

Participatory Rural Appraisal of Dudpukuria-Dhopachori Wildlife Sanctuary



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Acronyms and abbreviations

ACF	Assistant Conservator of Forest
ADB	Asian Development Bank
AIG	Alternative Income Regeneration
BARC	Bangladesh Agriculture Research Council
BFDC	Bangladesh Fisheries Development Corporation
BFIDC	Bangladesh Forest Industries Development Corporation
BFRI	Bangladesh Forest Research Institute
CF	Conservator of Forest
CHT	Chittagong Hill Tracts
CHTDB	Chittagong Hill Tracts Development Board
DC	Deputy Commissioner
DFO	Divisional Forest Officer
DoE	Department of Environment
DDWS	Dudpukuria-Dhopachori Wildlife Sanctuary
EIA	Environmental Impact Assessment
FAO	Food and Agriculture Organization
FD	Forest Department
FDTA	Forestry Development Training Centre
GOB	Government of Bangladesh
HDC	Hill District Councils
IRG	International Resource Group
IPAC	Integrated Protected Area Co-Management
MOEF	Ministry of Environment and Forest
MOU	Memorandum of Understanding
MACH	Management of Aquatic Ecosystems through Community Husbandry
NGO	Non Government Organization
NTFP	Non-timber forest products
NSP	Nishorgo Support Project
PAP	Project Affected Persons
PF	Protected Forest
RC	Regional Council
RDP	Regional Development Plan
RPA	Reinforce Project Aid
RF	Reserve Forest
RHD	Roads and Highways Department
SF	Social Forestry
TA	Technical Assistance (<i>ABT TA #3328-BAN CHT R DP</i>)
USAID	United State of Agency for International Development
USD	United States Dollar
UC	Union council
UNCED	United Nations Conference on Environmental Development
UNDP	United Nations Development Programme
USF	Unclassified State Forest

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1. Introduction

1.1. Background

Natural forests in Bangladesh are under constant pressure and have already been significantly degraded and fragmented. In an estimate, forest cover in the country has already been reduced by more than 50% since 1995-1996. This situation is threatening the value of these forests as habitat for biodiversity and for provision of vital environmental situations. 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 lining in and around the forest, biodiversity 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, international and global perspective as reflected in its endorsement and ratification of many national, international and conventions, treaties and protocols 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) under the provision of Wildlife Preservation Act, 1973. But there has been a little change in the degrading situation of thee Protected Areas (PAs) with regard to biodiversity and environmental conditions. Poor governance and lack of appropriate and pragmatic management practices for these PAs has been linked to the failure in PA management.

Responding to the need to address to forest conservation and related opportunity creation, the US government and government of Bangladesh signed a Strategic Objective Grant Agreement to improve management of open water and tropical forest resources. The agreement sets target for improving forest management.

In the context of the agreement, Forest Department (FD) has worked with USAID develop a project called Integrated Protected Area Co-management (IPAC) with the activity purpose: (i) Support the further development of the natural resources sector and the conservation of biological diversity; (ii) Develop a protected area strategy that applies to all ecologically and economically significant areas, including freshwater and forest ecosystems; (iii) Build technical capacity for protected areas co-management; (iv) Expand the geographic area under co-management to ensure the long-term success of the model and to extend socio-economic benefits to surrounding communities; (v) Address climate change mitigation and adaptation issues.

IPAC will embark upon the strategic goal of scaling up natural resource co-management at the policy and operational level by achieving recognition, acceptance and integration of this approach by the GOB into its management tactics. The overall IPAC objective is to promote and institutionalize and integrated protected area co-management system for sustainable natural resources management and biodiversity conservation that results in responsible, equitable economic growth and good environmental governance. IPAC will build upon and provide additional support to the successful co-management interventions launched under MACH and Nishorgo Support Project (NSP).

1.2. Purpose of the Report

The main purpose of this report is to present a synthesis of findings from PRA/RRA exercises conducted in the selected landscape villages/communities of Dudpukuria-Dhopachori Wildlife Sanctuary during August –September 2010. The report also highlights the issues in forest management and biodiversity conservation and identifies challenges to address the issues. The report presents some recommendations for the improved management of DDWS forests targeting conservation of Dudpukuria-Dhopachori Wildlife Sanctuary by reducing dependency of adjacent resource poor on Dudpukuria-Dhopachori resources.

2. The Resource Base

2.1. Description of the Site

Location:

The sanctuary is situated along the borderline of Chittagong, Rangamati and Bandarban District. The wildlife Sanctuary (WS) is located in the reserved Forest of khurusia and Dohazari Forest Rang under Chittagong (south) Forest Division. The WS is accessible from Chittagong Metropolitan city by road; north- east ward along Chittagong- Kaptai road and then toward south along Rangamati-Bandarban road. Administratively the Sanctuary lays Rangunia and Chandanish Upazillas Between 22 ° 09' north latitude and 92°05' to 92 °10' east longitudes.

Surrounding Communities:

The Sanctuary is surrounded with about 8 settlements of Bangali, Marma,Tanchagya, Khiyan,Tripura Communities, harboring about 1000 household. Some sporadic households live inside the Sanctuary along Dhopachri, Kamalachari and Mangala forest blocks. Most of these people are dependent on the sanctuary for meeting their fuelwood and timber needs. The indigenous community depend on nearby forests for fuel wood, and minor forest produces like bamboo, bush meat etc.

Area :

The WS was declared within the area of Reserved forests under dudpukuria, Shilcharei, Dhopachari and Mongla forest blocks Khurusia and Dohazari Ranges,

Area details of Dudpukuria-Dhopachari wildlife Sanctuary

	Forest rang	Forest beat	Block/Mouza	Area(ha)
Rangunia	Khurusia	Dudpokuria	Dudpokuria (Dudpokuria & East Khurusia Mouza)	829.55
		Kamlachari	Shibchari(East & West Khurusia Mouza)	890.68
Chandanish	Dohazari	Dhopachari	Dhopachari(West Dhopachari Mouza)	1515.78
			Mongla(Jungle Dhopachari Mouza)	1480.56
Total area				4716.57

Biophysical Characteristics:

Dhopukuria-Dhopachari WS comprises undulating hills, natural forests with rich diversity in flora & fauna, and numerous hilly creeks/streams. Historically this tract was covered with evergreen tropical rain-forest with dominant plant species as Garjan (*Dipterocapus tarbinatus*) and its many associates. This garjan tract has been a destination for co-tourists, academicians and researchers. As with other forests of the country, this forest landscape is also facing challenges from illegal felling, fire and livestock's grazing, timely management by gainfully involving local stakeholders. Some additional bio-physical features of the WS are:

- Topography: Small and medium hills, cross-crossed by numerous creeks, covered with forest and grasses.
- Flora: A number of plants, herbs, shrubs bamboo, orchids and cactus are found in the sanctuary. Garjan is dominant tree species along with its associate, namely Gamar, Teak, Koroi, Jam, Chapalish, Kadam, Chikrashi, Horitoki, Bohera, Amloki, Goda, Gutgutta, Bhadi, Jarul, Mehagoni, Shimul, Kau fal, Uriam, Batna, Neem, chatan, Tamarind, Arjun, Hargoza, Mandar, Bot, Kathgola, Guava, Ber, Akasmoni, Mangium, Minjira; different bamboo species like Mitinga, Kali, Bariala, Muli, Dolu; several herbs and vines like Satamuli, Asam lata, Lozzaboti, Serpentine, Ulatkombol, Apang, Menda, Tokma, Tulshi, Sungrass, Cycus, etc and different types of orchids and cactus.
- Fauna: Wildlife in this tract has a great animal and plant diversity. The flagship species of the WS is Asian Elephant. Other important wild life include barking Deer, Capped Langur, Rhesus Monkey, Wild boar, Hipsid Hare, Indian Crested Porcupine, Slow Loris, Hoolock Gibbon, different species squirrels and bats, Indian Pangolin, Jungle Cat, Black Bear, Badger, Civet, Others, Monitor Lizard, Gecko, Rock Python, different species of poisonous and non poisonous snakes etc. There are 177 species of birds and among them Rose-ringed parakeet, Hill Mayna, Streak-breasted, Wood pecker, Oriental pied Hornbill, Hoopoe, King Fishers and Bea-eaters are important.
- Natural creeks and streams: The Sanctuary is traversed by a number of creeks and streams viz. Piajum, Koiapara, Dolu, Chikanjhiri, Chekkani, Paran Jurani, Gondamara, Modhuchara, Tamachari, Naikhynghiri, Mayani, Bara Ghona, Balujhiri, Leburjhiri, Mongla, Fulerjhiri and Dhopajhiri. Water from adjacent watershed basin flows along the creeks round the year and maintains the unique biodiversity.

The DDWS is the largest. The forest lies at the feet of the Karnaphuli & Sangu Rivers and is spread areas of CHT Bangladesh and Bay Bengal, the seaward fringe of the delta. The total area of DDWS forest is 4716.57Ha managed by the Forest Department (FD).

Systematic management of this forest tract started in the 1822s. The DDWS forests were declared as reserved forests (DDWS) in 1822. DDWS Forest Division at Chittagong south.

Table 1: **Dudpukuria-Dhopachori Wildlife Sanctuaries**

SL #	Particulars	Area in hectare	Year of Establishment	
01	Dudpukuria Wildlife Sanctuary	829.55	2010	
02	Kamalachari Wildlife Sanctuary	890.68	2010	
03	Dhopachari Wildlife Sanctuary	2996.34	2010	

DDWS WS is located at the south-eastern part of DDWS North & west Range Kurusia & Duhazari in site the two range cover by Dudpukuria, Kamlachri,Dhupachari cover by the three beat.

2.2. Resources of DDWS

DDWS Reserve Forest (**DDWS**) is a vital source of livelihood for thousands of people (whether rich or poor) living next to the SRF including those living in adjoining & distant places. Form times immemorial, thousands of people are involved in harvesting /collecting various resources form DDWS for their livelihoods. Major resources that are officially allowed to collect/harvest include varieties of non-timber forest products (NTFP). In site forest Ruhingya & indigenous people residing there and anchor the forest land and cultivating lemon, Guava and pineapple.

There are varieties of plan-based minor forest resources called non-timber forest products (NTFP) in the DDWS collected by the people adjoining locality. Bamboo, Firewood is one of the important plant resources on which livelihoods of large number of people depend.

Among the Forest area Some Indigenous people and Ruhingya collecting the local fish and other reassures from the inside forest Chara.

2.3. The Landscape Zone of Dudpukuria-Dhopachori Wildlife Sanctuaries

The Landscape Zone consists of 17 villages of (i) Podua, dhupachari and Khualong Union. Zone are placed in Table 2

Table 2: Landscape Zone Dudpukuria-Dhopachori Wildlife Sanctuaries

SL #	Village	No. of Household	Union 3no of Union Uttar Padua, Dupachari & Khualong Union.	Distance from DDWS (km) GPS riding	Dependency on DDWS 89%
A. Rangunia, Chandanise, Bandarban Upazila, of Chittagong & Bandarban District					
Dudpukuria Rang of Uttar Padua Union					
01	Dudpukuria(bridge ghata)	250		North 22.19.2.9" East 092.08.31.6"	High
02	Napet pokuria Uttar	180			High
03	Khurusia	180			Medium
04	Barsonkhola	60		North 22"18.52.6" East 092.09.46.0"	High
05	Padua	65			Medium
06	Kamlachari	180		North 22.18.51" East 092.06.31.6"	High
07	Charakata	65			Medium
08	Shokbilash	65			Medium
09	Napet pokuria Dhokhin	140			High
10	Napet pokuria Madum	85			High
B. BandarbanUpazila of Khohalong Union, Bandarban District					
11	Kibok para	84		North 18.49.02" East 92.09.24.07"	Medium
12	Khoya para Uttar	75		North 22.17.31.7" East 92.09.10.01"	Medium
13	Datkhin Khoya para	45			Medium
14	Uddalbonia marmapara	55			High
C. Chandanise Upazila of Dhupachari Union, Chittagong District					
15	Dupachari	300		North 22.12.28.5" East 092.07.55.08"	High
16	Mongla	35			High
17	Khyian para	75		North 22.15.04.02" East 092.071.10.08"	High
18	Tripura para	55		North 22.15.32.4" East 092.06.48.7"	High
19	Chapachari	140		North 22.13.24.05" East 092.07.38.2"	High
20	Ganda mara	250		North 22.12.57.6" East 092.07.42.09"	High

3. Methodology

The overall purpose of the PRA/RRA was to come up with a comprehensive situational analysis of the DDWS with a view to understand (i) who destroys and how the forest is destroyed, (ii) What are the underlying driving force for the forest degradation, (iii) Cause and effect of behavior of local people, and (iv) Opportunities for its improvement. RRA is 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 is planned to collect in-depth information on the identified issues

3.1. Study Period

Preparatory work for primary and secondary data collection including focus group discussions and social mapping of some the selected spots of landscape zone of Dudpukuria-Dhopachori **Wildlife Sanctuaries** of the selected villages were conducted in August 2010. Formal PRA/RRA field works were conducted during August 2010. The detail time schedule of field studies are shown in Table 3

Table 3: List of selected spots and schedule for conducting primary data collection and PRA/RRA field work

Date	Name of RRA Spots	Union / Upazila	Remarks
3/8/2010	Dudpukuria	Uttar Padua, Rangonia	Formal PRA
4/8/2010	Barsankhola	Uttar Padua, Rangonia	Formal PRA
5/8/2010	Kibok Para	Kohalong, Banderban	Formal PRA
6/8/2010	Kamalachari	Uttar Padua, Rangonia	Formal PRA
7/8/2010	Khoya Para	Kohalong, Banderban	
10/8/2010	Pachim Dhopachori	Dhopachori, Chandanise	Formal PRA
11/8/2010	Gondamara	Dhopachori, Chandanise	Formal PRA
12/8/2010	Bikrampour	Dhopachori, Chandanise	Formal PRA
12/8/2010	Khyan Para	Dhopachori, Chandanise	Formal PRA
12/8/2010	Chapachari	Dhopachori, Chandanise	Formal PRA

3.2. Setting PRA/RRA Issues and Questions

3.3. Formation of PRA/RRA Field Teams

The PRA/RRA field team was formed with the members of Kaptai Site/Field Offices of IPAC including two resource persons from the locality. Details of the PRA/RRA field team shown in Table 4.

Table 4: Team to conduct PRA/RRA in the Field

SL #	Name	Designation	Remarks
01	Mr. Nikhiles Chakma	Site Coordinator	IPAC-CIPD
02	Mr. Md. Abdul Jalil	Value chain trainer	IPAC-Dhaka
03	Mr. Swe Cha Prue Marma	Field Organizer	IPAC-CODEC
04	Mr. Chai Swe Thui Marma	Social Worker	Local Resource Person
05	Mr. Mong Marma	Social Worker	Local Resource Person
06	Mr. Athuisse Marma	Social Worker	Local Resource Person

3.4. Selection of PRA/RRA Spots

On the basis of the information received from FD local officials and staff as well as field information received from IPAC field team members various sample locations were selected for visit by the team for information collection. The selection was based on a number of selection criteria. The selection process was completed during the planning meeting held at Dudpukuria beat office for that purpose.

3.5. Holding Training/ Orientation

A day-long planning and orientation for PRA/RRA team members was organized at Dudpukuria beat office on August 2010. The similar planning and orientation was organized.

3.6. Selecting PRA/RRA Methods and Tools

3.6.1. Metrics Covered under various PRA/RRA Tools

i. Venn Diagramming

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

ii. Seasonal Calendar

Timber, Bamboo, Firewood crab and other non-timber forest product (NTFP) collection, workload, accessibility to forest, transportation problem, operation, forest petrol, agricultural activities, collection of building materials, hunting, vegetable collection, damages by natural calamities. Wildlife (Lick as Elephant).

iii. Trend Analysis

Forest cover, forest thickness, trees, herbs and shrubs, forest use, unemployment, local solvency, 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, wildlife, hunting, illegal felling, fuel wood collection, fish/crab trapping collection, medicinal plants, other NTFP livestock, agricultural activities.

iv. Ranking and Scoring

Local problem ranking, wealth ranking and livelihood analysis

v. Transect Walk

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

vi. Resource Mapping

Land use cover, resource zones, resource exploitation zones, animal distribution, settlements.

3.7. Field Implementation Strategies for the Selected Tools

3.7.1. Household Interview

Household interviews were conducted by randomly selected household-owners from the place/gathering where formal Focus Group Discussions were organized. Household interviews were conducted at the specific houses of the respective household interviewees. Specific questionnaires were used to conduct the interviews.

3.7.2. Key Informant (KI) Interview

Secondary information was collected from Key Informants (KI) including Union Parisad Chairman Member, Local Elites, and Elderly Persons. KI interviews were conducted by making prior appointments as well as at spot visits. The interviews were conducted at the Offices/ Houses of the KI using a checklist of questionnaires developed for the purpose

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. Group interviews were conducted at places like tea stalls and other local community places where local people gather spontaneously and no formal invitation to the local people was made for participation the group interview. Mapping, seasonality's, ranking and scoring exercise,

whenever possible were done in group interviews. This is 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 conducted at public places especially on open spaces in front of mosques, schools; adjacent to tea-stalls or dwelling houses where local people usually gather together. Different information under different indicators like Resource Map, Wealth Rank, Mobility Map, Seasonal Calendar, Trend Analysis, etc., were collected using previously developed checklist as well as semi structured interviews.

3.7.5. Direct Observation

The team while walking through the area, talked to the 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 generation new questions for interview or discussions.

3.7.6. Secondary Information Collection

Some demographic data were collected from respective local union parishad sources. Relevant reports and documents were consulted and some information was used whenever necessary.

3.7.7. PRA/RRA Fieldwork Review

After each day fieldwork, the team sat together at night for team interaction and triangulation. The activities performed during the session included (i) reviewed information gathered that day and made summary of the information, triangulated whenever necessary; (ii) planned the next day's activities; and (iii) make methodological review.

3.7.8. Limitation of the Fieldwork

4. Outcomes

4.1. Forest Land/Resource Use Cover

The DDWS is a source of livelihoods of thousands of people lining next to the DDWS including those living in adjoining and distant places. From the time immemorial, thousands of people are involved in harvesting/collecting various resources from SRF for their livelihoods. Major resources that are officially allowed to collect/ harvest include varieties of NTFP, fisheries and non-fisheries forest products. There is no official permit to fell tree or harvest timber.

4.2. Forest Land/Resource Use Dynamics

Table 5 Rapid growth of population

- Extreme poverty
- Indiscriminate harvesting of natural resources; cutting tree, hunting wildlife, collecting non timber forest products, fishing
- Illegal removal of trees using permit issued by FD previously and without permit at present
- Increase forest dependent people due to increase of population and extreme poverty
- Lack of knowledge and awareness among the people on forest, tree, wildlife and environmental conservation
- Natural disaster
- Habitat destruction for DDWS' flora and fauna; ecological imbalances

Table: 5. Trend Analysis (Forest quality and resource use matrix)

Issue	Pre-1971	15 Years Ago	Present	Cause of Change	Future Risk
Forest Cover	100%	50%	30%	Dependency forest	Major
Forest Thickness	100%	50%	30%	Do	Major
Tall Trees	50%	50%	30%	Furniture & sawmill	Major
Herbs and Shrubs	100%	65%	35%	Deference user	Major
Wildlife	100%	55%	10%	Due to food crises	Major
Hunting	0%	80%	10%	Shortage Wildlife	Major
Illegal tree felling	5%	85%	10%	Shortage of daily labor	Major
Fuel Wood Collection	10%	70%	20%	Due to crisis of firewood	Major
Land Encroachment	10%	60%	25%	Near the land owner & Ruhingya stealer	Major
Bamboo	10%	60%	30%	Food crisis & KPM	Major
Cane	0%	30%	50%	Food crisis	Major
Fruit Bearing trees in the Wild	75%	47%	28%	Illegal tree falling	Major
Livestock	100%	60%	40%	Hunting	Major
Turtles and Tortoises	100%	75%	25%	Hunting	Major
Agriculture Activities	30%	65%	100%	Increase the people	Minor
Betel Cultivations	50%	50%	70%	De forestation	Minor
Sun grass	0%	0%	0%		Major
Medicinal Plant	100%	85%	15%	Demand of herbal medicine com:	Major
Vegetable	25%	55%	20%	Local people	Major
Fodder	100%	100%	100%	Local people	Major
Honey	100%	85%	65%	Local people	Major

Note: 1 star (%) indicates relatively lowest abundance/ intensities, (%) indicate relatively highest abundance/ intensities.

4.3. Stakeholders Assessment

Information collected on the stakeholders during PRA is summarized and presented in Table 6 below. A total of 21 categories of stakeholders has been identified, of them, 80% primary stakeholders extract resources from the DDWS, 20% are secondary stakeholders- indirectly involved with use of forest resources, and several institutional stakeholders remain in six such group. Some of the stakeholders is described in the following sections

Table 6: Stakeholders of Dudpukuria-Dhopachori Wildlife Sanctuaries(DDWS)

C. Tertiary Stakeholders/ Institutions				
01	Local Community Organization and NGOs	Work with the poor communities on their rights and entitlement	-Demand co-management and conservation of DDWS -Support poor communities, demand	
02	Wildlife Division of FD	Government institution FD	Wildlife conservation, sanctuary management	
03	IPAC Team	GOB Project	Capacity building, co-management with stakeholders, infrastructure development, AIGA support, conservation	

4.3.1. Primary Stakeholders

There are more people involved different types of primary stakeholders identified through PRA/RRA field work. These primary stakeholders are collecting different product from the forest.

PRA/RRA studies show that primary stakeholders cover 79% households. Timber, Bamboo & Firewood' involvement is the highest 39% (covering Agriculture garden, involved directly in collection, transportation and handling of DDWS resources, cover 7% household;

4.3.2. Secondary Stakeholders

There are seven types of secondary stakeholders identified through PRA/RRA field work. These secondary stakeholders are Small Mohajons (Money lenders), Large Mohajons (Money lenders), NTFP/ Timber, Saw Mill Owners, Brick Field Owners, businessmen.

PRA/RRA studies show that businessmen covering Small Mohajons (money lenders), Large Mohajons (Money lenders), NTFP/ Timber businessmen, Saw Mill Owners, Brick Field Owners, Charcoal Producers and local tea stall represented 06% of households.

Played destructive roles in environment and natural resources conservation by converting land timber illegal tree faller

Although Robbers/Dacoits are important stakeholders, also a great concern of other stakeholders of DDWS, they normally limit their operations inside DDWS affecting interests of other stakeholders.

4.3.3. Institutional/ Organizational Stakeholders

These institutional/ organizational stakeholders are NGOs, Private Tour Operators, Local Government/ Administrative Structures including Wildlife Division of FD, IPAC Team.

Local Community Organization (CBOs)/ NGOs/ Financial Institutions work with poor communities on their rights and entitlement. They support poor communities with micro-credit and skill development training. They demand transparency of forest department for conservation of DDWS and sustainable management of DDWS resources. Large number of NGOs was found in the list, majority of which were involved in Micro credit and at present. PRA field study shows that only a few NGOs are providing micro-credit, education, health & sanitation and social awareness services to the community people. Moreover, financial institutions like BRAC providing agricultural credits in some of the communities. List of NGOs is presented in **Table 7** below where there are total **07** of which are providing services to the villages/ communities under PRA study.

Table 7: Information of CBOs/ NGOs/ Financial Institutions along with their activities

SL #	Name of CBOs/NGOs	Area of Work	Activities
01	BRAC	Dudpukuria, Barsankhola, Kibok Para, Kamalachari, Khoya Para, Pachim Dhopachori, Gondamara, Bikrampour, Khyan Para, Chapachari, Uttar Padua, Rangonia Upazila, Kohalong Union BadarBan ,Dhopachori Chandanise Upizila	Micro-credit, Education, Social awareness, Health & sanitation,
02	ASA	Dudpukuria, Barsankhola, Kibok Para, Kamalachari, Khoya Para, Pachim Dhopachori, Gondamara, Bikrampour, Khyan Para, Chapachari, Uttar Padua, Rangonia Upazila, Kohalong Union BadarBan ,Dhopachori Chandanise Upizila	Micro-credit
03	Grameen Bank	Dudpukuria, Barsankhola, Kibok Para, Kamalachari, Khoya Para, Pachim Dhopachori, Gondamara, Bikrampour, Khyan Para, Chapachari, Uttar Padua, Rangonia Upazila, Kohalong Union BadarBan ,Dhopachori Chandanise Upizila	Micro-credit
04	Sanirbare Bangladesh	Dudpukuria, Barsankhola, Kibok Para, Kamalachari, Khoya Para, Pachim Dhopachori, Gondamara,	Micro-credit

		Bikrampour, Khyan Para, Chapachari, Uttar Padua, Rangonia Upazila, Kohalong Union BadarBan ,Dhopachori Chandanise Upizila	
05	UNICEF	Dudpukuria, Barsankhola, Kibok Para, Kamalachari, Khoya Para, Pachim Dhopachori, Gondamara, Bikrampour, Khyan Para, Chapachari, Uttar Padua, Rangonia Upazila, Kohalong Union BadarBan ,Dhopachori Chandanise Upizila	Education, Social awareness, Health & sanitation,
06	PADDAKHEP	Dudpukuria, Barsankhola, Kibok Para, Kamalachari, Khoya Para, Pachim Dhopachori, Gondamara, Bikrampour, Khyan Para, Chapachari, Uttar Padua, Rangonia Upazila, Kohalong Union BadarBan ,Dhopachori Chandanise Upizila	Micro-credit
07	IDF	Dudpukuria, Barsankhola, Kibok Para, Kamalachari, Khoya Para, Pachim Dhopachori, Gondamara, Bikrampour, Khyan Para, Chapachari, Uttar Padua, Rangonia Upazila, Kohalong Union BadarBan ,Dhopachori Chandanise Upizila	Micro-credit

4.4. Causes for Degradation of the DDWS and its Resources

4.4.1. Exploitation of Resources

A total of 10 resources are exploited from DDWS by the community people of landscape zone of Wildlife Sanctuary. Exploitation of resources takes place round the year. Different resources are harvested during different period of times. Resource harvesting times/ periods of DDWS are provided in Table 8 below.

Table 8: Resource harvesting calendar of Dudpukuria-Dhopachori Forest

Resource s	Months											
	Baish ak Apr/ May	Jaisth a May/ Jun	Ashar Jun/ Jul	Shrab on Jul/ Aug	Badro Aug/ Sep	Ashin Sep/ Oct	Karti k Oct/ Nov	Agrah an Nov/ Dec	Poush Dec/ Jan	Ma gh Jan/ Feb	Falgu n Feb/ Mar	Chaitr a Mar/Apr
Timber	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fuel wood								✓	✓	✓	✓	✓
Bamboo	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
House Building Materials	✓	✓										✓
Medicina l plants	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Leafy vegetable s	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Jungle Fruits				✓	✓	✓				✓		
Wildlife	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Honey	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Broomsti ck	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

The government of Bangladesh stopped harvesting of timber trees from DDWS for a period of So, officially no permit is being issued for collecting timber trees like Bamboo, firewood other commercial timber species from the DDWS, but illegal harvesting timber trees as well as other non-timber forest produces including fuel wood has been continuing.

Resources from DDWS are collected both for household consumption as well as for commercial purposes. Cause-effect analysis for understanding underlying factors for DDWS resource extraction in **Table 10** shows that local poverty, unemployment, physical location of DDWS, scarcity of resources in the locality drive the local people—particularly the poor to exploit the resources from DDWS. Poor forest department's controlling/resource management facilities and involvement of influential persons & money lenders are also responsible for indiscriminate resource extraction.

Table 9: Causes and Effect Ranking for understanding underlying factors for DDWS resource extraction

SL #	Resources Problems	Fuel wood	Other plant based NTFP collection	Timber wood collection	Bamboo
01	Poverty	*****	***	**	*****
02	Unemployment	*****	***	*	*****
03	Additional income needed	*****	**	***	*****
04	Scarcity of resources in the locality	*****	****	***	*****
05	Household consumption	*****	***	**	***
06	Less/ No employment opportunity				
07	Involvement of influential persons & money lenders	*****	***	***	***
08	Lack of FD s facilities to control/ manage resources	***	***	***	***

NOTE: 1 star (*) indicates relatively lowest abundance/ intensities, 5 stars (*) indicate relatively highest abundance/ intensities

There is 1 brickfield in the landscape village' Dolo para village communities of Bandarban. The brickfields used DDWS' wood, almost entire quantity as fuel for brick burning. Species used from DDWS.

Table 10: List of Brick Field owner in different villages/ communities adjacent of DDWSF

SL#	Brick field owner	Village	Union, Upazila	Remarks
01		Dolo para	Khohalon,Bandarban	

There are some specific entry and exit points through which resources collectors enters into the forests and come out with resources. These entry and exit points are used only those poachers who would establish arrangements for safe removal of resources. The entry and exit points are of significantly important for the conservation of DDWS.

ii. Education:

Household interview shows that about 65% people are illiterate and 35% educated (male 15% female 10%) comprising 29% educated in primary school and Madrasa, 14% in high school and the rest 3% are educated in college and above. But PRA field study shows about 70% illiterate and 15% literate which is different from household interview findings.

iii. Occupation:

PRA/RRA study shows that 85% household of the landscape zone completely depend on DDWS resources

- 25% in collecting wood,
- 27% in selling labor in DDWS resource collection
- 45% households involve in agricultural activities.

The rest 03% households are involved in business, and service

4.5.2. Livelihood Analysis (income/ expenditure, poverty/ richness, credit, skills, etc)

i. Income source:

PRA studies shows that 45% households main income source is agriculture that includes Deferent of varieties of crops , in non-timber forest products harvesting that includes fuel wood, fencing and thatching/building materials; 10% in agriculture; 07% in selling labor in DDWS resource collection and handling; 04% in business; Majority of the households involved in agriculture, business, and some of in other different activities are well to do families. Households involved in NTFP collection, labor collection basically very poor, some are poor, and lead a very inhuman livelihoods round the year.

Household survey (Table 15) shows that 35% households remain insolvent with their income and expenditure where 20% remain permanently insolvent and 64% remain temporary insolvent. 8% households found solvent with their monthly income and expenditure where 01% can save for future/ development.

Table 11: HH solvency status

SL#	Particulars	Monthly Income in Taka				Remarks %
		< 2,500	2,500- 4,000	4,000- 6,000	>6,000	
01	Permanent insolvent	10 HHs (Average 3.5 members/ HH)	-	-	-	35%
02	Temporary insolvent	-	51 (Average 5 members/ HH)	-	-	64%
03	Solvent	-	-	1 (Average 5 members/ HH)	-	1%
04	Have savings	-	-	-	2 (Average 5 members/ HH)	2%
	Total	10 HHs	51 HHs	1 HHs	2	100%

iii. Land ownership:

iv. Credit:

PRA studies shows that about 53% households took credit from different NGOs. This rate varied from DDWS area. The major credit providing NGOs in the villages are BRAC, ASA, Grameen Bank, Paddakhep and Others .

4.12. Opportunities

There are opportunities found from field study during PRA/RRA and FGD which are broadly classified as (i) Alternative income generating activities (AIGA) at local level, (ii) Employment generation in and around/ outside the locality.

4.12.1. Alternative income generating activities (AIGA) at local level

AIGA opportunities of DD Wildlife Sanctuary Landscape Zone are different as per from community needs and capacity of community. A total of eight AIGAs identifies by the people of different community of which a few have potentials for implementation, these are i) Fish nursery/culture, ii) Local variety poultry, iii) Cow & Goat rearing, iv) Small business, v) Tailoring, vi) Vegetable production, vii) Horticulture/tree nursery, viii) Handicraft. AIGAs identified by respective village/community members are presented in **Table 16** below.

Table 12: Village-wise List of AIGAs

SL #	Name of Village	Possible AIGA	Remarks
A. Uttar Padua Union of Rangunia Upazila, CTG			
1	Dudpukuria (Bridge ghata)	a. Fish culture, b. Local variety poultry rearing, Vegetable agriculture.	
2	Barson khola	a Fish culture, b. Local variety poultry, c. Cow & Goat rearing, d. Horticulture/tree nursery, e. Vegetable gardening f. Zinger and Turmeric Cultivation	
3	Kamlachari	a Fish culture, b Local variety poultry c. Vegetable gardening d. Rice Cultivation e. Zinger and Turmeric Cultivation	
4	Napet pokuria	a. Fish culture, b. Local variety poultry. c. Rice Cultivation d. Horticulture/tree nursery	
B. Khohalong Union of Bandarban Upazila, Bandarban			
6	Kibokpara	a Fish culture, b Local variety poultry, c. Horticulture/tree nursery. d. Rubber Cultivation. E. Zinger and Turmeric Cultivation	
7	Khoya para	a Fish culture, b Local variety poultry, c Cow & Goat rearing, d. Horticulture/tree nursery e. Rice Cultivation f. Zinger and Turmeric Cultivation	
8	Rajbhila	a Fish Culture Handicraft, c. Nursery, d. Vegetable cultivation, e. Tailoring, f. Small Trade	
E. Dupachari Union of Chandanise Upazila, CTG			
9	Gondamara	a. Fish culture, b Local variety poultry, Home state garden ,d. Small agriculture e. Lemon, Papa and Falafel	
10	Dupachari	a Rice Cultivation b. Lemon, Papa and Finale appeal, Guava c. Fish culture, d. Local variety poultry e.	
11	Mongla	a. Jhum Cultivation	
12	Khyian para	a . Jhum Cultivation	
13	Tripura para	a Jhum Cultivation b. Home state Gardening.	

5. Present Issues and Challenges for IPAC

5.1. Present Issues of Concern

i. Damage on DDWS Forest Ecosystem

The natural ecological conditions of DDWS Forest are at a critical stage at present. The situation is so alarming that the existing DDWS Forest may disappear in near future due to non-functioning of ecological systems for the survival of the forest and our next generation would find it only in the history. It is revealed from the trend in changes in the forest quality and resources used (**Table 5**) that during the last 40 years-

- **Forest tree cover has been reduced by 68% (average 17% reduction in every decade)**
- **Wildlife abundance decreased by 53% (average 13% decrease in every decade), Fish abundance reduced by 59% (average 13.5% reduction in every decade), and**
- Dependency on forest by the adjacent people increased by 58% (average 14.5% increase in every decade)

These are only a few measurable indicators other than a lot of qualitative indicators such as situation of forest regeneration stages including different stages of successions for healthy growth and development of the forest.

iii. Unsuitable Local situation for human settlement

The majority of the villages, especially some villages of DDWS area, are settled after the independence of Bangladesh. The inhabitants are fully dependents on DDWS resources and remain extremely vulnerable to natural phenomena of that area. The physico-chemical and environmental conditions of the area is not suitable for permanent human settlement.

iv. Indiscriminate resource extraction

Almost all the resources are collected illegally from the forest and naturally no Civi-culture system is applicable for the management of resources there. The resource harvesters harvest resources at its highest level without considering its conservation.

v. Deteriorating local law and order situation and weak law enforcement for forest protection

The local law and order situation along with the over all national law and order situation is so deteriorated that forest department with its limited capacity in terms of manpower, equipment and credibility is not in a position to control over the vast area of forest along with its resources.

vi. Poor management situation

Management of DDWS forest needs special Civi-cultural attention for its special features as well as complexity. It is not possible to regain the status of the forest without changing the traditional practices of forest management, rather adopting appropriate cilvicultural practices required by specific niches and sites of the forest.

vii. Local poverty and unemployment

Almost all the inhabitants of the villages situated adjacent to the DDWS are fully dependent on DDWS resources as they are very poor and do not have any employment opportunity there. Such situation exists because resource poor people migrated from other areas and settled there depending only on the DDWS resources as there were resource-full forests at that time. Now a days, local poverty and unemployment is in such an alarming stage that all the members of the family (even the child learned walking) are somehow involve in DDWS resource gathering. All the things are very unethical.

5.2 Challenges

i. Reduction in dependency on DDWS Resources for dependent people

Reduction in dependency on DDWS resources for dependent people is a big challenge. It is important to create provisions so that resources required by the people could be easily available

ii. Sustainable management of DDWS

DDWS is in a deteriorating condition and in fact no development of it is evident. It is now a great challenge to develop an appropriate management plan for the forest and implement.

iii. Reduction in local poverty and unemployment

The problem is huge in magnitude and comprehensive national policy is needed to address the issue.

iv. Reducing vulnerability to natural calamities

As most of the areas adjoining DDWS are not suitable for permanent human settlement and subject to frequent destruction by natural calamities, comprehensive national program is required to address the issue

v. Addressing the conflict between adjacent people and FD

Where there is resource there is conflict. DDWS is still has huge natural resources. As FD is the custodian of DDWS resources and adjacent people are resource collector/user/business-maker mostly of unlawful means, conflicts arise between the two parties. It is important to address the issue by involving the all concerned in the management of DDWS resources somehow on benefit sharing basis. It is a huge challenge and need to be addressed in national policy

vi. Complexity in management and implementation issues

Conservation of DDWS resources demands in addressing lot of complex as well as conflicting issues. Strong coordinated efforts among all the stakeholders are required to handle those issues.

6.0. Suggestions and Recommendations

6.1. There is an urgent need to strengthen the capacity of FD for effective management of DDWS forest resources. Some of the aspects are

- Adequate qualified staffing
- Capacity building training for all local staff on sustainable management of forest resources and biodiversity conservation
- Provide appropriate logistics and support services to field staff
- Provision for incentives to field staff to make the job lucrative
- Steps for improving the morale of FD staff and make them dedicated to biodiversity conservation
- Provision for strong monitoring and supervision of activities

6.2. There is no accurate information about the quality and quantity/amount of DDWS resources. It is an urgent need to have a complete assessment of all the available resources of DDWS makes a comprehensive development plan for sustainable management the DDWS.

6.3. Unauthorized collection of DDWS resources need to be stopped.

6.4. Rehabilitation of resource poor vulnerable people who are fully dependent on DDWS resources

6.7. Provision for habitat restoration through forest regeneration ensuring appropriate protection need to be executed

6.8. Local elites, brickfield owner's producers need to be brought on board with the concept of forest protection and sustainable natural resources management

6.9. Awareness programs need to be taken to make the people understand how the people could be benefited by conserving DDWS resources

6.10. Strong coordinated efforts are must among all concerned agencies (development/ administration/ law enforcement/ civil society) for conservation of DDWS.

Annexure-1

Map drawn by the Community Peoples during FGD at DWWS