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**Revised Site-Level Field Appraisal for Integrated
Protected Area Co-Management Project:**

Chunati Wildlife Sanctuary (CWS)

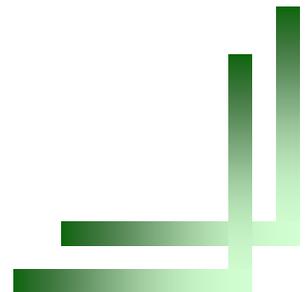
May 2009

IPAC Project

Chakaria Site

Southeastern Cluster

Cox's Bazar





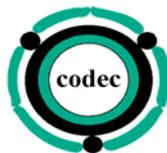
**Revised Site-Level Field Appraisal for
Integrated Protected Area Co-Management:
Chunati Wildlife Sanctuary (CWS)**

Prepared for:
International Resources Group (IRG)



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1. Introduction

At the onset of field intervention under Nishorgo Support Project (NSP) in 2004, a rigorous participatory rural appraisal (PRA) was conducted in Chunati Wildlife Sanctuary (CWS) to assess its biophysical features, potentiality and threats to biodiversity conservation, area of intervention under the project. During the project period (2004-08) a number of significant interventions took place in CWS to enhance conservation of biodiversity in heavily degraded CWS as well as to improve livelihood of local communities. Similarly, a follow up project 'Integrated Protected Area Co-management (IPAC) took the initiative of initial state of CWS during early 2009. The study focused on the progress and achievements made in NSP and updating baseline information for IPAC.

2. Methodology

This study principally based on series of meetings of CMCs, CPGs, discussions with key informants, extensive field site visits, discussion with FD personnel, local community members and secondary information particularly based on various case studies, research papers and other documents published during NSP period.

Table 1: Major field activities under took for the study.

Study events	#	Remarks
CMC meetings	3	Monthly CMC meetings
CPG meetings	22	Regular meetings with patrol groups
FD-IPAC coordination meetings	2	Local FD personnel attended
Nishorgo club meetings	4	With local youths and students
Field visit	Regularly arranged	On-site visit in the local community and FD personnel
Key informant interviews	10	Local elites, FD and members of resource user groups

Information gathered from above events are compiled and documented to update the report of NSP PRA 2004.

3. Status assessment of CWS

Chunati Wildlife Sanctuary is a unique forested landscape covering 7763 ha low hills with grassland, highly degraded forests, settlements and crop lands. During this assessment a trend analysis of biophysical features over last 35 years, assessment of key stakeholders, demographic features of local communities, livelihood and gender issues are studied. In all the aspect Nishorgo Support Project (NSP) interventions and their impacts are enumerated over resource use and ensuring environmental governance. A brief statement in these aspects is summarized below:

Biophysical condition of CWS

Satellite imagery based studies revealed that prior to 1990 CWS was severely degraded and dominated by grassland and barren lands. Gradually encroachment of WS area and settlements sprouted at significant rate along with further deterioration of vegetation cover. Based on recent (2006) satellite imageries land use of CWS is depicted as below:

Table 2: land use distribution in CWS.

Land use category	Area (ha)	% of CWS area
Forests including plantations	93.98	1.21%
Grass including bamboo	714.30	9.20%
Grass-shrub	2367.67	30.50%
Barren land	3823.62	49.25%
Water	763.45	9.83%
Total	7763.00	100.00%

Source: FD & BFRI 12008. Report on Mitigation of Greenhouse Gas Emissions through Co-management of CWS.

Based on PRA (2004) on CWS by under NSP and recent discussions with local FD personnel, stakeholder meetings and field visits, trends of quality and uses forest resources with relevant causes are assessed. The study reveals that forest coverage in CWS 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. Over all, CWS 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 3: Trend analysis (forest quality and resource use matrix)

Issue	Pre-1971	20 years ago	Before NSP (5 years ago)	Before IPAC (present 2009)	Major causes for change
Forest cover	00000	000	00	000	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 whereas NSP interventions made a positive shift in forest coverage.
Forest thickness	00000	000	0	000	Do
Tall trees	00000	000	0	00	Due to illegal removal of mature trees over decades no tall trees are left in the CWS; however, community involvement under NSP lights a promising future.
Herbs and shrubs/undergrowth	00	000	00000	00000	Due to reduced human interference recently shrub coverage is more visible in the CWS
Wildlife	00000	000	0	000	CWS habitat was largely degraded before 1990s; habitat restoration and fodder plantation raised under NSP facilitate to increase of wildlife in the CWS.
Hunting	00	0000	-	0	Due to mass awareness and strict patrolling by FD-CPG and communities, hunting has reduced;

Issue	Pre-1971	20 years ago	Before NSP (5 years ago)	Before IPAC (present 2009)	Major causes for change
					But in Jaldi range area some incidents of hunting (pig, deer, jungle fowl etc) are reported.
Illegal tree felling	0	00000	00	0	Lack of suitable timber trees, mass awareness and strict patrolling by FD-CPG and communities, illegal tree felling is reduced; however, in Jaldi range illegal tree felling incidents are often unreported by FD.
Fuel wood collection	00	000	00000	000	Due to lack of fuel wood in HH levels, less protection, unemployment and increasing population pressure fuelwood collection is increased; on the other hand availability of fuelwood in the forests is significantly decreased.
Land encroachment	0	000	00000	00	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	00	00000	000	00	Due to recent flowering in Bamboo grooves and subsequent dying, bamboo collection has decreased.
Fruit bearing trees in the wild.	0000 0	00	000	000	New plantation with fruit bearing trees.
Betel leaf cultivation inside the WS	0	00	00000	00000	Due to lack of law enforcement and political influence in the area
Agricultural activities inside forest	0	00	0000	000	Due to political pressure FD is unable to recover these areas. No further land use transformation occurred in the area.
Wildlife	0000 0	000	0	000	A remarkable abundance of wildlife is reported.

Table 4: Plantation raised in CWS.

Year	Chunati Plantation (ha)	Banskhali Plantation (ha)	Remarks
1993-1998	120		LR plantation @ 20ha/year
1998-1999	75		LR plantation
1999-2000	30		Bamboo and cane under plantation
2001/2002	80		LR plantation
2002/2003	10		LR plantation
2003/2004	50		LR & SR plantation; fodder and shelter for wildlife
2004/05	25		LR & SR plantation
2005/06	10	115	Enrichment plantation
2006/07	10	103	Enrichment plantation
2007/08	30	295	Enrichment and fodder plantation
2008/09	118	159	Buffer, encroachment and LR plantation

Source: Chunati and Jaldi Range Office, 2009.

Stakeholder assessment

In CWS there are 15 villages including about 44 paras whereby 24 are located inside, 18 are adjacent and 2 are located outside (within 1 km distance from). About 8000 HHs are directly or indirectly dependent on CWS.

Table 5: Interface Villages/Paras having stakes in Chunoti Wildlife Sanctuary

Sl No	Village/para	Beat	Location	Level of Stake
1	Khalifer Para	Chunati	Inside	Major
2	Rashider Ghona	Chunati	Inside	Major
3	Bangha Pahar	Chunati	Adjacent	Major
4	Sultan Mouluvi para	Chunati	Inside	Major
5	Munshi para	Chunati	Inside	Major
6	Damir Ghona	Chunati	Inside	Major
7	Mirikhil	Chunati	outside	Major
8	Hindhu para-1	Chunati	Inside	Major
9	Boro Miazzi Para	Chunati	Adjacent	Major
10	Baghan Para	Chunati	Adjacent	Moderate
11	Sikder Para	Chunati	Near to Adjacent	Moderate
12	Kathuria Para	Chunati	Near to Adjacent	Moderate
13	Deputy Para	Chunati	Near to Adjacent	Moderate
14	Hindhu Para-2	Chunati	Adjacent	Moderate
15	Kalu Sikder Para	Chunati	Adjacent	Major

Sl No	Village/para	Beat	Location	Level of Stake
16	Kumudiaduri	Chunati	Adjacent	Major
17	Moulana Para	Chunati	Near to Adjacent	Moderate
18	HutKholaMura	Chunati	Adjacent	Major
19	Rosainga Ghona	Chunati	Adjacent	Moderate
20	Barua para	Chunati	Near to Adjacent	Major
21	Null Bonia	Chunati	Adjacent	Major
22	Munshi para	Chunati	Inside	Major
23	Sufri Nagar	Chunati	Inside	Major
24	Gucchagram/ Ashrayan (Shelter)	Chunati	Inside	Major
25	RatarKul	Chunati	Inside	Major
26	hasainna kata	Chunati	Inside	Major
27	TeenGhoria para	Chunati	Inside	Major
28	Bon Pukur	Chunati	Adjacent	Major
29	Rahmania para	Chunati	Outside	Major
30	Kolatoli	Aziznagar	Inside	Major
31	Aziz nagar	Aziznagar	Inside	Major
32	Gainna Kata	Aziznagar	Inside	Major
33	Jungle basti Area	Aziznagar	Inside	Major
34	West Villager Para	Aziznagar	Inside	Major
35	Nayapara	Aziznagar	Inside	Major
36	Purba Villagerpara	Aziznagar	Inside	Major
37	Ichachari	Aziznagar	Adjacent	Major
38	Uttar Herbang	Aziznagar	Inside	Major
39	Taillar bill (Goyal mara Villager para)	Herbang	Inside + Adjacent	Major
40	Vandari Dhoba	Herbang	Adjacent	Moderate
41	Hormudhi para	Herbang	Adjacent	Moderate
42	barua para	Herbang	Inside	Major
43	West Charpara	Herbang	Inside	Major
44	Napiter Chita	Herbang	Inside	Major

A total 24 categories of stakeholder groups are identified in the CWS. Out of them, 19 are primary who are involved directly in forest resources extraction and 5 are secondary stakeholder groups. Among them fuelwood collectors, forest villagers, brick field owners, brickfield owners and sungrass collectors are prominent ones.

Table 6. Identified stakeholder groups in Chunati WS and NSP interventions

Sl no.	Stakeholder (SH) name/type	SH description	Role/Description of activities of SH
1.	Fuel wood collector: Primary SH	Local poors; women and children are dominant ones	Mass people (80%) of fuelwood collectors are aware of NSP interventions. About 30% poor fuelwood collectors and daily labours are included in the FUGs and CPGs under NSP. They are provided with training support, awareness and motivational programme on forest conservation etc.
2.	Forest	Registered	Forest villagers play significant role in forest patrol and often

Sl no.	Stakeholder (SH) name/type	SH description	Role/Description of activities of SH
	villagers: Primary SH	villagers with FD	make liaison in forest land encroachment.
3.	Brick Field Owner: Secondary SH	Influential persons from outside	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 fuelwood collectors in illicit collection of the same from forests.
4.	Betel Leaf Cultivator: Primary SH	Forest villagers and local and outside people	Encroached land, clear vegetation, weed adjacent areas, use sticks as support to vines and fence around the plot that come from the forest, lot of cultivation and associated activities.
5.	Tobacco Cultivators Secondary SH	Curing of tobacco leaves require huge fuelwood	Tobacco cultivation is a profitable farming as companies provide incentives to the farmers. Hence a large crop fields are being converted for tobacco cultivation. Most importantly curing leaves entails huge fuelwood which are being collected from nearby forests.
6.	Sun-grass collector Primary SH	Local poor people and employed labor by rich people and forest villagers	Collect Sun-grass and after collecting they burn that Chhanmohol. Grows on barren land
7.	Timber merchant: Secondary SH	Local businessmen	Purchase timber from illegal feller
8.	Political Leader: Indirect SH	Local and adjacent area leader	They encourage and provide support to illegal activities in the forest and forest resource collection
9.	Farmer: Direct SH	Forest villagers and local people	Usually the tiller encroach plain land and cultivate various crops in the forest and private land
10.	Hunter Primary SH	Influential local people and some ethnic people.	They hunt/trap wild animals such as deer, pig, wild cock etc.
11.	Dry leaf collector: Primary SH	Children and old women	They collect for own consumption and often sold it in local market.
12.	Medicinal plant collector: Primary SH	Traditional healer	Collect leaf, burk,fruits and herbs etc.
13.	Bamboo Collector: Primary SH	Local poor and betel leaf cultivator	Collect wild bamboos which already reduced for HHs use and for sell. Use bamboo for fencing in betel leaf plot
14.	Illegal Tree feller: Primary SH	Poor people/employed labor, armed gang, Influential persons are	Selectively fell valued trees and transport it to various places

Sl no.	Stakeholder (SH) name/type	SH description	Role/Description of activities of SH
		involved,	
15.	Cane collector: Primary SH	Poor women & men,	They collect cane and use it for handicrafts or sell.
16.	Fruit Collector Direct SH	local people, child	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.
17.	Vegetables Collector: Primary SH	Direct child & woman	Collect vegetables (aurum, Daeki etc) for own uses
18.	Fishermen: Primary SH	Poor and middle class local people	Catch fishes in streams and some people culture fish in streams and creaks
19.	Tea stall Owner: Secondary SH	Indirect	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
20.	Land encroacher/landlord/zamin dar: Primary SH	Local influential people/some poor people	Encroach a large scale of land and transform into the agric. land Lease out to others
21.	Sand collector: Primary SH	Day labor, Indirect: Businessmen	They extract sands from the Ziri/canal bed and transport to other places
22.	Fodder collector: Primary SH	forest villagers, local farmer, cow boy	Collect grass as fodder; often send their bull, buffalo and cattle to forest for grazing during rainy season and paddy cultivation period.
23.	Local Police: Indirect SH	Indirect	They have a role in law enforcement mechanism. Patrol in the area. Make arrest against court cases
24.	Local Govt & LGED	Direct	Constructing roads and conducting several development activities within the sanctuary.
25.	Banskhali Eco Park Direct SH	GoB project	Established a ECO-Park in Bamer Chara and Daner Chara area of jaldi Beat of the WS.

Demography of dependent communities

About 8000 HHs from 44 villages/para (table 5) are directly or indirectly dependent on CWS and on an average their HH size is 5. Over the NSP duration no significant change regarding population control occurred in CWS. Among them forest villagers comprise a significant part in terms of resource exploitation and land encroachment process. Discussions and NSP PRA 2004 reveals that there are almost 1550 encroacher HHs whereas about 200 villagers HHs or less are registered ones.

Table 7. Information on forest villager and land encroacher

Beat	Listed Forest Villagers (HHs)	Encroacher	Remarks
Chambol	15	500 (HHs)	In the Villager Para of Napora FD allotted 3 Acres of land for each HHs But at present 300 Acres of land are Encroached.
Aziznagar	22	No statistics But approximately 4-5000 people, 334 hhs	13 are reg. and rest legal encroacher
Chunati	34	930 Acres of land	Registered villagers HH-24
Herbang	100	7000, 500acres of land, land is more but settlements are less	Registered villager HHs-14
Puichari	31	266 family, 500 acres	
Total	202		

In general, villagers participate less in forest patrol and plantation activities and often FD is unable to take any punitive measures against them. Moreover, their involvement in land encroachment and timber poaching is widely spoken in the communities. In the NSP, forest villagers are included as a stakeholder and still they need further backstopping. There are similarities between forest villagers (FVs) and community patrol groups (CPGs) from FD perspective. FVs are provided with homestead area and 3 acres of farm land with prime responsibilities to assist forestry operations and patrolling. Over time their family sizes increased, encroached nearby forest lands for housing, more extraction of forest produces and the worst thing happened that FVs are largely reluctant to assist local FD staff in patrolling, involved in illegal removal of forest produces and involved in encroachment process. On the other hand, CWS based 11 CPGs has about 400 HHs who have received a nominal incentives from NSP. Experienced FD personnel opined that newly developed CPGs, if adequate livelihood mechanisms are not ensured, would turn into trouble for forest management. It is evident that rescheduling registered FVs and mobilizing them, instead of inviting new mass in the framework of CPGs, could be rather wise.

Table 8: Community patrol groups under CWS.

Sl. No	Name of CPG	Members
Chunati Range Area		
1	Banopukur Female CPG	28
2	Jangalia CPG	35
3	Chunati Sufi Nagar CPG	42
4	Aziznagar CPG	39
5	Harbung CPG	37
6	Banpukur Garjan Forest CPG	35
Jaldi Range Area		
7	Chambol CPG	35
8	Jaldi CPG	37
9	Shilkup Eco-Park CPG	35
10	Puichori CPG	36
11	Napora CPG	44

Facilities developed through NSP

NSP developed a number of infrastructures and office/eco-tourism facilities in the CWS. To improve the living condition of FD offices as well as tourism following facilities are developed:

Table 9: Infrastructures developed in CWS under NSP

Facilities developed	Chunati Site	Banskhali Site	Remarks
Beat Office	1	2	
ACF Quarter	1	-	
Range Office	1		
Rest House	-	1	
Student dormitory	1	-	
Interpretation center	1	-	
Trail development	2	-	
Watch Tower	1		
Resting shed	1		
Picnic spots	1	1	
Tourist shops	1	-	Under construction

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 a revolving financial arrangement is required but the funds delivered to the CMC, in the name of LDF, is one-slot grant.

Livelihood analysis: NSP interventions

About 400 CPG members are provided with AIGA training on various trades like Fish culture, Cow fattening, Sewing machine, Furniture shop, Rickshaw van, Poultry, Small trading etc. NSP interventions made a commendable achievement over the CWS dependent people whereby 10% HHs are provided with AIGA facilities and concerned training. AIGAs trainings provided are i. Bamboo Nursery management, ii. Eco-Rickshaw Puller, iii. Tree and Bamboo Management, iv. FUG Promoter Training, v. Nursery Development, vi. Orientation On FUG Apex body Formation and vii. WS with hardcore poor SH.

Initial studies (2004) reveals that agriculture is the main income source for 60% HHs, followed by forest resource collection 20%, labour sale 10%, others 2%. About 27% HHs have no secondary income source. However, Most of the poor are directly dependent on CWS for their income. About 64% are extreme poor, and the rest 36% HHs are poor and middle class. About 41% of the HHs are totally landless. About 59% households have homestead land of their own, on the other hand only 36% household owned cultivable land and 64% owned no cultivable land. About 36% HHs informed that their earning is quite adequate for managing their family expenses but 64% replied it is not. About 34% HHs took credit from different sources, both from bank and NGO sources during previous year. The major credit providers in the locality are Krishi Bank, ASA, BRAC, SHED, Proshika, ISD etc. The males mainly take loans from banks while the women from NGOs. In Chunati and Chambol, most credits are taken by women and handover it to their male counterparts. High interest rates of are major hindrance in paying back the loans. Furthermore, PRA findings (2004) revealed that only 25% HH people have some sorts of skills in the areas of poultry, nursery, fish culture,

horticulture, bamboo and cane works, etc. Some NGOs provide skill development trainings in many areas of IGA.

Gender issues

Traditional Muslim society restricts outdoor activities of women and they rarely participate in social events with men. However, in CWS and surrounding villages, NGO activities have been continuing for more than a decades and NGO credit programs widely created access to loan for women. In the poor and illiterate segments of the communities, voices of women are still restricted and their mobility and access are more firmly bonded by religious rituals.

Alike other development programme, NSP also contributed in gender sensitive interventions. NSP interventions positively 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 fuelwood.

With the initiatives from Government and NGO (especially BRAC schools) female education is visible in CWS 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 madrasha 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 labourer in earth work.

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.

PA Governance

Protected area (PA) governance has emerged as a key theme in biodiversity conservation in general, and protected area management in particular. PA governance has five commonly agreed-upon elements viz legitimacy and voice, accountability, performance, fairness and leadership. To ensure PA governance at local level NSP has developed a four-tier co-management institution in the CWS. These are 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, Nishorgo club, e-governance project and community information center are formed to strengthen FD in forest patrolling and overall management.

Prior to Nishorgo programme PAs had been managed under fences and policing approach. But due to high human interference and abiotic 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.

Co-management council includes 55 members from nine stakeholder classes viz. civil society members, local administration, resource user groups, resource owner group, indigenous communities, local youths, beneficiaries of PA, local NGOs and representatives from other agencies. A total of 19 members from co-management council are elected for co-management committee (CMC) as an executive body of CMC. To ensure effective forest patrolling a group of community people are grouped into Community Patrol Groups (CPGs) and participate in joint patrolling with FD staff. Forest User Groups are community people who are dependent on forest resources for their livelihood. NSP took initiatives to aware, provide alternate income generating assistance

and training etc to the FUGs to prevent over use and excessive exploitation of forest resources.

Two CMCs of CWS including Chunati CMC and Banskhali CMC are evaluated by Niaz et. al. 2008. The study reveals that both the CMCs are functioning satisfactorily (Table 10 and 11).

Table 10: Score ranking on functionality of Chunati CMC

<i>Summary of Assessment</i>							
#	<i>Indicator</i>	<i>Full mark</i>	<i>Score</i>	#	<i>Indicator</i>	<i>Full mark</i>	<i>Score</i>
1	Organisation Development	10	9	6	Status of poorest household in the locality	10	4
2	Leadership Development	10	7	7	Development of Self-reliance	10	5
3	Capital Formation & Transparency	10	4.5	8	Women and Gender Development	10	6
4	Skills & Awareness Enhancement	10	7.5	9	Participatory Planning/Linkage	10	6.5
5	Handling of Development Work/Projects	10	5	10	Conflict Management and Benefit Sharing	10	8
GRAND TOTAL						100	62.5

Table 11: Score ranking on functionality of Banskhali CMC

<i>Summary of Assessment</i>							
#	<i>Indicator</i>	<i>Full mark</i>	<i>Score</i>	#	<i>Indicator</i>	<i>Full mark</i>	<i>Score</i>
1	Organisation Development	10	8.5	6	Status of poorest household in the locality	10	4.5
2	Leadership Development	10	8	7	Development of Self-reliance	10	4.5
3	Capital Formation & Transparency	10	5.5	8	Women and Gender Development	10	6
4	Skills & Awareness Enhancement	10	8.5	9	Participatory Planning/Linkage	10	8
5	Handling of Development Work/Projects	10	7	10	Conflict Management and Benefit Sharing	10	7.5
GRAND TOTAL						100	68

score 60-79 means satisfactory

Conflict in CWS

Forest products are open resources with a high demand in local market and dependency of large mass of surrounding communities for fuel, fodder and other NWFPs. Since there exists a long-standing ban on forest resource extraction, especially from the PAs, it is not possible and even feasible to prevent illicit removal of forest resources. Consequently multifaceted conflicts are reality in forest resources management.

The main source of conflict in CWS centered on land disputes, over both legal and illegally occupied and also for money lending and other financial matters, dowry, family matters, cattle grazing, stealing, over kid's affairs etc. However, there some other causes that leads to local level conflicts.

Table 12: Sources of conflicts and resolution mechanism.

Sources of Conflicts	Resolution
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>

Local problem analysis

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

Table 13. 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 income generation activities.	Should create new IGA and provide credit without interest.
Unemployment	0000	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.
Elephant	000	Due to the habitat destruction and rack of food, elephant often attack the settlements and damages paddy during harvesting period. In 2008 most of the bamboo Species had beared fruit and after that all were died so on as a result elephant food scarcity is dominant then to any prior	Habitat restoration through planting with food plants for elephants.

Name of Problem	Problem ranking	Reason	Solution
		time. Often and regularly Elephants attack on paddy land and Settlements.	
Education	00	Inadequate number of educational institution in the area, children engaged in work	Educational organization should be increased.
Communication	0	Roads are uneven, at rainy season it become inaccessible.	Roads should be developed by local government
Hat-Bazar/Market	0	Necessary goods are not available due to lack of nearest Hat-Bazar.	A market should be set up by the effort of all at a suitable place.
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
Polygamy		Unemployment, lack of education	Polygamy should be discouraged.
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.
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
Sanitation		Not having healthy and safe sanitation system to the maximum poor household.	Should take necessary steps to provide safe sanitary wares.

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

Legal Aspects and Access to the Forest

CWS, with its legal basis, do not permit communities to enter as well as use forest resources while sole engagement was kept for wildlife especially for Asian Elephants. However, mere declaration of wildlife sanctuary could not prevent steady loss of wildlife habitat and biodiversity loss did not reduced. Traditional forest management, alike other parts of developing world, did not succeed in biodiversity conservation and habitat

restoration. Hence collaborative management has been introduced in CWS whereby surrounding and dependent communities' usage rights are appreciated and taken in the efforts of biodiversity conservation and PA management as a whole.

NSP initiatives took several steps for addressing livelihood alternatives of dependent communities through providing usufruct rights and access to resources. Simultaneously legal platforms for communities, in the frame of CMC and CPGs, are ensured, empowered and brought responsible for protection of forest resources. Traditionally forest patrols are conducted jointly by FD local staff and in newer regime CPG members from local communities are added in joint patrolling. It is reported that with this initiative of joint patrolling by FD-Forest Villagers-CPG members, illicit felling reduced significantly.

Local Level Awareness and Behavior

Forest surrounding communities usually know the reserved forests whereby access, resource extraction, landuse transformation and encroachment are illegal. They knew little about PA especially wildlife sanctuary. However, with the advent of NSP most local people know that the forests under Chunati Wildlife Sanctuary is declared as a protected area. About 65 % people surrounding the wildlife Sanctuary are aware about basic issues on wildlife Sanctuary, bio diversity conservation, and importance for their livelihood as well as for future generation.

People are also aware that CWS is a nationally important biological hotspot. Though previously FD staff were not aware of wildlife management rather confined themselves in plantation raising and protection issues, now they are more aware of their responsibilities over the wildlife sanctuaries and sanctuary management approaches as a whole. Mass awareness programme and newly introduced eco-tourism facilities in the CWS has increased peoples perception about wildlife and conservation of biological diversity in forested landscapes.

However, people of Banskhali site are yet aggressive and many of them seem to be non-cooperative, while people in the Chunati area are comparatively cooperative and less hostile. Through NSP interventions and most importantly for mass awareness program about 15% local people has changed their behavior and attitude towards forest conservation and came forward assist to Forest Department in different ways.

There were massive public movement and demonstration against the establishment of WS. This was with the fear that declaration of sanctuary could reduce their rights to access to resources and that number of elephants would increase and will damage their crops. In fact, the movement started in late eighties, particularly by the people from Chunati area. People could not prevent declaration of CWS by the Government. Most of the people of the area had encroached land inside the WS. At present this misconception had removed from their mind of the community inside and around the CWS and they are participating in management of the sanctuary alongwith FD.

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

4. Cross-cutting issues

Management Plan

A five-year management plan and simplified management guidelines are developed in 2006 for CWS 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 AAIGA 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 CWS.

Bird Census

In order to monitor forest health and ecological changes of wildlife habitats NSP initiated participatory bird survey in Nishorgo Support Project (NSP) PA sites including CWS. Unlike animals of other taxa, birds are more visible and more responsive to any change. Therefore, birds are treated as one of the best indicators of the ecological changes of their habitats.

The members of Bangladesh Bird Club (BBC) and the local communities living around the site had actively participated in the 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. The indicator birds were Red Junglefowl (*Gallus gallus*), Oriental Pied Hornbill (*Anthracoceros albirostris*), Red-headed Trogon (*Harpactes erythrocephalus*), Greater Racket-tailed Drongo (*Dicrurus paradiseus*), White-rumped Shama (*Copsychus malabaricus*), Hill Myna (*Gracula religiosa*), White-crested Laughingthrush (*Garrulax leucolophus*) and Puff-throated Babbler (*Pellorneum ruficeps*).

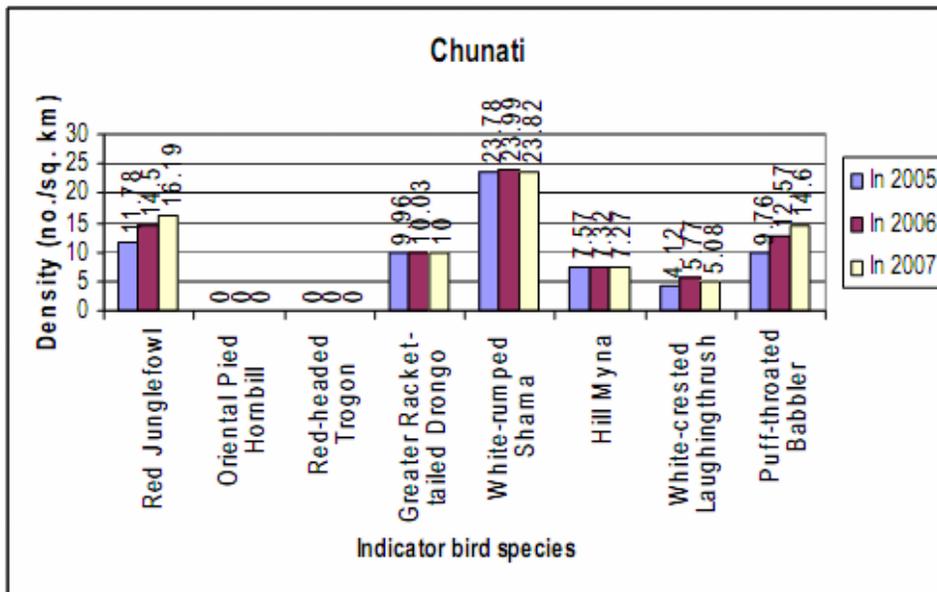


Figure 1: Population density (No/sq.km) of eight indicator bird species in CWS in 2005, 2006 and 2007.

In Chunati, due to poor tree coverage, two of the eight indicator species (Oriental Pied Hornbill and Red-headed Trogon) were not recorded. However, over three years Red Junglefowl and Puff-throated Babbler have increased significantly. This is the evidence of the strong correlation between the forest condition and the density of these bird species has found in CWS over the years.

Carbon project

Landuse, landuse change and forestry (LULUCF) is identified for mitigation of climate change under Kyoto Protocol. CWS significantly degraded prior to 1990 and thus qualify for carbon funds under Clean Development Mechanism (CDM). A project entitled 'Mitigation of greenhouse gas emissions through co-management of Chunati Wildlife Sanctuary' is developed in 2008 under NSP. Such a financial arrangement can supplement GOB contribution for reforestation in the CWS which would eventually contribute in biodiversity conservation as well as improvement of livelihood of poor local communities.

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 CWS and surrounding hills are generally very good quality. Village grown bamboos, cultivated and managed ones are good but quality of unmanaged village grown bamboo is low quality. It is identified that people in Banskhal and Chunati have strong skills in bamboo weaving and possess high potentiality of Bamboo value chain.

5. Present issues and challenges for IPAC

- i. Newly developed Co-management institutions need further nurturing with project supports like building awareness, stakeholder meetings, financial support to CPGs;
- ii. More support for habitat restoration programme to FD needs continuation;
- iii. AIGA supports through training and micro-finance is needed to reduce dependency of larger segment of surrounding communities;
- iv. Strict enforcement of law and order in cases required;
- v. FD staff need more orientation in co-management and people-oriented conservation programme; training on biodiversity conservation and park management;
- vi. Coordinated efforts should be ensured to reduce further encroachment, land use transformation and gang poaching of forest resources;
- vii. Involve local power structure e.g. politicians, business elites and administration in environmental protection;
- viii. Promote indigenous, fruit and fodder trees in the wildlife habitats rather than planting monoculture of exotic fast growing species.
- ix. 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.
- x. To address human-elephant conflict intensified habitat restoration programme as well as mass awareness and reduced human intervention in the CWS needs to ensure;
- xi. Building trusts and positive attitude among the stakeholders. IPAC need to lead the coordination and consensus building;
- xii. Overall livelihood-focused programme are needed in the CWS vicinity communities. NSP initiatives are good start and should be continued in IPAC with similar pace.

6. Conclusion and Recommendations

Nishorgo Support Project brought a significant shift in PA conservation in CWS and Bangladesh forestry as well. This shift is from *fences and policing approach* to multi-stakeholder approach for natural resource management. This is very much challenging for diverse interest groups to bring in an unique platform whereby win-win situation prevails. To keep sustainable pace of this initiative, it is highly recommended to further backstop the newly developed co-management institutions. Following are some recommendations:

- Develop co-management friendly forest policy
- Provide adequate AIGAs trainings and supports for CPGs and FUG members
- Ensuring sustainable financial mechanism for CMOs
- Develop a comprehensive strategy for functionalize and operate student dormitory, interpretation center, eco-cottage.
- Provide necessary logistics and manpower supports to FD local offices

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).

FD, 2008. Mitigation of Greenhouse gas emissions through Co-management of Chunati Wildlife Sanctuary.

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 Chunati Wildlife Sanctuary (CWS)

Photo Gallery of CWS



Co-management Day 2009



CMC meeting, Chunati



Interpretation Center, CWS



Student Dormitory, CWS



CWS Landscape



Strip plantation by CMC



CPG Meeting, Banskhali



Co-management Rally 2009



Watch Tower, Chunati



ACF Quarter, Chunati



Entrance of Bon pukur trail, Chunati



Entrance of Jangalia foot trail, Chunati



Bill board for mass awareness, Chunati



Bill board for mass awareness, Chunati



Information Board, CWS



Information Board, CWS



Nishorgo Library, Banskhali



Eco-cottage, Chunati