



Site-Level Field Appraisal for Protected Area Co-Management: Chunati Wildlife Sanctuary



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Site-Level Field Appraisal for Protected Area Co-Management: Chunati Wildlife Sanctuary

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EXECUTIVE SUMMARY

1. A two-step rapid appraisal process, initial RRA, followed by subsequent PRA, was undertaken to make a comprehensive situational analysis of the Chunati Wildlife Sanctuary during May-July, 2004, aiming at helping to shape the future activities for the improved management of the sanctuary within the Nishorgo Support Project. Specifically, the appraisals focused on the assessment of major stakeholders, understanding causes for the forest degradation and its underlying facts, identifying the challenges for the project and exploring the opportunities for its improved management. In addition to application of various RRA and PRA tools, like trend and seasonal analysis, Venn diagramming, livelihood analysis, ranking, scoring, resource mapping etc., a series of household and group interviews, and focus group discussions were also conducted.
2. A total of 70 settlements, locally called paras, having stakes with Chunati WS have been identified. In Chunati range only, there are about 42 paras, of them, 24 are located inside, 13 adjacent to and 5 are outside of the sanctuary. About 75% paras have major and the rest have moderate to low stakes with the Chunati part of the sanctuary. The paras comprise about 7810 households (HHs).
3. A total of 24 stakeholder groups has been identified in the sanctuary area, of them 18 are primary stakeholders and are involved in resource extraction and forest conversion activities, and the rest are secondary and are indirectly involved with forest destruction. Five stakeholder groups have major stakes with the sanctuary. Among the stakeholders, fuelwood collector, illegal timber feller, bamboo collector, land encroacher, betel leaf cultivator local brickfield and sawmill owner have major role in forest degradation.
4. The forest is seriously degraded and most parts of it are now denuded. Natural forest cover is confined in a few small pockets and represented by few scattered trees nearby the forest offices only. As revealed by trend analysis, in Chunati WS, the forest cover has decreased by more than 60%, forest thickness by 90%, abundance of tall trees and wildlife by 90%, since 1970. On the other hand, herbs and shrubs increased by 60%. Hunting and illegal tree felling although increased during 80-90's, have now declined due to its non/or less availability. Fuelwood collection increased, while bamboo collection decreased compared to 1985. Betel leaf cultivation has flourished since 90's. The forest is now dominated by herbs, shrubs and sungrass. Agricultural activities have also increased. Land encroachment has increased by 80% compared to 1970 level.
5. By now, many wildlife have become locally extinct from the WS. The extinct animals include Bengal tiger, peacock, chitra and maya deer, goyal, dhanesh, etc. Besides, some animals have also become locally endangered in the sanctuary. These include small barking deer, bear, meso bagh, gibbon, honuman, wild dog, python, wild fowl, cobra, doves, vultures, turtles, pheasants, and pangolin. On the other hand, many plant species have also become endangered and these are `mainly cane, garjan,

dhakijam, gamari, chapalish, chandan & tandul (extinct), telsur, pitraj, urium, batna, bhadi, bailam, nageshar, etc.

6. Betel leaf cultivation is a huge activity within the sanctuary area and presently it is the main form of temporary land encroachment and emerged as a good source for added income. Although, as per perception of local people and local FD staff the number of betel leaf cultivator would be near 6000. All types of people, from rich to poor, undertake this activity. The cultivator use *muli bansh* and other young plants to erect fence, provide support to vines and create shade. They also burn the area in the process of preparation of the betel vine beds. This has a huge impact on forest regeneration and local biodiversity. About 30% HHs are involved with betel leaf cultivation
7. Since the declaration of wildlife sanctuary legal tree felling has stopped and only in the recent years, instead of traditional plantation practice with valuable timber trees, the sanctuary is being planted with fruit bearing trees. However, the law enforcement activity still remains very weak. No recovery of encroached land has been made in the recent years, rather forest land is being grabbed and encroached and transformed. Illegal tree felling and collection of bamboo has not stopped. Other illegal resource extraction activities are being carried out by local people. This may be attributed partly to local deteriorating law and order situation, lack of skilled and adequate manpower and lack of logistics, also to negotiating arrangement between some local FD staff and local people. There is a decreasing tendency in forest cases, being almost nil in the last year. This decrease in illegal felling may be attributed to unavailability of suitable trees. There is no mechanism for consulting the local people in implementing and designing any management program. Other than plantation, no other rehabilitation and site specific management plan is under implantation.
8. FD's local records show that about 1734 acres of forest land of Chunati range is under encroachment, however, this would be far much lower than actual figure. Estimates by local people suggest that about 10% of forest land could be under encroachment. Records also show that about 1000 acres of land has been recovered. Forest land encroachment is still going on. Presently, majority of encroachment in Chunati is for betel leaf cultivation. Local elites, forest villagers, and some other local people are mainly involved with land encroachment, sometimes with hidden support from some local FD staff. At present, local FD are unable to act to prevent its occurrence. In fact, the local elite and influential people are more powerful than FD people. In some instances, the encroached land has been legalized through a process converting it to *khas* land.
9. In Chunati WS, about 64% HHs are extreme poor, and the rest belong to poor and middle class. In average, about 30% people of the area are unemployed, this figure vary with seasons, being most in September–October and April–May. Cause and effect analysis showed that the extreme poverty in the locality, unemployment, coupled with weak law enforcement situation made poor local people to be reliant on the forest

resources for meeting HH needs and added income. It is unlikely to prevent the illegal forest extraction activities unless these underlying causal factors are addressed.

10. The local power structure remains as the central issue to the management of the sanctuary. There are about 84 local influential people, who actually has major control over the locality. Besides, there are several outsiders, who also have influence on the local people and their activities. Information on their domain of power has been collected. There are two important families, namely, Miabari and Deputybari, located very near to the sanctuary and have their agricultural land inside of the sanctuary. These two families are very influential in the locality and have most control over local people and local affairs. The local public representatives are also very influential and are main sources for local conflict resolution.
11. There are 6 brickfields in and around Chunati range of the sanctuary, owned by very influential people, of which 4 are within the sanctuary area. In an average, each brickfield consumes about 300 maunds of fuelwood everyday during their operation period of 6-8 months. Earlier, entire fuelwood was used to come from the reserve, but now they are extending their supply areas to nearby other forests to meet their demands. The operation of these brickfields is being carried out violating the Forest Act. The presence of these brickfields has caused huge impact on the sanctuary and still it remains as a major threat to the forest biodiversity. There are also 11 sawmills around the sanctuary, established by passing the government laws. These are also owned by very influential people. It is alleged that the sawmills receive illegally felled trees. However, all of them are located nearby the Jaldi range.
12. It is locally held that the so called forest villagers cause most harm to the sanctuary. FGD suggests that they depend on the forest for many of their daily HH needs and they also use the forest for added income. Most forest villager's HH are involved with fuelwood and bamboo collection, betel leaf cultivation. They are in a advantageous position being located within the forest areas. In case of Chunati WS, they have little compliance to forest Villagers agreement with FD. However, they try to maintain a good relation ship local FD staff. The total number of registered and enlisted forest villagers stand near about 200 in the sanctuary. However, this number would be far behind the actual. Local people estimates suggest that the number of people claiming to be forest villagers would be near about 2000 HHs. FD listed them as encroachers. They are mainly descendant of forest villagers and/or their relatives. There are evidences that some forest villagers pursue other people to come to their settlement areas and help him in grabbing land, in return they take some money from him.
13. Earlier plantations in Chunati WS included long rotation valued timber trees as well as short rotation exotic trees, often with mono species. Since, 2001 this practices has changed and shifted to an eco-friendly plantation practice. Presently, the plantation is done with about 30 species of indigenous fruit bearing trees. So far more than 250 ha of land has been planted with these species of trees. Although not permitted under the plantation rules, the plantation technique still include the burning and clearing of land

and subsequent weeding of plantation areas, and thus this practice still remains as a threat to forest biodiversity.

14. There has been a growing opposition against the establishment of the wildlife sanctuary with an apprehension that local people would lose access to forest with this sanctuary designation. This led to a resistance group being set up in Chunati, who undertook a vigorous process of leafleting and meetings with message being that establishment of the wildlife sanctuary is a conspiracy against the local population. This movement was initiated by local powerful people who have large illegal stakes with the forest through encroachment. Before, RRA stage 4-5000 people had been mobilized. Anger is now bit diffused as the team had meetings with them at the RRA stage.
15. With decreased habitat and shortage of food, human-elephant conflicts are high, particularly during April-May, as they come hunting for food, often rampage the crop fields. In recent years crop damages by elephant has led many people to abandon cultivation. This is a particular concern for local people.

Acronyms

Acronym	Detailed name
BO	Beat Office
CODEC	Community Development Centre
FD	Forest Department
FGD	Focus Group Discussion
FRMP	Forest Resource Management Plan
FSP	Forestry Sector Project
GD	Group Discussion
HHs	Households
KI	Key Informant Interview
NACOM	Nature Conservation Management
PRA	Participatory Rural Appraisal
RO	Range Office
RRA	Rapid Rural Appraisal
WS	Wildlife Sanctuary

1. INTRODUCTION

1.1 *Project Background*

In Bangladesh, natural forests are under constant pressure and have already been significantly degraded and fragmented. In an estimate, forest cover in the country has fallen by more than 50% since 1970. This situation is threatening the value of these forests as habitat for biodiversity and for provision of vital environmental services. If this trend continues, it will soon result in a serious ecological catastrophe and a declining spiral of production and productivity irreversibly detrimental to the livelihood of people living in and around the forest, historically dependant on them. Therefore, there is an urgent need to reduce or reverse the detrimental impact on forest biodiversity and maintain resource sustainability through improved management and creating alternate livelihood opportunities for people dependent on forest resources.

The concern for biodiversity assets in the country has a long history and Bangladesh has a strong commitment to the cause of biodiversity conservation from the national, regional and global perspective as reflected in its endorsement and ratification of many national, regional and international conventions, treaties, protocols etc. related to biodiversity conservation.

The alarming situation in forest degradation in the country and the government's commitment to national and international community, spurred government effort to designate and establish a number of protected areas, (including National Park, Wildlife Sanctuary and Game Reserve) with biodiversity significance under the provision of Wildlife Preservation Act, 1973. But there has been a little change in the degrading situation of these PAs with regard to biodiversity and its environmental services. Poor governance and lack of appropriate and pragmatic management regimes for these PAs has been linked to the failure in PA management in the country.

Responding to the urgent need to address the forest conservation and related economic opportunity creation, the US government and Government of Bangladesh elaborated and signed a Strategic Objective (SO 6) Grant Agreement to improve management of open

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water and tropical forest resources. This agreement sets target for improving forest management.

In the context of the agreement, the Forest Department has worked with USAID to jointly develop a project, called Co-management of Tropical Forest Resources of Bangladesh, to accelerate and consolidate protected area management and more active local participation in forest resource management. The Forest Department and USAID recognize the need for the continued effort to manage the forest resources of Bangladesh and has set long-term greater vision with renaming the project as Nishorgo Support Project (NSP). Initially NSP is working in 5 protected area pilot sites, including the Chunati Wildlife Sanctuary.

The Nishorgo Support Project (NSP) is to demonstrate a replicable case for establishing a good governance system that will ensure sustainable management of protected areas of Bangladesh, while working in a number of selected pilot sites. Specifically, the project is designed to develop, promote and implement forest co-management model, to halt and/or reverse degrading trend in forest resources and its habitats, reduce unsustainable practices, bring about changes in policy environment in favor of co-management, strengthen stakeholders capacity in natural resource management, improve livelihood of local poor people in order to curb dependency on forest resources.

1.2 Information needs of NSP and logical basis for conducting PRA/RRA

For any project, development or research, information is needed for designing and planning project interventions, setting implementation strategies, evaluation and monitoring of project performance and impact. Information at the initial stages of the project thus helps the project in carrying out its activities effectively and efficiently.

It has been emphasized from the beginning that that NSP will avoid information overload, rather it will concentrate on collection of relevant information by using appropriate methodology. Therefore it was necessary to carefully scrutinize the information needs and determine its relevance to the project objectives and activities.

The generation of information, in principle, is guided by project objectives and goals. The NSP is particularly concerned with the establishment of co-management mechanism of forest resources in one hand and developing a prescription for the technical management of its resources, on the other hand. Therefore, generation of information is thus centered on the characterization of local community (stakeholders) likely to be involved with the project and local resources that are to be managed. Therefore, information on the following are thought to be relevant.

- Co-management ----- stakeholders and their activities, socio-economics, behavior, community power structure, their needs and expectations, conflict, challenges etc.
- Resource management ---- resources and its status, trend and causes for resource degradation, resource exploitation, threats to local resources and biodiversity

This preliminary assessment of information needs for NSP through scoping exercises provided precursors for brainstorming for identifying specific information needs that will be collected through subsequent appraisals. It was thought that at the initial stage of the project a rapid appraisal would be very appropriate in terms of cost effectiveness, usefulness, reliability, and overcoming time constraints.

Rapid Rural Appraisal (RRA)/Participatory Rural Appraisal (PRA) are packages of methods and tools for collection of qualitative information about local people, their life, environment, their resources, activities and living conditions in a short time. The purpose is to utilize knowledge of the local people in designing and setting implementation strategies of a project/program and /or to monitor and evaluate project performances and impact. It is also considered as a process for involving local people in the project planning and /or implementation and monitoring. In fact, RRA/PRA is thus considered as an integral part in down-top planning process in many development or resource conservation projects.

RRA was carried out as an initial activity in the field with primary focus on stakeholder assessment and also equally intended for generating information that will help to get a sense of range of key issues and challenges that need to be addressed and be better

informed on the context (social, economic, ecological) in which the project is likely to intervene.

Built upon the outcome of the RRA, subsequently PRA was planned to collect in depth information on the identified issues and to ensure greater participation of local people in information collection.

1.3 Purpose of the Report

The main purpose of the present report is to present a synthesis of all findings from RRA and PRA exercises conducted in Chunati WS during May-July, 2004. The report also details the methodology and tools used and highlight the issues in forest management and biodiversity conservation and identify the challenges for the NSP. Finally, the report puts forward set recommendations for the improved management of the sanctuary.

1.4 Outline of the Report

The site level appraisal report, at first, provides an executive summary which summarizes the entire ranges of the findings, methods used, issues and challenges identified during PRA. The report starts with general introduction in **Chapter 1** that includes the background information of the project, information needs of NSP and logical basis for conducting PRA/RRA, the purpose of the report etc. A brief description of the site is provided with a site map in **Chapter 2**.

Chapter 3 sets out the methodology of the study that deals with the approach taken for the implementation of the fieldwork of RRA and PRA, study team and study period, objectives and methodology of the study. The chapter also includes study period, setting RRA and PRA issues and questions, formation of RRA and PRA field teams , selection of RRA and PRA spots, choice of RRA and PRA methods and tools and the limitation of the field work. Outcomes of the RRA and PRA exercises are described in **chapter 4** which contain major findings and analyses. The findings are mainly presented as situational analysis of the forest resources, stakeholder analysis, resource and resource extraction, trend analysis, socio-economical situation of the surrounding area, seasonal

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trends in resource extraction, etc. In short, this chapter reflects the current status of the forest dynamics with social dynamics.

Chapter 5 presents issues and challenges for NSP, an extended section based on PRA/RRA outcomes, identifying present issues of concern and challenges for NSP and highlights the opportunities for the project.

The final **Chapter 6** embodies a set of suggestions and recommendations regarding the implementation of the project. At last a number of necessary references of all documents consulted and photographs are appended as annexure with the report.

2. DESCRIPTION OF THE PROJECT SITE

The Chunuti Wildlife Sanctuary is a tropical semi-evergreen forest in Bangladesh, situated at about 70 km south of Chittagong city on the west side of Chittagong – Cox's Bazar Highway (Fig. 1). The GPS locations for the sanctuary are 21⁰40' N and 92⁰07' E. The sanctuary embraces partly 7 unions (namely Chunuti, Adhunagar, Herbang, Puichari, Banskhali, Borohatia, Toitong) of Banskhali and Lohagara Upazila of Chittagong District and Chokoria Upazila of Cox's Bazar District.

Earlier, the sanctuary was under the jurisdiction of Chittagong (south) Forest Division, but in the recent past, it has been transferred to the newly created Wildlife and Nature Conservation Division of the Forest Department. Administratively, the sanctuary is divided into 2 Forest ranges, Jaldi and Chunati, 7 Forest Beats (namely, Chunati, Herbang, Aziznagar, Jaldi, Puichari, Chambol and Napora) and further divided into 7 forest blocks.

Chunati WS was formally established through a Gazette Notification in 1986 under the provision of Wildlife preservation Act. As per the Gazette Notification the Wildlife Sanctuary covers an area of 7763.94 ha or 19177 acres.

There are 7 mouzas, divided into 15 villages and further divided into about 70% settlements (locally called para). Of the paras, about 48% is located inside and at the edge of the forest and the rest are located outside, but adjacent and nearby the forest. In the Chunati Range, there are about 7810 HHs and a population of approximately 50000.

The sanctuary area is generally hilly to mountainous with shallow to deep gullies and gentle to steep slopes. The average elevation is 30 to 90 M. There are numerous creeks, which are clear with gravely, and stony beds, which traverse the area. The forest is covered by about 890 ha bush, 84 ha garjan forest, 13 ha small crown high forest, 11 ha open, 1458 ha plantation, 2761 scattered area and 9 ha water bodies.

It is a tropical semi evergreen forest in the Garjan belt, which extends from Chittagong to Cox's Bazar and originally there was a rich Garjan Forest with natural associates of Garjan in the area. The associate trees include Rakten, Jam, Urium, Chapalish, Simul, Koroi, and wide variety of other species. Besides this various species of trees, bamboos

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and grasses were also profuse in the sanctuary, but due to various causes, like unauthorized cutting and indiscriminate illicit felling, the species are being restricted now, stock is very poor. Approximately, 1200 plant species, which include 45 species of trees and rest are herbs and shrubs, are present now. A total of 178 species wildlife species found in the sanctuary which include 6 amphibians, 8 reptiles, 137 birds and 27 mammals.

Land encroachment leading to expansion of settlements and agriculture, tree poaching, hunting, collection of fuel wood, bamboo and cane, and other forest products are the major causes for the degradation of the forest and its resources. Poor forest management by FD, local deteriorating law and order situation, adverse role of the local influential people, operation of brickfield and sawmills, local unemployment and poverty are the major underlying factors that contribute to the forest degradation.

3. METHODOLOGY

As mentioned in the preceding section that a two-step rapid appraisal strategy was taken. RRA was conducted as the first and initial step in the appraisal process, followed by PRA. The overall purpose of the RRA and PRA was to come up with a comprehensive situational analysis of the Chunati WS with a view to understand: -

- Who destroys and how the forest is destroyed
- What are the underlying driving force for the forest degradation
- Cause and effect of behavior of local people
- Opportunities for its improvement

While RRA was designed to identify the stakeholder groups and to get a sense of range of issues that the project needs to address and be better informed during subsequent appraisals and surveys, PRA was planned to collect in-depth information on the identified issues.

3.1 Study Period

RRA and PRA field exercises in Chunati WS were conducted during 16th May to 19th May 2004 and 29th June to 4th July 2004, respectively and the detail time schedule for the field activities is given in Table 1 and Table 2.

Table 1. List of selected RRA spots and schedule for visit to Chunati Wildlife Sanctuary.

Date	Name of RRA spots	Remarks
16/05/2004	FGD at Cox's Bazar DFO and travel to Chunati	Night stay at Chunati.
17/05/2004	Aziznagar and adjacent villages –one team Bonpukur and adjacent villages --one team	Gather Team Reports.
18/05/2004	Puichari and adjacent villages –team Adjacent villages near Chambol beat	
19/05/2004	FGD at Chunati range office.	Work done, Back for Dhaka.

Table 2: PRA spots and schedule for conducting field activities

	Beat	Village/location	Performed activities	Remarks
29/6/2004	Chunnuti	Banpukur,	Transect, Institution visit & discussion GD(1) HH interview (3)	Inside the WS, Visited Zamia al Rahmania Madrasa and discussion with the teachers and students GD was done with a group of hunter
		Mirikhil,	FGD(1) HH interview (2)	Fuel wood collectors
		Hindhupara,	GD(1)	GD with community people to know about land encroachment, local governance system illegal timber felling and forest dynamics another
		kalusikderpara,	FGD(1)	betel leaf cultivator,
		Sufrinagar	FGD(1)	FGD with Forest villagers
30/6/2004	Chunnuti	Guccha Gram,	FGD HH interview (2)	FGD with women to learn about gender issues
		RashiderGhona,	Mapping HH interview (3)	Prepared participatory social and resource mapping of Chunnuti beat,
		kathuriapara,	FGD	FGD with Furniture shop owner and tea stall owner to know about timber and fuelwood consumption.
		NullBonia	FGD	FGD with local government members and local elites to know about social and forest dynamics, local governance system and community structure and functions
		Chunuti BaganPara	Institution visit & discussion	Visited Chunuti Women Degree college and conduct discussion with teachers and Students to know about the literacy, gender issue.
		Chunuti Beat Office	FGD	FGD with FD staffs to know about the land encroachment and forest management regimes including plantation strategy
		Chunuti Bazar	GD	One GD was conducted in near by Chunuti Bazar to know about the brickfield operation and impact.
		Deputy bazar	GD	One GD was conducted in near by deputy Bazar to know about the overall issues of the area and forest situation and grazing
1/7/2004	Aziznagar	Beat office	FGD GD Transect	FGD with FD staffs. GD with community people to know the overall situation of the area and forest special emphasis was given on brickfield.

	Beat	Village/location	Performed activities	Remarks
		East villager Para	FGD HHs Interview (2)	FGD with forest villagers,
		West villager Para	FGD, KI HHs Interview (3)	FGD with Betel leaf cultivator Local govt. member
2/7/2004	Aziznagar	Nayabazar,	FGD GD(1)	FGD with fuel wood collectors GD with tea stall and hotel owner and workers,
		Jungle Bosti area	FGD HHs Interview (5)	FGD with bamboo collector.
		Aziznagar bazar	GD (1) KI(1) Resource and social mapping,	GD with local government members and local elite. Local school teacher Local Community people
3/7/2004	Herbang	Goyalmara villager Para,	FGD GD Transect HHs Interview (3)	FGD with Forest villagers GD with community people
		Bhandarirdoba,	FGD KI	FGD with fuel wood collectors. Local government member
		Napiterchita	FGD	FGD with bamboo collector,
4/7/2004	Herbang	Beat office	GD	GD with FD staffs
		Charpara,	FGD Resource and social mapping, HHs Interview (5)	FGD with betel leaf cultivator Local community people
		West charpara	FGD HHs Interview (5)	FGD with tree feller
		Barua para	FGD KI	FGD with women. Local elite
		Herbang bazar	GD	GD with tea stall owner and workers
4/7/2004	Chunuti Range office		FGD	FD staffs

3.2 Setting RRA and PRA Issues and Questions

A interactive and consultative planning workshop was organized on 31st March to 1st April 2004 at CODEC Training Centre, Chittagong, with a view to identify, prioritize and finalize the RRA issues and questions. Workshop was participated by subject matter specialists and representatives from NACOM, field implementation partners (CODEC and RDRS) and local FD staff, who were likely to be involved in the RRA field exercise process. This workshop provided an opportunity to prepare a field protocol, decide and agree on, and elaborate approaches, methods and tools to be used and also to make and

consolidate team understanding. PRA issues and questions were developed by a 3-membered expert teams on the basis of outcomes of the RRA exercise and field experience from the RRA exercise. The RRA and PRA issues and questions are given in Table 3 & 4, respectively.

Table 3. Selected RRA issues for Chunati WS, specific activities and tools used

Sl.	RRA Issues	Specific activities	Tools Used	Participants
1	Stakeholder Assessment	Identification of settlements, resource users, local institutions and agencies and organization, community organizations etc and their roles and activities	HHs Interview, KI FGD GD Sketch mapping	Local HHs Local school teacher, Doctor Community people (villagers, elites etc) Local community people Local people
2	SH Demographic profile	Settlement wise no. of HHs/population HH occupation, education, forest use, land holding	Secondary Info HH Int., KI, GD, FGD Trend Analysis	Local union parishad HHs heads/members Community people School/College teachers & local public representatives
3	SH Economic Activities/ Livelihood Strategies and Human Capital Development	<ul style="list-style-type: none"> - HH primary and secondary income sources of HH - Richness/poverty - Unemployment and its seasonal trend - Credit and alternate income generating opportunities - Skill and skill development opportunities - Seasonal workload of male and female 	HH Int. GD KI FGD Seasonal Calendar	HHs heads/members Teacher, retired officers, old people Public representative Local elite Community people Forest villagers
4	Gender Issues	<ul style="list-style-type: none"> - General impression on living standard, education and health status etc. - Participation in decision making (household and PA management) - Women mobility in the area - Access to IGA and credit etc 	HH Int. GD FGD KI, Direct observation	HHs heads Women group Community people Local elites RRA team members.
5	Behavior of local people	<ul style="list-style-type: none"> - Initial response of the local people and FD staff towards the project - Sources of conflict and conflict resolution 	FGD GD HH int	Local community FD staff HHs heads
6	Local Level Awareness	<ul style="list-style-type: none"> - Awareness and perceptions about resource degradation and conservation - Willingness for resource conservation - Awareness about the existence of nearby 	HH int GD FGD	Local HHs heads Local community FD staff

Sl.	RRA Issues	Specific activities	Tools Used	Participants
		<ul style="list-style-type: none"> park/game reserve and reserved forest - Knowledge about forest and wildlife preservation acts 		
7	Resources /resource status	<ul style="list-style-type: none"> - Trend in changes in major resource bases - Endangered/extinct plant and animals - Causes for the decline in different resources 	Trend analysis, HH int, FGD GD KI	Local people/FD staff Local HHs heads FD staff Community people Local educated old,
8	Resource exploitation	<ul style="list-style-type: none"> - Major forest resources collected, including NTFPs: - Reasons and extent of exploitation of different forest resources - Dependency on the forest/forest products - Seasonal trend in resource exploitation - Future risks - Medicinal plant uses and reason for not using these 	HH int, FGD, GD KI, Trend analysis, seasonal calendar	Local HHs heads Public representatatives & FD staff Community people Local educated old, Local elite and FD staff HHs interview and KI
9	Resource regeneration practices	<ul style="list-style-type: none"> - Plantation status in the locality - Problem with natural regeneration in the forest - Plant nursery - General land use pattern in the buffer zone - Major agricultural crop - Seasonal pattern in agriculture 	Secondary Information, FGD, GD, KI, Seasonal calendar	Secondary data from FD FD staff Community people Local elite, teacher Community people
10	Legal aspects	<ul style="list-style-type: none"> - Access to the forest by locals - Forest villagers and land use agreement - Conflict and negotiation with FD staff - Land encroachment/recovery - Law enforcement mechanisms in the PA - Illegal tree felling and forest cases 	FGD GD KI FGD KI	FD staff and forest villagers Local community and local govt. members Local elites FD staff, community people Teacher, ex-officers,
11	Power structure	<ul style="list-style-type: none"> - Local influential and their role, local hierarchy - Nature and sources of power and their domain of influence - Conflict and conflict resolution - Social cohesion and adhesion 	HH int, FGD, GD, KI	Local HHs heads Local community and local govt. Local community Local elites
12	Others	<ul style="list-style-type: none"> - Access to areas and settlements - NGO activities in the locality - Challenges for conservation - Local problems - Mobility in the area 	HH int, FGD, GD, KI	HHs heads Local community and local govt. Local people & FD staff Local elites

Table 4. PRA issues, specific activities performed and tools used

Sl.	Issues	Specific activities	Tools used	Participants
1	Forest make up dynamics	-observation on forest physiography and topography and forest make up -land use cover, resource exploitation and regeneration areas, animal distribution -changes in forest cover, thickness, vegetation, settlements, animals and availability of resources	Transect walk KI Resource mapping Secondary data, FGD, KI Trend analysis	PRA Team Local elite, FD staff FD staff and village headman, forest villagers. Local people and FD staff, forest villagers
2	Local governance system and community structure and functions	- Decision makers--- influential people - Local community organizations and institutions and their linkages - Local conflict and conflict resolution - Social cohesion and adhesion - Collective action Local problem, cause and possible solution	Venn diagram Ven diagram Venn diagram FGD/GD FGD & GD and Ranking	Community people Community As above As above and local elite
3	Livelihood strategies	Income and expenditure sources, Livestock, Richness and poverty	Wealth ranking HH interview	Women group and local people
4	Gender issue	- Family decision making - mobility - workload - Education and access to credit	Decision making Chart Mobility map Daily and seasonal work chart HHs Int. & FGD	Women group Women group Women group Women and local educated people
5	Fuel wood collection	- Information on collector - Purpose and driving force for collection - Dependence on the extraction for their livelihood and its extent - Uses and marketing channel of the resource - Level of extraction and seasonality - Conflict with FD or other people over the extraction - Negotiation for carrying out the activity - Alternate source for the collection of the resources - Needs and expectation of the collector - Impact on the forest and future risks for the collector	FGD & GD, seasonal analysis	Fuel wood collector, community people, local hotel and tea stall owners
6	Illegal timber	- Information collector - key people behind the activity and	FGD, GD and KI	Illegal timber feller, FD staff

Sl.	Issues	Specific activities	Tools used	Participants
	<i>felling</i>	<ul style="list-style-type: none"> network - Purpose and driving force for collection - uses and marketing channels and dependence - What encourages them to take up the activity - Anybody protect them, if they are in problem - Protection by FD or by any other agencies (e.g. Police etc.) - conflict and negotiation with FD or other people - needs and expectation of the feller - impact on the forest and future risks for the illegal feller - Seasonalities and trend in timber extraction 	Seasonal calendar and trend analysis	and community people, teacher and local elite
7	Collection of trees as building materials	<ul style="list-style-type: none"> - Information on collector - purpose and reasons for collection - uses of the resource and extent of extraction - dependence on the extraction and marketing - conflict and negotiation with FD or other people over the extraction - alternate source for the collection of the resources - needs and expectation of the collector - impact on the forest and future risk for the collector 	FGD, GD and KI	Community people, FD staff , , forest villagers, local public representative and elite
8	Bamboo and cane collection	<ul style="list-style-type: none"> - Information on collector - purpose and reasons for collection - uses of the resource and extent of extraction - dependence on the extraction and marketing - conflict and negotiation with FD or other people over the extraction - alternate source for the resources - needs and expectation of the collector - impact on the forest and future risk for the - seasonal changes and trend in abundance 	FGD, GD Seasonal calendar and trend analysis	Bamboo and cane collector, community, people and FD staff Bamboo collector and local people
9	Information on Forest villagers	<ul style="list-style-type: none"> - Distribution of forest villager's settlements - Registered and actual number of forest villagers - compliances to FD agreement - Present economic activities - Resources exploitation and dependence on forest resources - land encroachment by the forest villagers 	FGD Secondary data	Forest villagers and FD staff FDs villagers register

Sl.	Issues	Specific activities	Tools used	Participants
		<ul style="list-style-type: none"> or by their dependant - relationship and conflict with FD - internal governance system - needs and expectation 		
10	Betel leaf cultivation	<ul style="list-style-type: none"> - distribution of betel vine yards within and approximation of its number - historical perspective of flourishing the activity in the area - information on cultivator - ownership of land - dependence on the activity - Impact on the forest resources - Conflict with FD 	FGD GD GD	Betel leaf cultivator FD staff Local community
11	Land encroachment	<ul style="list-style-type: none"> - Historical perspective and trend - information on encroaches and reason for encroachment and what drives to undertake the activity - Legalization of process - Conflicts and negotiation process - Uses and transformation of encroached land - Local mechanisms/system or traditional practice for land encroachment 	Secondary data and trend analysis FGD and KI	FDs encroacher register Encroacher Group and FD staff, local elite And community people

3.3 Formation of RRA and PRA Field Teams

The RRA field teams were formed with representatives from NACOM, RDRS and CODEC and FD local staff, having biological and sociological background. Two separate RRA field teams were formed, each team consisting of 3-4 members. The teams worked simultaneously in the field, but at different locations. The team make up for the RRA and PRA field exercises are given in Table 5 and Table 6.

Table 5. RRA team for Chunati WS

RRA Team composition			
Team 1		Team 2	
Name	Duties/Organization	Name	Duties/Organization
Mrs. Rasheda Khanom	Team Leader, CODEC	Mrs. JK Shahana	Team Leader, NACOM
Mr. Safiqur Rahman	Report Writing, NACOM	Mr. Mahbubur Rahman	Report Writing, NACOM
Mr. Nazmul Abedin	CODEC	Kazi Saifuzzaman	CODEC
Mr. Moazzem Hossain / any other.	FD	Mr. Hanif Khan	CODEC

		Mr. Mominul Hoque / or any other	FD
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Table 6. PRA team for Chunati WS

PRA Team composition					
Team 1		Team 2		Team 3	
Name	Duties/ Organization	Name	Duties/ Organization	Name	Duties/ Organization
Mr. Safiqur Rahman	Transect, Social and resource mapping, FD management regimes and plantation NACOM	Mr. Mahbubur Rahman	FGD, GD and KI with different stakeholders, NACOM	Mrs. JK Shahana	HHs Interview, Formats NACOM
Mr. Nazmul Abedin	CODEC	Mr. Hanif Khan	CODEC	Kazi Saifuzzaman	CODEC

3.4 Selection of RRA and PRA Spots

On the basis of information provided by the FD local officials and staff and field implementing NGO (CODEC)'s various sample locations were selected for visits by the teams for the purpose of information collection. These locations are hence called RRA and PRA spots. The selection of locations was based on a number of selection criteria. The selection process was completed during planning workshop. A list of the selected RRA and PRA spots for Chunati WS is given in the above-mentioned Table 1 & 2.

3.5 Holding Training Workshop

A one-day training workshop was organized for the RRA team members on 10th May 2004. A similar workshop was also held for PRA on 19th June. The purpose was to give the RRA and PRA field team instructions in using various tools. The workshop was held at the CODEC Training Centre, Chittagong and NSP field office, Cox/s Bazar, on RRA and PRA, respectively.

3.6 Choice of RRA and PRA Methods and Tools

The RRA and PRA methods and tools to be used for generation of information were selected, elaborated and detailed in the planning workshop. The type and nature of issues, accessibility and mobility in the area, behavior of local people and rapport of the field staff decided appropriateness of these methods and tools with the local people. Various techniques and tools used for generating information for various set issues and questions are provided in Table 3 & 4. The detailed methodology for corresponding tools was embodied in manual and used in the training workshop so that the methodology remained same across the team and across the sites. It may be mentioned that a particular tool was not exclusive for a particular issue; rather a tool was used for a number of issues. Similarly, particular information was sought by a number of techniques and tools and thus provided an opportunity for triangulation for deciding on the acceptance of particular information.

RRA was mainly based on the unstructured and semi-structured HH interviews, group and focal group discussions and also used some limited number of other RRA tools, like trend analysis, seasonalities, sketch mapping etc. However, in addition to focus group and group discussion, various PRA tools, like Ven diagramming, resource mapping, seasonalities, trend analysis, Livelihood analysis etc., were used during PRA exercises.

3.6.1 Matrices covered under various PRA tools

i. Ven diagramming

Local power structure, local community organizations, local institutions and agencies, local conflict and conflict resolution, family decision making, Mobility Women & men Local NGO/CBOs.

ii. Seasonal calendar

Fuel wood, bamboo and timber collection, unemployment, workload, accessibility to forest, transportation problem, brickfield/sawmill operation, forest patrol, agricultural activities, collection of building materials, hunting, vegetable collection, damages by elephant, sand collection, sungrass extraction.

iii. Trend analysis

Forest cover, forest thickness, tall trees, herbs and shrubs, forest use, unemployment, local solvency, land encroachment, settlement/population solvency/income, livelihood

expenditure, literacy, unemployment, use of forest for income, use of forest for HH needs, transportation and mobility, homestead plantation, food scarcity, credit and IGA, occupation, damages by elephant, wildlife, hunting, illegal tree felling, fuel wood collection, bamboo and cane collection, fruit bearing trees in the wild, livestock, turtles and tortoises, agricultural activities, medicinal plants.

iv. Ranking and scoring

Local problem ranking, wealth ranking, and livelihood analysis.

v. Transect walk

Soil, vegetation, land use, elevation, crops, wildlife, human activities etc.

vi. Forest resource mapping

Forest land use cover, resource zones, resource exploitation zones, animal distribution, settlements.

3.7 Field Implementation Strategies for the Selected Tools

During RRA exercise, a total of 40 HHs interviews, 5 group interviews, 9 key informant interviews, and 5 Focus group discussions were conducted. The other RRA tools were applied during above mentioned interviews and discussions. Similarly, during PRA a total of HH 30 interviews, 10 Group interviews and 19 focus group interviews were conducted (table-7). The other PRA tools were used either during the above exercise or in separate exercises dedicated for this purpose. The field implementation strategies of various tools used are given below.

Table 7. Records of performed activities in different beats of Chunati range during PRA

Beat	Village/ Settlement covered	FGD	GD	KI	HHs Interview	Transect	Institution visit	Resource and social mapping
Chunuti	9	7	4	2	10	1	2	1
Aziznagar	5	5	3	2	10	1	-	1
Herbang	6	6	3	2	10	1	-	1
Chunuti Range Office	-	1	-	-	-	-	-	-

Total	20	19	10	6	30	3	2	3
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3.7.1 Household (HH) interview

- Individual/HH interviews were conducted with randomly selected interviewee, typically visiting one household at each stop.
- Both male and female respondents were considered.
- Typical HH interview last for about 1 hr – 1:30 hr
- The interviewee was not treated as respondents to a questionnaire, but active participants in an unstructured/semi-structured interview. A checklist of issues was used as a basis for questions, not necessarily addressing all questions in each interview and sometimes departing from basic questions to pursue interesting, unexpected or new information, relevant to the project and situation.

3.7.2 Key informant (KI) interview

The key informants are local people who have extensive knowledge on the local environment, situation and events. The purpose of this interview was to utilize them in collecting information from them relevant to the project needs.

- KI interview was by prior appointment. A local guide helped in making appointment with the KI. The interview was taken by paying visit to Key informant HH or by inviting him to the team base
- A preliminary discussion with local FD staff, NSP field partner staff and interview of local people gave adequate clue for selecting KI. Preferably local schoolteachers, retired officials, local elites or local public representatives would be selected as the KI.
- A typical KI interview lasted for about 1.5 hrs. The entire team took part in the interview taking session
- As with HH interview, a similar checklist of questions was used for the purpose of KI interview.

3.7.3 Group interview

- The purpose of the planned Group Interviews was to collect some information on the locality and local situation based on the consensus of the local people.
- Interviews were conducted at places, preferably at local tea stalls, road junctions and other local community places, where local people gathered spontaneously. No formal invitation to the local people was made for participating at the group interview.
- Mapping, seasonalities, ranking and scoring exercises, whenever possible, were done in such group interviews.
- Typically a group interview lasted for about 1-1.5 hrs
- At least a group interview was held each day
- This was basically unstructured interview and a checklist of issues was used as a basis for questions

3.7.4 Focus Group Discussion

Focus Group Discussions were carried out with different professional groups, resource user's groups, and local public and government representatives with a view to collect information on specific areas.

- During PRA, FGD were principally conducted with different stakeholder groups, mainly with local FD staff, forest villagers, local public representatives etc. other professional groups, like fuelwood collector, sawmill owner, etc.
- During RRA FGD were conducted with un
- The FGD were conducted by appointment and by invitation and a local guide was used to invite the people.
- Senior project personnel /or senior personnel from the partner NGO /and or senior FD Official and/or experts were usually present in the FGD sessions.

3.7.5 Other PRA tools

Resource mapping, ven daiagramming, seasonal calendaring, trend analysis, ranking, scoring etc. were done usually in separate sessions dedicated to these activities. However, sometimes, these exercises were also performed during group, focus group and key

informant interviews. The participants were either invited local people or local people instantly gathered at places.

3.7.6 *Direct Observation*

The team while walking through the project area, talked to local people, discussed many things and made observation on the resources, people's behavior and their activities, etc. It also helped in triangulation of collected information and also helped in generating new questions for interview or discussions.

3.7.7 *Secondary Information Collection*

Some demographic data were collected from respective local Union Parishad sources. The report on secondary information collection on the WS prepared under NSP was also consulted and some information used, whenever necessary.

3.7.8 *Organizing RRA and PRA field work*

The organization of field exercises involved a series of logical steps. The field teams always made efforts to adhere to those steps. The flow of activities is shown in the following flow chart.

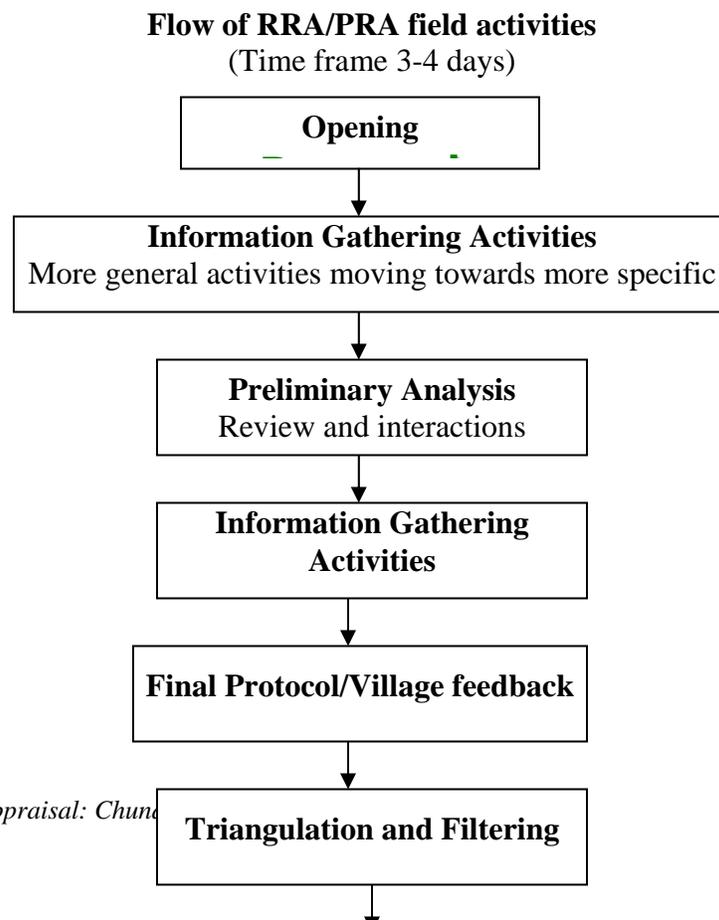


Fig. 2.

i. Team interaction

- After each day fieldwork, the team sat together at night for team interaction and triangulation and spent about one and half-hour for the purpose. The activities performed during the session included:
 - Reviewed information gathered that day and made summary of the information, triangulated whenever necessary. The person designated for report writing took note of discussions
 - Planned the next day's activities
 - Made methodological review

ii. Triangulation and filtering

A single information may be collected by using several tools or from several sources. The team required to cross-check the results and accepts the most logical one. The team members had the opportunity to use his/their own judgment in accepting an answer.

3.8 *Limitation of the Fieldwork*

The main limitation of the fieldwork was that it took place during the rainy season. This made working conditions difficult, and in particular meant that the traditional PRA approach of participants working together to complete large scale matrices on the ground was impossible, and researchers recorded information in note form and by completing matrices themselves either during the group discussion or afterwards. Therefore this work does not match the usual requirements of a PRA where information is analyzed and owned by the participants.

4. OUTCOMES

4.1 *Forest Land Use Cover*

Fig. 3 shows the distribution of different land use zones and forest resources in Chunati WS. The primary natural forest remains in tiny pockets with only scattered trees. The long rotation plantations have turned into secondary natural forests and are also restricted in few places, of them, the most notable plantation is near Chunati Range Office (scattered trees with dense undergrowth) and near Herbang Beat Office alongside the highway.

The vegetation cover is dominated by herbs, shrubs and bush. Sungrass which evolved with clearance of forest also has wide coverage. Natural bamboo is now-a-days restricted to the boarder areas with Jaldi Range. Betel leaf cultivation is now found almost everywhere throughout the entire Chunati WS. New plantations are presently done with fruit bearing and medicinal trees and by now these are found in many places, notably in Chunati, Herbang, Bandaridoba, Goyalmara Chara, Chitar beel, Bhandarida pahar etc. Crop fields are found in the valleys and approximately cover 10 % area of sanctuary.

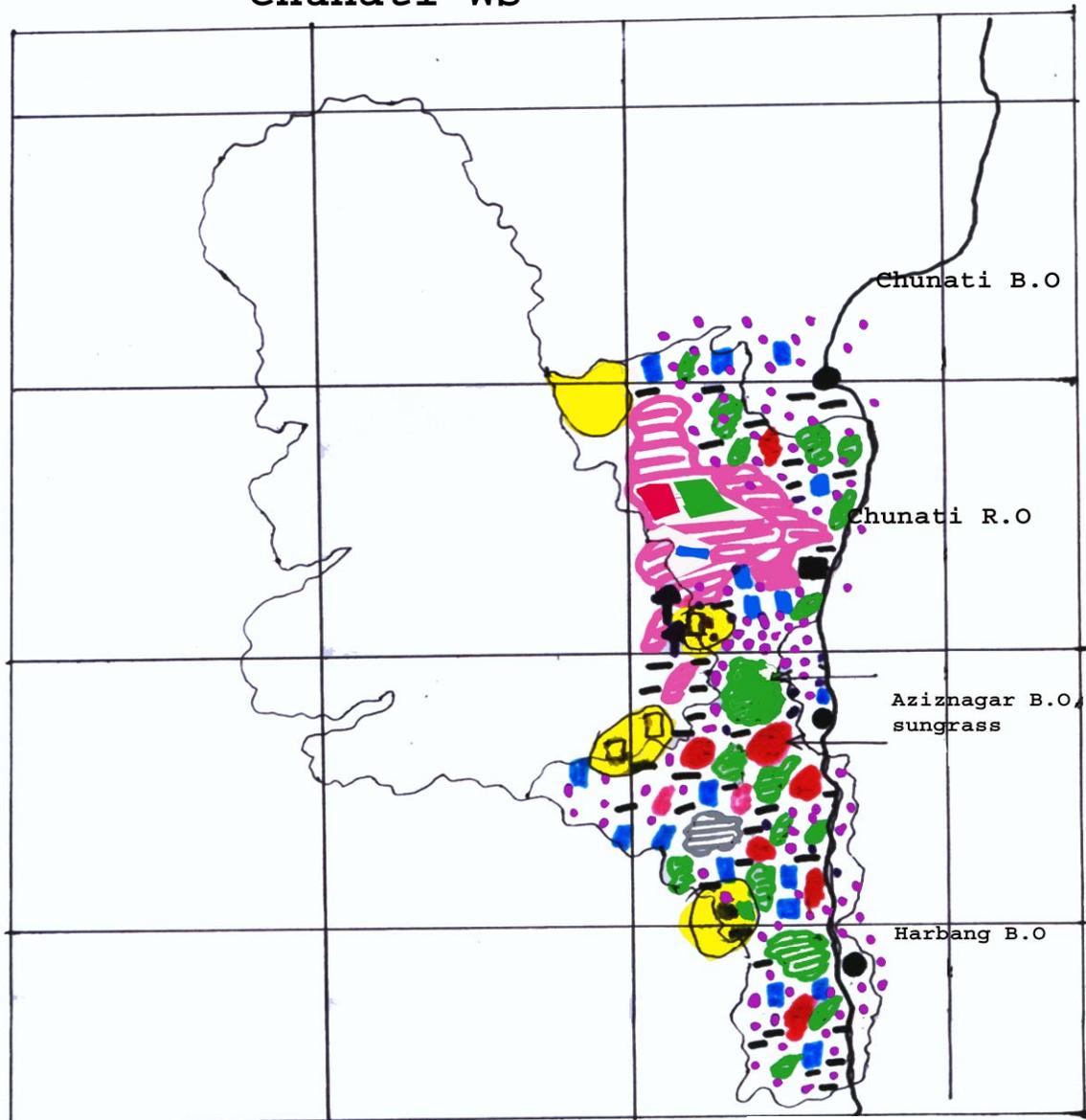
Fig. 4 shows the areas of concentration of some wildlife in the sanctuary. The distribution of major animals are now restricted to few places only. It may be mentioned that wildlife in the forest have declined seriously over the past 3 decades. The elephants are concentrated near Chunati in the garjan forest area. Deer are found mainly near Herbang beat. Monkeys are found along the highway areas. Gibbon is restricted to Jungle Chunati.

4.2 *Forest Dynamics*

Table 8 shows the trend in changes in the forest quality and resource uses and the causes for the changes. In Chunati WS, gradually the forest cover has decreased by more than 60%, forest thickness by 90%, abundance of tall trees and wildlife by 90%, compared to 1970. On the other hand, herbs and shrubs have increased by 60%. Hunting and illegal

tree felling although increased during 80-90's, have now declined due to serious decline in these resource bases. Fuelwood collection increased, while bamboo collection decreased compared to 1985. Betel leaf cultivation has flourished since 90's. Agricultural activities have also increased. Land encroachment has increased by 80% compared to 1970.

Forest land use cover of Chunati WS



Legends

- Undergrowth
- Bamboo and Cane
- Paddy land
- Fruit bearing trees/Plantation
- Belel leaf vine
- Sungrass
- Agar wood

Animal Distribution of Chunati WS

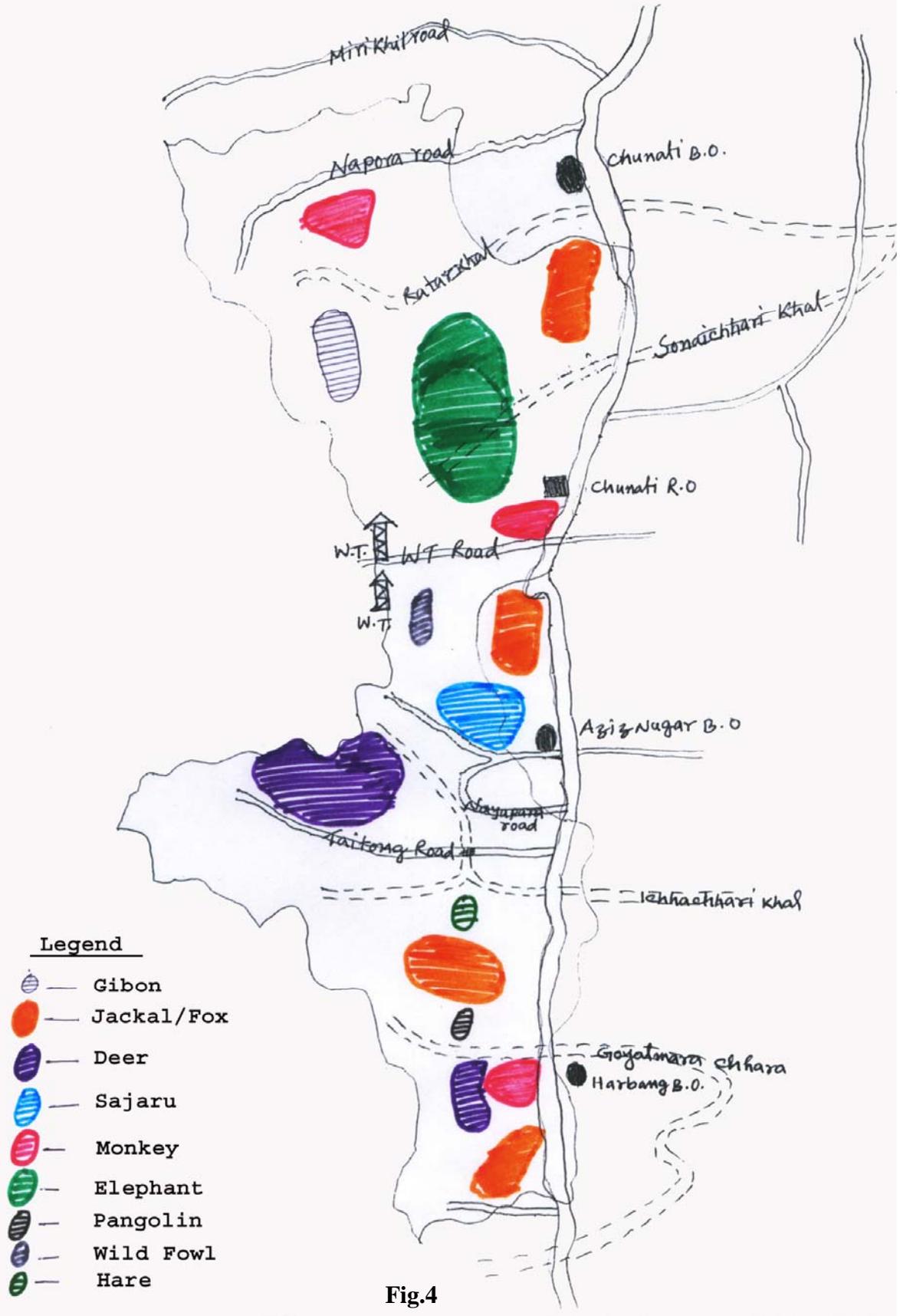


Fig.4

Table 8. Trend analysis (forest quality and resource use matrix)

Issue	Pre-1971	15 years ago	Present	Major causes for change
Forest cover	00000	000	00	Excessive exploitation/ tree felling/tree poaching/ expansion of settlement and agricultural activities & betel leaf cultivation, land encroachment and conversion/ problem in regeneration
Forest thickness	00000	000	0	Do
Tall trees	00000	000	0	Illegal selective felling, problem in regeneration.
Herbs and shrubs/undergrowth	00	000	00000	Lack of tall tree cover
Wildlife	00000	000	0	Habitat destruction and hunting in the past
Hunting	00	0000	-	Unavailability suitable animals/birds and also for awareness among people
Illegal tree felling	0	00000	00	Lack of suitable timber trees
Fuelwood collection	00	000	00000	Lack of fuelwood, activity emerged as added income, no forest protection, unemployment
Land encroachment	0	000	00000	Population increase
Bamboo and cane collection	00	00000	000	Decreased abundance of bamboo and cane and increasing demand of bamboo for betel leaf cultivation.
Fruit bearing trees in the wild	00000	00	000	New plantation with fruit bearing trees
Betel leaf cultivation inside the WS	0	00	00000	Damages of crop by elephant in paddy land, low risk, emerged as high profit business
Agricultural activities inside forest	0	00	0000	Population increase, the outsider agricultural land has converted into settlement
Wildlife	00000	000	0	Habitat destruction, hunting etc.

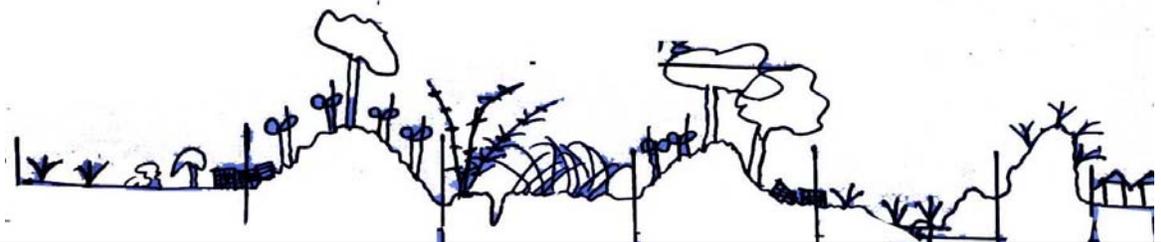
N.B 1 circle indicates relatively lowest abundance/intensities, 5 circles indicates relatively highest abundance/intensities

Many wildlife have become locally extinct by now from the WS. The extinct animals include *bengal tiger*, *peacock*, *sambar deer*, *goyal*, *dhanesh*, etc. Besides, some animals have also become endangered in the sanctuary. These include small barking deer, bear,

meso bagh, gibbon, *honuman*, wild dog, python, wild fowl, cobra, doves, vultures, turtles, pangolin. On the other hand, many plant species have also become endangered and these are mainly cane, *garjan*, *dhakijam*, *gamari*, *chopalish*, *chandan* and *tandul* (extinct), *telsur*, *pitraj*, *urium*, *batna*, *bhadi*, *bailam*, *nageshar*, etc.

Fig. 5 shows a transect map along a transect line nearby Herbang beat. The map clearly shows that abundance of natural forest is very less, compared to 30 years back. A perception transect map drawn as per local people memory indicates how the forest has changed with time. The main changes are reflected in transformation of forest land into agriculture land, replacement of natural forest by plantation and emergence of sungrass and dominance of herbs and shrubs.

Present situation

							
Soil Type	Clay	Sandy clay	Sandy clay	Sandy clay	Sandy clay	Sandy clay	Sandy clay
Land use cover	Crop land	Hill	.....Chhara,	..... Hill	- Hill, Marsh.	Hill	Marsh
Vegetation	nil	FDs plantation	Hurbs & shrubs, Sun Grass Bamboo.	Scattered trees, FDs plantation,	Sun Grass, Hurbs & shrubs,	Hurbs & shrubs	nil.
Crops	Paddy, betel Vine	--	.....	Betel vine	--	.....	--
House Hold	.....	--	House Hold	House Hold	--	--	--
Animals	Cow	Moyna	.....	Monkey	Cow, Crow.	.....	--

Situation of 30 years ago

							
Soil type	Sandy clay	Sandy clay	Sandy clay	Sandy clay	Sandy clay	Sandy clay	Sandy clay
Land use cover	Low hill	Hill	Hill	Hill	Hill	Hill	Hill
Vegetation	Scattered trees, Hurbs & shrubs	Deep forest	Deep forest	Bamboo	Scattered trees, Hurbs & shrubs	Deep forest	Deep forest
Crops	.....	.....	.....	.....	.....	.....	.....
Household	.....	.....	.....	.....	.....	.....	.....
Animals	.....	Wild fowl	Elephant	.....	Monkey	.....	.....

Fig. 5. Transect Map through Herbang Beat (GPS location 21⁰ 52'08"N, 92⁰ 03'32"E)

4.3 Settlements and its Level of Stakes with the Sanctuary

As per official record, a total of 15 villages, included in 7 mouzas, located within the Chunati WS and its surrounds. During RRA exercise the demarcation between these villages could not be ascertained. However, the team identified about 72 settlements in and around the sanctuary, locally called *paras*, which have stakes with the forest. Of them, 48% are inside and the rest are outside paras.

It may be mentioned that PRA field exercise was confined only to Chunati range of the sanctuary and team identified 44 paras in and around the Chunati range of the sanctuary which have stakes with it. Among them, 24 are located inside, 18 are adjacent and 2 are located outside (within 1 km distance from) of the sanctuary. Among these paras, 35 have major and 9 have moderate stakes. Fig 5 shows the location of different identified settlements in and around the PRA target area with boundary demarcation of those settlements, while a list of the identified settlements and their level of stakes with the sanctuary are given in Table 9. Of the identified settlements, 29 are located in Chunati, 9 in Aziznagar and 6 in Herbang beat. As per participants estimate, there are about 8000 HHs in the identified paras.

Table 9. Identified settlements and their level of stakes with Chunati Range of Chunati WS

Sl No	Village	Total HHs No	Beat	Location	Level of Stake
1	Khalifer Para	70	Chunati	Inside	Major
2	Rashider Ghona	500	Chunati	Inside	Major
3	Bangha Pahar	200	Chunati	Adjacent	Major
4	Sultan Mouluvi para	200	Chunati	Inside	Major
5	Munshi para	250	Chunati	Inside	Major
6	Damir Ghona	200	Chunati	Inside	Major
7	Mirikhil	500	Chunati	outside	Major
8	Hindhu para-1	100	Chunati	Inside	Major
9	Boro Miazi Para	200	Chunati	Adjacent	Major
10	Baghan Para	100	Chunati	Adjacent	Moderate
11	Sikder Para	800	Chunati	Near to Adjacent	Moderate

Sl No	Village	Total HHs No	Beat	Location	Level of Stake
					e
12	Kathuria Para	300	Chunati	Near to Adjacent	Moderate
13	Deputy Para	100	Chunati	Near to Adjacent	Moderate
14	Hindhu Para-2	30	Chunati	Adjacent	Moderate
15	Kalu Sikder Para	30	Chunati	Adjacent	Major
16	Kumudiaduri	70	Chunati	Adjacent	Major
17	Moulana Para	200	Chunati	Near to Adjacent	Moderate
18	HutKholamura	80	Chunati	Adjacent	Major
19	Rosainga Ghona	30	Chunati	Adjacent	Moderate
20	Barua para	40	Chunati	Near to Adjacent	Major
21	Null Bonia	40	Chunati	Adjacent	Major
22	Munshi para	250	Chunati	Inside	Major
23	Sufri Nagar	400	Chunati	Inside	Major
24	Gucchagram/ Ashrayan (Shelter)	100	Chunati	Inside	Major
25	RatarKul	40	Chunati	Inside	Major
26	hasainna kata	15	Chunati	Inside	Major
27	TeenGhoria para	10	Chunati	Inside	Major
28	Bon Pukur	50	Chunati	Adjacent	Major
29	Rahmania para	-	Chunati	Outside	Major
30	Kolatoli	20	Aziznagar	Inside	Major
31	Aziz nagar	50	Aziznagar	Inside	Major
32	Gainna Kata	50	Aziznagar	Inside	Major
33	Jungle basti Area	70	Aziznagar	Inside	Major
34	West Villager Para	300	Aziznagar	Inside	Major
35	Nayapara	50	Aziznagar	Inside	Major
36	Purba Villagerpara	250	Aziznagar	Inside	Major
37	Ichachari	30	Aziznagar	Adjacent	Major
38	Uttar Herbang	-	Aziznagar	Inside	Major
39	Taillar bill (Goyal mara Villager para)	800	Herbang	Inside + Adjacent	Major
40	Vandari Dhoba	200	Herbang	Adjacent	Moderate
41	Hormudhi para	1000	Herbang	Adjacent	Moderate
42	barua para	40	Herbang	Inside	Major
43	West Charpara	10	Herbang	Inside	Major
44	Napiter Chita	5	Herbang	Inside	Major

4.4 Stakeholder Assessment

Information collected on the stakeholders/groups during RRA is summarized and presented in Table 10. It may be mentioned that during PRA in depth information on some selected major stakeholder groups have been collected and will be dealt later elsewhere in this report.

A total 24 categories of stakeholder groups has been identified, of them, 19 are primary stakeholders - extract resources from the forest, 5 are secondary stakeholder groups - indirectly involved with use of forest resources and several institutional stakeholders. Of the resource users, 6 stakeholder groups have major stakes with the forest (Table 10). The important major primary stakeholders are: land encroacher, fuelwood collector, illegal tree feller, bamboo collector and betel leaf cultivator. Among the secondary stakeholders, brickfield and sawmill owners have major stakes with the sanctuary.

Table10. Identified stakeholder groups in Chunati WS (based on RRA findings)

Sl no.	Stakeholder (SH) name/type	SH description	Role/Description of activities of SH	Impact on forest and its resources	Level of stake	Risks
1.	Fuel wood collector: Primary SH	Poor people: children, women, some adult, usually unemployed	Usually the cut the tree branches, coppice and even newly planted saplings & stamps and bring it after few days	Biodiversity reduced and forest regeneration hampered	Major	High
2	Brick Field Owner: Secondary SH	Influential persons from outside	Purchase fuelwood for brick klin from the local people and also employ paid labor to collect it.	Increased pressure on the forest. As above	Moderate	High
3	Forest villagers: Primary SH	Registered villagers with FD	Land encroachment and its conversion, fuelwood and bamboo collection, agriculture inside the forest, sun grass collection, sometimes illegal tree felling	Increased pressure on forest, reduced biodiversity	Major	High
4	Timber merchant: Secondary SH	Local businessman	Purchase timber from illegal feller	Reduction in large and valued trees	Moderate	High
5	Betel Leaf Cultivator:	Forest villagers and local	Encroach land, clear vegetation, weed adjacent areas, use sticks as support to vines and fence around	Forest land lost, biodiversity	Major	Moderate

Sl no.	Stakeholder (SH) name/type	SH description	Role/Description of activities of SH	Impact on forest and its resources	Level of stake	Risks
	Primary SH	and outside people	the plot that come from the forest, lot of cultivation and associated activities.	reduced, forest regeneration hampered		
6	Farmer: Direct SH	Forest villagers and local people	Usually the tiller encroach plain land and cultivate various crops in the forest and private land	Forest cover are decreasing	Moderate	Moderate
7	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	Reduced habitat	Minor	Low
8	Hunter/ Pollan:/Zankhi/ Primary SH	Influential local people and some ethnic people.	They hunt/trap wild animals such as deer, pig, wild cock etc.	Decreased wildlife	Moderate	Moderate
9	Dry leaf collector: Primary SH	Children and old women	They collect for own consumption and often sold it in local market.	-	Minor	Low
10	Medicinal plant collector: Primary SH	Traditional healer	Collect leaf, burk, fruits and herbs etc.	-----	Minor	Low
11	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	Heavily depleted stock, causes scarcity in food for elephant	Moderate	High
12	Illegal Tree feller: Primary SH	Poor people/employed labor, armed gang, Influential persons are involved,	Selectively fell valued trees and transport it to various places	Reduced forest cover, loss of valued trees, loss of habitat	Major	High
13	Cane collector: Primary SH	Poor women & men,	They collect cane and use it for handicrafts or sell.	Cane is seriously decreased	Minor	High
14	Fruit Collector	local people, child	Collect various fruits (Lata mangos, litchi, Chapalish Kanthat, Daua, Bakumgola, Chalta,	Some times they cut the trees for	Minor	In average low,

Sl no.	Stakeholder (SH) name/type	SH description	Role/Description of activities of SH	Impact on forest and its resources	Level of stake	Risks
	Direct SH		Amloky, Olive, Hartoki, bohera, banana etc). Often cowgola are collected for selling in local market.	procurement of fruits.		but certain cases very high
15	Vegetables Collector: Primary SH	Direct child & woman	Collect vegetables (aurum, Daeki etc) for own uses	-----	minor	Low
16	Fishermen: Primary SH	Poor and middle class local people	Catch fishes in streams and some people culture fish in streams and creeks	Reduced fish diversity	Low	moderate
17	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	Encourages the fuel wood collector	Moderate	Low
18	Land encroacher/land lord/zamindar: Primary SH	Local influential people/some poor people	Encroach a large scale of land and transform into the agric. land Lease out to others	Forest land reduced affecting biodiversity	Major	High
19	Sand collector: Primary SH	Day labor, Indirect: Businessmen	They extract sands from the Ziri/canal bed and transport to other places	Erosion of soil & hill,	Moderate	Low
20	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.	Grass and undergrowth, saplings are decrease	Moderate	Moderate
21	Political Leader: Indirect SH	Local and adjacent area leader	They encourage and provide support to illegal activities in the forest and forest resource collection	Negative impact on the forest management	High	----- -
22	Local Police: Indirect SH	Indirect	They have a role in law enforcement mechanism. Patrol in the area. Make arrest against court cases	-----	Low	-
23	Local Govt & LGED	Direct	Constructing roads and conducting several development activities within the sanctuary.	-	Moderate	Low
24	Banskhali Eco Park Direct SH	GoB project	Established a ECO-Park in Bamer Chara and Daner Chara area of jaldi Beat of the WS.	Positive, Inside the park the forest resources are increasing.	moderate	-----

Table 11 shows the takes of the different the settlements with different resources. It appears that in case of fuelwood collection, paras like Mirikhil, Rashiderghone, Villagerpara etc., have most stakes. However, in case of illegal tree felling the people from outside paras, like, Banskhali, Toitong, Borohatia are most involved. However, the people from inside paras, like, Goyalmara villagerpara, Bonpukur, West Villagerpara etc., are mainly involved with illegal felling.

Table 11. Settlements and its stake with different resources

Village/ settlements	Locatio n	Resource extraction						
		Fuel wood collec tion	Illegal timber feeling	Collectio n of trees as building material s	Bambo o & cane collecti on	Betel leaf cultivatio n	Involvem ent in land encroach ment	Huntin g
Khalifer Para	Inside	000	0	000	000	00	00	
Rashider Ghona	Inside	0000 0	000	0000	0000	00000	0000	
Bangha Pahar	Adjacent	000	000	00	00	00	00	00
Sultan Mouluvi para	Inside	00		0000	000	000	000	
Munshi para	Inside	000		000	00	00	000	
Damir Ghona	Inside	000		0000	000	000	00	
Mirikhil	Inside	0000	000	0000	0000	00000	00	
Hindhu para- 1	Inside	000		0000	00	00	0000	
Boro Miazi Par	Adjacent	00		000	00	000	0	
Baghan Para	Adjacent	00	000	00	00	00	0000	
Sikder Para	Near to Adjacent	00		000	0	00	00000	
Kathuria Para	Near to Adjacent	00	0000	00	0	000	-	
Deputy Para	Near to Adjacent		000	000		00	00000	00000
Hindhu Para- 2	Adjacent	000	0	0000	0	00	0	
Kalu Sikder Para	Adjacent	00	0	000	00	000	0000	
Kumudiaduri	Adjacent	00	0	00	0	000	-	
Moulana Para	Near to Adjacent	0		00	0	000	0000	
HutKholamur a	Adjacent	00	0	0000	00	0000	0000	
Rosainga Ghona	Adjacent	0000 0	000	0000	0000	000	00000	
Barua para	Near to	00	00	0000	00	0000	000	00

Village/ settlements	Locatio n	Resource extraction						
		Fuel wood collec tion	Illegal timber feelng	Collectio n of trees as building material s	Bambo o & cane collecti on	Betel leaf cultivatio n	Involvem ent in land encroach ment	Huntin g
	Adjacent							
Null Bonia	Adjacent	0000	000	0000	00	000	00	
Munshi para	Inside	000	0	0000	0	00	0	000
Sufri Nagar	Inside	0000 0	0000	0000	000	00000	0000	
Gucchagram/ Ashrayan (Shelter)	Inside	0000 0	00	0	00000	00000	00	
RatarKul	Inside	0000 0	00	00000	00	00000	00	
Hasainna kata	Inside	0000 0	00	00000	000	00	00000	
TeenGhoria para	Inside	0000 0	0	00000	0000	0000	000	
Bon Pukur	Adjacent	0000	0000	0000	000	00	00000	0000
Kolatoli	Inside	000	0	00000	000	0000	0	
Aziz nagar	Inside	0000	0000	0000	0000	00000	0000	
Gainna Kata	Inside	0000 0	0000	0000	000	00000	0	
Jungle basti Area	Inside	0000 0	000	00000	00	00000	0000	
West Villager para	Inside	0000 0	00000	00000	00	00000	00000	
Nayapara	Inside	000	0	00000	0	00	00	
Purba Villagerpara	Inside	0000 0	000	0000	000	0000	00000	
Ichachari	Adjacent	00	0	0000	0	0000	-	
Taillar bill (Goyal mara Villager para)	Inside + Adjacent	0000 0	00000	00000	00000	0000	00000	
Bhandarir Dhoba	Adjacent	0000 0	00	00000	0000	00	000	
Hormudhi para	Adjacent	00		00000	0	00	0	
Barua para	Inside	0000	00	00000	000	00	0	0000
West Charpara	Inside	0000 0	00	00000	00000	00	0000	
Napiter Chita	Inside	0000 0	0	00000	000	000	00	
Banskhali			00000		0000			
Toitong			00000					
Borohatia			00000					

4.4.1 Primary Stakeholders

A total of 19 different primary stakeholder groups, including 16 resources user groups was identified during RRA. The primary stakeholders are fuel wood collector, illegally tree feller, bamboo and cane collector, sun grass collector, wildlife hunter and killer, betel leaf cultivator, fruits and vegetable collectors, dry and green leaf collector, traditional healers etc. Information on their activities, dependency on the resources, their influence and impact of their activities on the forest resource also have been gathered during this RRA sessions. However, more in-depth information on their activities were further collected during subsequent PRA exercises. A brief description on them are provided below

- i. **Fuelwood collector:** Major stakeholder group, collect fuelwood to meet household needs and/or for added income to supplement livelihood expenses. Both outside and inside settlements are involved with collecting fuelwood, but predominantly the inside people. They are mainly poor people, representing both male and female, adult and children. Most of them are unemployed people.
- ii. **Illegal tree feller:** They are mainly poor people or employed labor, sometimes armed gang, influential people. Poor are dependent on this, while others do it for added income.
- iii. **Bamboo and cane collector:** Local poor people, mainly male, but also females, sometimes the betel leaf cultivator. Some HHs depends on it for their livelihood.
- iv. **Land encroacher:** They are the local influential people. Sometimes, the poor people and forest villagers and their decedents, mainly from inside settlement as well as from outside settlements.
- v. **Hunter/ wildlife trapper:** Widespread hunting existed in the past. Presently, the activity is very limited. Some local ethnic community people still hunt for wildlife. Sometimes, amateur visitor are also involved with this activity.

vi. **Medicinal plant collector:** Medicinal plants are also collected from the forest at a low scale. Mainly the local traditional healer so called *boiddah* or *kabiraj* and some businessmen from Riazuddin Bazar of Chittagong collect these plants. From HHs survey revealed that only 20% HHs use medicinal plants from forest, whereas 80% does not. About 73% HHs feel that abundance of medicinal plants in the forest has decreased.

vii. **Forest villagers:** Forest villagers are the most important category of stakeholder in Chunati WS. Mostly, dependent on the exploitation of forest resources and also involved with land encroachment (Table 12).

Table 12. 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	

Presently, they have thought to be responsible for forest degradation to a large extent and thus have emerged as an issue in forest management. They do not abide by their agreement with FD and FD is unable not to take any action against them. They have encroached a huge area of forest land. In many cases, they give shelter and land for establishing homestead to their relatives. They also act as associates of tree feller. One Villager para which is situated inside the WS under Aziznagar Beat, during pre liberation period there lived only 30 HHs who were originally forest villagers. But at present there about 500 HHs, and most of them are migrant from other places. They came here and settled down with the help of the forest villagers. Some HHs are their dependents.

viii. **Sungrass collector:** Sungrass (locally called Chon) is collected as a building material by local people, both for commercial and household needs. Presently, sungrass is available mainly in Borgona, Baznatoli, besides Herbangchara, Panir chara, Lombagona, *Site-Level Field Appraisal: Chunati Wildlife Sanctuary*

Daishhagona, etc. in Chunati area, and similarly, Talipara, Tomerghiri, Holudiakati, Mtarjhuri, etc in Jaldi area. Most sungrass beds (chon mohols) were earlier covered by tall trees and replaced plots as those were clear felled, legally or illegally. Sungrasses are mainly used as building materials for giving roof/sheds of house or shops. Abundance of sungrass is now more than earlier.

ix. Agriculture and horticulture practices by the farmer: It is reported by the forest staff that about 25% of the land area of the sanctuary is under paddy cultivation. Some people have legal documents in favor of their claim for their rights over the land, while others do it (mostly growing paddy) illegally. The fertile lowlands are used for growing paddy. High plains are used for growing betel leaf (Pan), vegetables like yard bean, watermelon etc. Most of the people who use the land for agriculture do not reside inside the WS.

Horticultural practices include raising fruit trees like guava, papaya, safeda, and lemon around homesteads and fringes of forests where they find a suitable land. Mango, Jackfruit, Jalpai, (Olive) are also planted for growing fruits. A number of nurseries have been established privately in the area that is encouraging local people towards horticulture and also home stead plantation.

x. Betel leaf cultivator: There are more than 2000 betel leaf yards, located inside the WS and mostly concentrated around Chunati and Jaldi. The local middleclass and rich people including the forest villagers are involved with this activity. Sometimes, the businessmen who are locally called MONDOL provide loan to the cultivators.

xi. Sand collector: There are two syndicates who are involved with sand extraction from the Ziri/canal, called Sonaichari canal and Ratarchara canal (Aziznagar and Herbang), situated within and adjacent the forest. These syndicates are too influential and powerful. Sands are collected mostly on a commercial scale during dry season. Sands are transported by trucks and this is a huge activity and causes disturbances to wildlife.

xii. Dry leaf collector: Little children and sometimes women collect dry leaf from the WS. They collect mainly leaf for HHs consumption and sometimes sell it in local market, at the rate of Tk 10 per sac that provide them with extra source of income for their family. This activity is confined to dry season only.

xiii. Fish harvesting and fish culture: Some fish are available in the chara and other waterbodies, located within the WS. Besides, some people culture fish in Ziri/Goda/Kona (wetland) inside the forest. Sometimes, cross dams are made across the chara/ziri to hold water and fish are cultured there.

xiv. Fruits and vegetables: Local people collect various fruits (*Lata Aam*, Litchi, *Chapalish*, *Kanthat*, *Dauwa*, *Bakumgola*, *Chalta*, *Amloky*, *Olive*, *Hartoki*, *Bohera*, *Banana*, *Cowgola*, etc.) for their own consumption and sometimes for selling in local market. People also, particularly the inside people, collect vegetables (*aurum*, *dekhishak*, *haichha shak*, *tarashak*, *maminnashak*, *terishak*) from the Ws for HH consumption.

xv. Other Primary Resource collectors: The other resources collected are tree bark, fodder etc and but at a minor scale. These are also collected by poor people or employed labor.

4.4.2 Secondary stakeholders

i. Sawmill owners: There are 11 sawmills inside and in the immediate vicinity of the sanctuary, established bypassing the government laws. These are owned by influential people. All the mills are located in Jaldi area. Of them, seven are located adjacent to Puichari Beat (in near Prambazar, Borodar Bazar, Napurabnazar, Solayman Choudurir Bazar, Dakatiar Ghona) and four in Chambol bazar. According local people, the mills receive illegally felled tree, which come from the adjacent forests, including Chunati WS. Another big saw mill is situated in Adhunagar bazar (six km away from WS) saw a huge quantity of timber.

ii. Brick field owners: A total of nine brickfields are present within and around the WS. Of them, three are in Jaldi area and six are located within the Chunati area (Table 13). In Chunati, three are brickfields are located near the range office of Chunati, two in Aziznagar and one in Herbang (four are within the WS). These brick fields are also owned by very influential people. Almost all fuelwood for the brickfields come from the WS as well from the adjacent forests. Stack of coal id found in front of each brickfield,

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but in practice all mainly burn fuelwood in the kilns. The brickfield owners buy fuel wood from the local poor people and also some cases they appoint day labor to collect fuelwood. Presently, the brickfields also receive fuelwood from nearby forest as the supply from the WS has decreased. The brickfields are operated for about 6 to 8 months period in a year. As per local people estimates, in average, during pick period, a brickfield consumes about 300 maund (1 maund = 37.5 kg) of firewood each day.

Table 13. List and location of brickfields in Chunati WS

Beat	Village/location	No of Brickfields
Chunati	Nolbunia	01
	Banpukur	01
	Kolatali	01
Aziznagar	Villagerpara	01
	ITCL Station	01
Harbang	Ichachhari	01

iii. **Furniture shop owners:** There are about 13 furniture shops in the nearby bazaars of the Chunati WS, mostly in Adhunagar, Chambol, Deputy bazaars. According to local people, some illegally felled trees go to those shops. Once furniture business was lucrative in the area when there were trees in the forest. Furniture from the area goes to different parts of the country, including Dhaka.

iv. **Fuelwood and timber traders:** A substantial quantity of fuelwood is transported everyday from this area and some are also marketed locally. The name of the shop owners and local timber traders has been collected. Fuelwood is transported by richshaw, zEEP and trucks and large number of them are found to ply every day in the area with full of fuelwood.

Sometimes, the timber merchants sell sawn timber in the local market, they usually buy timber from local people and claim that all timber come from homestead gardens. In practice, they receive that come from the nearby forest illegally. Sometimes, they engage day labor for tree felling. In nearby market especially in Nayabazar, Razabazar, Aziznagar bazar, Chunati bazar, Adhunagar bazar, Chambol bazar and Banskhali everyday a huge quantity of fuelwood and timbers are traded.

- v. **Zleep/truck/rickshaw owner:** They help in transportation of timber and fuelwood and therefore are indirectly contribute to the forest degradation.
- vi. **Rich businessmen:** They employ labor for their HH work and agricultural work on a yearly contract basis. When those labors have no work they send them to forest to collect timber and fuel.
- vii. **Local hotel and tea stall owners:** There are hundreds of tea stalls and a number of hotels (restaurants) located within and around the WS or in nearby bazar or market. These hotels and tea stalls burn fuelwoods in their kitchens. The main source of their fuelwood supply is the WS. These hotels and tea stalls burn huge quantity of fuelwood every day.

4.4.3 *Institutional /Organizational stakeholder*

During RRA exercises, a number of organizations/institutions / government and non-government agencies having direct and indirect stakes was identified. However, detail information on the major institutions have been collected during PRA. These organizations are either involved with the administration of the WS or have working linkages or have influence on the local people. A brief description on them is provided below.

- i. **Forest Department:** Forest Department (FD) is responsible for day to day administrative as well as technical management and development of the sanctuary. However, they have loose control over the WS, primarily due to local poor law and order situation. However, it is widely alleged that some of the FD local staff have linkages with illegal tree feller and contribute to the forest degradation. However, this was not verified by the PRA team. It is also reported by the local people that the FD staff also help the local people to establish betel leaf yard illegally within the WS, a major cause for reducing biodiversity of the WS.
- ii. **Local Administration:** Local government entities such as Union Parisad, District Council and LGED are constructing roads for the villagers across the WS. At present, three roads are being constructed: one is Charpara road, which is being metalled; another

Herbang-Ttoitong road which is also under construction. A large number of educational institutions, mosques/madrasha etc. and rehabilitation areas for the landless people have established within the WS. Many development programs are taken by different organizations and are therefore have stakes with the WS.

iii. **Police Administration:** Chunati Police Camp and Banskhali Police Station are located very near to the WS and are responsible for enforcing law and order in the area. However, they take little interest in forest protection, as they expressed that they do not want to be involved in any conflict with local people. However, local people reported that sometimes local police negotiate with illicit forest resource users. The local police administration is also responsible for making arrests warranted by forest cases. They sometimes, also register some forest cases lodged by the local FD staff.

iv. **Banskhali Natural Environment and Biodiversity Conservation and Development Project:** This is an initiative by the FD and aims at plantation of rare and endangered plant species, development of medicinal plant plots, beautification of the sea beach and eco-tourism development. The project area includes a part of the sanctuary, particularly the northwestern part. Banskhali Eco-park is situated at Jaldi Forest Beat under Chittagong Wildlife Division consisting Daner Chara and Bamer Chara areas of the Jaldi Range under Chunati WS. The park is about 60 km south-west of Chittagong city under Banskhali Upazila. The total area of the eco-park is about 1700 ha. So, there is an overlapping area with the NSP project area.

4.4.4 Local Community Organization and NGOs

The major NGOs working in the area are Pathikrit, ASA, BRAC, Grameen Bank, Proshika, ISD, SHED, Uddipon, CARE, FDSR, VERC etc. Their major activities include social forestry, horticulture, poultry, livestock rearing, education, health and nutrition etc. One NGO called Pathikrit has strong influence in Chunati area and can help NSP to implement the project. Table 14 provides list of major NGOs working in the area and their activities in the area.

Table 14. Information on NGO activities in Chunati area

SI	Name of NGO/CBOs	Area	Activities
01	Pathikrit	Chunati	Plantation and social forestry, Health & Credit
02	BRAC	Chunati, Aziznagar, Herbang, Banskhali	Education, Credit, Nursery, Seed
03	ASA	Chunati, Aziznagar, Herbang, Banskhali	Credit, Group formation
04	SHED	Chunati, Puichari	FSP partner, nutrition
05	CARE	Chunati	Homestead gardening
06	Proshika	Banskhali	Micro-credit
07	UDDIPON	Chunati	Education, Credit
08	Samaz Unnayan (Local)	Chunati	Education, Credit, Plantation
09	FDSR	puichari & Jaldi	Health care
10	Nari Moitri	Chambol	Credit
11	POUSH	Chambol	Homestead gardening
12	VERC	jaldi	Micro-credit
13	Grameen Bank	Around the WS	Micro-credit

4.5 Causes for the Degradation to WS and its Resources

4.5.1 Exploitation of Resources

A total of 16 major resources are exploited by the local people from Chunati WS. Table 15 provides information on the resources exploited, level of exploitation, major users and their dependency on the resources and the risks involved with the present level of exploitation.

The Government since 1972 bans systematic and legal harvesting of major forest produces. Illegal harvesting of firewood, poles, bamboo, canes, and sun grass however continues. Both people from the inside paras as well from adjacent paras are mainly involved with resource exploitation from the WS. As revealed from HH interviews during RRA that highest about 80% HHs depend on forest foe fuelwood, bamboo and

sungrass, followed by fruits (8%), cane (5%), bark of trees (2%), vegetables (5%). Besides, stone and sand also are collected from WS. About 86% HHs informed that they collect it directly from forest and in 14% cases they purchase or collect it from others. About 70% HHs collect resources from forest for HH consumption and the rest 30% for commercial purposes. However, majority HHs of inside villages collect it for both reasons.

Fuelwood, herbs & shrubs and sungrass are collected at a large extent while timber and bamboo are at a moderate extent and the rest are at a lesser extent from the WS. People depend moderately on the collection of timber, sungrass, bamboo and fodder etc. Collection of fuelwood, felling of trees, bamboo, wildlife etc. pose high to moderate risk to the biodiversity of the WS.

Mainly the local people from inside and adjacent villages and forest villagers are involved with fuelwood, bamboo, sungrass collection. Middle class and rich people are not much directly involved with collection of these resources.

Resources are collected both for HH consumption and as well as for commercial purposes. Cause-effect analysis (Table 16) shows that local level poverty, additional income needs, unemployment, scarcity of some resources drive the local people, particularly the poor to exploit the resources from the WS. Poor forest patrol and negotiation with elicited fellers is mainly responsible for tree felling. Land encroachment is mainly done by powerful and influential people.

Table 15. Summary information on resource exploitation in Chunati WS

Sl	Name of Resources	Reason for resource Exploitation	Users	Extent	Dependency	Risk
1	Fuel Wood	Both for commercial and HHs use, as main sources of fuel	Local people, tea stall & hotel owner, Brick fields	High	Moderate to high	High
2	Timber	Commercial & HHs use as building materials	Local people, outsider, bandit group, syndicate, furniture shops owner	Moderate	Moderate	High, selectively the tall trees are felling
3	Sun grass	Both for Commercial and HHs consumption as building materials	Local people	High	Moderate	Low but habitat of fox is

Sl	Name of Resources	Reason for resource Exploitation	Users	Extent	Dependency	Risk
						decreasing
4	Bamboo	As raw material of handicrafts, poles, fencing, basket and others, fuel, poles for betel leaf cultivation	Local people, fisherman, beta leaf cultivator, outsider people	Moderate	Moderate	Moderate
5	Cane	Commercial & HHs use for handicrafts	Local people, furniture makers	Less	Low	Low
6	Medicinal Plants	As medicine, commercial consumption	Outsider and traditional healer,	Less	Low	Low
7	Honey	Both commercial and HHs consumption, used as Food, medicine.	Local People	Less	Negligible	No risks
8	Herbs & Shrubs	As vegetables and also as alternative of rope	Local People, small businessmen	High	Low	Low
9	Bird	Both Commercial and HHs consumptions, For meat (wild fowl, pigeon etc.)	Local People, Hunter	Very less	Very low	High risks
10	Deer	Commercial and HHs consumption for eating	Hunter,	Low	Low	High
11	Fruits	Maximum for HHs Consumption and also for Commercial purpose, as Food	Local People, Tribal Birds, Monkey	Very Less	Low	Less
12	Vegetables	HHs consumption as Food	Local People especially women and children	Less	Low	Less
13	Grass	Collected as fodder	Local People and cow boy	Less	Moderate	Less
14	Sand	Commercial purpose,	Influential person through poor day labor	Less	Low	Moderate
15	Dry leaf	Both for HHs & commercial purpose	Children & women	High	Moderate	Low
16	Creek/water body/canal	Commercial purpose,	Fisherman and local people	Moderate	High	Low

Table16. Cause and Effect–Ranking (understanding underlying factors for resource extraction)

Name of resource	Timber to sell	Fuelwood collection	Bamboo and cane sell	Land encroachment	Hunting
Identified problems					
Poverty	000	000	00	000	0
Unemployment	00	0000	0		
Additional income	000	00	00	0	0

Name of resource	Timber to sell	Fuelwood collection	Bamboo and cane sell	Land encroachment	Hunting
Identified problems needed					
No resource for house building.	0		0000	000	
Forest cases	000	0		00	0
Income opportunities squeezed		000			
HHs consumption	0	00000	000	0000	0
Poor forest patrol	000	0	00		0
Easy negotiation	000	0		00000	
Lack of control over forest by FD	000	0	0	0000	
Transportation dev.	00	0	0	00	
Natural calamities	00	0	0		
Burning hills	00	000	0	0000	0
Traditional practice	0	000	0	000	000
Involvement of influential people	00000			00000	00
Marketing opportunities dev	0		0		
Emerged as new income generation activity		00	000		
Brick Field	00	00000			
Sawmill	0000				
Betel leaf			00000	0000	

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

4.5.1.1 Fuelwood extraction

All fuelwood requirements of inside HHs and at least partial demand of HHs in adjacent villages are met from the forest. Besides, fuelwood collections provide primary and secondary occupation for many HHs. Mainly children, women and poor people collect fuelwood. A huge quantity of fuelwood is used in local brickfields and substantial quantity of fuel is transported to other areas. Fuelwood collection takes place in all seasons, but predominantly during dry season. Usually they cut the tree branches, canopies and even fell the newly planted tree, stamps and bring it after few days when it get dead appearance. This poses a threat to the forest and its biodiversity. Fig 7 shows various stakeholders involved in fuelwood utilization.

Mainly children, women as well as poor day labour, adult and in some cases, old people also involved in this activity. In most cases, they enter into forest individually for

collecting fuel wood. Sometimes, they enter the forest in groups, specially, at the time of clearing forest by fire for claiming land for plantations. Fuelwood is collected from morning to evening. In Fig. 8 the flowchart shows the sources of fuelwood and process for its transportation.

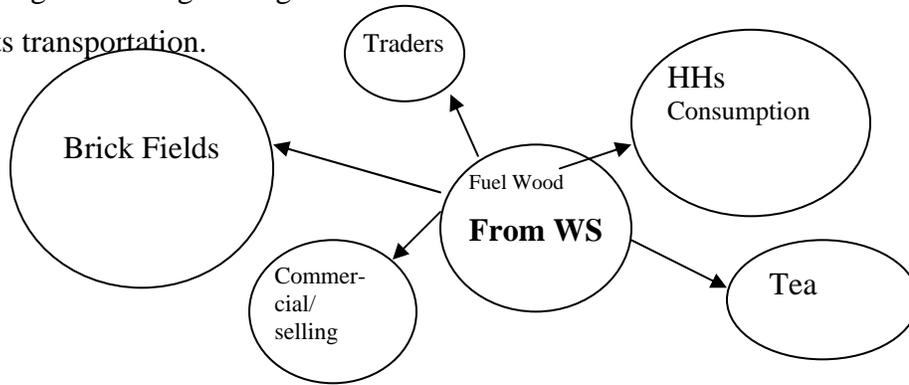


Fig.7. Venn-diagram on fuelwood consumption

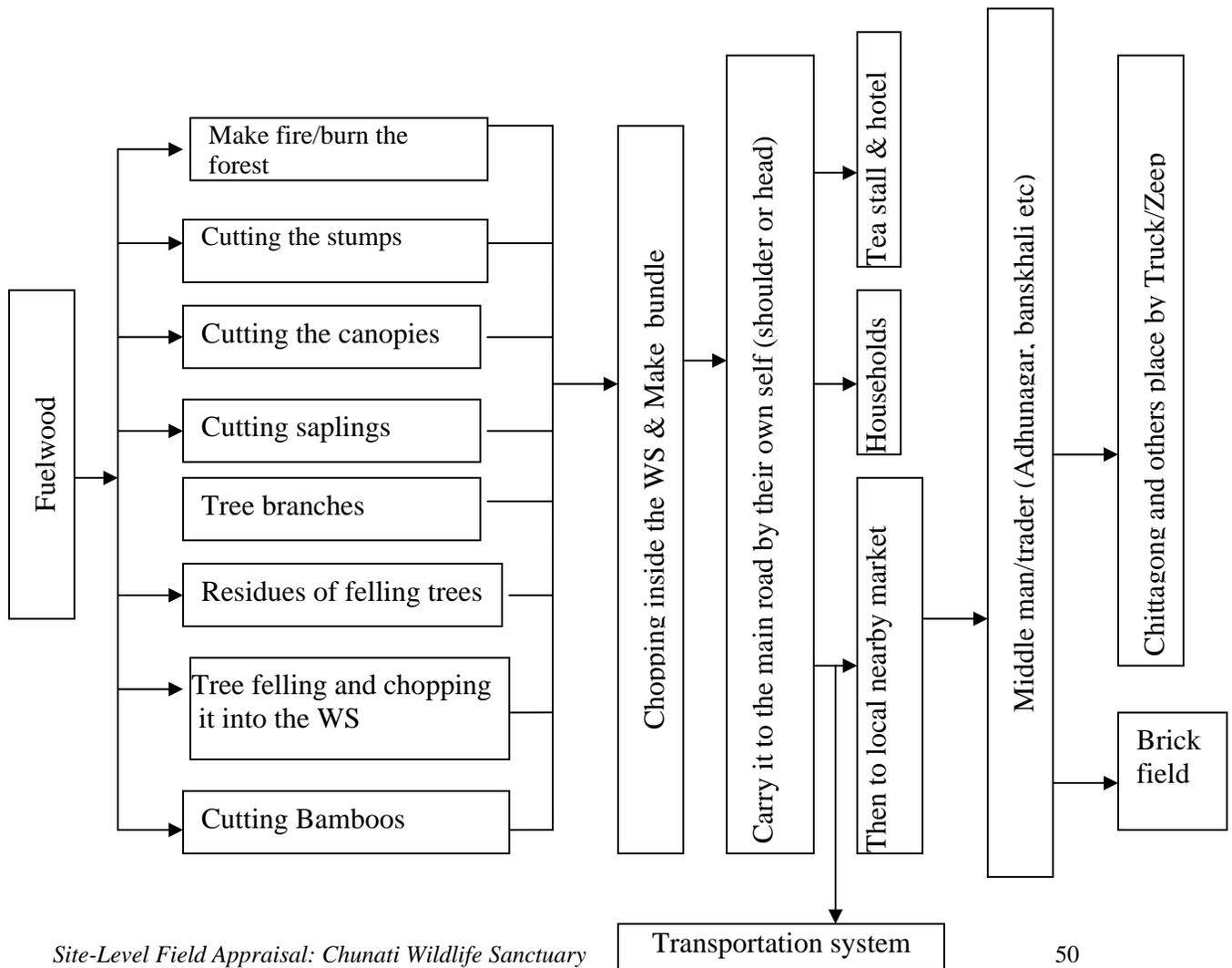


Fig.8. Flow diagram on fuelwood collection and processing

Although, almost all the settlements within and its surrounds are involved with fuelwood collection, but among those 19 identified settlements are most involved. Table 18 gives the names of the identified settlements which have most stakes with WS with regard to fuelwood collection.

Table 17. Beat wise list of settlement having large involvement in fuelwood collection from the WS

Beat	Name of settlements
Chunati beat	Gucchagram, Rashiderghona, Lambakata, Ratarkool, Bonpukur, Hasainnakata, Sufrinagar, Nullbunia, Rosaingaghona, Tingoriapara
Aziznagar	Villagerpara, Baruapara, Jungle Bosti, Gainnakata,
Herbang	Bhandarir Dhoba, Brindabonkhil, Charpara, Goyalmara Villagerpara, Napiterchita

The collectors usually collect small bushy trees and chop it, herbs, saplings, young trees of valuable timber trees, branches of different types of trees. Sometimes, they cut larger trees and leave it to get dead appearance so that can collect it later. Sometimes, they collect burnt trees from the area cleared by burning for plantations. They also chop the stumps of felled trees. They also remove the coppices of other valuable trees. Usually, the collector cut the small trees or branches, chop and bundle it. They carry it as shoulder or head load from the forest.

As revealed in FGD with fuelwood collectors, lack of alternate source of fuelwood for HHs consumption, income generation for livelihood support, added income needs etc. are underlying causes for fuelwood collection. Besides, easy access to forest and demand for

fuelwood in the nearby markets and by other establishments also drive local people to collect the resource.

Finding no other alternatives, at this old age I took fuelwood collection as my main and only occupation. I cannot do anything, I have no land property, and so for living I am dependent on it. If I could not go to forest one day, then I have to strive. In this world I have no relatives. My wife and only son had left me alone. Though collecting fuel wood is not so easy, it's a hard working job but better than begging. Now a days fuel wood is not available as previous. For collecting one shoulder of fuelwood, I have to spend an entire day; from morning to afternoon.

- **Golam Bari, 70, Chunuti Banpukur**

Dependency on fuel wood collection: Almost all HHs within and around the WS are dependent on the WS for their HH needs of fuelwood. About 2-5% HHs is entirely dependent on fuelwood collection from the WS. Many HHs also undertake this activity to supplement their HH income.

It is alleged by local people that they need to pay Tk 5 to 10 as levi to FD staff for each entry to WS for collecting fuelwood. However, this was not verified carried out one shoulder fuelwood the male pay 10 taka, for entering the women pay 2 taka and children pay 5 taka to FD.

The brickfield is the major consumer of fuel wood, followed by household consumption, consumption by tea stall and hotel, and the rest are traded outside of the area (Fig. 7). In addition to buying from supplier, some brickfields have their own labors to collect fuelwood directly from the forest and also get it via middleman. The rich does not collect fuelwood directly from the forest, purchase it from the poor. However, sometimes, they also employ some labour to collect it from the forest.

About 3-5000 people enter into the forest each day for collecting fuelwood. Most of the people go once in a day. But few of them go twice a day. Each time a women, children and old man can collect one tara fuelwood, however the adult male can collect two tara (1 tara = 20-30 kg- sold at taka 30-40).

Fuel wood collection has a serious negative impact on forest and its biodiversity. It seriously hampers forest regeneration, reduce vegetation cover leading to habitat degradation. However, this is not felt by the Though the FD staff and local people found no impact on forest but in fact for this activities, forest is decreasing, natural regeneration is not occurring, several planted sapling is damaging, wild life is loosing their food bearing trees.

It appears that imposition of vigorous restriction on fuelwood collection may jeopardize the livelihood of many HHs, particularly of poor and a conflict with local people could be expected.

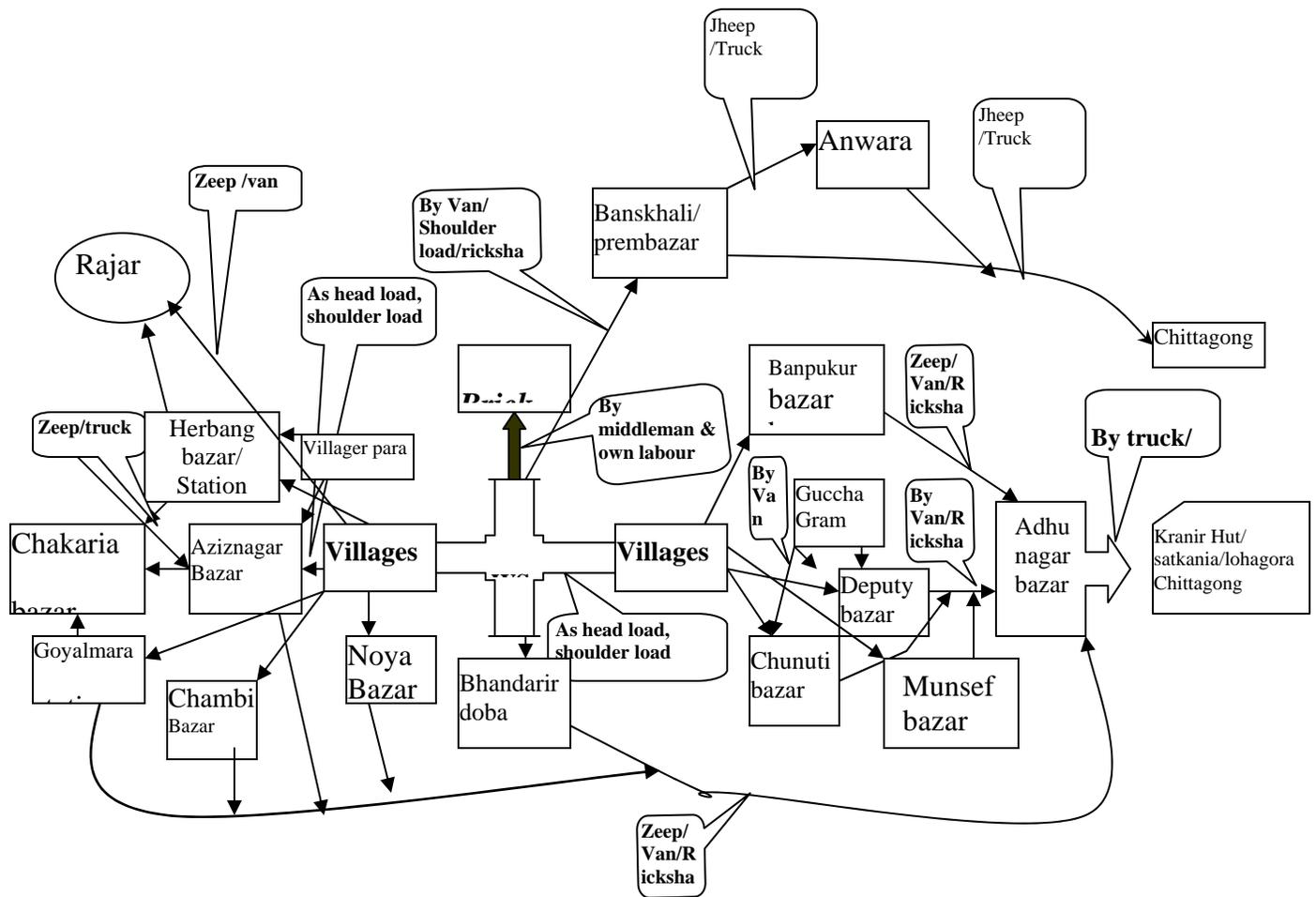


Fig. 9. Flow diagram on fuelwood collection, transport and marketing

The flow chart (Fig.9) shows the route for the movement and transportation of fuelwood from the WS. The fuel wood from the WS is collected by the villagers and carried as shoulder or headload load to the village and nearby market. From the local small market fuelwood is carried to the nearby comparatively bigger markets by van or rickshaw. Then from the nearby local market fuelwood is carried to nearby three large markets. Adhunagar is one of them; from Adhunagar fuelwood is transported by Jeep or truck to Karanirhut, Satkanai and also to Chittagong. In Adhunagar, a number of fuelwood traders who ha got large depots. Alternatively, fuelwood may be transported to Chakaria from Herbang station, Aziznagar bazar and Goyalmara station. The other important trading center Rajabazar under Toitang Union. Another big market of fuelwood is in Banskhali and Prembazar. From Banskhali fuelwood is transported to Anwara and Chittagong by truck or Jeep. The following markets are the local trading centers of fuelwood.

List of Local trading centers of fuelwood		
◆ Raja bazar	◆ Hazir Rasta	◆ Chambi Bazar
◆ Adhunagar Bazar	◆ Natun bazr	◆ ITCL station
◆ Herbang bazar	◆ Noya bazar	◆ Prem Bazr
◆ Munsef bazar	◆ Goyal mara station	◆ Banskhali
◆ Deputy Bazar	◆ Bhandarir doba	◆ Borohatia
◆ Banpukur Bazar	Bazar	◆ Chakaria
	◆ Aziznagar Bazar	

A substantial quantity of fuelwood is transported everyday from this area and also marketed locally. Among the above markets, a huge quantity of fuelwood is traded in Nayabazar, Razabazar, Aziznagar bazar, Chunati bazar, Adhunagar bazar, Chambol bazar and Banskhali everyday.

4.5.1.2 Illegal tree felling

Widespread tree felling in the past contributed to the qualitative and quantitative reduction in forest and its resources. Illegal tree felling is still going on. However, unavailability of suitable trees has led to the reduction in the activity. There are some armed gangs, particularly from Banskhali, Borohatia and Chunati areas involved in tree felling. Some trees are also collected as building material by local people. Still tree felling remains as a major threat.

Mainly adult, as well as poor day labour, and in some cases the old people also involved in this activity. In most cases, the illegal fellers come from outside of the WS area, mainly from Borohatia and Banskhali. However, some local people as well as forest villager help them in this activity. In most cases, they enter into forest in groups for illegal tree felling. They usually carry out this activity at night, but sometimes in day time. The illegal feller group from Banskhali, consisting 20 to 25 people, come to the forest at night, fell the trees, sometimes saw it manually inside the forest and then they carry it to Banskhali. Local influential and political leaders are sometimes are behind the activity. Table 19 Shows the name of the settlements where the majority tree fellers come from.

Table 18. Beat wise list of settlements having large involvement in tree felling in WS

Beat	Involved in felling
Chunati beat	Borohatia, Chunati, Banskhali
Aziznagar	Villagerpara, Toitong, Banskhali, Chunati,
Herbang	Goyalmara, Villagerpara, Toitong

According to local people, there are more than 4 organized gangs patronized by the dishonest forest officers and guards are involved with tree felling. Besides, there are 4 syndicates in Banskhali, Borohatia, Chunati, Toitong and Herbang involved with illegal felling of trees in WS. Besides, illicit harvest is done at individual level also. Almost all of the illicit fellers are poor and their livelihoods are dependent on this activity. Timber merchant, local political and influential persons are indirectly involved in tree feeling. Sometimes, local influential people engage poor villager in tree feeling on a daily basis. Many local HHs also collect small trees as building material for their houses. In some cases, Headman (Head person of forest villages) and forest villagers are involved in tree feelings and have a strong negotiation with the syndicate and FD.

The major markets for illegal timber trading are Toitang, Rajarbazar and Adhunagar bazar. Illegal timber are also traded many places nearby local market places. Timber is also transported to Chittagong and Dhaka. In some cases, the illegal feller are so powerful that they override the local forest guards and staff. For example, a armed group of 50 people, once raided Aziznaga beat office, locked them inside the their houses and felled trees during the entire night and sawed trees inside the WS by manual sawing machine. There were some incidents of firing with the illegal feller and the FD personnel also. Last year one illegal feller of Banskhali was shot by the Chunati beat office staff.

4.5.1.3 Bamboo and cane collection

Bamboo is collected by the both local poor and betel leaf cultivator both for commercial and HH consumption (Fig.10). In spite of its depletion, every effort

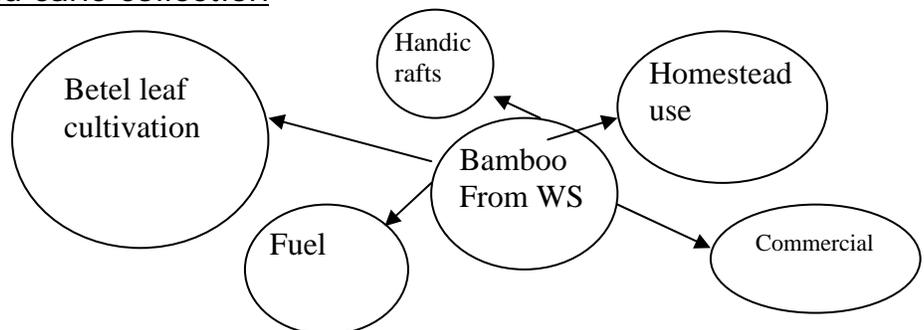


Fig.10. Venn diagram showing utilization of bamboo

is put to find and collect it. The local use of bamboo includes its use as building material, fencing and fuel wood. Bamboo is also collected for commercial purposes. Presently, a huge quantity of bamboo is used in betel vineyards used. Presently, bamboo is distributed in limited areas of the WS, mainly in eastern sided of the Jaldi range.

In Jaldi are some women are engaged in handicrafts production by using bamboo and cane. Although, FD has plantation programs of these two resources, the natural regeneration of bamboo and cane has become very limited and posed a great threat to its future availability. At present, cane is near about extinction from the WS due to over exploitation and burning the hills for claiming land for plantation and also for betel leaf cultivation.

4.5.1.4 Hunting and killing of wildlife

Widespread hunting existed in the past. However, still it is going on a very limited scale. In particular, deer, birds, jungle fowl, mothura, turtles, wild boar etc. are hunted. There is a hunter groups in Chunati, and have their own licensed gun. As reported about 45 licensed guns are possessed by the group. On the other part of the WS, in Jaldi side, there is also a similar group of hunter. They are mainly interested in deer hunting. As a tradition of Chunati village, at least once in a year they are used to go for collective hunting. They are still active, but not like earlier. The RRA team met a hunter who hunted about 1000 deer during the past 20 years.

Besides, wildlife species, like snakes, foxes, pangolin, etc are killed when these are encountered by local people. There is a serious lack of awareness about the conservation of wildlife.

4.5.2 Seasonal trend in resource extraction

The extraction of various resources from the WS is season dependent. Table 20 shows the seasonality in resource collection. Fuel wood is mainly collected during winter (dry season-Poush-Chaitra)), primarily due to easy accessibility and mobility within the forest.

Bamboos are collected round the year, but predominantly during the dry season which coincide with the period for house building and renovation in the locality. Timber felling takes place during Baishak to Kartik, when forest patrol is poor due to mobility reasons. Medicinal plants, vegetables and some other forest resources are extracted to some extent mainly during rainy season. Damages by Elephant are highest in the month of Jaista and Falgun.

Table 19. Seasonality chart on various matrices for Chunati WS

Name of resources	Baishakh	Jaishtha	Ashar	Shrabon	Bhadra	Ashwin	Kartik	Agrahayan	Poush	Magh	Falgun	Chaitra
Unemployment	0	0			000	0000 0	0000 0				00 0	00
Solvency	00000	000	0	000	0	00	000	0000 0	0000	000	00 0	00
Accessibility to forest	00 00	000	0	0	0	0	0	00	0000	0000	00 00 0	0000
Transportation facilities/easy mobility	00	0					0	000	0000	0000	00 00 0	0000 0
Brickfield/sawmill operation	000	00	-	-	-	-	-	000	0000	0000 0	00 00 0	0000 0
Forest patrol	0000	0	0	0	0	0	0	0	00	000	00 00	0000 0
Agricultural activities	000	00	000 0	000	00	0	00	0000	0000	0	0	0
Timber felling	000	00	000	000	0	0	0000 0	0	0	0	0	0
Fuelwood collection	0000	0	0	0	0	00	0	000	0000 0	0000 0	00 00	0000 0
Bamboo and cane	000	0000	00	0	0	0	00	000	0	00	00	0000
Building materials	00	0					0	00	00	00	00 0	0000
Hunting	0	0						0	0	00	00 0	00
Vegetable collection	00	00	0	0	00	00	0	0	0	0	0	
Betel leaf vein	00	000	000	0000	0000	000	00	00	00	0	0	00
Sand extraction	0000	0	00	00	000	0	0	00	000	0000 0	00 00	0000
Sun grass	000	0000						000	0000	0000	00 00 0	0000
Damages by Elephant	0	0000 0		0	00	000	0000	0000 0	00	0	0	00

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

4.6 Socio-economic Setting and Dynamics

4.6.1 Demographic Profile

i. HHs and population: As per secondary sources, the total number of HHs is about 7810 with having approximately 50, 000 people. Most of the people migrated from outside to the area (such as Kutubdia, Moheskhal, Teknaf etc) due to several reasons

ii. Education: HH interview shows that about 65% people are illiterate, 24% are educated in the primary schools, 9% in the High School and the rest 2% are educated in the colleges and above. FGD indicates that the literacy rate would be much lower as reflected in HH interview. Madrasha education is preferred in the area. Overall, picture of education in the area is below the country's rate. Women education rate is very low in comparison to male. From the FGDs it is reflected that at present 70% children are attending in formal education. In comparison in between the two sides of WS, the people of Chunnuti area are more educated than Jaldi area.

iii. Occupation: As per HH interview, primary occupation of the local people is agriculture (including betel leaf and paddy cultivation) 75%, day labor 9%, fuelwood collection 10%, others 6%. A 30% HH has no secondary occupation, while among the others 70% are day labourer (related to forest resource exploitation/collection, Aziznagar industry, digging, cultivation, brick field works etc.), followed by small business (5%), homestead gardening and fruits production (8%), handicrafts (8%, women are more engaged), rickshaw pulling (3%) and others (6%).

iv. Unemployment: In average, about 30% people of the area are unemployed, this figure vary with seasons, being most in September - October

“Everybody of this area must have to work for managing their bread”- YakubAli, Banpukur, Lohagora

and April-May. In HHs interview, 86% people replied that a large number of people are unemployed in the area. Because most of the people has no permanent job.. A 55% people replied that they have some sorts of work in the round the year , but 45% expressed that they become workless during certain periods of the year. The agricultural labours have works for bout six months, but most of them do not have work everyday. These labour and those, who are not involved in agricultural activities, do not have work for a substantial period of the year. During the period they engage themselves in

Site-Level Field Appraisal: Chunnuti Wildlife Sanctuary

collecting firewood and other building materials, like small trees, bamboos and sell it in order to support their livelihood.

4.6.2 *Livelihood analysis (income / expenditure, poverty/ richness, credit, skills, etc.)*

i. Income source: 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. Major secondary income source are: horticulture 10%, betel leaf cultivation 30%, day labour 32%, forest resource collection 25% and others 3%. However, Most of the poor are directly dependent on WS for their income.

ii. Richness-poverty level: As reflected in HHs interviews, 64% are extreme poor, and the rest 36% HHs is poor and middle class. Wealth ranking in FGD shows following distribution: poor 70% and very poor 19%, middle class 10% and rich 1%.

iii. Land ownership: As revealed from HH interview that 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. It is significant to note that maximum lands are inside the WLS and reserve forest.

iv. Livelihood expenses and food consumption: About 36% HHs informed that their earning is quite adequate for managing their family expenses but 64% replied it is not. Only 2% of the HHs indicated that they have a surplus of food, while 32% mentioned that they have neither deficit nor a surplus of food, while 64% of the HHs mentioned that they have a food deficit: A 22% of HHs always has a deficit, and 38% sometimes have a deficit. Food deficit are more common

in very poor and poor classes than in middle class and lower middle classes HHs. Most of the middle class people have neither surplus nor deficit of food.

Only I who makes the income and 7 members depend on it- Abdus Sobhan,
One forest villagers of Jangle Chambol.

v. Credit: 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 hinderance in paying back the loans.

vi. Local skill and skill development opportunities: As revealed by HHs interview, only 25% HH people have some sorts of skills in the areas of poultry, nursery, fish culture, horticulture, bamboo and cane works, etc. But, many of them do not undertake IGA activities due to lack of initiative (10%), lack of capital (50%), and 40% are not interested. Some NGOs provide skill development trainings in many areas of IGA. But there prevails a large scale of initiating IGA and skill training for the improvement of livelihood strategies and minimizing the dependency of local poor on the WS resources exploitation.

vii. Wealth ranking & Expenditure: Wealth ranking of people of the area was done during PRA. Fig. 11 shows that people spend highest amount of money for purchasing food (71%), followed by clothes, purchasing building materials etc.

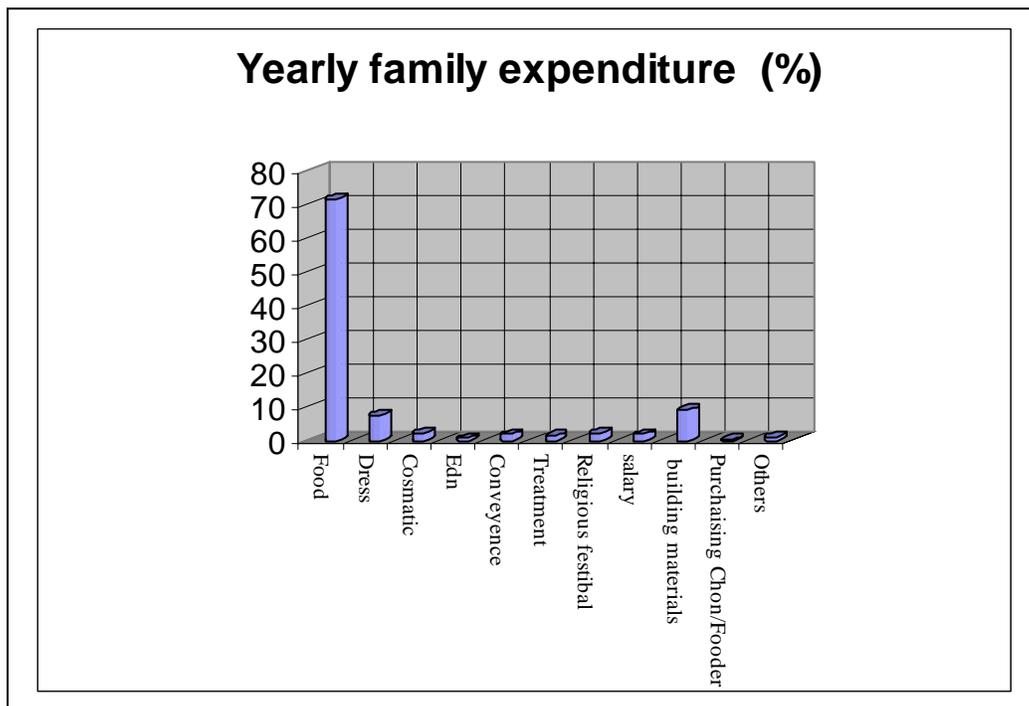
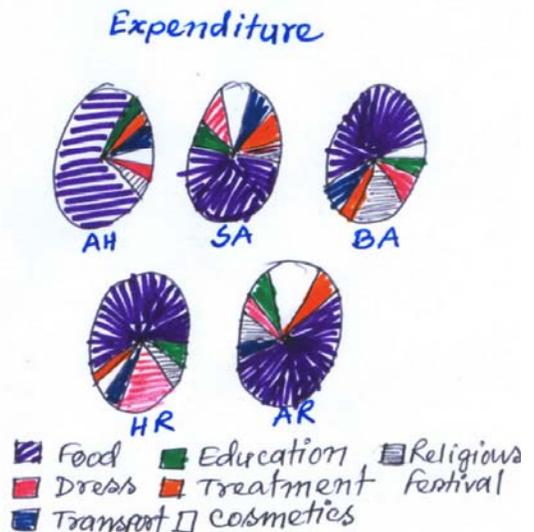
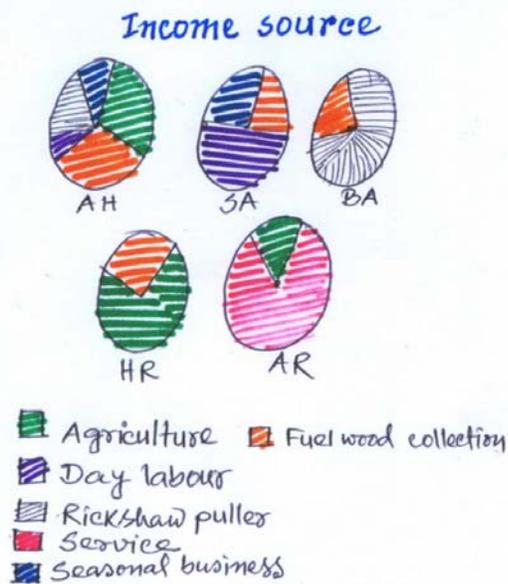
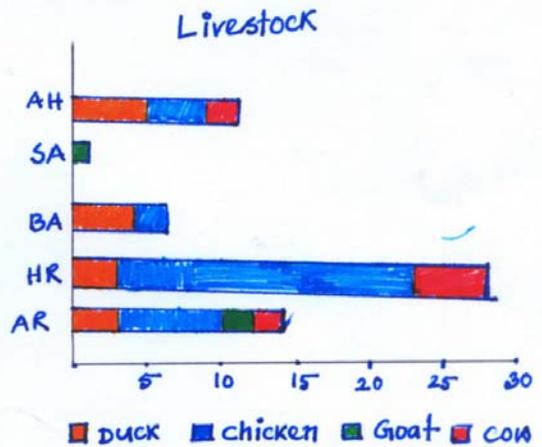
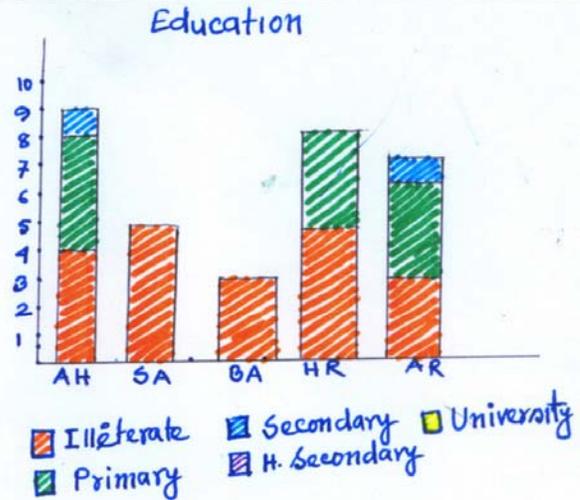
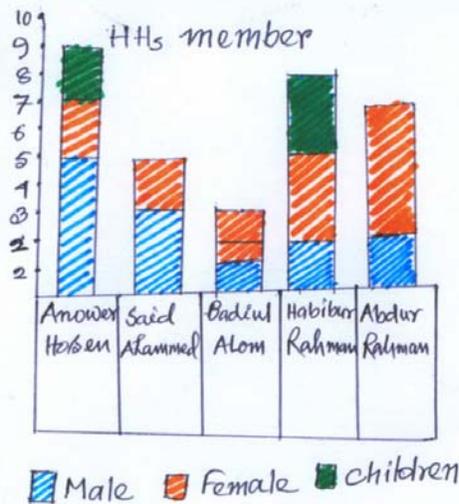


Fig. 11 Livelihood analysis: HHs Expenditure in Herbang area

Venue : Harbang Beat
Date : 04.07.09



Participants :- Habibur Rahman, Abdur Rahman, Saied Ahmed, Rina Begum, Nurik Anwar Hossain, Badrul Atom, Fatema

Fig.12. Livelihood analysis (an example from Herbang area)

4.6.3 Gender issues

Table 21 to 24 and Figs 13 to 15 show the various aspects of gender issues in the area. A brief description is further provided below on the issue.

i. Mobility and Access: The person of the area is religious minded and outdoor movement of the females is restricted. The women rarely participate in social events along with the men. However, females have more access to NGO credit programs, but not to bank loans (Table 21).

ii. Education and Employment: Females are less educated than the males and madrasa education is preferred for the females. 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.

iii. Daily workload: 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. Fig 14 and 15 show the daily workload of male and female of the locality. It seems that the woman has bit less workload than the men.

iv. Family decision making: Table 23 shows the role of different family members in decision making. It is apparent that male takes the leading role in decision making. However, females have the major role in taking certain decisions making.

Table 20. Mobility and participation in social events and access to credit and IGA by male and female in Chunati area.

	Outdoor mobility	Participation in social events	Access to credit	Access to IGA	Education	Employment
Male	00000	00000	00	0000	00000	00000
Female	00	00	00000	000	00	0

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

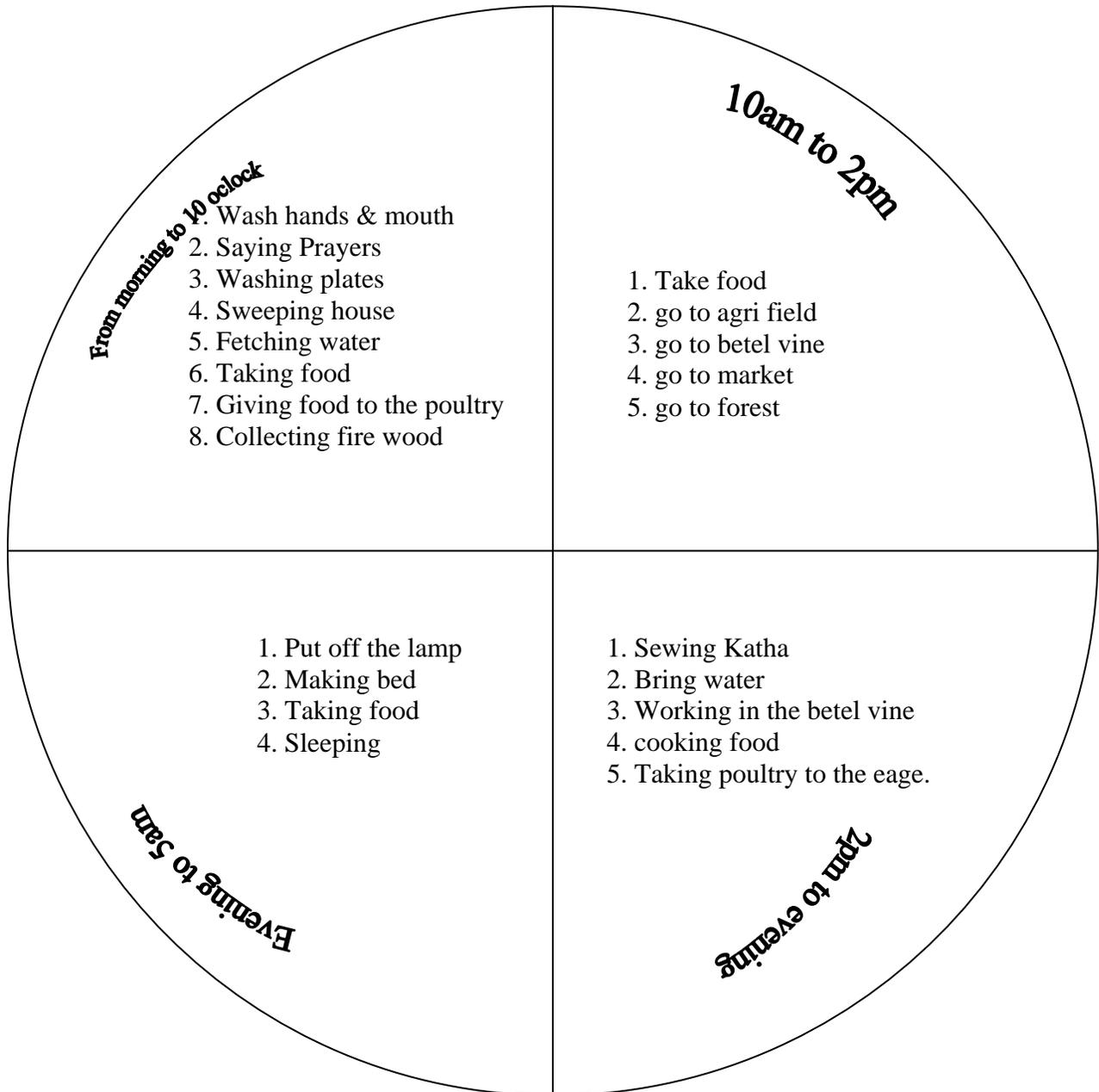


Fig. 13 Daily work chart of men of Chunati area



Fig. 14 Daily work chart of women of Chunati area

Table 21. Seasonal workload of male and female

Months across column	Baishak	Jaistha	Ashtar	Shrabon	Bhadra	Ashwin	Kartik	Agrihaya	Poush	Magha	Falgun	Chaitra
Male	00	000	000	000	000	00	00	000	000	000	00	00

Female	00 0	000	000	000	00	0	00	000 0	000	000	00	000
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N.B 1 circle indicates relatively lowest abundance/intensities, 5 circles indicates relatively highest abundance/intensities

Table 22. Decision-making role of male and female in the family

Name of decision	Husband**	Wife	Father	Mother	Elder Brother	Younger Brother	Son	Daughter
Marriage	00000	000	00	0	0		000	
Sowing crops	00000	00	000		0		00	
Land	00000	00	000		0		000	
Land selling	00000	000	000		00	0	000	
Treatment	00000	0000	00	000	00	0	00	00
Trees	00000	000	00	0	00	00	0000	0
House making	00000	000	0000	00	000		000	
Cattle Purchase	00000	000	00	0	00	0	000	
Loan	00000	00	000	0	0		00	
Savings	00000	00	000	0	00		000	
Vote casting	00000	0	000	0	00	00	00	
General expenditure	00000	000	000	0	000	0	000	0
Resource collection from the forest	00000	000	000	0000	00	00	00	0000

** Husband is the head of the family

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

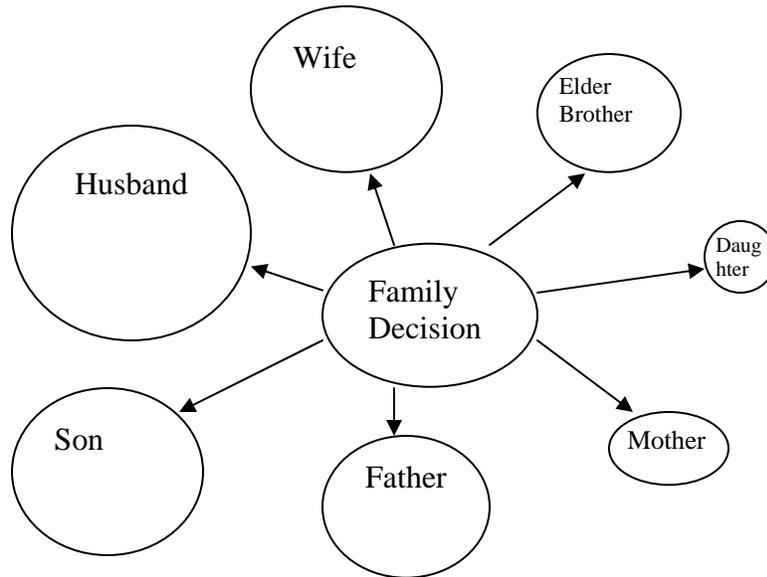


Fig. 15 Venn diagram for family decision-making

Table 23. Comparison of educational status of male and female in Chunati area

Overall literacy (based on adult)		Educational level (based on students)				
		Primary	Secondary	Colleges	Above	Informal
Male	20%	70%	20%	11%	5%	5%
Female	15%	85%	30%	8%	2%	3%

4.6.4 Local Community, Power Structure, Local Governance

4.6.4.1 Social dynamics

Table 25 shows the trend in changes in some socio-economic matrices of the area. Population has increased by 80% compared to the pre liberation period. However, overall solvency has increased in comparison with pre liberation period but decreased 20% in comparison with 15 years back. Because 15 years ago massive destruction of tree felling were conducted. However, Livelihood expenditure has increased 60% in comparison with pre liberation period.

Table 24. Trend analysis of socio-economic situation

Issue	Pre-1971	15 years ago	Present	Causes for change
Settlement/population	0	000	00000	No family planning activity, Migration of people,
Solvency/income	000	00000	0000	population increased but not land and IGA
Livelihood expenditure	00	000	00000	Increasing trend of the value of daily using goods.
Literacy	0	00	0000	mass awareness on education after intervention of both Govt and NGO, Increasing the facilities of education and establishment of new institutions, Govt various inceptive scheme as like primary sub- scholarship, female secondary assistance etc.
Unemployment	00	000	00000	Increasing pupulation, not creating as expected new Job

Use of forest for income	00	00000 (80-92)	0000	Increasing population, availability of resources (land, trees, fuelwood etc) and easy to cope.
Use of forest for HH needs	0000	00000	0000	No significant changes has occurred, from the past people are using forest for their HHs needs.
Transportation and mobility	0	000	00000	New road construction and bus station set up, new transportation system introduced
Homestead plantation	000	000	00000	Tradition and NGOs intervention
Food scarcity/starvation	-	00	000	Increased poverty
Credit and IGA	00	000	00000	Several NGOs and bank intervention
Occupation	Agriculture	Day labour, Agriculture, tree feeling	Agriculture, business, day labor	
Damages by elephant	0	00	00000	Decreases of forest and elephant food
Livestock	000	000	00000	
Betel leaf cultivation	0	000	00000	Profitable
Agricultural activities	00	00	0000	More agricultural land has encroached

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

4.6.4.2 Local power structure/ Influential persons

A total of 84 influential people have been identified within and around the WS, of them 34 are most influential. Besides, there are several outsiders who also have influence on the local people and their activities. Information on the domain of their power has also been collected. There are three important and influential families, two in Jaldi area, namely Miabari and Chowdhuri bari and one in Chunati area, namely Deputy bari. All these are located very near to the sanctuary and have their agricultural lands inside of the sanctuary. These two families are very influential in the locality and have most control over local people and local affairs. They also have good linkage with the government high officials and upper level political leaders. Table 26 shows the list of powerful and influential persons in Chunati area and may be consulted during the implementation

phase of the project, while Fig. 16 illustrates the relative location and their influence within the locality and interlinkages among themselves.

Table 25. List of powerful and influential people in Chunati WS

Sl	Name	Designation	Area
1	Amin Ahmed khan	Secretary, Prothikrit, Teacher, Degree college, President of several Madrasas management committee	Chunati
2	Dr. Niaz Ahmed Khan	Prof, Chittagong University	
3	Principal Din Md. Manik	Chairman, Prothikrit & Principal Chunati Female Degree College	
4	Idris Member	Member, 8 no Chunati Union	
5	Sirazul Islam	Chairman, Chunati UP	Nariccha
6	Hafizul Huq Khokon	Defeated Chairman Candidate, Local Jamayat leader	Chunati
7	Rokon Uddin Khan	Influential person	
8	Ahmed kabir	Brick field owner, Relative of a national leader of ruling party	
9	Rafiq Ahmed (Dubai Rafiq)	Brick field owner	
10	Amir Hamza	Brick field owner	
11	Basir Uddin Ahmed	5 No. Word Member, 8 no Chunati Union	
12	Moulana Habib Ahmed	Religious Leader	
13	Prof. Shafic	Respective person, Jamayat Leader	
14	Zainal Abedin	Defeated Chairman Candidate	
15	Habibur Rahaman	Member, 8 no Chunati Union	
16	Md. Ferdous	Member, 8 no Chunati Union	
17	Jamal Uddin (jamir member)	Member,4 no. ward, 8 no Chunati Union	
18	Akter Hossain		
19	Nurul Kabir	Member, 6 no. ward 8 no Chunati Union	
20	Md. Idris Mia	Ex-chairman	
21	Md. Hossain		
22	Gias Uddin ahmed		
23	Rokon Uddin Khan		
24	Moslem Khan		
25	Hafizul Huq	Political leader	
26	Anwar Kamal	Business, AL Political leader	
27	Kafil Uddin		
28	Kazi basir	Ex Member	
29	Tazu Mia		Banpukur
30	Yasin Mazi		
31	Sha Alam driver		
32	Abdur Hasem		Satghar
33	Khaleda	Female Member, 8 No.Chunati UP	
34	Zahir Ahmed		
Aziznagar			
35	Nuru Soba master	Chairman, Aziznagar UP	
36	Sarful Amin	Jamayat Leader	
37	Nazimuddin	Ex-Chairman	

Sl	Name	Designation	Area
38	Md. Ibrahim	Head Master, North herbang Govt. primary school	
39	Sha Alam	Influential person	Karam Muhuri Para
40	Ali Hossain	Influential person	Karam Muhuri Para
Herbang			
41	Abdur Rashid	Member	
42	Nurul Afser Choudury	Chairman, Herbang UP	
43	Abul Kasem	Son of Headman	
44	Nur Alam	Ex-Chairman	
45	Moksudulla	Social worker	
46	Museul Azim Siddique		
47	Nur Hossain	Headman	
48	Azhar Mia	Headman	
49	Syed Nur	Member 8 No ward, herbang	
Chambal Beat			
50	Dil Md. Khan	Ex Chairman	North Chambol
51	Nurul Amin Choudhury	Chairman	West Chambol
52	Ansarul Islam	Ex Member	East Chambol
53	Sarwar Hossain babul	Ex Member	West Chambol
54	Mahmudul Alam		
55	Sha Alam Master		
56	Nurul Afser Sikder	PFG Leader	Hamider Muira
57	Shahidullah		Sonar khil
58	Mostak memeber		
59	Abdul Rajat Memeber	Ex-Memeber	
60	Moulana bashir	Businessman	
Puichari Beat			
62	Zafrul Islam	MP & State Minister	Jaldi
63	Anwar kabir choudury	Chairman, Puichary	West Puichary, zaminder Bari
64	Rezaul Azim Choudhury	Ex Chairman	
65	Sultanul Gani Choudury Ledu Mia	Ex Chairman, Influential person	
66	Monzurul Alam Choudury	Ex Member	
67	Istafizur Rahman Choudury	Zaminder & villager	
68	Nurul Kabir Choudury		4 Ward-Dakshinpara
69	Tofazzul Hossain Choudury		4 Ward-Sia para
70	Abdur Sukkur		6 Ward-west para

Sl	Name	Designation	Area
71	Hazi Nurul Huq	Elder respective person	
72	Kamrunnahar	Female member	
73	Nurul kabir Choudhury	Member 4 No. Ward	
74	Ayub Nabi	para sarder	Puichari
75	Rashedul Alam Choudury	Influential person	
76	Md. Hossain	Member	Bot taly, borohatia
Adjacent but have much Influences			
77	Sultanul Kabir Choudury	Ex MP, AI Leader	Jaldi, Banskhali
78	Md. Saluddin	MP & State Minister	
79	Sahidul Alam	Chairman, Taitong	
80	Abdul Wahab	Chairman, Jamayat leader	Borohatia Union
81	Mohammed Ali	Ex Chairman	Borohatia Union
82	Zafar Ahmed	Ex Chairman	Borohatia Union
83	Hazi Ismail	Businessman	Borohatia Union
84	Nurul kabir	Ex-Member	Bot taly, borohatia

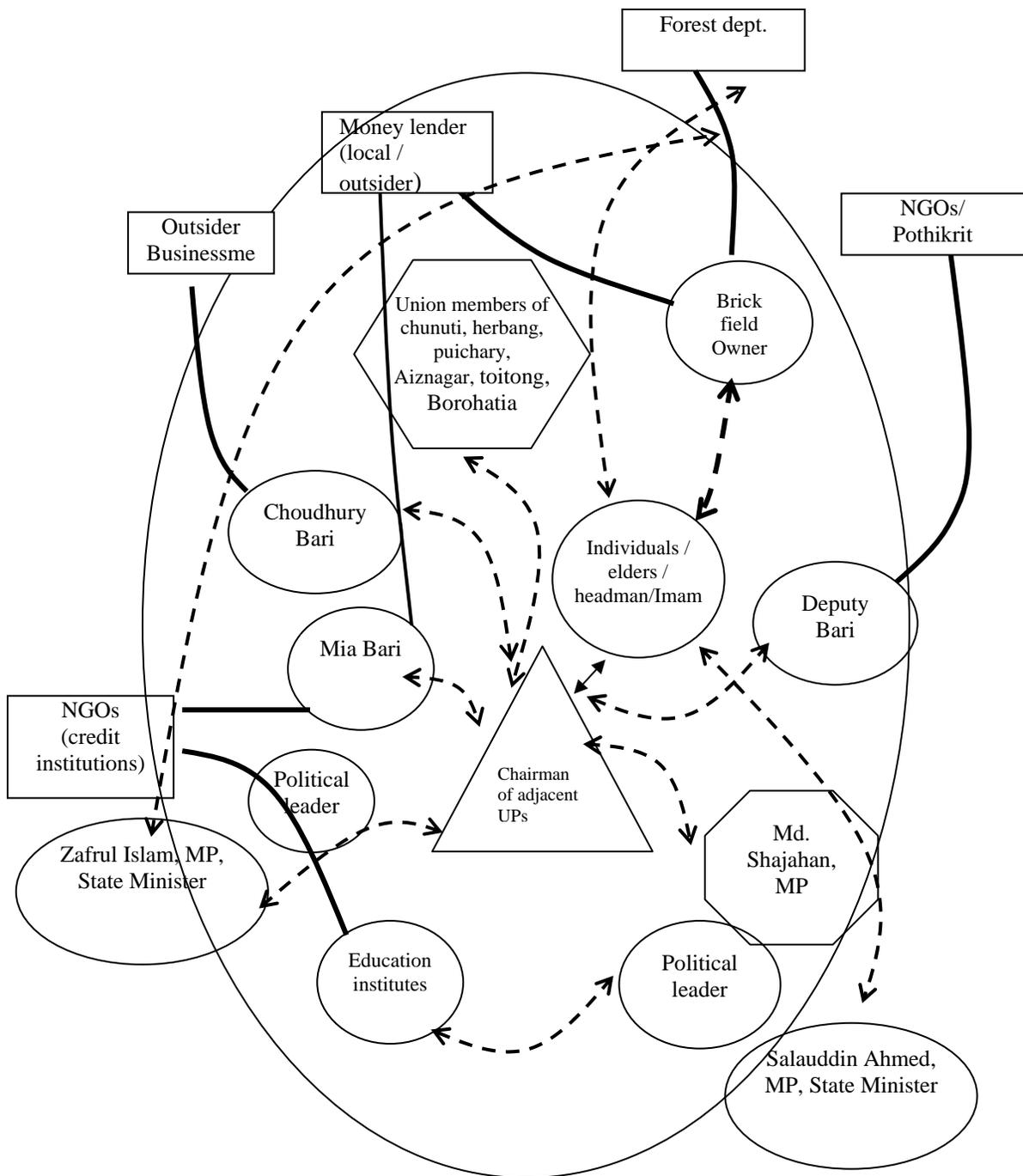
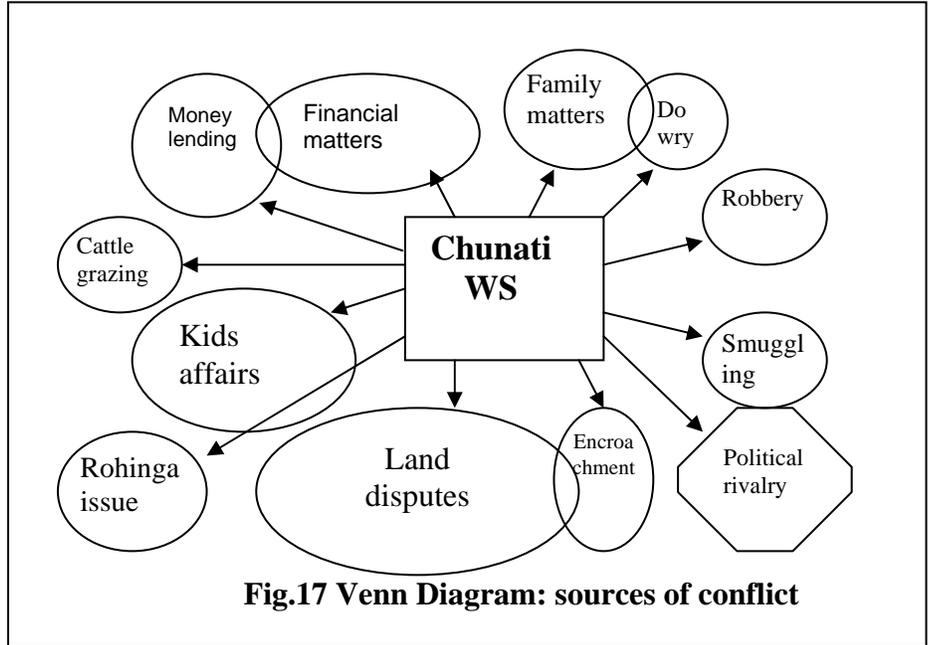


Fig. 16 Power structure of Chunati WS

4.6.4.3 Local conflict, conflict resolution, social adhesion and cohesion

i. **Conflicts:** Fig. 17 shows the various sources of conflict in the locality. The main source of conflict 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.



ii. **Conflict with FD:** Forest and land encroachment, forest cases by local FD staff, prevention in resource exploitation. Giving any type privilege by local FD to any individual or group.

iii. **Conflict source:** Table 27 shows the main sources of conflict and possible ways of resolution in the area.

Table 26. Sources of conflict and its resolution

	Sources of conflict	Resolution
1	Land disputes	By arranging local salis through local member and chairman
2	With Partner	Do
3	Vote	UP
4	Encroaching Hill	Local influential people make negotiation
5	Tree Felling	Forest cases
6	Money dealings	Salis
7	To establish influence in the locality	Salis
8	Kids matter	Salis by social elites

iv. Conflict resolution process:

The local level conflicts are resolved through various mechanisms and ways. Figure 18 demonstrates how conflicts are resolved. If the conflicts arise due to forest land disputes then people often go to the nearby forest office. However in the cases of family level conflicts,

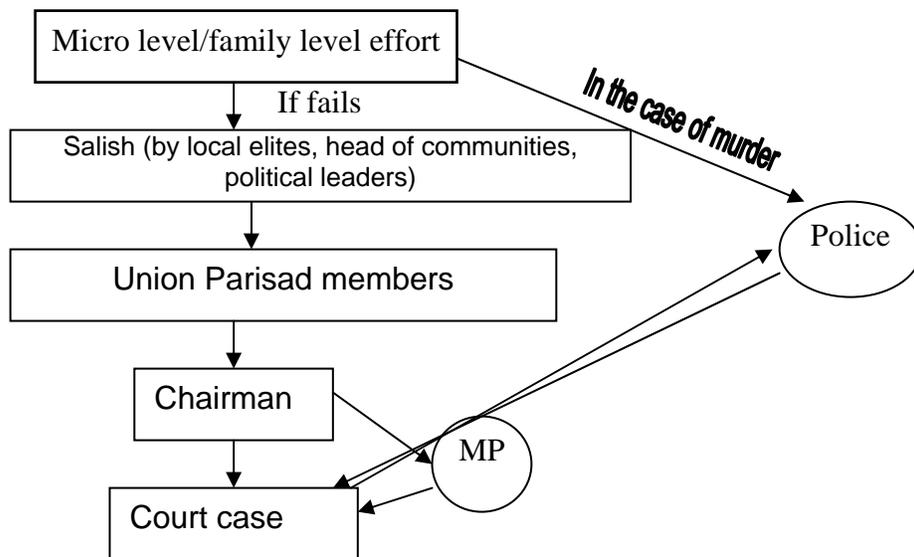


Fig. 18 Different steps followed in conflict resolution

usually the family head and old member try to resolve the conflict. At the community level, conflicts are usually resolved by the village head, locally called *Matabbor*. If local level efforts are not fruitful then it goes to Thana –Police and even ends up in courts.

v. Local believes act as a means of conservation: Though many inhabitants of Chambol area are tree poacher, yet inside the Chambol beat, there is an almost intact *Garjan* garden. This was possible due to the local beliefs and superstition. The garden is situated on and surrounding of a graveyard, called *mama-bhagner kabarstan*. Local people believe that if any body cut an any tree from this garden, he would either die or face serious problems.

vi. Social cohesion: *Shah Shaheb Orosh Mubarak* (the death anniversary of Sha Shaheb- a great respectable holy religious leader/saint of the area) is a great religious festival in the area and it brings thousands of together from the locality and beyond. It is the biggest congregations in the area and continues for about 18 days and is held in observance of the death anniversary of the great religious leader of the area Hazrat Shah Shaheb. During the period the area takes a festive mood and people embrace each other. In connection with this occasion, various other events, like folklore, exhibition of local

arts and crafts, folk fair etc. are also organized. During the period, every night dinner is offered to devotees and donations are raised for *mazar* and local welfare. A religious festival is also organized in Puichari and also hundreds and thousands of people congregate there.

Besides, on the occasions of several religious festivals, like Eidul Fitr, Eidul Azha, Durgapuja Puza also is observed with great enthusiasm and brings harmony among people. Social events, like marriage ceremony and other community festivals also bring together and help to build fellow feeling among people.

4.6.5 Land encroachment and transformation

4.6.5.1 Land encroachment process

In Chunati WS, land encroachment is the major cause for degradation to the forest and is considered as the most challenging issue for the management of the WS. As reflected in the FGD with FD, about 30% of total land of the WS has been encroached and transformed into agricultural land, homesteads and others.

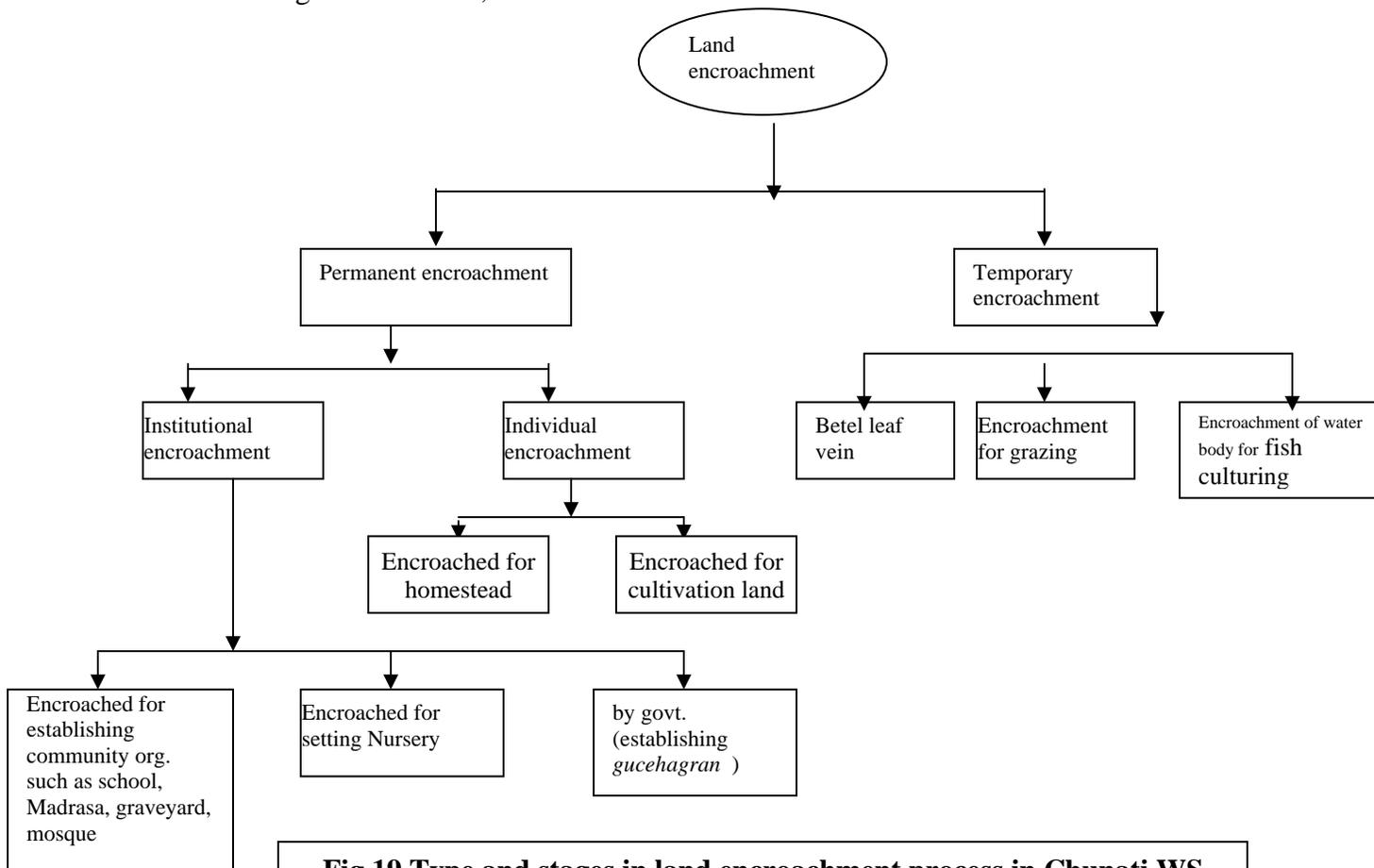


Fig.19 Type and stages in land encroachment process in Chunati WS

There are mainly two types of land encroachment is in practice the WS (Fig. 19), permanent and temporary encroachment. There is no proven record that encroached land has been recovered by FD, but the field level FD staff, each year send a list of encroachers to the higher authority (DFO), but no steps have taken yet. Rich, poor, influential persons, both the local and outsider are involved with land encroachment. However, most of the land is encroached by the local influential and rich people. Forest villagers also have extended their land area allocated to them (Fig.20).

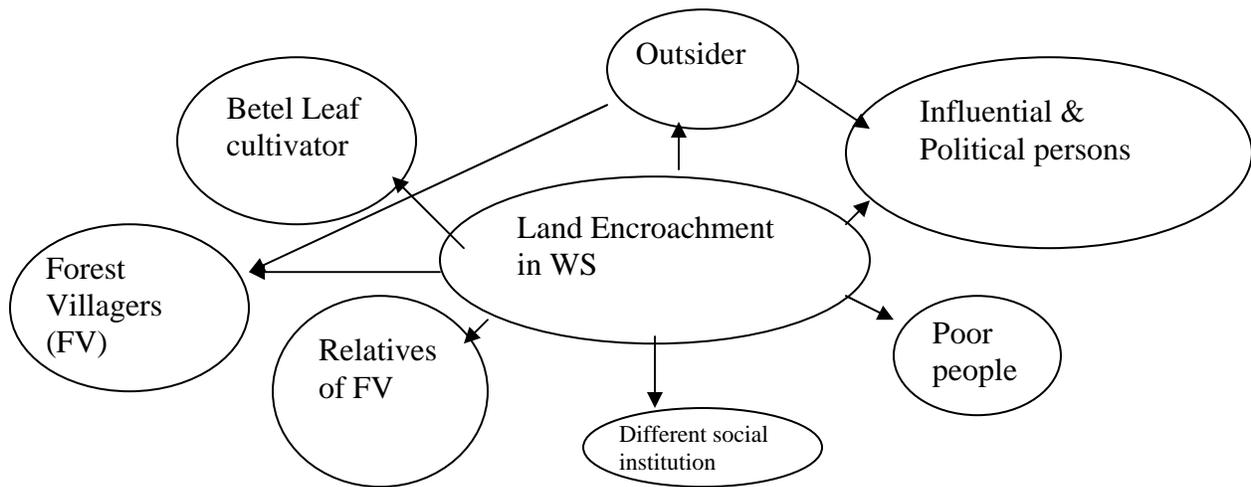


Fig. 20 Venn diagram on land encroachment by categories of people

It's clear from FGD that no land could be encroached without making any negotiation with local FD staff. However, this was strongly denied by the FD staff. There is a traditional understanding that the right of encroaching forest land lies with him who has land along it. This is locally called *Matha killa* Rule. Land encroachment started during Pakistan period, but become severe form 15 years ago. In fact, land grabbing started just after allocation of land to so called forest villagers. But become severe form 15 years ago.

Land grabbing by forest villagers

Almost all recognized forest villagers encroached land, in addition to their legal allocated area. They usually extended their agricultural by grabbing adjacent land area for agriculture. Their descendants also grabbed land for establishing their homesteads and claim themselves as forest villagers. Table 28 shows distribution recognized and illegal forest villagers. Sometimes, forest villagers allow their outsider relatives to come and

settlement within the WS. It is alleged that headman of the forest villages also take money from outsider and help him to settle in side the WS.

Table 27. Settlement wise distribution of forest villagers

Beat	Listed Forest Villagers	Encroacher	Remarks
Chambol	15HHs	500HHs	In the Villager Para of Napora FD allotted 3 acres of land for each HHs But at present 300 acres of land area 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	Reg-24
Herbang	100	7000, 500 acres of land, land is more but settlements are less	Reg-14
Puichari	31	266 families, 500 acres of land	

4.6.5.2 Land encroached by rich and influential people

As revealed in FGD with local people that most lands of the WS have been encroached by the rich and influential people by exercising their power. They employ the daily labour to clear the forest land and manage the documents to make it legal. It was learned that the District Administration and Tahsil office allocate land to people, although the land is owned by the forest department.

4.6.5.3 Legal encroachment: Guccha Gram within the WS

There is a guccha gram situated inside the WS, established by the Bangladesh government for the landless people. There are 10 barracks, each consisting of 10 households and thus 100 HHs in each gram. Total population is about 820 who have no any other means of earning except the WS. These landless people also have grabbed some lands by clearing forest lands to establish agricultural lands. These had migrated from Chunati, Cox's bazaar, Chokoria, Moheskhal Island. They are mainly cyclone affected and erosion-affected people. The people of these settlements are dependent on the forest products for their livelihood. They have their own internal governance system.

The head of the settlement is called *SARDER* and is the main center for resolution of internal conflict.

4.6.5.4 Encroachment by betel leaf cultivator

In Chunati it is alleged that the Forest Department staff make illegal agreements to lease out land on short-term basis to local people for betel leaf cultivation anywhere between 6 months and 4 years and then return the land to the Forest Department. It was alleged that growers need to pay 100-500 Tk to FD depending on area of land used. However, it was denied by the FD staff, rather they told that there was legal system earlier, but exists now.

All types of people undertake this activity – from poor to the rich, cultivating different areas of land depending on their wealth. It is estimated that 95% of betel vine cultivation in the Chunati area occurs within the WS.

4.6.6 Resource regeneration practices

4.6.6.1 FD's plantation practices

FD's current plantation practice is different from previous. Table 29 indicates the recent plantation program of FD. The present practice is in favour of planting fruit bearing and indigenous trees. However, the plantation area is claimed by clearing of forest by fire. The subsequent maintenance of the planted areas includes periodical weeding. This removes the biodiversity and causes disturbances to wildlife.

Table 28. Information on FD's recent plantations in Chunati range of Chunati WS

Beat	Year	Planted area	Type	Species	Remarks
Chunati	2004/05	5 ha	LR & SR,	Medicinal, Indigenous & fruit bearing trees	Food & shelter for wild life
	2002	10ha	As undergrowth of 96's LR plantation	Cane	
	2001	10 ha	As undergrowth of 95's LR plantation	Cane	
	2001	20 ha	LR		People burn four ha of plantation

Beat	Year	Planted area	Type	Species	Remarks
	2001	5HA	LR & SR,	Medicinal, Indigenous & fruit bearing trees	food & shelter for wild life
	2000	5 HA	As undergrowth of 96's LR plantation	Cane	
	2000	5 HA		Bamboo	
	1999	10 acres	As undergrowth of 95's LR plantation	Cane	
	1998	40 ha 10 ha 5ha	LR cane bamboo		
Herbang					
	1998/99	20 ha	LR	Teak, garjan, gamari, chickrashi, mehogony, telsur, sal	
	2001/02	20 ha	LR	Olive, Amloki, Horitoki, Bohera, neem, Raj karai, Amra, Jum, Banyan, Gub, Bokail, tatul, Dumur, borta, Kowfall, kazu badam, bachi, kamrangha, shaora, paduk, Chapalish, cane, bale, arjun, kath badam, kadam, jarul, etc	food & shelter for wild life
	2003/04	65 acres	lr	do	do
	2002/03	5 ha	LR	Agar	
	2004/05	50 acres	LR	same as 2001/02	food & shelter for wild life
Aziznagar	2003/04	20 ha/50acres	LR	Olive, Amloki, Horitoki, Bohera, neem, Raj karai, Amra, Jum, Banyan, Gub, Bokail, tatul, Dumur, borta, Kowfall, kazu badam, bachi, kamrangha, shaora, paduk, Chapalish, cane, bale, arjun, kath badam, kadam, jarul, bamboo etc	food & shelter for wild life
	2001/02	20 ha	LR	do	do
	2001	5 ha	LR	Medicinal plant	do
	2001/2002	g ha		same as 2003/04	
	2000/2001	20ha	LR	Teak, garjan, sal	
	1999/2000	20ha	LR	same as 2003/04	
	1993-1998	120 ha (20ha per year)	LR	mehogony sal garjan, teak	near about vanished

4.6.6.2 Betel leaf cultivation

In Chunati WS, the trend of betel leaf cultivation is increasing day by day. At present total number of betel leaf cultivation yards (boros) accounts to about 6-7 thousands and almost all of them are located inside the WS. Highest number of betel leaf yard are seen in Chunati beat about 5000 of them are located there, followed by Aziznagar 650 and Herbang 550 boros.

Most of the people cultivate betel leaf in the land of WS, few also cultivate in their own land, forest villagers cultivate in the FD's allotted land. As gathered that one single person could own as much as 25 boros. Betel leaf cultivation started in Pakistan period. However, during the last 20 years, the rate of cultivation has been increased manifolds. Initially, cultivation started in Banskhali area, and then spread to Chunati area. As being a profitable business and availability of forest land the practice spread very quickly. The rampange of paddy field by elephant is also another reason for cultivation of betel leaf.

The local middle class people, who have a capital of minimum 10 to 15 thousands taka and also can provide labour, are mostly involved in betel leaf cultivation. A number of rich HHs is also involved in this activity but not directly, they employ poor people as day labour in the betel leaf boros. Sometimes, the poor/middle class people cultivate betel leaf by taking yearly lease of land from the landlord (locally called zamindar).

Usually cultivator sows betel leaf sapling in the month of Bhadra and start to harvest of green leaf after two month. It continues up to zaista. The betel leaves are usually sold in local markets, such as Aziznagar bazaar, Deputy bazaar, and Chunati Bazaar. There are some middlemen who purchase betel leaf from the cultivator and carry it to the Adhunagar Bazaar from where betel leaf is transported to Chittagong, Dhaka and also to north Bengal.

As reported by the local people, the betel leaf cultivator and FD staff maintain good relationship and no conflict is seen between the parties. As reported, for cultivating 1000 sapling betel vine, the cultivator pay 500 taka to the FD. However, this was strongly denied by FD people.

Many people are dependent on betel leaf cultivation, its trading and processing for their livelihood. The impact of betel leaf cultivation is huge on the forest and its biodiversity. All the raw materials for fencing, support and shade come from the forest. Therefore, bamboo, saplings, small trees and other vines are used by the cultivator. The practice also involves the clearing land for cultivation and subsequent weeding of the boros. This practice also makes enormous disturbances to the wildlife.

4.6.6.3 Agriculture

Agriculture is now a major activity within the forest and its surrounds. The grabbing of land facilitated the extension of agriculture in the Ws and has claimed a huge area. The main crop is the paddy. In addition to reducing biodiversity and habitat, the practice causes disturbances to wildlife.

4.7 Local Level Problem and Expectations

Table 30 provides information on the local level problems and their possible solution as suggested by local people. The problems were identified during FGD and ranked. Poverty has been identified as major problem in the area, followed by unemployment. Damages caused by elephants to crop filed are also an important problem in the area. The major suggestions for addressing the problems are centered on the poverty and unemployment.

Table 29. 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.

Name of Problem	Problem ranking	Reason	Solution
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.	Habitat restoration through planting with food plants for elephants.
Education	00	Inadequate number of educational institution in the area, children engaed in woprk	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-Bazaar.	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

4.8 Legal Aspects and Access to the Forest

Forest patrol is negligible. FD staffs in Jaldi Range feel insecure. In three beats of Jaldi range, there are no arms for the forest staff. Sometimes, armed gangs attack forest office. Local police provides little or no protection to WS. FD's manpower is not adequate for WS management. FD has lack of other logistical facilities. Presence of bandits in the Jaldi part of the WS restricts movement not only of the FD staff, but also of the local people of the area at night. However, bandits have negotiating relation with the tree poacher. In the Jaldi part of the WS, the control of the FD has become much loosened. The local people have easy access to WS. No one restrict them from going to the WS and collecting resources. The route for entering into the forest and resource extraction route are shown in Fig. 21.

Poacher routes of Chunati WS

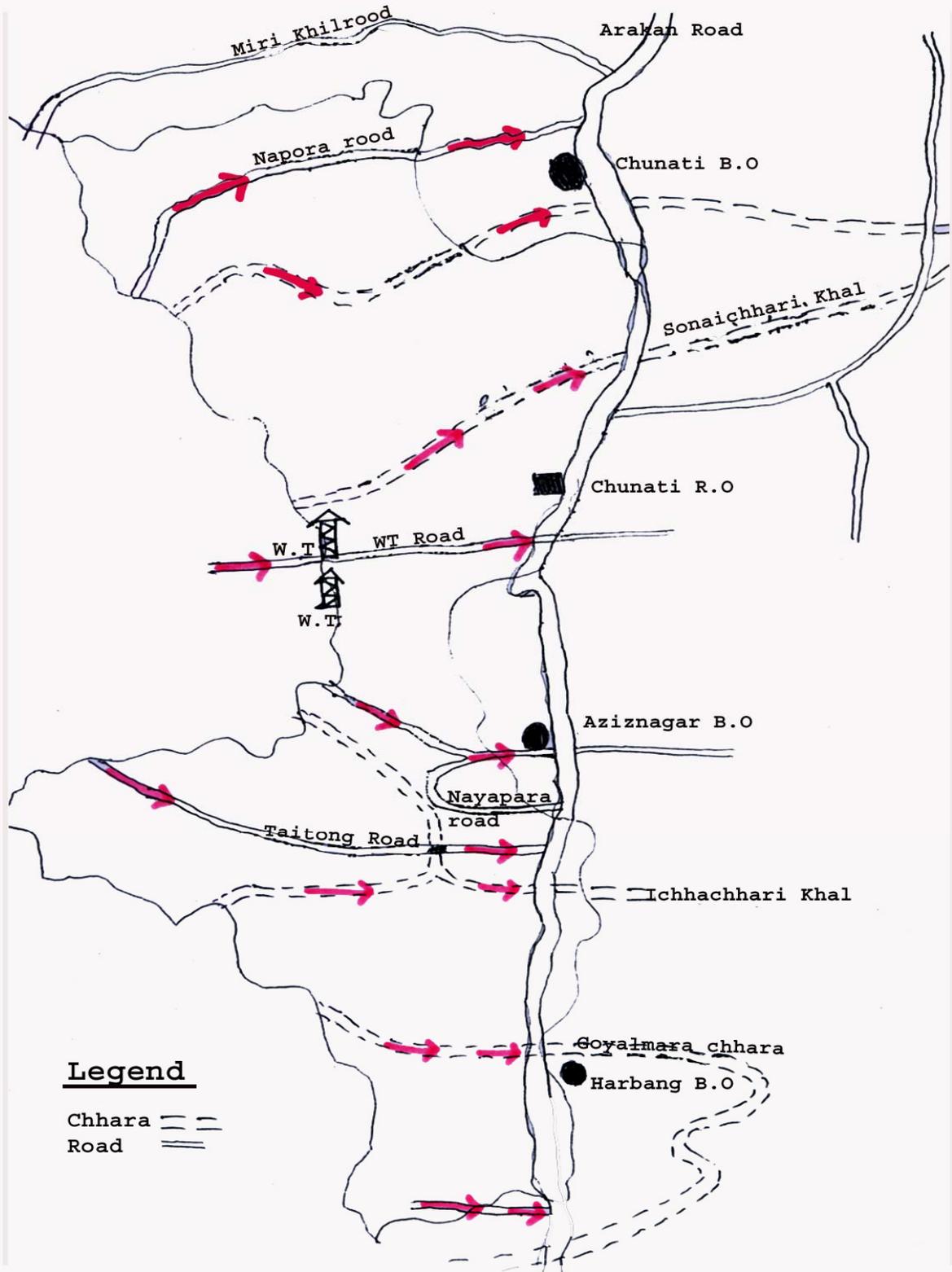


Fig.21

4.9 Local Level Awareness and Behavior

4.9.1 Knowledge about WS

Most local people know that the forest would be developed into a wildlife protection area, but they have misconception about it. About 40% people know about some restrictions imposed in the sanctuary. Local FD staff is also ignorant of the activities not permitted in the sanctuary and it appeared that they do not have clear idea about the sanctuary. About 90% people think that the forest resources should be protected. Perception of the local people about the resource degradation and its impact on their life and livelihood is moderate. Most local people are against the protection of elephant. They are only in favour of plantation. 100% people of Chunati side knows that the forest is going to be a wildlife sanctuary, In Jaldi side this rate is low (70%), women are comparatively less aware about WLS. Only 40% people knows what are allowed and not allowed to do in the sanctuary, however 55% knows nothing and 5% have heard about the rules. But none of them has clear idea about this.

4.9.2 Behavior of local people

The people in Jaldi area (belongs to Banskhali Upazila) appear to be bit aggressive and many of them seem to be non-cooperative, while people in the Chunati area are comparatively cooperative and less hostile. The local people are worried about the establishment of the WS. Most of the people (90%) think that the Forest Department people are not protecting the forest resources according to the rules.

4.9.3 People's attitude towards the project & WS

A 90% of people of the area support the Govt. plans to preserve the forest biodiversity and to improve the socio-economic condition of the people. But they think that government should do plantation only, nothing else. Most of the inhabitants have land inside the WLS.

There is an on-going massive public movement and demonstration against the establishment of WS. In fact, the movement starts in late eighties, particularly by the

people from Chunati area. People could not stand the WS anymore when the government made declarations of WS in Chunnuti. Most of the people of the area had encroached land inside the WS. They think that they would lose their encroached land, if the WS is established. They also think that easy access to forest might be lost, number of ferocious animal may increase, and FD may give a fence with barb wire surrounding the forest boundary, so they may lose their cultivable land. They are particularly worried about the protection of elephants. Local people also traveled to Dhaka and organized street rallies against the government's plan of setting WS in areas. However, they think that number of elephants would increase and will damage their crops. The protest from local people and reporting on the issue generated interest about the problems that the forest-dwelling and illegally land encroacher people face locally and nationally. The media and the people took little interest in WS, eco-parks, safari parks, marine parks, etc. in other places giving an indication that there was little concern in general about establishing such parks.

4.10 FD's Forest Management Regimes: Current Status and Situation

Administratively, Chunati Wildlife Sanctuary is under the jurisdiction of the Wildlife Division of FD. The WS is divided into two Forest Ranges which are further subdivided into seven beats (Table-31), the beat offices are located inside and adjacent to the WS. DFO- Wildlife is based at Chittagong and look after the WS.

Table 30. Chunati WS: administrative structure

SI	Range Name	No. of Beat	Beat name
1	Chunati	3	Aziznagar, Chunati and Herbang
2	Jaldi	4	Jaldi, Napora, Chambol, Puichari

As revealed by FGD with FD staff, the manpower for the management of the WS is inadequate. The FD staff at the WS indicated that it is impossible for them to manage the WS with the present strength of manpower (Table 32).

Table-31 Manpower involved in management of Chunati range

Office	Ranger	Forester	Forest Guard	Wildlife scout	Wildlife keeper	Boatman	Mali	Total Manpower	Total land	Area/Man
Chunati BO		1	1	1	1	1		5	814.33 ha	162.87 ha/man
Aziznagar BO		1			1		2	4	347.7 ha	86.93
Herbang BO		1	1			1		3	1451.42 ha	483.81
Chunati RO	1							1		
Total								14	2610 ha	186.43

There are no specific guidelines and management plans for the management of the sanctuary. No management actions plans were developed for the WS. However, certain actions were planned under FSP.

The FD staff at Chunati WS staff the managers for general forest management which mainly deals with production forestry. Their job is transferable and can be brought from any forest under the FD. None of them are trained in Protected Area Management and do not have any past experience in the management of PAs. Their knowledge about the National Parks, Wildlife Sanctuary and Game Reserve, biodiversity etc. is very limited.

4.11 Research conducted and development project implemented in WS

It was reflected from the FGD with FD personnel and personnel conversation with Fd staff that several government projects have implemented and a number of research

projects were conducted in WS such as: (Special survey and studies on biology, population dynamics, forest dynamics etc.)

- Banskhali Eco Park project: as stated earlier.
- Asian Elephant projects: In the first phase of this project Chunati WS also included for elephant survey under IUCN where NACOM was co-partner.
- Systematic surveys of the Sanctuary's flora and fauna were undertaken during 1989-90 (Flora Studies by Dr. Khan 1990 and Fauna studies by Dr. Hussain 1991).
- BCAS (Bangladesh Center for Advance Studies) conducted a Biological Survey (1997) of 13 Projected area sites (including Chunati W.S.) under the World Bank assisted Forest Resource Management Project (FRMP).
- Under the study which was conducted by National Conservation strategy (NCS) Implementation Project-I of MOEF, GOB during 1997-98 in the forest south of Sangoo River in Chittagong Forest Division and Cox's Bazar Forest Division, Chunati W.S. also included and formed part of this study. Flora Survey, fauna Survey and also maps prepared by Bangladesh Space Research and Remote Sensing Organization (SP ARRSO).
- Several Plantations program raised over the WS Under various development projects/revenue budget up to 1999 – 2000 such as FSP, Development of Bamboo, cane and Reed plantation project.
- Exotic species like *Acacia auriculiformis*, *Acacia mangium*, *Eucalyptus cameldulensis*, are also not suitable species for wildlife sanctuaries; but these were planted in Chunati forests under Forest Resources management Project (FRMP) funded by IDA (The World Bank).
- Chunati Wildlife Sanctuary was included in A GOB funded development project which was taken up in the year 1993 to be executed during the Fiscal

Years 1993-94 to 1994-95 and then revised to cover the period 1995-96 to 1996-97 was approved. Name of the project was "Development of Wildlife Conservation and Management". Location of the project was all over Bangladesh but mainly in the Wildlife Sanctuaries and Game Reserves.

- Under the World Bank assisted "Forest Resources Management Project (FRMP)"; Technical Assistance Component, Dr Emilio A. Rosario, Conservation Management Plan Specialist prepared an elaborate plan "The Conservation Management Plan of the Protected Areas other than Sundarban Forests in Bangladesh (September 1997)". This plan covers Chunati Wildlife Sanctuary and provides guidelines for the Scientific Management and development of the protected areas as well as the basics for monitoring and evaluating the activities in the areas. The plan has not been acted upon.
- Under FRMP some plantations were raised in the Chunati Wildlife Sanctuary Area, curiously enough some exotics like teak, mahogany, Akashmoni, which are not suitable for conservation areas, have also been planted.
- Under ADB- aided Forestry Sector Project (FSP), provision exists for raising plantations of indigenous species in buffer zones and some enrichment planting in the buffer zones with indigenous species are being done with the FSP (on-going) project budget

5. PRESENT ISSUES AND CHALLENGES FOR NSP

5.1 *Present issues of concern*

- i. **Fuelwood and bamboo collection and poor forest regeneration:** As stated above that the WS area is almost devoid of trees and mainly characterized by growth of shrubs, bamboo and grasses. However, these are also extensively collected and thus leading towards further denudation. Saplings and coppice are also being collected and thus contributes to poor forest regeneration..
- ii. **Deteriorating local law and order situation and weak law enforcement for forest protection:** The local law and order is so deteriorated that the local FD has little control over the WS and, particularly at the western side of the sanctuary, as a result the local FD staff fail to protect forest. On the other hand, implementation of any management plan for the sanctuary will require establishing stringent control over forest which seems to be a far away cry.
- iii. **Poor sanctuary management by the Forest Department:** So far the sanctuary has been managed by general FD staff, no designated WS management personnel was posted. Recently, that has happened, but they lack sanctuary management skills. Further, there is no as such management plans under implementation for the sanctuary except the proposed MP developed under FSP for the Chunati WS.
- iv. **Land grabbing and expansion of settlements:** Many people claimed that they possess land even within the proposed core area and could be an issue of conflict

while implementing the management plans for the conservation of elephants. Settlements have extended in to the sanctuary at many places and contributed most to degradation to the WS. There are some villages located nearby the proposed core area. The inhabitants are supposed to exert pressure on the forest resources and its environment.

v. Agricultural activities within the proposed core area: Paddy and betel leaf are cultivated extensively in and around the core area. Betel leaf cultivation involves clearing of land area, use of bamboo and saplings for providing shade and support and thus causes degradation to the forest.

vi. Local poverty and unemployment: The local people are poor, particularly the forest villagers (legal and illegal). They depend on the forest resources in many ways for supporting/supplementing livelihood. As revealed in FGD that a huge population is unemployed and thus extend extract the forest resources for supporting their livelihood.

vii. Illegal tree felling: Although, there is a scarcity of trees in the WS, yet tree felling is going on and causing a threat to the further deterioration of the habitat of the WS.

viii. FD's plantation practices: Although, the present plantation practice has been changed, but the plantation process is still not eco-friendly and posing a threat to biodiversity. The burning of hills for claiming land for plantation and weeding of planted areas posse a threat to the WS.

ix. Negative role of forest villagers: Forest villagers are involved with land encroachment and their number has increased manifolds compared to originally recognized number. They are also involved with extraction of many forest resources. Their role is detrimental to the forest and its biodiversity.

x. Hunting and killing of wildlife: Although, game animals are now rarely available, yet some sorts of hunting are going on in the WS. Some ethnic group from Herbang hunt some wild animals, including pangolin, deer and others. There are local

hunter groups who are still active. Thus hunting is posing a serious threat to the wildlife of the WS.

xi. Disturbances to elephant: In order avoid the damage caused by the elephants the local people sometimes, collectively, try to drive away the elephants from the vicinity of their crop fields.

5.2 Challenges

i. Reduction in local poverty and unemployment: This problem is huge in magnitude and thus could be difficult for the project to address the problem with limited resources and mandate of the present program. Unless these problems are resolved this could pose a threat to the successful implementation of the project.

ii. Addressing the human-elephant conflict: This has been identified as one of the major problems in the area. The project aims at protection of the elephants and therefore this will increase the magnitude of the project. Minimizing of the conflict would be necessary for the project. And thus could a challenge for the project.

iii. Addressing the issue of opposition to WS: As discussed in preceding chapters local people oppose the establishing WS. It could be challenging job to convince them and to establish the sanctuary.

iv. Building good relationship and trust with local people: Local people are hostile and therefore it will be necessary to build a good relationship with them and this will a challenging job for the project.

v. Extensiveness of the project area: The project area covers a huge area. To bring the entire area within project management could be difficult, particularly at the initial stage.

vi. Recovery of encroached land: About 30% area pf the Ws is under encroachment. The encroacher is well established on the forest land. On the other hand, it will be necessary for the project to bring them back for the effective management of the PA. Therefore, recovery of the encroached land would be very challenging or even

impossible.

vii. Stopping of fuelwood collection: Livelihood of a huge population is dependent on this activity. Therefore, it could be difficult to stop fuelwood collection in order to enhance the forest regeneration.

viii. Preventing illegal tree felling: the illegal tree fellers are organized and powerful and many of them are armed. It could be difficult to prevent them from tree felling.

6. SUGGESTIONS AND RECOMMENDATIONS

6.1 Poor forest management by the FD has been identified as one of the major causes for the forest degradation. Therefore, there is an urgent need to strengthen the local FD in the Park with adequate and skilled manpower and to capacitate them in dealing with co-management of Protected Areas. Specifically the FD may strongly consider the following:

- adequate staffing, particularly for forest patrol under a skilled PA management manager
- Capacity building training for all local forest managers on sustainable management of forest resources and biodiversity conservation
- Providing appropriate logistics, like vehicle and modern arms and ammunitions for local FD
- Provision for providing incentives to local FD staff to make the job lucrative
- Steps for improving the morale of FD local staff and make them dedicated to biodiversity conservation
- Erection of fencing at strategic places of the park

- Provision for strong monitoring and supervision of local activities by a central cell.

6.2 Fuelwood and bamboo collection should be stopped but may not be a success as long as there is a scarcity of its supplies remains in the area. Therefore, project should strongly consider the following:

- establishment of a buffer sustainable resource use zone around the PA with provision for fuelwood plot, woodlot and other plantations required for house building purposes
- providing resource substitution (for example, commercialization of fuel made of rice husk and others)
- promotion of fuel efficient stoves in the locality
- cultivation of Dhancha sticks to substitute molibash to be used in betel leaf bed
- promotion of homestead plantation

6.3 There is an urgent need to strengthening the local FD at the sanctuary with adequate and skilled manpower and to capacitate them in dealing with co-management of Protected Areas. Logistical support, like vehicle and modern arms and ammunitions should be ensured. A strong administrative support from the higher authority needs to be extended to the local staff, particularly in case of dealing with forest cases and local notorious people. A mechanism for providing incentive to local managers to make their job lucrative. Staff posted in PA should be transferred only between the PAs. Steps should be taken to improve the morale of local FD staff and make them dedicated to the cause of biodiversity conservation. Strong monitoring and supervision of local activities should be ensured by a central cell.

6.4 Appropriate, site specific and technically sound management Action Plans should be developed with consultation of local people. The action plan, among others, should have the following provisions:

- a plan of actions for re-introduction and rehabilitation of endangred and plants and animals species
- a plan of actions for habitat restoration and rehabilitation
- a plan of actions for protection and sustainable uses of forest biodiversity

- 6.5 Betel leaf cultivation should be stopped within the sanctuary area. As it has emerged as a alternate source of income generation to the local people, this may be rehabilitated to some buffer zone areas with provision for resource substitution for materials for support, shade and fencing.
- 6.6 Forest villager's agreement should be reviewed and renegotiated with valid forest villagers. The encroachers should be rehabilitated outside of the sanctuary area with proper support for AIG.
- 6.7 Poor resource users should be identified and brought under AIG program with provision that they give up the unsustainable use of forest resources.
- 6.8 Provision for habitat restoration through forest regeneration for such a degraded forest like Chunati may not be adequate. Extensive plantation program with multi-species indigenous timber and fruit bearing trees should be considered.
- 6.9 Steps should be taken to recover FD's lost land and to this end some pragmatic and feasible trade-off policy should be sought. This may include, among others, adoption of policy like FD's existing social forestry with high valued timber trees.
- 6.10 Approach should be taken to bring the local elites on board with the concept of forest protection.
- 6.11 Human-elephant conflict should be resolved / minimized. Erection of electric fencing at strategic places could be useful. This technique has brought success elsewhere in the world.
- 6.12 The project should initiate a strong dialogue with brickfield and sawmill owners to comply with forest laws, in case of failure tougher actions should be taken against them with strong support from FD's higher authority.
- 6.13 Awareness activity should be done on priority basis in the area to make the people understand how the people could be benefited out of this project.

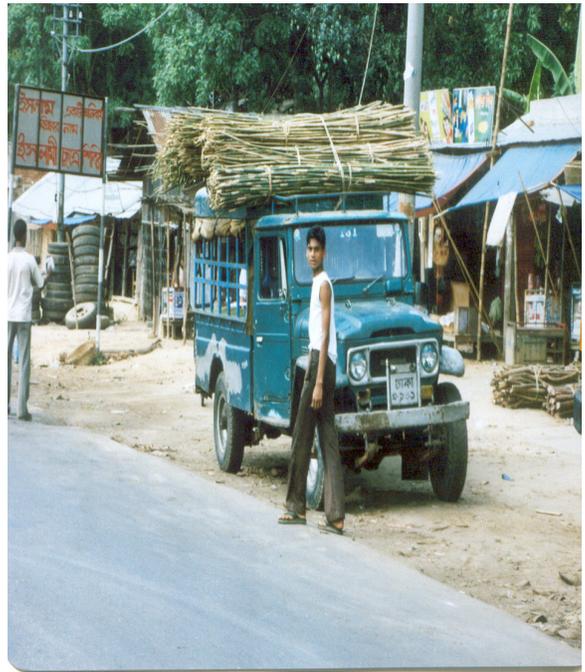
6.14 A strong dialogue should be made at higher level with other law enforcement authority to ensure the effective involvement of law enforcement agencies at the local level.

6.15 Project should also make provision for generating scientific and social knowledgebase on the sanctuary. On an immediate basis a comprehensive faunal and floral inventories should be made. Investigations in to the threatened categories of plants should be made on an priority basis and a management scheme for their protection and rehabilitation should be developed.

Annexure-1
Summary Activities (pictorial description)



Orientation training on RRA south before field work



Transportation of bamboo from WS (in front of Aziznagar beat office)



Piled up fuelwoods are sorted in the market place for sale at Aziznagar Bazar



A brickfield inside the WS



Burning : a FD plantation strategy



Burning for the preparation of bed



Burning of forest for changing land for agriculture



Stacking of collected fuelwood for transportation to nearby market



A view of Betel leaf yard within the WS



Coppice of illegally felled tree



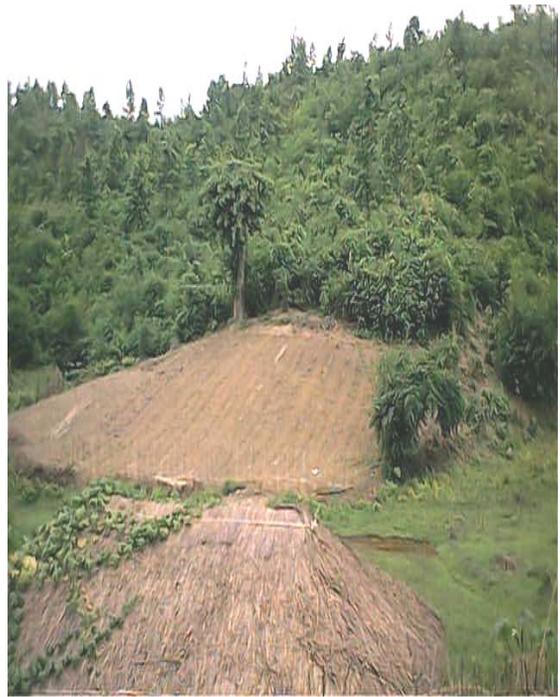
Chopped fuel wood stacked within the WS



Encroached paddy field and betel vine plot beside FDs plantation area at Chunati



Betel vine plot on hill top of WS



Betel vine in deep forest in between hill slopes



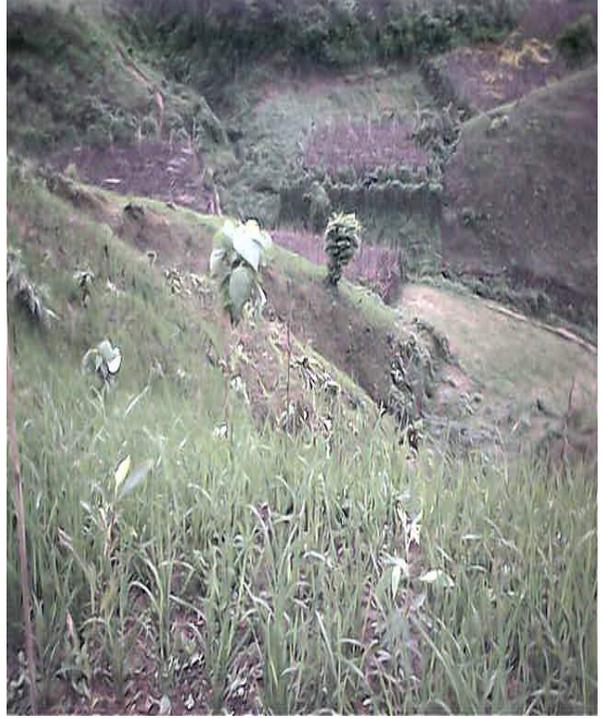
Betel vine plot and paddy land within the WS-1



Betel vine plot and paddy land within the WS-2



A Betel Leaf plot inside the WS



A private sungrass plantation area within the WS



Trees pruned for fuel collection within the WS



Denuded hills with betel leaf plot deep in the WS



Stack of seized illegally felled tree logs in front of a FD office, Banskhali



A bundle of bamboo collected from the WS



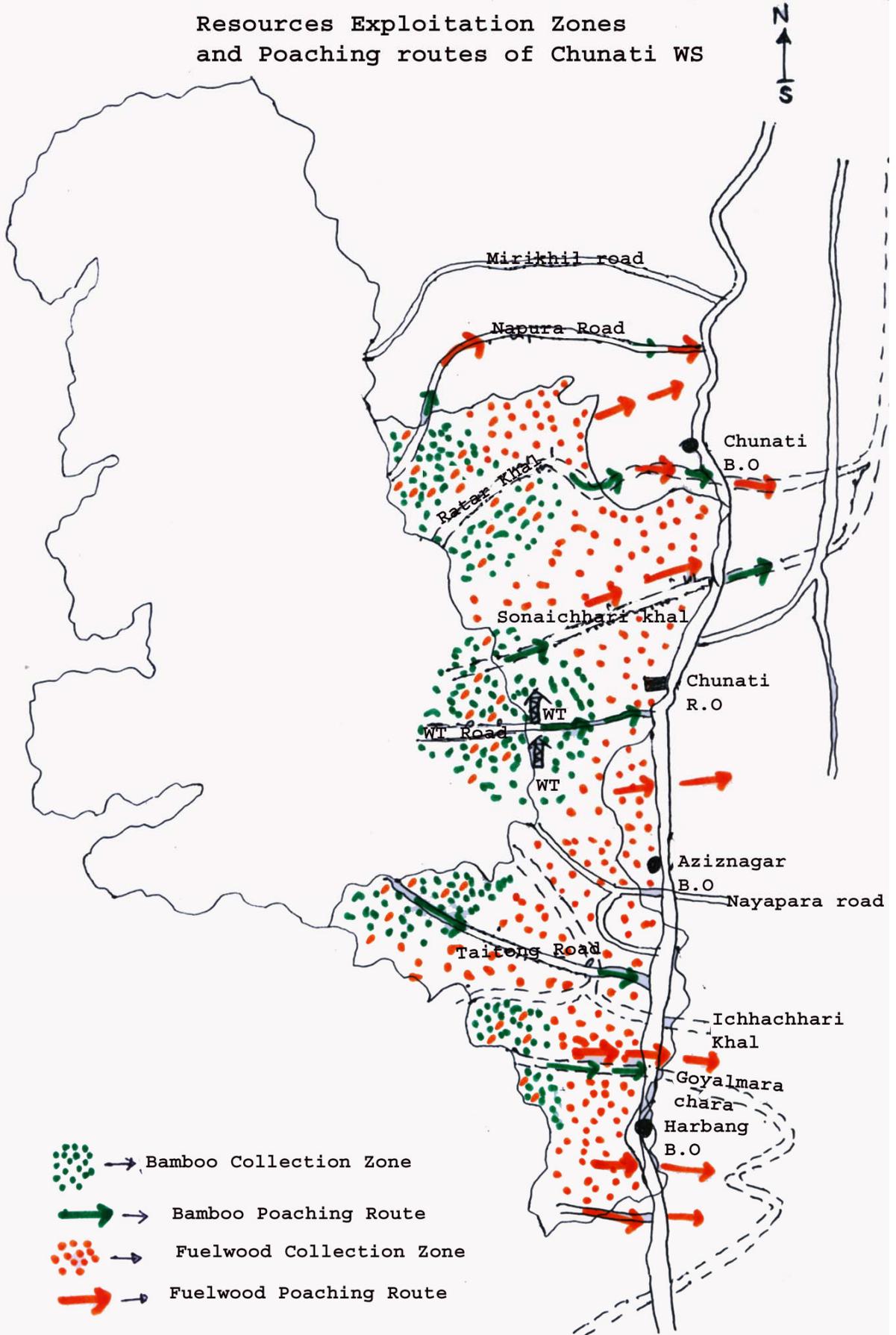
Stump of an illegally felled Garjan tree at Chunati



Very prudent in storing fuelwood in his house for use during wet season, but not in the forest for future supply

Annexure -2

Resources Exploitation Zones
and Poaching routes of Chunati WS



Annexure -3

Checklist of questions for FGD, KI and HHs interview

a. Checklist of questions for FGD

I. Stakeholder Assessment

1. What are the settlements/villages from where the people come to the forest and collect resources? Please indicate its location on the map.
2. What are the different categories of people who collect different resources from the forest?
3. At what extent the local people depend on the resources they collect from the forest for their livelihood, please specify for each category of resource users group?
4. What are the local organizations/institutions which are involved with the development /management of the forest or its control or its resource exploitation/and or degradation? What are the activities of these institutions/organizations?
5. Please indicate how the different resource users and other stakeholder groups interact with each other or inter-linked with each other.

II. Resources and resource status

6. Which plants and animals have disappeared from the forest in the recent past?
7. Which plants and animals in the forest have been declining very rapidly?
8. What are the causes for the decline of these animals and plants-Ven diagramming
9. What are the major shifts in the abundance of various resources over time? Compare between pre-liberation and present status? ---Trend analysis

III. Power structure and local conflict

10. What are the sources of conflict among local people?---ven diagramming
11. Whom do the local people go for conflict resolution?
12. How the local conflicts are resolved?
13. What are the events that bring the local people together?----ven diagramming

IV. Resource exploitation

14. What are the various resources that are collected from the forest and who collect what? Please indicate on the format. ---use format
15. Exploitation of which resources is posing threat to its future availability?
16. Please indicate how exploitation of different resources varies with different seasons? ----- Seasonal analysis
17. Which animals and plants are collected more and which are collected less?
18. When there is scarcity of fuel wood in the locality and indicate how it varies with season? –Seasonal calendar

19. Do the local people collect medicinal plants from the forest? Are they available now a day?

V. Demographic profile

20. What are major occupations of the people of the locality? Please rank them.
21. Are there many illiterate people in the locality? Do many people go to High school, college, and universities? Please rank them and indicate on the format
22. Do you think that the occupations of people in the locality have changed over past (30-50 years)? Please indicate the shift in occupation local people over time? Format, in which occupation the shifting have occurred (Trend analysis).

VI. Socio-economic activities/livelihood strategies

23. What are the major activities for earning of the local people and rank them according to their importance?
24. Are there many people who have no land?
25. Are there many people in the locality who have no work to do?
26. Please indicate how the availability of work changes with seasons?
27. What the local people do when there is less or no work for them to do
28. Do many people in the locality take loan from, bank NGO or other organizations and please mention the reasons for taking loans?
29. Do the local people get income generation training from various organizations?

VII. Gender issues

30. How do the roles of men and women differ in this community?
31. What are the different thing men and women do concerning the forest and forest products?
 - a. Does the male and female are equally educated in the locality?
 - b. Who take the decision for HH purchase, undertaking income generation activities etc. - male or female?
 - c. Do the females have access to loan and IGA as the male have?
 - d. Is the female are associated with forest management?
 - e. Please indicate on the format, what daily works are done by the male and what daily works are done by the female?----- Chart

IX. Others

32. What are major the NGOs operating in the locality? Please indicate their activities on the format?
33. What are major challenges for the conservation of forest resources?

Checklist of questions for Key Informant (KI) interview

Stakeholders Assessment

1. What are the organizations/institutions, which carry out any type, work in the forest?

2. What are the villages from where people come to forest for collecting resources? Please tell which villages are more involved and which are less involved?
3. What are the different categories/groups of people who go and collect various resources from the forest?
4. Who are the other people who don not use forest resources but have linkages with resource exploitation and development of the forest?
5. Are there any people who can be important for the conservation of the forest and its resources?

Power structure and local conflict

6. Who are the more influential people in your locality? Tell who more and who are less influential among them
7. What are the sources of conflict among local people
8. Whom do the local people go for conflict resolution
9. How the local conflicts are resolved
10. What are the events that bring the local people together
11. Have the local people any conflicts with Forest Department? If yes, what are those?

Resources and resource status

12. Which plants and animals have disappeared from the forest in the recent past?
13. Which plants and animals in the forest have been declining very rapidly?
14. What are the causes for the decline of various animals and plants?

Resource exploitation and dependency on forest

15. What are the various resources that are collected from the forest? Which are collected more and which is less?
16. What are the reasons for collection of these resources?
17. Which category/group of resource users are dependent on the collection of these resources?
18. What proportion of HHs benefit from the forest?
19. Collection of which resources likely to pose a threat to those resources/availability in the future?
20. Do people collect and use medicinal plant from the forest?

Demographic profile

21. How many households are living in this community/thana? How many adults?
22. What are the major occupations of the local people?
23. What proportion of local people are illiterate and what proportion of people have read upto school, colleges and above.
24. How have the occupations of people in the locality have changed over past (30-50 years)

Socio-economic activities/livelihood strategies

25. What are the major activities for earning of the local people?

26. What proportions of local people are very poor (have food shortage), poor, middle class and rich?
27. Are there many unemployed in the locality? What proportion?
28. In which season(s) there is scarcity of work in the locality?
29. From which source the local people take credit?
30. What are the different organizations, which operate credit in the locality?
31. Do many people in the locality take loan from , bank NGO or other organizations
32. Have the local people skills that can be utilized for undertaking alternate income generation
33. Is there any work/economic opportunities that requires special skill that the local people don't have?

Legal aspects

34. Can anybody can go to the forest and collect any thing?
35. Is there illegal tree felling? Is it at large scale? Does it affect forest health? Are the feller local or come from outside?
36. What are the main reasons for tree felling?
37. Do you think that the forest department people are protecting the forest resources?
38. Is there any issue of forestland encroachment? What are problem with recovery of these land?

Gender issues

39. Does the male and female are equally educated in the locality?
40. Who take the decision for HH purchase, undertaking income generation activities etc. - male or female?
41. Do the females have access to loan and alternate income generating activities as the male do have?

Others:

42. What are the major threats to the forest habitat and its resources
43. What would be major challenges for the conservation of biodiversity and restoration of its habitat?

c. Checklist of questions for HH interview

1. Govt. has plans to preserve the forest biodiversity and to improve the socio-economic condition of the people ---- what do you think (Actually team will give a statement on the purpose of their visit and on the project)
2. Do you know that the forest is a park/wildlife sanctuary/reserve
3. Do you know what are allowed and not allowed to do in the park/reserve/sanctuary
4. Do you think that the forest resources should be preserved/conserved?

Stakeholders

5. What are the villages from where people come to forest for collecting resources? Please tell which villages more involved and which are less involved?
6. What are the various groups of people who collect different types of resources from the forest?
7. Who are the people who do not use forest resources but are involved with the forest or has control over the forest
8. What are the organizations/institutions which carry out any type of work in the forest

Resources and resource status

9. Which plants and animals have disappeared from the forest in the recent past
10. Which plants and animals in the forest have been declining very rapidly
11. What are the causes for the decline of these animals and plants

Resource exploitation and dependency on forest

12. What sorts of things do you use from this forest?
13. Does your household collect it/them, or do you obtain from someone else?
14. If yes, do you collect those for selling or for consumption?
15. Of those things you get from the forest, which ones won't be available in 5 or 10 years?
16. Do you use medicinal plants from the forest?

Power structure and local conflict

17. Who are the more influential people in your locality? Tell who are more and who are less influential among them
18. What are the sources of conflict among local people
19. Whom do you go for conflict resolution
20. How the local conflicts are resolved
21. Have you or your neighbors any conflict with forest department? If yes, what are those?

Demographic profile

22. What is your primary and secondary occupation?
23. How many people in your HH are educated up to School, how many in the colleges and above and how many are illiterate.

Socio-economic activities/livelihood strategies

24. What is your HH primary and secondary source of income
25. Do you have land of your own (home stead/agricultural)?
26. Is your HH income adequate to meet your family expenditure or you having surplus?
27. Have many people in the locality no work?
28. Have you work to do in all seasons? In which season/seasons people of the locality have little/no work
29. What do you do when you have no work opportunities locally?
30. Have you taken loan from, bank NGO or other organizations? Was it easy to get the loan
31. What are the different organizations, which operate credit in the locality?
32. Have you any skill to do a particular work but you don't do? Why don't you do it?

Resource regeneration practices

33. Are there many plant nurseries in the locality?

Legal aspects

34. Can anybody can go to the forest and collect any thing?
35. Do you know that there is tree poaching in the forest? If yes, from where they come (villages)?
36. Do you think that the Forest Department people are protecting the forest resources?

Annexure - 4

PRA issues

PRA will build upon the RRA findings and is intended for collecting in depth information on the identified issues.

Understanding the forest make up and dynamics

Transect map: Necessary for understanding the present forest physiography and topography. A few transects across the forest will give an idea on overall make up of the forest. This exercise will also provide the opportunity for learning about the historical trend in changes in the forest make up in different areas of the forest. It will also provide the opportunity to learn many things about the forest while walk with a key informant.

The transect map should indicate

- ❑ land elevation (high/low)
- ❑ land cover/use pattern (trees/bush/grassland/agric. land/marshy land etc.).
- ❑ A similar transect map should be drawn based on the condition of the forest 30-40 years back.
- ❑ Should carry GPS to track the transect walk/take coordinate reading at intervals
- ❑ Should be accompanied by a key informant and learn about the changes over time in the forest

Trend analysis in forest dynamics: changes with time of the following: forest cover and thickness, abundance of tall trees and herbs and shrubs, settlements, population

Resource maps (on the forest): Helps in the understanding the distribution, concentration of different major resources of the forest, resource exploitation and regeneration areas. Also will show

- internal walkways, footpath trails, access roads
- encroached land areas
- settlements
- pressurized areas
- areas for plantation, agricultural and other resource regeneration
- areas for major resource exploitation
- distribution of various resources

Understanding the land encroachment process: Important for Teknaf and Chunati

- historical perspective and trend
- who and how
- uses and transformation
- legalization process
- causal factors
- impact on forest

Understanding local governance system and community structure and functions

- decision makers--- influential people
- hierarchy set up
- local community organizations and institutions and their linkages
- local conflict and conflict resolution
- social cohesion and adhesion (which brings them together)
- collective action

PRA ISSUES

Fuelwood collection/collector

Information to be collected:

- who collect (adult, boys or girls/ women, poor or rich/ employed labor, gang/armed gang, local/outsider if possible mention the settlements from where they come etc.)
- purpose of collection (for selling,HH consumption or both)
- what compels them to extract the resource
- do they depend on the extraction for their livelihood (partially/entirely, supplement income), at what extent and how
- What encourages them to take up the activity
- What are various uses of the resource
- if commercial-where do they sell, who buys, where does it go, who are the traders and where, prices at various levels
- Quantity collected/day/person
- any conflict with FD or other people over the extraction
- any negotiation or arrangement to carry out the activity
- any alternate source for the collection of the resources
- needs and expectation of the collector
- impact on the forest, as the participants see
- Risk for the collectors as the collector see, if the activity is carried out at this rate

Illegal timber felling

Information to be collected:

- Who collect (adult, boys or, poor or rich/ employed labor, gang/armed gang, local/outsider etc. if possible mention the settlements from where they come etc.)
- at individual or group level
- Who are behind the activity and indicate the network
- Purpose of collection (for selling,HH consumption or both)
- reasons for the activity
- uses of the resource at various levels
- what compels them to fell the timber
- Do they depend on the activity for their livelihood (partially/entirely, supplement income or for added income), at what extent and how
- What encourages them to take up the activity
- Anybody protect them, if they are in problem

- If commercial-where do they sell, who buys, where does it go, where are the traders-indicate the chain
- how the protection is provided by FD or by any other agencies (e.g. Police etc.) and at what stage
- any conflict with FD or other people over illegal felling
- any negotiation or arrangement to carry out the activities
- needs and expectation of the feller
- as seen by the feller, impact on the forest due to the activity on forest and its resources
- Impact on/risk for the collector, if the activity is not allowed
- Seasonalities and trend analysis

Collection of trees as building materials

Information to be collected:

- who collect (adult, boys or girls/ women, poor or rich/ employed labor, gang/armed gang, local/outsider if possible mention the settlements from where they come etc.)
- carried out at individually or in group
- purpose and reasons for collection (for selling, HH consumption or both)
- uses of the resource
- what compels them to extract the resource
- do they depend on the extraction for their livelihood (partially/entirely, supplement income), at what extent and how
- What encourages them to take up the activity
- if commercial-where do they sell, who buys, where does it go, who are the traders and where, prices at various levels
- any conflict with FD or other people over the extraction
- any negotiation or arrangement to carry out the activity
- any alternate source for the collection of the resources
- needs and expectation of the collector
- impact on the forest, as the participants see
- Risk for the collectors, as the collector see, if the activity is carried out at this rate

Bamboo and cane collection

Information to be collected:

- who collect (adult, boys or girls/ women, poor or rich/ employed labor, gang/armed gang, local/outsider if possible mention the settlements from where they come etc.)
- purpose of collection (for selling, HH consumption or both)
- what compels them to extract the resource
- Do they depend on the extraction for their livelihood (partially/entirely, supplement income), at what extent and how
- What encourages them to take up the activity
- What are various uses of the resource
- if commercial-where do they sell, who buys, where does it go, who are the traders and where, prices at various levels
- any conflict with FD or other people over the extraction

- any negotiation or arrangement to carry out the activities
- any alternate source for the collection of the resources
- Needs and expectation
- Impact on the forest, as the participants see
- Risk for the collector, if the activity is carried out at this rate

Rohinga issue (Teknaf):

- ❑ Distribution of Rohingya settlement/camps in and around the forest
- ❑ Settlementalization or process of establishing settlement (past and present)
- ❑ Present economic activities
- ❑ dependence on the forest resources and its impact on the forest
- ❑ relationship with the local people or agencies
- ❑ internal governance system
- ❑ conflict with Fd or other agencies or other people with use of the forest
- ❑ needs and expectation

Information the Ethnic community:

- ❑ Distribution of ethnic community settlement in and around the forest
- ❑ Probable No. of HH in each settlement
- ❑ Present economic activities
- ❑ Resources (plants and other NTFPs) they extract and reason for extraction (consumption/selling or both)
- ❑ dependence on the forest resources and its impact on the forest
- ❑ land encroachment by them
- ❑ relationship with the local people or agencies
- ❑ internal governance system
- ❑ conflict with FD or other agencies or other people on thre use use of the forest
- ❑ needs and expectation
- ❑ reaction to the project

Information on Forest villagers:

- ❑ Distribution of forest villager's settlement in and around the forest
- ❑ No. registered and approx. present number of HH in each settlement
- ❑ Privileges under FD agreement
- ❑ compliances to agreement
- ❑ Present economic activities
- ❑ Resources (plants and other NTFPs) they extract and reason for extraction (consumption/selling or both)
- ❑ dependence on the forest resources and its impact on the forest
- ❑ settlementalization processes and land encroachment by the forest villagers or by their dependant
- ❑ relationship and conflict with FD
- ❑ Forest villager management / or internal governance system
- ❑ needs and expectation

- ❑ reaction to the project

Betel leaf cultivation

- ❑ distribution of betel vine yards within and around the forest and approximation of its number
- ❑ historical perspective of flourishing the activity in the area
- ❑ who cultivate (local people, poor/rich people, influential etc.)
- ❑ ownership of land (FD/private/khas etc./own)
- ❑ dependence on the activity (necessary for livelihood, supplement income, entrepreneurship etc.)
- ❑ Impact on the forest resources and its sustainability
- ❑ Development of
- ❑ Conflict with FD
- ❑ Marketing chains and mechanism

Jhum (shifting) cultivation

- ❑ Identify the areas where the activity dominate within and around the forest and indicate its extent
- ❑ historical perspective and trend of the activity
- ❑ who do practice and where do they come from (tribe of ethnic people, poor or rich, on whom land (FD/khas/privately owned
- ❑ dependence on the activity (necessary for livelihood, supplement income, entrepreneurship etc.)
- ❑ Impact on the forest resources and its sustainability
- ❑ Conflict with FD
- ❑ Trend in changes in the activity

Understanding the land encroachment

- ❑ Historical perspective and trend
- ❑ Who encroaches and reason for encroachment and what drives to undertake the activity
- ❑ Legalization of process
- ❑ Conflicts and negotiation process
- ❑ Uses and transformation of encroached land
- ❑ What encourages them to encroach land
- ❑ Local mechanisms/system or traditional practice for land encroachment
- ❑ Trend in the changes in the intensity of the activity

FD's forest management regimes

- ❑ Forest patrol, check post operation etc.
- ❑ Activities of other organization in relation to the forest protection
- ❑ Any special management efforts for the NP/WS/Reserve etc.
- ❑ Forest cases and punishment
- ❑ Is the present regime effective in protecting the forest
- ❑ Prevailing unlawful extraction and uses
- ❑ If not effective, what are the causes for the poor management of the forest (lack of manpower and logistics/ accessibility and problem in movement/ fear of bandits/ local people more powerful/ little help from the higher

authority/ low morale of FD staff/ intervention by the local public representative or political elite etc.)

FD's plantation strategies

- Area under plantation
- Species planted (information on clear felling etc.)
- Plantation practices
- Nursing and care (thinning etc.)
- Impact on the wilderness

Information on Brickfield/ Brickfield owners (Chunati/Teknaf)

- Nos. and distribution
- Owners and their influences
- Compliance to forest laws
- Period of operation
- Sources of fuelwood (from the forest concern or from elsewhere)
- Type of fuelwood used
- Network of supplies
- Approx. quantity used/year
- Impact on forest

Information on Sawmill/ Sawmill owners (Chunati/Teknaf)

- Nos. and distribution
- Owners and their influences
- Compliance to forest laws
- Period of operation
- Who brings timber to them
- Sources of timber (form the forest concern or from elsewhere-homestead)
- How distinction is made between timber from the forest and that from villages
- Inspection by FD/or other law enforcing authority
- Network of supplies

Livestock grazing (Teknaf)

- Identification of grazing areas
- Types and No. of livestock
- Who owns the livestock (ethnic/poor/rich/influential/general people)
- Mention whether seasonal and all time
- Description of damages /impact caused by grazing
- Alternate areas for grazing

Information on clear felling (Satchari):

- Area felled
- Name of auctioneers and their influences
- Natural or planted trees felled
- Felling practices (clearing, burning etc.)
- Operation period
- Transportation and marketing of felled trees-network

- Link with illegal feller
- Impact on the forest

FGD with Tea Garden people (Lawachara (3), Satchari (2) and Rema (1))

- Unemployment in the labor colony
- Penetration to NP?WS /RF by tea garden people
- Resource collected from the forest
- Reasons for invading the forest and collecting resources
- Ecosystem continuity with the forest
- Role of Tea Garden management in preventing poaching