory Plantation
	Mochani	10	Participatory Plantation

In TGR there are about 113 villages or settlements are identified during the study hosting a population about 150,000. These settlements are either inside or adjacent or close the TGR and largely dependent on it. Following table shows these settlements under the jurisdiction of respective forest beats and their level of stake with the TGR.

Table 4: Interface Villages/Paras having stakes in TGR

Sl No	Village	Beat	Location	Level of Stake
1.	Poran para	Shamlapur	inside	Major
2.	Natun para	„	inside	“
3.	Gochha gram	„	Adjacent	“
4.	Montolipara	„	„	“
5.	Jumpara	„	inside	“
6.	Rohingapara	„	Adjacent	“
7.	Kerontoli	Whykong	inside	“
8.	Chammapara	Monkhali	„	“
9.	Gilatoli	Whykong	„	“
10.	Chakmapar		“	“
11.	Katakhali	„	Adjacent	Moderate
12.	Balukhali	„	„	“
13.	Horikhula	„	„	“
14.	Ulobonia	„	Inside	Major
15.	Tulatoli	„	Adjacent	Moderate
16.	Whykong	„	„	“
17.	Chakmapara	„	Inside	Major
18.	Dhaingakata	„	„	“
19.	Tanghaingapara	„	„	“
20.	Lombagona	„	„	“
21.	Laturikula	Roikong	Inside	“
22.	Amtoli	„	„	“
23.	Lombabeel	„	„	“
24.	Unchipran	„	Adjacent	Moderate
25.	Roikong	„	Inside	Major
26.	Kerontoli	Teknak	„	Moderate
27.	Poran pollan para	„	Adjacent	“
28.	Kaikhali para	„	„	“
29.	Islamabad & natun pallan para	„	„	“



<b>SI No</b>	<b>Village</b>	<b>Beat</b>	<b>Location</b>	<b>Level of Stake</b>
30.	Damdamia	„	Inside	Major
31.	Teknaf bazar	„	Adjacent	“
32.	Naitongpara	„	„	“
33.	Kharak khali	„	„	Minor
34.	Uttar Jalia Para	„	„	Negligible
35.	Daskhin Jaliapara	„	„	“
36.	Hangar para	„	„	Minor
37.	Daispara	„	„	“
38.	Oliabad	„	„	“
39.	Teknaf reserve Forest	„	Inside to Adjacent	Major
40.	Hatir Ghona	„	Adjacent	Moderate
41.	Natun Para	„	„	“
42.	Boroitoli	„	Inside	Major
43.	Nithong Para	„	„	“
44.	Lengurbeel	„	„	“
45.	Katabunia	„	Near to Adjacent	Minor
46.	Jahalia Para	„	Inside	Major
47.	Hechapara	„	„	“
48.	Dumdomipara	Mochuni	„	Major
49.	Jhadimurapara	„	„	“
50.	Noyapara	„	„	“
51.	Chakmapara	„	„	“
52.	Mochunipara	„	Adjacent	Moderate
53.	Noyapara Rohingya Camp	„	Inside	Major
54.	Daskhin Leda	„	„	“
55.	Moidhya Leda	„	„	“
56.	Leda Lamarpara	„	„	“
57.	Leda Puchingapara	„	„	“
58.	Purbo Rongikhali	„	„	“
59.	Paschim roingikhali	„	„	“
60.	Uttar Leda	„	Adjacent+Inside	Moderate
61.	Daskhin Alikhali	„	Adjacent	“
62.	Moidhya Alikhali	„	Inside	Major
63.	Ali Akborpara	Hnila	„	“
64.	Rojerghona	„	„	“
65.	Marichaghona	„	Adjacent	“
66.	Ali Khali	„	„	Moderate
67.	Villagerpara	„	Inside	Major
68.	Shikderpara	„	Adjacent	Moderate
69.	Uttapara	„	„	“
70.	Daskhinpara	„	„	“

<b>SI No</b>	<b>Village</b>	<b>Beat</b>	<b>Location</b>	<b>Level of Stake</b>
71.	Konapara	„	„	“
72.	Majgerpara	„	„	“
73.	Muslimpara	„	Outside	“
74.	Nikhani Khali	„	Adjacent+Inside	
75.	Chowdhuripara	„	Outside	Moderate
76.	Fulerdail	„	„	“
77.	Pankhali	„	Adjacent+Inside	Major
78.	Kutobdiapara	Moidhya hnila	Adjacent	Moderate
79.	Khanjonpara	„	„	“
80.	Karachipara	„	„	“
81.	Rajarghona	„	„	“
82.	Noyapara	„	„	“
83.	Jimonkhali	„	„	“
84.	Purbo satghoriapara	„	Outside	“
85.	Paschim Satghoriapara	„	Inside	Major
86.	Purbo Moheshkhaliapara	„	Adjacent	Moderate
87.	Moheshkhaliapara	„	„	Major
88.	Komboniapara	„	Inside	“
89.	Nachorpara	„	Outside	Moderate
90.	Moughpara	„	„	Major
91.	Daskhin Dailpara	Shilkhali	Inside	“
92.	Jahajpura Mathpara	„	„	“
93.	Miarpara	„	„	“
94.	Holbunia	„	Adjacent	Moderate
95.	Kaderpara	„	„	“
96.	Uttar Chakmapara	„	Inside	Major
97.	Daskhin Chakmapara	„	Inside+Adjacent	“
98.	Uttar Shilkhali	„	Inside	“
99.	Chokiderpara	„	Outside	Moderate
100.	Rajar Chhara	Rajar Chharra	Inside	Major
101.	Habib Chhara	„	„	“
102.	Mathpanir Chhara	„	„	“
103.	Darga Chhara	„	„	“
104.	Tulatoli	„	„	“
105.	Hatirghona	„	„	“
106.	Lambori	„	„	“
107.	Kachchharipara	Mathabhanga	Inside+Adjacent	“
108.	Karachipara	„	„	“
109.	Noakhali	„	„	“
110.	Borodial	„	“	“
111.	Marishbonia	“	“	“
112.	Mathabhanga	“	“	“
113.	Hazampara	“	“	“

## 5. Stakeholder Analysis in TGR

A total 29 categories of stakeholder groups are identified in the Teknaf Game Reserve. Out of them, 21 are primary who are involved directly in forest resources extraction and forest conservation activities and the rest are secondary stakeholder groups. Among them fuel wood collectors, illegal timber feller and betel leaf collectors have major stakes with the forest having significant role in forest degradation. The detail information on the important primary and secondary stakeholders is given bellow:

Table 5. Identified stakeholder groups in Teknaf Game Reserve and NSP interventions.

Sl no.	Stakeholder (SH) name/type	SH description	SH category	Impact on forest and its resources	Role/Description of activities of SH
1	Sun-grass collector	People of day all works/day labor/forest villagers	Primary	Decreasing wildlife habitat	They collect sun-grass and after collecting they burn that Chhan mohol
2	Betel leaf cultivator	Forest villagers and local poor and middle class people	Primary	Forest land are temporarily encroached, burning the under growth	Forest villager and outside people encroach land and for betel leaf cultivation ,they burn the under growth for preparing the field and cutting bamboos for making fence.
3	Bamboo Collector	Local poor and betel leaf cultivator	Primary	Bamboos are declining and elephant food is reducing	Collect wild bamboos which already reduced for HHs use and for sell. Use bamboo for fencing in betel leaf plot and other purposes

Sl no.	Stakeholder (SH) name/type	SH description	SH category	Impact on forest and its resources	Role/Description of activities of SH
4	Brick field Owner:	Influential persons from outside are dominant ones	Secondary	Purchase fuel wood from the local people and also appoint labor to cut trees.	Brickfield owners have active involvement in co-management organization. They are aware of rules and regulation of forest laws but due to political support and local needs they are often use fuel from forests and often escape from law enforcement. Sometimes they influence fuel wood collectors in illicit collection of the same from forests.
6	Fuel wood collectors	Poor men and women, children and tribal	Primary	Forest resources are reducing seriously.	75% of fuel wood collectors are aware of NSP interventions. About 25% poor fuel wood collectors and daily labors are included in the FUGs and CPGs under NSP. They are provided with training support, awareness and motivational program on forest conservation and protection.
7	Timber merchant	Local businessmen	Secondary	Engaged daily labor for illegal tree felling	Purchase timber from illegal feller
8	Hunter	Influential local people and some ethnic people	Primary	Many species are becoming endangered.	They hunt/trap wild animals such as deer, pig, wild cock porcupine etc.
9	Dry leaf collector	Children and old women	Primary	fertility of forest land is highly reducing	They collect for own consumption and often sold it in local market.
10	Medicinal plant collector	Traditional healer	Primary	Number of trees are reducing .	Collect leaf, bark, fruits, root and herbs.

Sl no.	Stakeholder (SH) name/type	SH description	SH category	Impact on forest and its resources	Role/Description of activities of SH
11	Bamboo Collector	Local poor and betel leaf cultivator	Primary	Bamboos are declining and elephant food is reducing	Collect wild bamboos which already reduced for HHs use and for sell. Use bamboo for fencing in betel leaf plot and other purposes
12	Illegal Tree feller	Poor people/employed labor, armed gang, influential persons are involved	Primary	Forest area is reducing highly.	Selectively fell valued trees and transport it to various places
13	Cane collector	Poor women & men,	Primary	Cane are disappearing in the forest.	They collect cane and use it for handicrafts or sell.
14	Fruit Collector	local people, child	Primary	Foods of wildlife are reducing.	Collect various fruits (Lata mangos, litchi, Chapalish Kanthat, Daa, Bakumgola, Chalta, Amloky, Olive, Hartoki, bohera, banana etc). Often cowgola are collected for selling in local market.
15	Vegetables Collector	Direct child & woman	Primary	Wildlife habitat and plant species are destroying.	Collect vegetables (aurum, Dacki etc) for own uses
16	Fishermen:	Poor and middle class local people	Primary	Fish production diversity of fish species are seriously decreasing.	Catch fishes in streams and some people culture fish in streams and creaks
17	Tea stall Owner	Local people	Secondary	They are encouraging the collector to destroy the forest.	They purchase fuel wood from the children or people and sometimes they also visit WS for collecting their own fuel wood, and use it as fuel

Sl no.	Stakeholder (SH) name/type	SH description	SH category	Impact on forest and its resources	Role/Description of activities of SH
18	Saw mill owner	Local influential person	Secondary	Timber and planted trees are decreasing	purchase fuel wood from the local people and some times engage labors to collect fuel wood.
19	Boat owner/maker	Solvent people/carpenter	Secondary	Forest trees are declining especially the Garjan	They transport the timber and help the tree poachers.
20	Fodder collector:	Forest villagers, local farmer, farm owners, fodder seller and cow boys	Primary	Plant species are destroying.	Collect grass as fodder; often send their bull, buffalo and cattle to forest for grazing during rainy season and paddy cultivation period.
21	Outsider researcher	Different university team.	Secondary	Not very much	Collect several sample trees such as medicinal plants or animal survey.
22	Chander gari	Solvent people	Secondary	Tree poacher are encouraged	They transport the timber and help the tre poachers

## 6. Demography of Dependent Communities

Forest villagers were set up the mid 1920s, by Forest Department who were leased small areas of land (2 acres) to a certain number of households within the Reserve Forest area. In return, the villagers are expected to help the Forest Department in raising the plantations and undertake others duties such as regular patrolling. The total number of registered and enlisted forest villagers stands near about 350 in the TGR. Local people estimate suggest that the number of people claiming to be forest villager would be near 5000 HHs.

Internal governance of forest villagers, in between the forest villagers, they have an internal system. They select or elect a headman who coordinates the activities of forest villagers. But it was revealed that the headman in most of the cases plays negative roles, involved in land encroachment and sometimes also helped the illegal feller.

Table 6: Beat wise encroachment in TGR

Sl.	Name of Beat	Encroached Area	Comments
01	Teknaf Beat	134.05 Hectare	The forest villagers and other local people illegally encroached forest land
02	Mochani Beat	122.41 Ha	„
03	Hnila Beat	13.06 Ha	„
04	Madda Hnila Beat	123.14 Ha	„
05	Whykong Beat	14.30 Ha	„
06	Rokkong Beat	16.34 Ha	„
07	Shamlapur Beat	9.57 Ha	„
08	Monkhali Beat	29.13 Ha	„

During the NSP period 15 community patrolling groups (CPGs) were formed under in three Forest Ranges of TGR namely Shilkhali, Whykeong and Teknaf. A total of 595 CPG members were included in the groups. All of them received AIGA assistance from the NSP. They have been participating in the patrolling activities with the Forest Department staff .The following CPGs were formed during Nishorgo Support Project.

Table 7: Community patrol groups under TGR

Sl No	Name of CPG	Name of Beat	Range	Number of CPG members
01	Kerontoli Female CPG	Teknaf	Teknaf	28
02	Kerontoli Male CPG	Teknaf	Teknaf	42
03	Mochuni N Park CPG	Mochuni	Teknaf	42
04	Ulochamori-Lichuaprang CPG	Nilla	Teknaf	42
05	Pankhali CPG	Nilla	Teknaf	42
06	Kombonia CPG	Madda	Teknaf	42

		Nilla		
07	Garjan Day CPG	Shilkhali	Shilkhali	42
08	Garjan Night CPG	Shilkhali	Shilkhali	35
09	South Shilkhali Chowkholderpara CPG	Shilkhali	Shilkhali	35
10	Poranpara Akashmoni Day CPG	Shamlapur	Whykong	42
11	Shamlapur poranpara Golap CPG	Shamlapur	Whykong	28
12	Jumpara Segun Day CPG	Shamlapur	Whykong	42
13	Uttarpara Mehgoni CPG	Shamlapur	Whykong	49
14	Kodum Cabe CPG	Raskhyng	Whykong	42
15	Thaingya CPG	Raskhyng	Whykong	42
Total				595

Furthermore, to make the students and local community aware and efficient in forest conservation as well as biodiversity conservation a total of 11 Nishorgo Libraries were established in different institutions under Teknaf Game Reserve landscape. Libraries facilitated the students and local people in reading the books and learning about different things especially the about our environment. Based on Nishorgo Library experience IPAC will also influence the student as well as local communities for future biodiversity conservation.

Table 8: Nishorgo Libraries in TGR landscape.

Sl. No.	Name of institute	Name of Forest Range
01	Teknaf Pilot High School	Teknaf
02	Teknaf Azahar Girl High School	Teknaf
03	Hnila Al-Fala Academy	Teknaf
04	Hnilla Girl High School	Teknaf
05	Hnilla Gufaraz Foundation	Teknaf



06	Ali Asiya High School	Whykong
07	Khanjorpara Junior High School	Whykong
08	Naya Bazar High School	Whykong
09	Dharut Thaohid Girl Madrasa	Whykong
10	Shaplapur High School	Shilkhali
11	Madinatul Ulom Dhakil Madrasa	Shilkhali

“We shall save the nature for our future generation” it was the slogan of Nishorgo Support Project. In this regard to make the people aware about nature as well as biodiversity, few Nishorgo Clubs were also formed in different educational institutions. The main objectives of the clubs formation were to involve the students in plantation as well as nature conservation for our future generation. The members of the clubs observed different programs to motivate the mass people for biodiversity conservation. Expansion and continuation of these activities by IPAC will sustain the process of natural resource management and biodiversity conservation.

Table 9: Nishorgo Club in different institutions.

Sl. No	Name of Institute	Date of establishment	Club members	Range
01	Hnila Al-Fala Academy	25.09.2006	80	Teknaf
02	Teknaf Pilot High School	14.09.2006	80	Teknaf
03	Ali Asiya High School	18.05.2005	45	Whykong
04	Naya Bazar High School	18.09.2006	40	Whykong
05	Khanjorpara Junior High School	15.12.2006	38	Whykong
06	Shaplapur High School	22.02.2006	59	Shilkali
07	Madinatul Ulom Dhakil Madrasa	20.09.2006	41	Shilkali

## 7. Eco-tour Guide

A total 17 eco-tour guides were selected under NSP and provided with different kinds training on eco-tourism. During NSP implementation they worked in the field and earned some money though it was not adequate for them. Under IPAC project they can be involved more in different eco-tourism activities.

Table 10: List of eco-guides of TGR

Sl. No	Name of Guide	Contract No	Range
01	Shirasul Khader	01711175653	Whykong
02	Abdus Salam	01714374138	Whykong
03	Shaiful Ismal	01811111468	Whykong
04	Hasina Akhter	018130109399	Whykong
05	Md. Jahangir Alam	018130084236	Whykong
06	Md. Idris	01725270249	Whykong
07	Shazzad Hosan	01815138083	Shilkali
08	Abu Ahmed	-	Shilkali
09	Md. Ibrahim	01818165924	Shilkali
10	Shamsul Alam	01815065129	Shilkali
11	Monir Ahmed	01811621320	Shilkali
12	Abdul Gafur	01811622012	Shilkali
13	Kabir Hosan Mahmud	01710939370	Teknaf
14	Imam Hosan	01731366820	Teknaf
15	Shalah Uddin	01715921892	Teknaf
16	Mohammed Zobair	01710807719	Teknaf
17	Jowel	01814966128	Teknaf

## 8. Facilities Developed through NSP

NSP developed a number of infrastructures and office/eco-tourism facilities in the TGR. To improve the living condition of FD personnel as well as development of eco-friendly tourism following facilities were developed:

Table 11: Infrastructures developed in TGR under NSP

Facilities developed	Quantity	Location
Beat office	01	Nilla
ACF quarter	01	Teknaf
Student dormitory	01	Teknaf
Staff dormitory	01	Teknaf
Interpretation center	01	Teknaf
Foot trail	04	Teknaf
Resting shed	03	Teknaf, Shilkhali, Whykong
Water supply	01	Teknaf
Road	01	Teknaf
Electrification	01	Teknaf
Barbet work		Teknaf
Tourist shops	02 under construction,	Teknaf, Shilkhali,
Ticket counter	01 under construction,	Teknaf

## 9. FD Manpower in TGR

The TGR is a large area but there is no sufficient staff for the protection of forest resource. In this circumstance the NSP project took initiative to involve the local community to protect the forest along with the FD staff. The table below shows the present status of the staff of TGR.

Table 12: Manpower of FD at TGR

Sl No	Office Name	Officer and staff				
		ACF	RO	BO	FG	PM
01	ACF office	02	-	-	-	-
02	Range office	-	02	-	-	-
03	Beat officer	-	-	11	21	04

## **10. Cox's Bazar-Teknaf ECA**

Government has declared some ecologically important areas to be Ecologically Critical Areas (ECAs) under the Bangladesh Environmental Conservation Act (BECA '95) to articulate and expand upon the environmental management and sustainable development goals of the 1992 Environmental Policy. To ensure the conservation and sustainable use of globally significant coastal biodiversity at the Cox's Bazar sites through their management as ECAs.

Department of Environment (DoE) has been implementing development programme in these areas and undertook Coastal Wetland and Biodiversity Management Project (CWBMP) during 2004-2009. The Cox's Bazar – Teknaf Peninsula is one of the ECA of the country which is extended from Khurushkul, Cox's Bazar to Shahporir dweep of Teknaf. This area is declared as ECA since this harbours the longest sea beach in the world. Under the Cox's Bazar-Teknaf ECA, Teknaf Game Reserve (TGR) (FD managed PA) covers from Shaplapur to Shaporir Dweep at the south along the beach.

ECA under TGR landscape covers three unions of Teknaf Upzilla and these are Baharchara, Teknaf and Sabrang. CWBMP has been working in these villages through village conservation groups to prohibit hunting and poaching of wild animals; catching or collection of snail, coral, turtle and other wild animals; establishment of industries that may pollute soil, water, air and/or create noise pollution; and mass awareness programme among the inhabitants of the ECA.

About 1200 persons of different ages are active in the ECA for the collection of shrimp fry. During Chaitra- Shrabon five months they collect shrimp fry day-night and earns Tk.60-400 daily. During 3-4 days of new moon and full moon, shrimp fry catch is abundant. Often informal money lenders invest through the fry collectors to collect shrimp fry from the seashore. This is a very harmful practice for marine biodiversity.

There are about 21 boating spots and during PRA about 852 fishing boats are found in 17 spots. In each boat about 5-6 fishermen moves for fishing. Local arrangement for fishing

finds that boat and net owner is the local investor. Price of fuel is shared by both the boat owner and the fishermen. Rest amount of fish selling price is divided into 12 shares whereby owner of the boat gets four shares and the fishermen get eight shares.

Table 13: Boating spots along the Teknaf beach.

Sl.	Name of Ghat	GPS Reading	Number of Boats
01	Shamlapur	N-21°04'29.4'' E-092°08'04.2''	250-300
02	Shamlapur Uttar	N-21°04'43.4'' E-092°07'50.7''	300
03	Uttar Shilkhali	N-21°03'12.4'' E-092°09'20.6''	80
04	Dakkin Shilkhali	N-21°01'52.1'' E-092°10'31.02''	13
05	Halbonia	N-21°01'19.4'' E-092°10'47.8''	15
06	Jahajpura	N-21°00'53.5'' E-092°11'07.0''	24
07	Hazam para	N-21°00'12.6'' E-092°11'22.8''	23
08	Bordail	N-20°57'17.8'' E-092°12'22.2''	12
09	Rajarchara	N-20°54'04.3'' E-092°14'06.8''	12
10	Mitapanirchara	N-20°53'24.9'' E-092°14'38.3''	25
11	Lambari	N-20°52'56.0'' E-092°14'57.4''	20
12	Langorbill	N-20°51'56.3'' E-092°15'36.4''	82
13	Tolatali	N-20°51'31.7'' E-092°15'52.7''	52
14	Moheskhaliapara	N-20°50'47.3'' E-092°16'19.5''	55
15	Subrang Baharchara	N-20°49'57.7'' E-092°16'47.6''	65
16	Mondardail	N-20°49'44.9'' E-092°16'54.4''	48
17	Hadurchara	N-20°49'34.8'' E-092°17'00.3''	26
			852

Administratively TGR ECA consists of three unions namely Sabrang, Baharchara and Teknaf. Some demographic features of these unions are as below:

Table 14: Demographic and socio-economic features of three unions of TGR's ECA.

SL No	Information	Name of Union Parishad		
		Teknaf Union Parishad	Sabrang Union Parishad	Baharhhara Union Parishad
01	Area	-	19 Sq.Km	18 Sq k.m
02	Number of Household	5975	7872	6500
03	Population	34,537	75,512	42,000
04	Literacy Rate	27%	19.10%	20%
05	Main Occupation	Agriculture, trade fishing and salt cultivation	Agriculture ,fishing and salt cultivation	Agriculture, fishing
06	Cyclone Centre	08	11	08
07	Primary School	09	10	7
08	High School	02	03	01
09	Madrasa	98	05	04
10	Health Centre		02	01
11	Bazar/Hat	02	03	03
12	Bus Stand	01	03	-
13	River/Sea Ghat	10	01	-
14	Masjid	84	54	47
15	Club	-	13	10
16	Community School	-	02	-
17	Hospital	01	-	-
18	Temple	01	-	-
19	Deep tube well	17	-	-
20	Land port	01	-	-

21	Sawmill	04	-	-
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Table 15: Population status of Sabrang, Teknaf and Baharchara unions.

Word	Sabrang Union Parishad			Teknaf Union Parishad	Baharchhara Union Parishad
	Number of village	Number of Household	Population	Voter	Number of Household
01	05	764	4780	2907	646
02	04	590	3804	2616	280
03	05	793	9687	2226	682
04	05	630	4300	2028	399
05	05	554	3576	2338	355
06	03	788	4843	3247	377
07	04	888	5518	1791	668
08	04	798	5450	2278	581
09	03	960	5282	307	533

## 11. Suitable AIGAs for Communities along the ECA

During PRA i.e. in general discussions, focus group discussions and interviews, scopes for suitable AIGAs are discussed with local communities in the ECA. It is evident that more than 50% population, young male and female are unemployed and there are opportunities to introduce short term vocational trainings. Among them introduction of improved stove, nursery, fish culture, fish drying tana jal, eco-friendly rickshaw, small trade, nut and betel leaf cultivation, sewing machine, beef fattening, small trade on poultry feeds, poultry rearing etc. can be provided with micro-finance followed by hands on training.

AIGAs have significant influence over livelihood improvement of local communities whereby NGOs can be involved. micro-finance agencies and other service providing agencies need to be brought in the community level.

Furthermore, with the landscape development fund from NSP e-governance and strip plantations along the rural roads are developed. Under the e-governance scheme, communities are provided different information and facilities through the interpretation center. In the landscape area strip plantations are developed by the CMC using the LDF funds. It is evident that for the sustainability of CMC largely dependent on a regular flow of financial arrangements. In this context, 50% revenue from entry fee of eco-tourism development will recycle back to the CMCs as grant. Government has approved this arrangement recently.

## **12. Livelihood Analysis and NSP Interventions**

Most of the people of the area are involved in agricultural farming system and fisheries. Farming activities is the primary occupation of local people, which accounts of almost 80% of total populace.

During the NSP, CPG members are provided with AIGA training on various trades like nursery, cow fattening, fish culture, sewing machine, furniture shop, rickshaw van, poultry, small trading etc. NSP interventions made a remarkable achievements over the TGR dependent people whereby 08 %-10 % HHs are provided with AIGA facilities and concerned training. AIGAs trainings provided nursery development, tree and bamboo management, eco- rickswa puller, improve cooking stove etc.

Initial studies in 2004 revealed that agriculture was the main income source for 53% HHs, followed by fishing and shrimp collection (30%), day labor (10%)and other (7%).On the other hand 57% HHs has no secondary source of income ,betel leaf cultivation (33%),day labor (30%), fishing (30%) and others (7%). NGOs and banks have direct stakes with the people living in and around the TGR. The major credit providers in



the locality are Grameen Bank, Krishi Bank, BRDB, ASA, BRAC, VERK, SHED, Muslim AID etc. The males mainly take loans from banks while the women from NGOs. These institutions provided loan as micro-credit for support in agriculture activities, small business and IGA. These IGA programs concentrate on small business, poultry livestock etc. NGO's credit is mainly focused on the women. In the western side of the TGR, no recognized NGO activities have observed, but some CBOs (such as *somity* ,club) have found whereas in the eastern side a number of NGOs like BRAC, ASA, SHED, Grameen Bank, Krishi Bank etc. are operating various development activities.

### **13. Gender Issues**

Women in the locality have moderate mobility and have access to NGO credit facilities in the eastern side only. However, women are less educated than male. Although in household decision-making, the women have some role but their opinion has no value in practice. It was noticed in Jahajpura village that women are also engaged in outdoor activities as day laborer for earthworks and road construction.

Alike other development program, NSP also contributed in gender sensitive interventions. NSP interventions positively made aware, empowered women and facilitated to participate in eco-friendly activities as well as biodiversity conservation like promote improve cooking stove to reduce pressure on fuel wood.

With the initiatives from government and NGO (especially BRAC schools) female education is visible in TGR area. At primary level non-formal education also made huge positive impacts on female education, often girls outweigh boys. However, at higher level, females are less educated than the males and madrasa education is preferred for the females. People are also more conscious about the girls' education towards a secured future. But, at local level employment opportunity is very restricted for the women. However, now a days many poor women undertake physical work for earning, such as day laborer and earthwork.

Male usually do the outdoor work for earning for their family, while females perform all the HH works and sometimes undertake some work for additional income, such as poultry rearing, homestead gardening. Female discussants expressed their interests for homestead based economic activities, which would add earning to their family income. It is well admitted that an earning female is more confident and emancipated in her family. In decision making female members are increasingly playing important role, through lead roles are played by males. Education and financial earning capacity facilitate females to create their own space.

Activities for PRA report up gradation revealed that at primary level high representation of both young boys and girls are visible which gradually reduces as education level progress. However, at early age, girls are more present in schools at primary level; which indicates that parents are more careful about education of their girls.

#### **14. PA Governance**

Sustainable protected area co-management requires the participation of local people in decision making processes, devolution of power, the equitable sharing of benefits and institutions that are both transferring and responsible. These are key principles of good governance. Nishorgo Support Project (NSP) was comprehensive program aimed at improving the management and governance of PAs in Bangladesh.

Prior to Nishorgo program PAs had been managed under fences and policing approach. But due to high human interference and biotic pressure steady loss of biodiversity from the PA could not arrest. At this juncture, with the financial support from USAID, co-management of PAs are introduced and newly formed co-management institutions are evolved. These are co-management council, co-management committee, community patrol groups and forest user groups.

The Co-management Council comprising 55 members from all key stakeholders, 19 member Co-management Committee (CMC), Community Patrol Groups (CPGs) and forest user groups (FUGs) at grass root level. Besides, some other co-management

organizations/institutions e.g. CMC, CPG, Federation, Nishorgo club, e-governance project and community information center are formed to strengthen FD in forest patrolling and overall management.

Three CMCs of Teknaf Game Reserve(TGR) including Teknaf, Whykong and Shilkhali CMC received legal status via a gazette from the Ministry of Environment and Forests(Government of Bangladesh 2006). The Gazette notice emphasis that the Committee will act as an executive body that is accountable to the Council. It also stipulate that the members of the committee will be elected for two year term except for the member secretary and representatives of law enforcement authority. Table below illustrates the actual number of representatives from each of the designated stakeholders groups on the Council and the Committee as well as designated number of members from each group on the committee.

Table 16: List of representatives in co-management institutions

<b>Stakeholder group</b>	<b>Actual no. of Council members</b>	<b>Designated no. of Committee members</b>	<b>Actual no. of Committee members</b>
Local government	12	04	04
Local elites including journalist	07	2-3	04
Resource owning groups	05	02	02
Forest user group and federations	09	02	02
Local youth	02	01	01
Indigenous/ethnic communications	03	02	02
Law enforcing authority	02	01	01
Forest Department(ACF/RO)	02	01	01
Local NGOs/CBOs	05	01	02
Other government agencies/departments	04	02	0
<b>Total members</b>	<b>51</b>	<b>18-19</b>	<b>19</b>

## 15. Conflicts in TGR

The main source of conflict among local people are centered on land disputes, over both legal and illegally occupied and also for money lending and other financial business, dowry, family matter, cattle grazing, stealing, kid' matter etc. It was found some different dimensions of conflicts into different communities. In between the forest villagers, most of the cases, conflict arises regarding boundary of encroached/occupied forest land.

There is a huge conflict between FD and local people, particularly with tree fellers from various villages. Sometimes direct conflict with tree feller during patrolling, sometimes lead into exchange of fire and even murder. The other causes of conflict arising with FD are forest and land encroachment, forest cases by local FD staff, and prevention in resource exploitation.

Furthermore, a recently developed political dimension is coming forefront. With the change in national political environment local politics are highly shaken and eventually this makes significant impact over forest resources. New occupancy initiates as new leaders both at local and national arena comes into being.

## 16. Conflict Resolution Mechanism

The local level conflicts are being resolute in several ways. Following table shows the ways of resolving conflict in the area. If the conflict arise due to forestland deutes then people go to the near by forest office. However in the cases of family level conflicts, usually the family head and elder members try to resolve the conflict. In the community level, conflict usually resolved primarily by the village head locally called Samajpoty. In extreme cases either party takes shelter to court or police stations for conflict resolution.

Table 17: Sources of conflicts and resolution mechanism.

Sources of Conflicts	Resolution mechanism
Land disputes	By arranging local <i>salis</i> through local member and chairman
With Partner	Do

Vote	UP
Encroaching Hill	Local influential people make negotiation
Tree Felling	Forest cases
Money dealings	<i>Salis</i>
To establish influence in the locality	<i>Salis</i>
Kids matter	<i>Salis by social elites</i>

## 17. Local Problem Analysis

PRA (2004) and recent discussions in various meetings local level problems are identified and ranked with causation and probable solutions as depicted in table below:

Table 18: Ranking of local problems and enquiry into its solution

Name of Problem	Problem ranking	Reason	Solution
Poverty	00000	Unemployment, lack of capital to initiate business, lack of skill and want of income generation activities.	Creation of new job opportunities, IGA and provide credit without interest.
Unemployment	0000	Want of capital, over population, lack of education, lack of skill and opportunity of work.	Vocational education should be introduced and should create new income opportunity through IGA and micro-credit.
Elephant	000	Due to the habitat destruction and lack of food, elephant often attack the settlements and damages paddy during harvesting period. Due to serious crisis of food the elephant often and regularly attack on paddy land and settlements.	Habitat restoration through planting with food plants for elephants.
Education	000	Poverty, inadequate number of educational institution in the area, children engaged in work.	Awareness raising and educational organization should be increased.
Communication	00	Roads are uneven, at rainy season it become inaccessible.	Roads should be developed by local government.
Hat-Bazar/Market	0	Availability of Hat/Market ,want of communication necessary goods are not available.	Market should be set up by the effort of all at a suitable place.

<b>Name of Problem</b>	<b>Problem ranking</b>	<b>Reason</b>	<b>Solution</b>
Over Population	00	Population increasing rate is high, lack of education, awareness & entertainment system are the main cause of population increasing.	Should take awareness program as well as family planning program
Sanitation		Not having healthy and safe sanitation system to the maximum poor household.	Should take necessary steps to provide safe sanitary wares.
Dowry		This traditional, without dowry no marriage could be arranged,	Awareness should be created.
Early marriage		Lack of education, lack of awareness, and traditional	Early marriage should be stopped.
Fuel wood scarcity		There is no big trees in the forest,	Trees will be planted in the forest.
Polygamy		Unemployment, lack of education and poverty.	Polygamy should be discouraged by motivation and low enforcement.
Stealing and Robbery		Loose law and order situation, Poverty, unemployment.	Robbery should be protected by the Chairman and M.P
Drinking Water		Due to the lack of deep tube well, peoples are not getting pure drinking water.	Government should take necessary steps for setting up deep tube well.
Health and treatment facilities	00	Not having good doctor and clinic/hospital	Should establish community clinic

N.B 1 circle indicates relatively lowest abundance/intensities, 5 circles indicates relatively highest abundance/ intensities

### **18. Legal Aspects and Access to the Forest**

Though there is well-demarcated boundary of the TGR, a large number of settlements are located inside or adjacent to the TGR and consequently it is difficult to prevent the human access in TGR. For, example in Hnila Beat, there is about 3 hundred trails and road to go inside the TGR. So, the local people have easy access to TGR. In the public gathering the respondents were asked whether they have easy access to the TGR. In

response 90% replied that they have easy access to forest. Whenever they wish they can enter into the forest and collect resources according to their needs except big timber trees. Similarly 96% people informed that any one could get into the forest to collect resources. On the other hand respondents from FD personnel differed with the mass opinion and claimed that several routes are identified for the resource extraction and FD is trying hard, with limited workforce, to restrict indiscriminate access of resource users into the TGR.

Although access is not permitted, by legal definition of Game Reserve, but usually villagers often enter into the forest. Most of the forest villagers within the forest do not have any agreement with FD. Law enforcement is not sufficient and thus illegal felling is happening sometimes.

Manpower of FD for managing the forest is inadequate; as a result forest patrol is inadequate. Sometimes FD staff request the police to help them for forest protection. Though the local police find no interest in forest conservation matters but they take a lot of interest in enforcing law in the area. However, BDR has a positive role in forest conservation.

In this situation NSP took initiatives to protect the forest as well as biodiversity conservation. Different community based organizations like CMC, CPG, FUG, etc were formed. As a result, forest conservation has got a newer dimension in this region. Not only these but also many other awareness programs were conducted in and around the TGR to motivate the mass people for natural resource conservation and management. In this regard, different kinds of AIGA support were given to the SHs so that they protect the resources and reduce their dependency on the forest.

For the sustainable management of the natural resources IPAC needs to continue these initiatives and also introduce relevant activities.

## **19. Local Level Awareness and Behavior**

The perception of the local people about resource degradation and its impacts is very good. People are aware of forest resource and forest degradation and about its adverse impacts. They have a positive attitude towards conservation. 100% respondents think that forest resource should be preserved so that they can procure resources in future.

About 90% people support the govt. plan to preserve the biodiversity and to improve the socio-economic condition of the people. Local people know little about some of the rules of forest Act, but most of them do not know the significant of the TGR from biological stand-point. Almost all people know that the TGR is a reserve forest but only 45% of them have heard a little about the game reserve.

Forest surrounding communities usually know the reserved forests whereby access, resource extraction, land use transformation and encroachment are illegal. However, through NSP implementation in TGR most of the local people know that the forests under Teknaf, Whykong and Shilkhali Ranges are declared as a protected area. People surrounding the TGR are aware about basic issues on biodiversity conservation, natural resource management and importance for their livelihood as well as for future generation.

Due to mass awareness programs and newly introduced eco-tourism facilities in the TGR, peoples perception about wildlife and conservation of biological diversity in forested landscapes has increased.

## **20. Capacity of FD & Co-management Institution**

Under the NSP, local level FD personnel as well as other local stakeholders are provided with number of capacity building trainings and orientation workshops. Newly formed co-management institutions are also backstopped with series of training on organization building, leadership, in country cross visit and exposure to PAs abroad. CMC capacity building has today reached in a stage whereby they are able to develop Annual Development Plan (ADP) of their own landscapes and PA. They are often come forward



to pursue FD, development partners for sustaining their initiatives and development of the wildlife sanctuary.

## **21. Cross-Cutting Issues**

### **(a) Management Plan**

A five-year management plan and simplified management guidelines are developed in 2006 for TGR with the objectives to:

- ❑ Develop and implement a co-management approach that will ensure long-term conservation of the sanctuary's biodiversity while permitting sustainable use in designed zones by local stakeholders.
- ❑ Conserve biodiversity by building and maintaining gainful partnership with key stakeholders and sharing benefits with local poor communities.
- ❑ Refine and strengthen the policy, operational, infrastructural and institutional capacity framework.
- ❑ Conserve wildlife population including elephants and their habitats/corridors.
- ❑ Restore and maintain as far as possible the floral, faunal, physical attributes and productivity of the forest eco-systems and surrounding landscapes.
- ❑ Encourage eco-tourism and develop visitor facilities (including private nursery and tree growing) for sustainable livelihood development for rural poverty alleviation in surrounding landscape.

The management guidelines include **i.** habitat protection programs for conservation of constituent biodiversity, **ii.** management program with landscape zoning including micro-watershed management and enrichment plantation in core zone and buffer plantation in landscape zone, **iii.** livelihood program with AIGA trainings, LDF fund allocation and development of conservation enterprises, **iv.** facilities development and maintenance programs, **v.** visitor use and visitor management programs to promote eco-tourism and **vi.** participatory monitoring programs including regular timber loss assessment, regeneration study, photo monitoring, indicator bird survey to measure forest health at TGR.

## **(b) Bird Census**

Nishorgo Support Project (NSP) has initiated an ecological monitoring program that observes the population of eight indicator bird species to assess forest health. The selection of indicator birds was done based on scientific knowledge and did not consider the interest and knowledge of forest dwellers. Recognizing the need for involving forest dwellers in sustainable community-based ecological monitoring, bird census explores local knowledge of indicator birds used for the ecological monitoring program at the Teknaf Game Reserve (TGR). Most local people could identify the Hill Myna, Oriental Pied Hornbill, Red Jungle Fowl, Greater Racket-tailed Drongo and Red-headed Trogon and knew their ecological value. Only member of the Chakma community living within the game reserve, however, could identify all eight birds, including the White-rumped Shama. This study's findings suggest that the usefulness of these birds as indicator species depends on the community that will be monitoring them. Among people living near or outside the game reserve, the more easily identifiable species are more useful. Among people living within the game reserve, all eight species are easily recognized.

The main objectives of bird census and monitoring are:

- (a) to understand and document local knowledge and capacity of the forest dwellers to identify the indicator birds,
- (b) to understand local knowledge of the ecology of the indicator birds, and
- (c) to assess the scope for introducing community-based ecological monitoring into the co-management process.

It is believed that local perspectives on the eight NSP indicator birds will provide critical information for community-based ecological monitoring in the co-management process of the protected areas of Bangladesh. The cited birds are:

1. Greater Racket-tailed Drongo (*Dicrurus paradiseus*)
2. Hill Myna (*Gracula religiosa*)
3. Oriental Pied Hornbill (*Anthracoceros albirostris*)
4. Red-headed Trogon (*Harpactes erythrocephalus*)

5. Red Jungle Fowl (*Gallus gallus*)
6. White-crested Laughing Thrush (*Garrulax leucolophus*)
7. Puff-throated (Spotted) Babbler (*Pellorneum ruficeps*)
8. White-rumped Shama (*Copsychus malabaricus*)

The members of Bangladesh Bird Club (BBC) and the local communities living around the site had actively participated in birds survey. Strip transects sampling and opportunistic survey methods were followed in the field. Eight species of primarily forest birds were taken as indicators and their population densities were estimated.

**(c) Bamboo value chain study**

A recent study on ‘Initial assessment report on Bamboo’ in geographic areas where there is commercial potential in the bamboo value chain in Sylhet Cluster (Lawachara and Satchari), Southeastern Cluster (Chunati Wildlife Sanctuary) and Central Cluster (Pirgacha)’ by Oasis Transformation Ltd, FD and IPAC team was conducted during November/2008 to January/2009. The study is conducted based on the understanding of global market interest and available technology to add value to Bamboo based raw materials resulting in product innovation and new market opportunities, which could benefit the rural poor. The study reveals that wildy grown bamboo in TGR and surrounding hills are generally very good quality. Village grove bamboos, cultivated and managed ones are good but quality of unmanaged village grown bamboo is low. However, bamboo weaving and possess high potentiality of Bamboo value chain.

## **22. Present Issues and Challenges for IPAC**

- ❑ Ensure sustainability of co-management institutions after post project period.
- ❑ FD staff need more orientation in co-management and people-oriented conservation program; training on biodiversity conservation and park management;
- ❑ AIGA supports through training and micro-finance is needed to reduce dependency of larger segment of surrounding communities;
- ❑ Newly developed co-management institutions need further nurturing with project supports like building awareness, stakeholder meetings, financial support to CPGs;
- ❑ More support for habitat restoration program to FD needs continuation;
- ❑ Strict enforcement of law and order in cases required;
- ❑ Coordinated efforts should be ensured to reduce further encroachment, land use transformation and gang poaching of forest resources;
- ❑ Involve local power structure e.g. politicians, business elites and administration in environmental protection;
- ❑ Promote indigenous, fruit and fodder trees in the wildlife habitats rather than planting monoculture of exotic fast growing species.
- ❑ Forest villagers, from half a century back, have been associated with forest patrolling. Over times they have sided away from their committed services towards forest conservation and development. They should be brought back to their commitment with law enforcement and providing added incentives as CPGs.
- ❑ To address human-elephant conflict intensified habitat restoration program as well as mass awareness and reduced human intervention in the TGR needs to ensure;
- ❑ Building trusts and positive attitude among the stakeholders. IPAC need to lead the coordination and consensus building;
- ❑ Overall livelihood-focused program are needed in the TGR vicinity communities. NSP initiatives are good start and should be continued in IPAC with similar pace.

### **23. Suggestions and Recommendations**

- ❑ Teknaf Game Reserve is extensive in its area coverage, having a large population and many parts of it are not easily accessible.
- ❑ Though few steps were taken in Bangladesh for PA conservation but was not adequate. In this regard Nishorgo Support Project implementation brought a remarkable change in protected area co-management.
- ❑ In protected area co-management various types of SHs are involved and it is very difficult to bring them under a common interest.

Some recommendations are given bellow for the sustainable management of TGR.

- ❑ Establish co-management institution and PA conservation strategy.
- ❑ Providing appropriate logistics.
- ❑ Strengthening FD capacity, FD field offices, particularly Beat office, is the potential entry points for ensuring co-management of natural resources for biodiversity conservation.
- ❑ Provision for providing incentives to FD local staff make the job lucrative
- ❑ Capacity building training for all forest managers on sustainable management
- ❑ Administrative and political support strongly needed.
- ❑ Establishment of a sustainable buffer zone around the PA.
- ❑ Promotion of fuel efficient stoves in the locality
- ❑ The present rate of encroachment is alarming and must be stop.

#### **24. Reference**

IPAC, 2009. Initial assessment report on Bamboo in Geographic areas where there is commercial potential in the Bamboo value chain in Sylhet cluster (Lawachara and Satchari), Southeastern cluster (Chunati Wildlife Sanctuary) and Central cluster (Pirgacha).

Niaz et. al. 2008. An exploratory study on performance and capacity of Nishorgo Support Project (NSP) Co-management Committees' pp 15-16.

PRA, 2004. Site level field assessment for Protected Area Co-management of Teknaf Game Reserve (TGR).

## 25. Photo Gallery











