

First Draft

REPORT ON KAP SURVEY



INTEGRATE **P**ROTECTED **A**REA **C**O-MANAGEMENT

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Executive Summary_____

The USAID-Bangladesh, one of the leading international organizations operating in Bangladesh, has been playing a major role in promoting and protecting natural resources of the country. Its strategy empowers non-rich people giving them a central role in resource management and addressing the core issues, e.g. inequality. In addition, USAID strongly promotes a transparent process of environmental governance ensuring a participatory, multi-stakeholder approach to resource management.

In Bangladesh it seeks to continue its support to the environment sector through a new five-year project, entitled “*Integrated Protected Area Co-management (IPAC)*”. That is why, it sought the assistance of Asiatic Marketing Communications Limited (AMCL), which has a high reputation in this arena, to develop the communication strategy of the IPAC.

Against this backdrop, a KAP survey was undertaken in order to meet the desired objectives. The objectives of the undertaking were to: comprehend the knowledge, attitude and practices of stakeholders for the sustainable management of natural resources, assess the current knowledge about attitude towards the protected areas, grasp knowledge, practice and attitude of tourism/eco-tourism, and Provide messages for communication strategy and necessary recommendations.

In the entire survey, tools including questionnaire, KII and FGD were employed to get qualitative and quantitative data. Questionnaires were served to the local beneficiaries, and potential tourists; KII were conducted with local level religious leaders, UP members, businessmen, influentials of various categories, high officials and local level officials of concern government agencies, political leaders and the members of parliament. Moreover, FGDs were conducted with CBOs, staffs of PNGOs, local beneficiaries etc.

The main findings revealed that the respondents could mention changes in the wetlands/forest areas including decreasing fish and other aquatic creatures, increased catches, increased soil erosion by the rivers have, decreased depth of the forest, species of plants/trees have been lost, irregular water flow in the rivers/canals, water has become salty, forest are being replaced by farms, forest plants/thatch/bamboo have declined, acquisition of forest plants/thatch/bamboo have risen, accessibility of honey has declined,

soil has become dry and hard, increased attack of pirates, increased use of harmful gear, and increased dependency on the forest

According to respondents in the forest of the Sundarban over the years some changes are evident: the forest resources including wild birds and animals, trees and plants have decreased to some extent. The specialties of the Sundarban particularly the Royal Bengal tiger, deer, mangrove trees etc are on the decline; over fishing and secret fishing in the decreasing water bodies have resulted in the loss of local species of fishes and last but not the least siltation has given rise to new *chars* in place of the rivers and canals. In addition, the sea level has gone up. The rate of natural calamity has increased. The pirates have now become a great problem. They frequently haunt the life of the foresters.

There are numerous causes of the change of wetlands/forest in the last 15/20 years. The data revealed that the most common causes were: wetlands/River/rivulets/tributaries are being silted up, unregulated acquisition of wetland resources, climate change, increased population, lack of awareness and knowledge of people and encroachment of land etc.

The level of encroachment within the range of 10 years is on the increase. In this connection data revealed that at present 25% respondents said that the encroachment level was below 10% percent while 10 years ago 49% respondents said so. The most striking thing is that at present encroachment level is 51%+ and is commented by 14% whereas 4% respondents said so 10 years back. The main reasons of encroachment are: population increase, unemployment, pressure on scarce resources etc.

Biodiversity conservation is significant for the respondents and it is encouraging to note that they have understood its importance. Highest 24% of the respondent suggested regarding sustainability of forests/wetlands that the protector should not become the destroyer. 20% of the respondents suggested that afforestation is necessary for the sustainability of forest/wetlands. But still many issues regarding this need to be sensitized and more groundwork are needed in this respect. They are enthusiastic about eco tourism development, as they would be benefited from it in a number of ways.

In this respect, according to the respondents to entice more visitors the transportation system should be developed, 25% opined that different attractive spots/places to be

arranged (Park, hanging bridge over the lake, forest, sanctuary, arrange boats in the river, build bridges, reconstruct the fountains), 21% opined that infrastructure development (arrangement for sufficient facilities, establish rest houses, build trails) is needed, 19% opined that the beauty of forest/wetland should be increased whereas 13% opined that arrangement for security is needed. Other pointed issues are more communication should be made through the medias, the wild animals/birds to be protected and co operative environment to be created, the environment of the area should be kept clean, eco tourism spot should be established etc.

Legal issues are very significant in the context of forest resources conservation, protection and promotion. But it seems that more intervention is needed in this respect. Sometimes they expressed vague and confusing ideas regarding the legal issues. This arena should have been given stress as corruption, and piracy has eaten into the very vitals of the forest and wetland resources and to revamp these, what is required is the proper implementation of the laws and consciousness of the law-enforcing agencies apart from the active role of relevant bodies. The promotion of people attitude also to be addressed.

Significant information has been gathered from the incumbent study. These information would help understand the project well and its proper implementation. It is expected that these information would be used intelligently when and where necessary. So the survey is definitely a smart start in the proper implementation of the IPAC project and its success.

Project Brief and Methodology

1.1 Introduction

Bangladesh's biodiversity and cultural heritage resources are continually threatened as a result of unsustainable development, urban encroachment and a lack of urgency to protect habitats, species, heritage sites and values. Bangladesh is a country where there exists a high correlation between poverty and natural resource dependence. Poverty is mainly rural, namely 53% of the rural population lives under the poverty line and traditionally they are the most natural resource dependent and landless communities in Bangladesh. Historically they rely upon the floodplain system for their living hood and degradation of natural capital and biodiversity has a serious impact on their food security, nutrition and per capita income. Therefore sustainable management of the biodiversity remains a challenge and is central to poverty reduction in Bangladesh.

1.2 The Project Brief and Its Goal and Objectives

USAID/Bangladesh has played a foremost role in protecting and resorting Bangladesh's natural resource in a manner that simultaneously promotes income and living hood growth for the rural poor while introducing and advancing good governance practices. While conservation of natural resources is central to the USAID's approach, the program focuses on expanding broad-based economic opportunities at a landscape level. USAID's strategy empowers poor people by giving them a central role in resource management and by addressing the fundamental issues of inequality and risk. In addition, USAID strongly promotes a transparent process of environmental governance by ensuring a participatory, multi-stakeholder approach to resource management.

USAID/Bangladesh seeks to continue its support to the environment sector through a new five-year project, entitled "*Integrated Protected Area Co-management (IPAC)*". The definition and core of co-management is the full participation of local stakeholders, such as communication and government to sustainable manage natural resource.

IPAC will focus its field level interventions on some 26 Protected Area sites (PAs); the project team and collaborating stakeholders will target their interventions in the rural communities and surrounding landscapes of these sites, which are grouped in five clusters:

Sl. No	Cluster	Protected Area site
1	Sylhet	Tangual Haor, Hail Haor, Hakaluki Haor, Lawachara, Rema-Kelenga, Satchari, Khadimnagar
2	Chittagong Hill Tracts (CHT)	Publakhali, Kaptai
3.	Southeastern	Teknaf Game Reserve, Teknaf Peninsula, Sitakunda, Inani, Himchari, Medha kachapia, Faisakhali, Chunati
4	Central	Modhupur, Ramsagar, Bhawal National Parks, Kangshaw-Malijhi, Turag-Bangshi wetlands
5	Sundarban	Sundarban Ecologically Critical Area (ECA), Sundarban East, Sundarban South, Sundarban West

The overall IPAC objective is to promote and institutionalize an integrated protected area co-management system for sustainable natural resources management and biodiversity conservation resulting in a responsible, equitable economic growth and good environmental governance.

1.3 Component of this Research

This research has two diverse but intra linked components namely, Identification of the Stakeholders and KAP Survey.

1.4 Stakeholder Identification

The objective of this component is to identify the potential stakeholders. Although there exist a known structure of local and national level stakeholders in those PAs where the donor supported government programs are running, namely NSP and MACH, we have identified the stakeholders in all possible arena.

1.4.1 Process of Stakeholder Identification

Both primary and secondary level data collected and analyzed for the identification of national and local level stakeholders in order to classify the target group and their degree of influence on the protected areas.

- *Secondary Data:* The secondary data have been collected through various local and national levels documents, newspapers and other printed documents to

generate idea about the most potential target audience and direct communication and the credible sources (key informants) that would give views on the merit of such audience.

- *Primary Data:* Local level fact finding carried out through Key Informant Interview (KII), and Focus Group Discussion (FGD).

1.5 Knowledge, Attitude and Practice (KAP) Survey

KAP survey has special focus on action for developing persuasive messages calling for action. Further the study will find out potential media for reaching the target group effectively.

KAP survey serves two fold purposes. First it helps assess the current level and detect gaps based on which the communication strategy and messages will be developed. Secondly, it serves as a baseline study, which will later on assist in assessing the outcomes and impact of the intervention. Keeping in mind the two-fold purpose, the study has been designed extensively with large qualitative and quantitative components.

1.5.1 Research Objectives

- To comprehend the knowledge, attitude and practices of stakeholders for the sustainable management of natural resources,
- To assess the current knowledge about attitude towards the protected areas, and issues of protection and co management of these areas,
- To grasp knowledge, practice and attitude of tourism/eco-tourism
- Provide messages for communication strategy and necessary Recommendations.

1.5.2 Methodology

The project incorporated 3 types of ecological sites - one is forest and high hilly area, another is wetland and the rest is the Sundarban. The survey collected data using both qualitative and quantitative data collection method and tools. The purposive sampling method was followed to select respondents. Quantitative data was collected from local beneficiaries and potentials tourists using one to one interview with structured

questionnaire. The total of 970 one to one interviews was conducted, of which 650 from local level beneficiaries of 11 Protected Area Sites and 320 from potential tourists (university students, scouts, local journalists and spot tourists etc.) who are major target audiences for communication to reach the project goal. The study also conducted 45 key informants' interviews of which 13 from local level and 32 from the national level stakeholders. 18 FGDs were conducted of which 11 were from Protected Area Sites and another 7 with University Students.

1.5.3 Study Locale

IPAC initially selected 26 landscapes to implement IPAC themes. Among these 26, only 11 were finally taken for the study. These are Hail hoar, Hakaluki haor and Kongsho Malijhi River from wetland; Lawachara, Rema-Kelanga, Pablakhali, Kaptai, Teknaf Game Reserve, Chunati, Modhupur from forests; and Sundarban ECA. The study also selected 6 universities (university of Dhaka, University of Chittagong, Shahjalal University, Khulna University, North-South University and Jahangirnagar University) students as potentials tourists.

1.5.4 Information Area

1. Knowledge on nature and characteristics of PAs,
2. Resources of PA, collection and use of resources, indiscriminate use of resources, changes in resources collection trend, over use, impact of over use, variation in resources availability.
3. Existing resources collection techniques/tools/mechanism.
4. Participation in wetland/Forest resources management, control over the resources, influence in wetland resource management, needs for the better management of PAs, constraints for the better management of PAs, maintenance situation of development interventions,
5. Laws and rules of PAs and practice level, implementation and violation of rule/laws.
6. Income from wetland resources, exploitation by different types of beneficiaries, well-being status of household, how these resources impact on the livelihood of locals.
7. Knowledge on improved management of PAs, overall well being of this wetland
8. Community compliance with wetland related rules and decision-making.
9. Views on Ecological Degradation from a multi-stakeholders perspective

10. Views on biodiversity, threats of biodiversity, seasonal variation, wetland habitat from a multi-stakeholders perspective
11. Encroachment of wetlands/Forest by agriculture and homestead use
12. Knowledge on conservation or enhancement of resources, threats to conservation of biodiversity from multi-stakeholder perspective, steps/measures can be taken to conserve wetland resources.
13. Recovery of endanger species/aquatic resources
14. Intervention needed to improve on management and utilization of resources
15. Views of sustainable management of PAs, Indigenous knowledge and practices
16. Views of sustainable livelihood of dependents/beneficiaries of PA,
17. Knowledge on self-sufficiency of PAs
18. Information availability and exchange among the people, current source of wetland related information and preferred sources i.e. folk drama, radio program, video show, puppet show, leaflet-poster, signboard, billboard, audio cassette, miking, exhibition etc.
19. Current media activities on PAs resources management and effect on changing attitude
20. Present situation of PAs as a eco-tourism spot, in flow of tourist, mechanism for the development of eco-tourism

Chapter- 2

Stakeholders of IPAC

2.1 Stakeholders of IPAC

Being an integrated and co-managed project various types of stakeholders were likely to participate in the project and this has actually happened in the IPAC. However, the main stakeholders have come from top to the bottom of the government machinery, private, non-government and community people.

2.2 Local Stakeholders

The inhabitant of PAs and local residence (adjacent of the protect area), local influential, rich people, community leader, local institutions/ associations/ CBO/Samity/Club, religious leader/, teacher, local businessman, related professionals-woodlot cutter, smith, net maker, boat maker etc. are likely to fall under this group. Also, Union Parishad members, ethnic people belong to local direct stakeholder group is the Local level stakeholder. Because their knowledge, attitude and practices are more likely to impact protected resources, local communities are considered priority audiences for site-based communication or interpretive efforts.

These local people are some how dependent on resources, get benefit from the resources, posses control over the resources, took lease, manage the resources, play role in decision making process of resources management, collection and use, buy or sell the resources and equipment, involve resources utilization process. So these people consciousness can create a tremendous effort to protect the resources of the PAs. Their participation in management and decision-making process of natural resources and the environment can create an enlarge role for conservation initiatives. There is a need to develop a conservation ethic where people will understand what should be changed in their knowledge, practices and attitude which can build a strong commitment them to protect the resources of PAs.

Moreover, the anticipation of local people is one of the surest ways to build long-term capacity to maintain the resources even after ending IPAC.

2.3 Potential Tourist/Visitors

The educated and urban people of the country yearn to visit nature amid its pure form. IPAC will create the opportunity for the people of Bangladesh to gather experience about the nature and elements of forest and wetland of the country. There will be mainly two types of visitors in the Protected Areas:

From Institutions/ Professionals: Different professional groups or organizations along with educational institutes like school or college may visit for eco-tourism or holding conference cum nature visit (Institutional Marketing)

Family/ Friends: Individuals will be interested to visit the nature may be with family or friend circle. Though both the type of consumers will seek the idyllic beauty of nature, still their requirements and expectations would differ. The parks need to be marketed differently to these two types of consumers.

2.4 Policy & Decision Makers

The important stakeholders of IPAC are the decision makers among the relevant government officials. The ministers including the Forests, Fisheries and Environment Minister and other related Ministries such as Finance Minister, Land Minister, Agriculture Minister, Information and Communication Minister, Commerce Ministers, etc. and secretary and other high officials for these respective Ministries belong to these group.

Members of the Parliamentary Standing Committee (Environment), Bangladesh Wildlife Advisory Board, Local Ministers, Local MPs and Political leaders can be motivated will act as an important decision maker for the Protected Area conservation. Members of the Standing committee for the IPAC Program would also play a key role in implementing the IPAC Program.

Also other government officials like DC/UNO and non-governmental organizations like INGOs, Donor supported development projects are also involved in natural resource management and decision making process. The civil society who operates on the environment sector will also advocate for Pro-Protected Area Conservation policies if they are properly communicated and motivated.

2.6 Private Enterprises

To save the remaining wetland/forest and the biodiversity now we must reach to the private sector for the very much needed. Conservation Partners will be the private sector companies that would contribute to IPAC programs for the conservation and improved management of the Protected Areas of Bangladesh. Thus the private company would play a crucial role in protecting our wetland/forestry and biodiversity. They will develop a partnership with IPAC Program that would lead to mutual benefits, not only for conservation but also in terms of marketing and communication, which are broadly divided in two groups, Local Level and National Level which are given in the table below:

Chart-1: Different Stakeholders and Reasons for Selection:

Selected stakeholders	Reasons for Choice
LOCAL LEVEL	
Inhabitants of the protect areas	Direct beneficiaries of resources/ dependent of resources
Local residents (adjacent of the protect area)	Beneficiaries of resources
Local Influential/ Rich people	Beneficiaries/Possess control over the resources/lease
Community leader	Possess control over use of resources
Local institutions/associations/CBO/ Somity/ club	Beneficiaries/manage resources/lease
Religious leader/ teacher	People obey them as a respectful person often play role in community decision making process
Local Businessman	Buy and sell resources and equipments
Related Professionals- woodlot cutter, smith, net maker, boat maker etc.	Involve in resources utilization process
Potential Tourists/visitors	
Students (university)	Take part in study tour/excursion
Scouts	Take part in study tour/excursion
National Level	
Ministry of Fisheries and Livestock and related departments	Working for the national fisheries and livestock resources management
Ministry of Land and related department/offices	Responsible for land (including wetland and forest) management
Ministry of Environment & Forest	Responsible for environment and forest resources management
Ministry of Water resources	Responsible for water resources management
Bangladesh Tourism Corporation	Working for tourism management
Other Govt. agencies	

Union Parishad	Representative of local government and responsible for local development (resource & people)
DC/UNO	Representative of government in district and upazila level
NGOs and Others	
NGOs	Different NGOs are working in PAs for people and resource development
International NGOs	INGOs provide fund and work in partnership with local NGOs to assist development of PAs
Donor supported development project	Donor supported projects directly involved to development of resources of PAs.
Political Leader	Involve in policy making process, Influence to implementation process
MP	Involve in policy making process and influence to implementation process
Experts of different area like fisheries, marine, environment, forest etc.	Work in development process of natural resources, educate people and research

Knowledge on Biodiversity and Changes of Protected Area Site

3.1 Introduction

The study focused on the changes of knowledge of the respondents in the wetlands, forest and Sundarban. Significant changes have occurred in the biodiversity, ecosystem, natural resources etc over the decades. But we are not aware well about the dimensions, issues, causes and consequences of these changes. That is why focus has been laid on the determination of the people's knowledge in the said issues in the study area.

3.2 Changes in the wetlands

We asked the respondents about the changes that have taken place over the years in ecology/biodiversity in order to fathom the depth of their knowledge on the issue. The data shows that they could determine several changes. Of these the decline of fish stocks and species topped the chart (169.3%) followed by decrease of the depth of wetlands (67.4), decrease of the area of wetland (58%), rivers/cannels have been silted, connection with wetland have reduced (41.3%) and bird stock and species has declined (26%).

Table-1: Responses on changes in the wetland over 15/20 years

Changes	Responses	Cases
Fish stock has declined and species have been lost	37.6	169.3
Depth of the wetlands has decreased	14.9	67.4
Area of wetland has decreased	12.9	58.0
Rivers/cannels silted and connection have reduced	9.2	41.3
Bird stock has declined and species have been lost	5.7	26.0
Wetland area are encroached by agriculture	3.9	18.1
Birds stock has increased	3.4	15.3
Water does not flow in due time	2.7	12.7
Wetland plants/weeds have reduced	2.1	10.0
Fish stock has increased	1.3	6.0
Flood/Cyclone/Storm has increased	1.1	5.4
Aquatic species (other than fish) have reduced	1.1	5.3
Sweet water has declined in prominence	1.0	4.7
Water is adulterated/poisoned/toxic	0.9	4.0
Aquatic plants increased	0.7	3.3
Build fish sanctuaries	0.4	2.0
Soil erosion by the rivers have increased	0.4	2.0
	100.0	450.7

* Base 151 and total responses 676 ** (All figure in %)

They have mentioned quite a number of changes like wetland area are encroached by agriculture, birds stock has increased, water does not flow in due time (Excess rise in water in rainy seasons, enough water does not flow in rainy seasons, irregular water clogging takes place), wetland plants/weeds have reduced, fish stock has increased, flood/Cyclone/Storm has increased, aquatic species (other than fish) have reduced, sweet water has declined in prominence, water is adulterated/poisoned/toxic, aquatic plants increased, build fish sanctuaries and soil erosion by the rivers have increased.

According to the respondents (KII and FGD) significant changes have taken place over the years in the wetlands. The resources are being depleted day by day. There is dearth of water, fishes, flora and fauna, medicinal plants compared to earlier years. Rivers, *haor* and other bodies have been silted. So cultivation has become easier and increased than before, particularly *boro* cultivation. But the volume of wetland has been declined. This has resulted in the human habitation. The rate of natural calamity is increasing. Several sanctuaries have been built. The sanctuaries for the seasonal birds have been set up at *Tanguar* and *Hakaluki haor*.

3.3 Changes in the forest

The respondents could name the changes that have taken place in the forest over the years when they were asked to tell about the changes. The data revealed that the decrease of woodlot topped the chart with the figure of 26.4% followed by reduction of wildlife (12.9%), decline of birds (9.1%) and decline of bamboo (8.1%).

They have told about other innumerable changes but those are not significant in number e.g. forest area decreasing, deforestation took place to create homes, acquisition of forest plants/thatch/bamboo have risen, encroachment by Agriculture, bird stock has declined, mountains/Hills have eroded, different wildlife species have lost, several plants/trees are lost, connections with the rivers/rivulets have reduced/disappeared, cyclone/Storm/Flood has increased in frequency, species of birds have lost, forests are being felled in an unplanned manner, fish species have lost, water does not flow in due time, soil quality has deteriorated/Soil is damaged (Soil fertility has declined, Soil has become dry and hard), depth of forest have decreased, increase woodlot, increase wildlife, temperature has increased, sweet water has declined in prominence etc.

Table-2: Responses on changes in the forest over 15/20 years

Changes	Res. (%)	Cases (%)
Timber/woodlot have decreased	26.4	141.8
Wildlife stock and species have disappeared	15.1	80.5
Birds stock and species have declined	13.0	69.5
Fish stock & species (of canal in forest) has declined	8.8	47.5
Forest thatch/bamboo have declined	8.1	42.8
Forest area decreasing	5.0	26.9
Encroachment by Agriculture and habitat	8.6	43.9
Acquisition of forest plants/thatch/bamboo have risen	3.9	21.1
Mountains/Hills have eroded	2.5	13.1
Species of plants/trees have lost	2.1	11.1
Connections with the rivers/rivulets have reduced	2.0	10.6
Cyclone/Storm/Flood has increased in frequency	1.4	7.2
Depth of forest have decreased	1.5	8.3
Water does not flow in due time	0.8	3.7
Soil quality has deteriorated	0.7	3.2
Increase woodlot	0.3	1.4
Increase wildlife	0.3	1.4
Temperature has increased	0.2	1.1
Sweet water has declined in prominence	0.2	0.9
	100.0	535.7

* Base 351 and total responses 1875 **(All figure in %)

According to respondents (KII and FGD), there have been marked changes in the forest over the years. Forest areas are on the decline. Trees have been cut randomly for manifold purposes including for firewood and business purposes causing imbalance in the environment and changing the ecosystem. Human habitation is on the rise in the forest areas. Various wild species have been lost. Detroit and change weather and environment and change in natural beauty. The fertility of soil decreased, the hills been destroyed, the rivers have silted; the weather and climate have changed.

3.4 Changes in the Sundarban

Sundarban is the largest mangrove forest of the world and a national asset of the country. But the state of the Sundarban is not encouraging at all. This is reflected in the observations of the respondents.

Table -3: Responses on changes in Sundarban over 15/20 years

Changes	Responses	Cases
Fish stock and species have reduced	20.1	96.1
Timber have decreased	18.9	90.1
Siltation of river/canals	15.8	75.6
wildlife stock and species has declined	12.4	59.7
Birds stock and species have declined	9.7	46.4
<i>Golpata</i> have declined	6.1	29.1
Flood Cyclone/Storm has increased	5.2	24.5
Area decreasing	2.6	12.6
Fishing & collection of aquatic creatures have increased	2.3	11.3
Soil erosion by the rivers have increased	1.4	6.6
Depth of the forest have decreased	0.9	4.7
Aquatic creatures (other than fish) have reduced	0.7	3.3
Aquatic plants/weeds have reduced and lost	0.7	3.3
Decrease fish habitat	0.6	2.6
Species of plants/trees have lost	0.7	3.3
Irregular water flow in the rivers/canals	0.4	2.0
Water has become salty	0.1	0.7
Forest are being replaced by farms	0.2	1.4
Forest plants/thatch/bamboo have declined	0.1	0.7
Acquisition of forest branches have risen	0.2	1.4
Accessibility of honey has declined	0.1	0.7
Soil has become dry and hard	0.1	0.7
Decreased by pirate	0.1	0.7
Increase harmful gear use	0.1	0.7
Increase dependency on the forest	0.1	0.7
Total	100.0	478.9

* Base 151 and total responses 722 **(All figure in %)

According to the respondents there have been many changes in the forest of the Sundarban. Of them reduction of fishes stock and species topped the chart with the figure of 96.1% followed by decrease of timber 190.1%, siltation of rivers and canals 75.6% and decline of wildlife stock and species 59.7% and birds stock and species have decreased, *golpata* has declined 29.1, and flood cyclone/storm has increased (24.5%).

They have mentioned other changes like Sundarban area decreasing, fish and other aquatic creatures catches have increased, soil erosion by the rivers have increased, depth of the forest have decreased, aquatic creatures (other than fish) have reduced, aquatic plants/weeds have reduced and lost, decrease fish habitat, species of plants/trees have lost, irregular water flow in the rivers/canals of Sundarban, water has become salty, forest

are being replaced by farms, forest plants/thatch/bamboo have declined, acquisition of forest plants/thatch/bamboo have risen, accessibility of honey has declined, soil has become dry and hard, decrease by pirate, increase harmful gear use, and increase dependency on the forest

According to respondents (KII and FGD), there have been some sharp changes in the forest of the Sundarban over the years. According to the respondents, the forest resources including wild birds and animals, trees and plants have decreased to some extent. The specialties of the Sundarban particularly the Royal Bengal tiger, deer, mangrove trees etc are on the decline, which has reduced its beauty and charm considerably. Over fishing and secret fishing in the decreasing water bodies have resulted in the loss of local species of fishes. Siltation has given rise to new chars in place of the rivers and canals.

The sea level has gone up. The rate of natural calamity has increased .The pirates have now become a great problem. They frequently haunt the life of the foresters. Thus the picture of the Sundarban is grave indeed.

3.5 Causes of Changes

We tried to know the causes of changes in the study area. In the broad outline both natural and man-made causes are responsible for these changes. Global climatic changes, geographical factors have had a significant impact on our forest and wetlands. In order to understand these issues well we asked the respondents a series of questions and received the following results.

3.5.1 The Causes of changes over the years in wetland

There are numerous causes of the change of wetlands in the last 15/20 years. The data revealed that wetlands/River/rivulets/tributaries are being silted up topped the chart with the figure of 81.2%. Others to follow are unregulated acquisition of wetland resources (73.8%), climate change (42.3%), increased population (38.9%), lack of awareness and knowledge of people (24.8%) and encroachment of agricultural land (24.2).

Major causes	Minor causes
<ul style="list-style-type: none"> ✓ Wetlands/River/rivulets/tributaries are being silted up ✓ Unregulated acquisition of wetland resources ✓ Climate change ✓ Population increase ✓ Lack of awareness and knowledge ✓ Encroachment by agri. Land ✓ Capture/Killing of different types of birds 	<ul style="list-style-type: none"> ✓ Flood/Cyclone increase (intensity also) ✓ Demand of fishing has been increase ✓ Bridge/dam/embankment/culvert building ✓ Resource accumulation by outsiders ✓ Ineffectiveness of authority ✓ Waste disposal of factories ✓ Use of destructive gear & insecticide

They have mentioned other changes like flood/cyclone/hurricane increase and intensity also increase (increase water-flow, excessive rainfall), lack of awareness and knowledge of people, capture/killing of different types of birds, deterioration of wetland resources, demand of fishing has been increase, bridge/dam/embankment/culvert building, resource accumulation by outsiders, ineffectiveness of authority, waste disposal of factories, decrease of water, and ineffectiveness of authority

The causes of changes in the wetlands are many according to the KII and FGD respondents. Mainly man-made causes are responsible for this ominous situation. According to the respondents natural water bodies like rivers and *haors* are being silted up for lack of dredging and intervention of the concerned officials. Wetland is being decreased due to the encroachment for human habitation for the abode of increased population. The management of wetland protection committee is very poor. There is no proper implementation of laws. On the other hand, there is the unawareness of local people and their disobedience to the laws. The seasonal birds don't come now at a huge number because of preying. A criminal group works there. There are no basic rules here.

3.5.2 The Causes of changes over the years in forest

We asked the respondents to tell about the causes of changes in the forest in the last 15-20 years. They could tell a number of significant reasons for the changes. According to the respondents the prime reason of changes is deforestation (89%) followed by unregulated collection of resources (78.6), ineffectiveness of authority (65.5%), increased population (63.80%), killing of animals and birds (44%) and floods/cyclones (25%).

Major causes	Minor causes
<ul style="list-style-type: none"> ✓ Deforestation ✓ Population Increase ✓ Unregulated collection of resources ✓ Ineffectiveness of authority/corruption ✓ Capture/Killing of animals/ birds ✓ Flood/cyclone/hurricane increase 	<ul style="list-style-type: none"> ✓ Resource collection by outsiders ✓ Lack of awareness of people ✓ Exploitation by local influential ✓ Canals (<i>chara</i>) in the forest are being filled up ✓ Climate Change ✓ POVERTY ✓ Encroachment by agri. and homestead ✓ Degradation of soil fertility ✓ Firing in the forest for <i>jhum</i> cultivation ✓ hill erosion, hill cutting

They also mentioned another causes which is insignificant like resource collection by outsiders, lack of awareness/knowledge of people, exploitation by local influential, river/rivulets are being silted up, climate changes, temperature rise, environmental degradation, poverty, encroachment by agriculture and homestead land, degradation of soil fertility, firing in the forest for *jhum*, lack of food, hill erosion, hill cutting, uncontrolled entry in the forest.

According to respondents (KII & FGD), the main reason is that the forest has been destroyed. There is no proper planning for forestry. The assigned authorities for the forest protection don't play their respective roles. As the population has increased, changes have occurred. People cut trees and sell for earning. They use the branches as firewoods. As the trees are decreasing, wildlife are decreasing for lack of food, hunting, and environment. Trees are being stolen due to dishonesty of forest guards and forest officials. The respondents of Modhupur forest area mentioned that many trees have been cut for the army firing range in the deep forest as a result wildlife have lost their habitat.

The terrorist groups cut trees unboundedly at Publakhali and Kaptai forest as a result the forest has been destroyed. Firing for *jhum* cultivation is a crucial reason of the decrease of wild animals. As water is not sufficient in the rivers, the number of fishes is also very low.

3.5.3 The Causes of changes over the years in the Sundarban

We asked the respondents about the causes of change in the Sundarban over the years. It is interesting that they could tell about the causes well. According to the respondents increased frequency and intensity of the cyclones and natural disaster are the prime causes of changes in the Sundarban with the figure of 166.8% followed by unregulated collection of resources (69.7%), increased population (52.3%) and filling up of rivers/rivulets (49.1%).

Major causes	Minor causes
<ul style="list-style-type: none"> ✓ Increase in frequency and intensity of cyclone/hurricane ✓ Unregulated collection of resources ✓ Increased population ✓ River/rivulets are being filled up 	<ul style="list-style-type: none"> ✓ Climate change ✓ Killing of wildlife and birds ✓ Ineffectiveness of authority ✓ Lack of proper implementation of law ✓ Use of destructive equipment ✓ Uncontrolled entry of people ✓ Fishing demand increase ✓ Lack of awareness of people ✓ Resource collection by outsiders ✓ No afforestation ✓ Disobedience of rules

They also mentioned other causes but these were insignificant like climate change, killing of wildlife and birds, ineffectiveness of authority, lack of comprehensive laws, lack of proper implementation of development programs, planting of foreign tree varieties as opposed to local ones, use of destructive tools/techniques, uncontrolled entry of people, fishing demand increase, lack of awareness of people, deceasing of aquatic resources, loss of fish species, resource accumulation by outsiders, no new forestation etc.

According to respondents (KII & FGD), wildlife decreases because of scarcity of food and shelter, hunting, and environmental degradation. Woodlot is decreasing due to unabated stealing and dishonesty of forest guard. Moreover, natural disaster, silted river, harmful techniques use, no new plantation, raising the height of forest land, use of poison in fishing, dishonesty of businessmen, weakness of laws enforcement agencies, illegal

resource collection, over fishing in the river/canals, poverty, rising and falling of sea are the major causes for changing Sundarban biodiversity.

3.6 Changing Scenarios of Natural Resources of the Protected Area Site

The protected area site once upon a time abounded with natural resources of all sorts. Plenty of wild resources including trees, plants, herbs, animals, fishes, honey, timber etc abounded the study area. But for a variety of reasons these resources are on the decline. In this section we have tried to identify the causes and dimension of changes, the rate of changes, its consequences etc.

3.6.1 Changing scenarios of wetland resources for the last ten years

The study was interested to know the changing scenario of wetland resources for the last ten years. Two types of answer were available from the respondents about the change of wetland resources. One group of respondents opined that the wetland resources decreased while others were of the opposite view.

Table-4: Changing scenarios of wetland resources

Resources	Ext. Decrease	Decrease	Increase	Ext. Increase	DK
Fish	32	43	16	1	8
Other Wetland Creatures	11	19	2		68
Water weed	5	12	3	1	80
Bird	5	19	22	1	53

* Base- 151 ** (All figure in %) *** Ext. = Extreme, DK = do not know

In the first category fish topped the chart, 75% (43+32) respondent thinks fish has been decreased followed by, other wetland creatures (30) bird (24) bird and water weed (17). It is interesting to note that of them 32 told of extreme decline of fishes followed by other wetland creatures (11), water-weed (5) and bird (5). In the second category who opined that wetland resources increased put bird (23) in the top of the chart followed by fish (17), waterweed and other wetland creatures.

3.6.2 Changing scenario of forest resources

Two types of answer were available from the respondents about the change of forest resources. One group of respondents opined that the forest resources decreased while others were of the opposite view.

Table-5 : Changing scenarios of forest resources

Resources	Ext. Decrease	Decrease	No Change	Increase	Ext. incr.	DK
Fish	21	11				68
Trees	58	29	1	5		7
Thatch/Bamboo	26	40	3	1	1	28
Forest vines	7	36	1	4		52
Wildlife	26	40		7		26
Insect	5	28		2		65
Bird	27	32		5	1	36

* Base- 351 ** (All figure in %) *** Ext.= Extreme, DK= do not know

In the first category who were of the opinion that forest resources declined extremely put trees on top of the chart (58) followed by birds (27), wild animals (26), bamboo (26) and fish (21). However, of those who said that forest resources decreased put wild animals (40) and bamboo (40) on the top of the chart followed by forest plants (36) and birds (32).

In the second category who opined that forest resources increased put forest animals (7) in the top of the chart followed by trees (5), bird (5) and forest plants (4). Notable that one person each talked of the extreme increase of bamboo and bird. It is interesting to note that a significant number of the respondents did not know whether fish resources increased or decreased. The data revealed that 68 respondents could not tell whether fish population increased or decreased. This is equally true in case of insect (62), forest plants (52) and bird (32).

3.6.3 Knowledge on changing scenarios of Sundarban resources

We wanted to know about the knowledge on changing scenarios of Sundarban resources of the respondents. That is why we asked them what their opinion about it was. There were two types of opinions of whom most of them mentioned of the decrease of Sundarban resources.

Table -6: Changing scenarios of Sundarban resources

Resources	Ext. Decrease	Decrease	Increase	Ext. increase	DK
Fish	56	42			3
Other Wetland Creature	3	57	8	1	32
Water weed	1	42	16	3	38
Trees	16	72	6		7
Thatch/Bamboo/ <i>golpata</i>	3	36	3		57
Forest vines	1	25	30		43
Wildlife	11	78	6		5
Insect	5	41	7		46
Bird	15	69	1		16

* Base- 151 ** (All figure in %) *** Ext.= Extreme, DK= do not know

In the first category who were of the opinion that resources of Sundarban declined extremely put fish (56) on top of the chart followed by trees (16), bird(15), wild animals(11). However, of those who said that forest resources decreased put other forest animals (78) on top of the chart followed by trees (72), bird (69), wetland creatures (57), fish (42) and water weed (42).

In the second category who opined that Sundarban resources increased put forest plants (30) on the top of the table followed by water weed (16), other wetland creatures (8) and insect (7). Notable those 3 percent talked of extreme increase of waterweed whereas only one person mentioned of other wetland creatures.

It is interesting to note that a significant number of the respondents did not know whether fish resources increased or decreased. The data revealed that respondents could not tell whether bamboo (57) increased or decreased. This is equally true in case of insect (46), and forest plants (43).

3.7 Causes of Decreasing Resources

Over the decades the forest resources have decreased to a significant extent. But we do not know the causes, dimensions and consequences of these changes. That is why we asked a series of questions to the people to understand the said issues well.

3.7.1 The causes for decreasing the resources

Resources	Major five causes
Fish	<ul style="list-style-type: none"> ▶ Over fishing (36%) ▶ River/rivulets are being silted up (25%) ▶ Wetlands are being silted up (24%) ▶ Unregulated collection of fishes (20%) ▶ Use of harmful tools and techniques (12%) ▶ Fishing by outsiders (6%)
Aquatic animal (other than fish)	<ul style="list-style-type: none"> ▶ Increase natural disaster (28) ▶ Wetlands are being silted up (21) ▶ River/rivulets are being filled up (16%) ▶ Unregulated collection (13%) ▶ Lack of awareness of people (6%)
Aquatic plant	<ul style="list-style-type: none"> ▶ Increase natural disaster (22%) ▶ Over collection (15%) ▶ Wetlands are being filled up (9%) ▶ River/rivulets are being filled up (8%) ▶ Encroachment by agriculture (3%)
Woodlot	<ul style="list-style-type: none"> ▶ Timber cutting (51%) ▶ Deforestation (30%) ▶ Increase in population (25%) ▶ Increase in frequency of Cyclone/hurricane (19%) ▶ Ineffectiveness of authority (11%) ▶ Timber cutting by outsiders (11%)
Thatch/cane/bamboo	<ul style="list-style-type: none"> ▶ Decline in forest/Jungles resources (35%) ▶ Increase in population (33%) ▶ Collection by outsiders (15%) ▶ Flood increase (8%) ▶ Lack of awareness of people (6%)
Wildlife declining	<ul style="list-style-type: none"> ▶ Killing/trapping (27%) ▶ Lack of proper regulations (26%) ▶ Temperature rise (14%) ▶ Deforestation (13%) ▶ Unregulated catching/killing of wildlife (7%)
Birds declining	<ul style="list-style-type: none"> ▶ Killing of different types of birds (27%) ▶ Increase in frequency of cyclone/hurricane (24%) ▶ Decline in forest/Jungles (24%) ▶ Killing/trapping by outsiders (8%) ▶ Lack of awareness of people (3%)

3.7.2 Common causes for decreasing the resources

The forest resources are on the decline due to manifold problems. But of these problems a common pattern can be observed in case of the reasons in the context of its decrease. Nonetheless, the common reasons are: wetland/rivers/canals are being silted up; unregulated collection of resources, increase in frequency of cyclone/hurricane/flood, and over collection of people etc are worth mentioning.

3.7.3 Causes of Resource Decline According To Respondents (KII & FGD):

WETLAND: 15/20 years back fish was found aplenty but after that the number decreased at an alarming rate due to indiscriminate catching. But NOW THE NUMBER OF FISH HAS INCREASED AGAIN BECAUSE OF THE MACH PROJECT, which has made some positive changes. Fishes lost are regained again like *shoil fish*, *gojar*, *taki*. However, some fishes like *katketia* have been totally abolished. In the *hakaluki haor* crabs, shell, snake etc has decreased because of the poor depth in the wetland. Aquatic weeds have increased as the rivers have been silted because of the sandy water flow from the hills. As a result there is a scope for the weeds to grow. CURRENTLY BIRDS HAVE INCREASED SOMEWHAT BECAUSE OF THE RESTRICTION ON THE BIRD PREYING.

FOREST: The forest resources decreased for a variety of reasons. The main reasons are: population increase, activities of unscrupulous businessmen and the negligence of the forest department. Because of population increase, the cutting down of trees goes on unabated especially in the hilly areas. The dishonest forest officials cut trees at an alarming rate for profit motive. The new ones do not replace the cut trees. In addition, stealing goes on unabated due to the corruption of govt. officials and mismanagement of the government.

SUNDARBANS: In the Sundarban, the forest resources are on the decline as well. The rivers/canals are being silted. Fishes are being caught with the use of harmful net like *current* net. Sometimes fishes are caught using POISON. All these contribute to the decline the fish species. Due to decreased navigability of the rivers other species like alligator,

shark etc has also decreased. Moreover, trees have been declining due to natural calamities like *SIDOR* and people are cutting down of trees at random for multifarious uses.

3.8 Knowledge on Eco-System of Wetland/Forests

It seems that people are conscious about the eco-system of wetland/forests. That is why majority of them were in favor of protecting every element of wetland/forest. The respondents said that they thought that there was need to protect every element of wetland/forest. The figures revealed that 83% respondents said that they felt the need to protect elements of wetlands. The figures are 89% and 99% respectively in case of forest and Sundarban.

3.8.1 Why it is needed to protect every element of the forest/wetland:

The respondents gave a variety of causes for the protection of the forest, wetlands and Sundarban. It is mentionable that the respondents were not knowledgeable enough in these cases as expected. In most cases they gave partial or wrong answer. However, the main two reasons are: protecting beauty of the wetlands/forest and maintaining environmental balance.

According to the respondents operating livelihood is the topmost (45%) factor why they opined in favor of protecting every element of the forest/wetland. It is quite natural that due to want of education and other skill development opportunities, they would turn to nearby resources for survival. And this is exactly happened in case of the respondents of the study area.

Maintaining environmental balance is the second topmost factor for the respondents for protecting the elements of forest. The data revealed that 19 percent respondents said that elements of forest should be preserved for the protection of environmental balance. This is very significant due to the fact that it is not expected from the common public to understand what are environmental balance and its significance.

The data further revealed that 12 percent respondents said that it was required to protect the beauty of the wetland/forest and Sundarban. This is indeed an encouraging revelation,

as the respondents have understood the significance of preserving beauty of the forests particularly of the Sundarban.

According to the wetland respondents (KII & FGD) all flora and fauna are dependent on each other. For example, fishes live on the stool of migratory birds and local species of fishes. These are also used as high quality fertilizer. All are needed to balance the ecological system. So, all the wildlife is required to be sustained for the survival of wetlands.

According to the forest respondents (KII & FGD), it is need to increase and protect the forest to sustain the beauty of the nature. All are needed to protect the forest because all are dependant on each other. The forest should be protected to keep the animals/plants alive. Trees are necessary for both the human being and the animals. To maintain the balance, the forest should be protected. According to the Sundarban respondents (KII & FGD). It is need to protect every element due to prevent the natural calamities, and to prevent cyclone effect.

3.8.2 Mutual Dependency in the Ecosystem

All elements in the ecosystem are dependent on another. The chain reaction due to the maladjustment in the ecosystem falters other elements causing significant changes. We wanted to know how far the respondents knew about various dimension of these changes and other concerned issues. We wanted to know whether the respondents knew how animals, fishes and plants that exist today depended on another. We are surprised to find that in case of wetlands 60% respondents could tell about it.

Table- 7: how are the animals, fishes and plants that exist dependent on one another

Mutual dependency	Wetland	Forest	Sundarban	All
One provide the food of another (or one is consumed as food of another)	68	45	85	60
Help is needed from another to survive	28	62	56	53
Does not know	21	15	4	13

** Base- wetland: 151, forest: 351, Sundarban: 151 **(All figure in %)*

However, in the context of forest the figure is slightly low and it stands at 45%. But about Sundarban they are well aware and this is reflected in the data. It shows that 85%

respondents could tell about the relationship between the flora and fauna. The respondents said that they understood that help is needed from another to survive. It is revealed from the data that 28 percent respondents said so in case of wetland and the figures are 15% and 4% respectively in the context of forest and Sundarban.

In the eco-system both plants and animals are dependent on each other. Thus entire ecosystem maintains a chain and when this chain is destroyed or suffers maladjustments, it has had negative fallouts. Thus the ecosystem experience a major shake up. These are equally true in case of the wetlands, forest and Sundarban. A couple of examples will beef up these statements:

- ▶ In the Sundarban tigers live on other wild animals. Other wild animals depend on plants and leaves of trees and smaller animals. These smaller animals are to depend on microorganism and micro plants (phytoplankton and zooplankton). In this way mutual dependency sustains.
- ▶ In the wetland, fishes depend on insects. Insects depend on microorganisms. Microorganisms depend on phytoplankton and zooplankton. Thus the chain is maintained.

3.8.3 Hazards of Broken Eco-System:

Eco-systems help to maintain the balance of the wildlife. But if the eco-system breaks down or cannot be sustained, hazards are bound to happen in the long run. In order to understand the level of knowledge of the respondents we asked the respondents about it and got the following answer.

Table- 8: Problems the forests/wetlands may face, if eco-system broken

Problems	Wetland	Forest	Sundarban	All
The resources will be decreased	42	38	40	39
Eco-system will be hindered	19	30	48	32
The environment will be destroyed	8	21	15	17
Food scarcity will be for each other	12	5	6	7
Will be stop to come migratory birds	15			4
Natural disaster will be increased	1	4	3	3
The habitat of wildlife will be destroyed	3	4	1	3

Will be affected the livelihood of people	1	3	5	3
Oxygen scarcity	1	2		1
Next generation will be deprived	3	1		1
Wildlife will be entered in the locality		1	3	1

* Base- wetland:151, forest: 351, Sundarban: 151 ***(All figure in %)*

The respondents gave numerous foreboding about the future if ecosystem is broken down. Of them the prominent three are: resources will be decreased (39%), ecosystem will be hindered (32%) and environment will be destroyed (17%).

The resources will decrease according to 39% respondents if ecosystem broke down. The wildlife in the forest depends on each other to a significant extent. If the chain of ecosystem is hindered or damaged, it has had severe consequences on the entire elements of the ecosystem. This hampers the growth of the forest resources rather contribute to its decline.

Nobody could mention that human being would not got antidote of different disease

3.8.4 Common threat

Ecosystem of the forest is dependent on the mutual dependency of the flora and fauna. So, if one element suffers, it has had consequences on the other elements and thereby ecosystem will be hindered. That is why thirty two percent respondents were of the view that elements of forest/wetland should be preserved as if the ecosystem is hindered negative consequences are bound to happen.

Ecosystem of the forest is dependent on the chain relationships of the flora and fauna of the forest. So if ecosystem is broken down, the trees and plants and other wild life suffer which contribute to the damage of the environment. According to seventeen-percent respondents environment will be damaged if ecosystem is not sustained well.

According to the respondents (KII & FGD), wetlands will face numerous changes if the chain of ecosystem is broken. It will decrease the production rate of fishes as well as aquatic plant. As a result, the balance of environment will be broken. If broken eco system then will be imbalanced the environment of forest and wetlands elements will suffer. Biodiversity will be degraded due to decrease of the resources of forest/wetland.

According to respondents (KII & FGD) of forest, environmental imbalance will be created if we do not protect the forests and wetland. As a result, it is a big threat for the total environment. Woodlot and the natural beauty will be decreased. Will be obstructed production and living of wildlife and birds and it will create a massive loss on the environment. Life of the people will be in danger. According to the respondents (KII & FGD) of Sundarban, people will face manifold changes if ecosystem is disturbed. Natural disaster will increase that can be destroyed the residence of people, degrade environment and financial security. The economical development will be hampered. Sundarban will lose natural beauty.

3.9 Knowledge on How Can Protect Forests/Wetlands against Existing Problems:

The respondents were asked how they could protect forests/wetlands against these problems. In this context, they mentioned that relevant laws, rules and regulation will have to be followed and in this context the figure stands at 17 in case of wetland. However, in the case of forest and Sundarban the figures are 14 and 25 respectively.

In the second category, the respondents said that they could protect the forest via collecting resources in a proper ways and in this case the figure stands at 17. The figure stands at 52 and 34 respectively in the context of forest and Sundarban.

In the third category, the respondents said that different types of initiatives should be taken like declare protected area, no encroachment, stop hill cutting, Re excavation, new forestation. The figure stands at 10. However, in the context of forest and Sundarban the figure stands at 6 and 7 respectively.

According to the respondents (KII & FGD) of wetlands, more fish fries should be introduced, and stealing of fishes should be stopped. The preying of migratory birds should be banned. The proper implementation of government rules is necessary. Govt should take initiatives like fishing with harmful nets should be banned.

According to the respondents (KII & FGD) of forests, the forest should be protected, security should be stricter, and the people living around the forest should be made aware. To protect the forest the forest officials should be rusticated. The foreign trees should be

abandoned and the local trees should be planted. Moreover, proper work plan should be taken for proper management.

According to respondents (KII and FGD) of Sundarban, people should be aware and everybody should cooperate to protect the forest. Govt will have to take many initiatives in cooperation to the local people. In addition, local NGOs should play important roles, strictly prohibition to entry in the forest, and enforce laws, stop uncontrolled timber cutting.

Chapter 4:

Collection and Utilization of PAs Resources

4.1 Recourse Collectors

Local people of the PAs are highly depended on its resources. They have begun their settlement in the adjacent area of wetland/forest to enjoy the blessing of these resources. Now it is no more confined to local people but other stakeholder are approaching.

Table- 9: Different Resources Collectors

Resource collectors	Wetland	Forest	Sundarban
Local people (neighboring area)	√	√	√
Local people (inside)		√	
People from outsider	√	√	√
Authorized person/permit holders/leaser	√	√	√
Influential people	√	√	√
Ethnic people		√	

All types of stakeholder found in forest area, particularly Ethnic people found only in forest area and they are living here from time immemorial. The people living in adjacent area the forest/wetland and depending on the resources for their living collect these resources. People alleged that some authorized people of forest department involve in illegal activity and there are robbers who come and collect these resources.

Table- 10: Involvement status of resources collection

Area	Types of resources	Response (%)
Wetland	▶ Fishing	74
	▶ Firewood collection	28
	▶ Cuts grass	3
Forest	▶ Cuts branches/bamboo/cane	76
	▶ Cuts trees	22
	▶ Fishes in	20
	▶ Cuts grass/creepers	19
	▶ Collects thatch	6
Sundarban	▶ Fishes in command area	97
	▶ Collecting fish fries	63
	▶ Collects <i>golpata</i> /thatch	25
	▶ Collects crabs/ turtles	12
	▶ Collects honey	9
	▶ Cuts branches/twigs/bamboo/cane	8

In the wetland, fishing (74%) and firewood collection (28%) are the main involvement in resource collection. In the forest, cutting bamboo (76%) and trees (22%) are the main involvement whereas in the Sundarban the activities are fishing in the river/canal (97%), collecting fish fries (63%) and collecting *golpata*(25%). The data further revealed that fishing and firewood collection are the main involvement of resource collection in the study area.

4.2 Gender work division in resources collection

Gender perspectives are very significant to understand the work division of the sexes. It is not surprising that in almost all activities male play the leading role. Notable as well that some children have got some involvement in these activities.

Table-11: Gender work division in fishing activities

Resources	Wetland			Forest			Sundarban		
	M	F	C	M	F	C	M	F	C
Fishing	93		7	90	6	4	97		3
Timber cutting				79	17		100		
Branches/ bamboo/cane collection				53	22	20	100		
Collects fruits and flowers				40	53	7			
Collects medicated trees				70	30				
Collects <i>golpata</i> /thatch				77	23		100		
Collects honey				50	50		86		14
Collection of fish fries							96		4
Collection of wildlife				100					
Catches birds	100						100		
Fishing crabs/ turtles				100			100		

M= male, F= Female, C= Child ******(all figures in percentage)

The data revealed that the male dominated activities are: fishing, bamboo collection, timber cutting, collection fruits and flowers, medicinal plants, *golpata* and honey. The female dominated activity included: collection of fruits, flowers and honey.

4.3 Persons-days (time) of engagement in resource collection

On an average 2.1 persons from each household are involved in fishing activities in the study area. In timber cutting and bamboo collecting the figures are 1.7 and 1.9 respectively.

Table- 12 : Persons-days (Time) of engagement in resource collection

Resources	Wetland			Forest			Sundarban			Total
	Month in a year	Day in a month	Hour per day	Month in a year	Day in a month	Hour per day	Month in a year	Day in a month	Hour per day	
Fishing	7.1	18.6	5.6	5.9	11.3	4.1	9.4	17.1	7.8	2.1
Timber cutting				5.8	8.8	5.3	4.3	18.3	8.8	1.7
Branches/ bamboo collection				8.1	11	3.9	6.8	11.9	4.6	1.9
Collection of fruits and flowers				3.3	13.7	3.9				1.4
Collection of honey				2	2	1	2.8	20.9	8	3.7
Collection of <i>golpata</i> /thatch				4.8	8.4	4.5	2.9	21.1	8.2	2.1
Collection fish fries							5	15	7.1	2.8

In the wetland, data revealed that on an average, a person is involved in fishing 7 months in a year whereas the figures are 18.6 and 5.6 per month and per day respectively. In the forest, data revealed that on an average, a person is involved in fishing 5.9 months per year whereas the figures are 11.3 and 4.1 respectively per months and per day. In the Sundarban, data revealed that on an average, a person is involved in fishing 9.4 months per year whereas the figures are 17.1 and 7.8 respectively per month and per day.

In case of timber cutting on an average, a person is involved 5.8 months per year whereas the figures are 8.8 and 5.3 respectively per month and per day respectively in the forest. In the forest a person is involved in the Sundarban 4.3 months a year whereas the figures are 18.3 and 8.8 respectively per month and per day.

Those who involved in honey collection in sundarban could collect for 20 days per month and it is a seasonal profession only for 2 month per year.

4.4 How long have people been collecting the resources

The respondents said that they have been collecting wild resources for more than a decade in most cases. The data revealed that fishing is being done for 15.9 years on an average. However, the figures are 15.3 for timber cutting, 18.5 for bamboo collection, 15.9 for thatch, 16.9 for honey, 12.4 for wildlife hunting, 14 for birds hunting, 14 for shell collection, 11.6 for turtles collection and 8 for fish fry collection.

Table- 13: How long have people been collecting the resources

Resources	Ancestors collected			Avg. Yrs of Involvement			
	Wet	Forest	Sund.	Wet	Forest	Sund.	All
Fishing	74	33	70	17.3	17.1	13.1	15.9
Timber cutting		24	31		16	12.1	15.3
Branches/bamboo collection		40	10		19.2	10	18.5
<i>Golpata</i> /thatch collection		8	46		23.2	10.6	15.9
Honey collection		5	23		22	15.4	16.9
Wildlife hunting		8	0		12.4		12.4
Birds trapping		8	0		14		14
Snails/shells collection		4	3		13	20	14
Crabs/turtles collection		7	19		14.7	9	11.6
Fish fry collection			36			8	8

* (All figure in percentage)

In reply of do people from other area (who are not in adjacent area) come to collect its resources? They mentioned that people from other areas come to the forest/wetland to collect its resources. This is reflected in the table. It shows that 74% respondents said that people come to the wetlands to gather resources whereas 26% answered in the negative. In the forest, 67% respondents opined in the positive whereas 33% answered in the negative. In the Sundarban, 86% respondents answered in the positive whereas 14% answered in the negative.

74% respondents said that people come from outside every to collect resources.

4.5 Use of Resources

Selling: The wildlife resources are collected for a variety of reasons. Of them selling seems to be the prime cause of resource collection. The data revealed that ninety seven percent fish collection are made for selling in the Sundarban. Other resources like timber (100%), bamboo (67%), *golpata* (97%), honey (100%), fish fry (100%) are primarily collected for selling.

Table- 14: Use of resources

Resources	Wetland (%)			Forest (%)			Sundarban (%)		
	Selling	HH consumption	Selling and consumption	Selling	HH consumption	Selling and consumption	Selling	HH consumption	Selling and consumption
Fishing	14	31	54	4	51	39	97		2
Timber cutting				39	40	20	100		
Branches/bamboo/thatch collection				22	67	8	67	33	
Collects fruits and flowers					53	47			
Collects Medicinal plant					80	20			
Collects <i>golpata</i> /thatch				41	59		97		3
Collects honey				100			100		
Collecting fish fries									100
Collect wildlife					40	60			
Catches birds		100					100		
Collects crabs/ turtles					100		94		6

Household consumption: Household consumption is another factor why the respondents said that they collected wild resources. In this category, the resources are: timber (40%), bamboo (67%), fruits/flowers (53), medicinal plants (100%), hunting wildlife (40%) and turtles (100%).

Selling and household use: In this category, the resources are collected for selling and household use. The collected resources are: fruits/flowers (47%), medicinal plants (20%), hunting wildlife (60%) etc.

4.6 The Status of Rate of Resources Collection

In the wetland, ninety two percent respondents said that fishing has increased while four percent respondents said that it has remained the same and only five percent respondents said that it has decreased.

In the forest, seventy five percent respondents said that fishing has increased while 20% respondents said that it has remained the same whereas only 6% respondents said that it has decreased. In the Sundarban, 51% respondents said that fishing has increased while 14%

respondents said that it has remained the same whereas 35% respondents said that it has declined.

Table- 15: The status of rate of resources collection

Resources	Wetland			Forest			Sundarban		
	+	Same	-	+	Same	-	+	Same	-
Fishing	92	4	5	75	20	6	51	14	35
Timber cutting				70	3	28	50		50
Branches/bamboo collection				63	23	14	50	17	33
Fruits/flower				53	13	34			
Medicinal plant				70		30			
<i>Golpata</i> /thatch				91	5	5	33	19	49
Honey						100	43	0	57
Fish							42	15	43
Hunting wildlife				80	0	20			

+ = increase, same and - = decrease

In the forest, seventy percent respondents said that timber cutting has increased whereas three percent respondents said that it has remained the same whereas 28% respondents said that it has declined. In the Sundarban, timber cutting has increased according to 50% respondents whereas equal number of respondents said that it has decreased.

In the forest, 63% respondents said that bamboo collection has increased whereas 23% respondents said that it has remained the same whereas 14% respondents said that it has decreased. In the Sundarban, 50% respondents said that bamboo collection has increased whereas 17% said that it has remained the same and 33% said that it has declined. In the forest, 53% respondents said that fruits/flower collection has increased whereas 13% said that it has remained the same and 34% respondents said that it has declined.

In the forest, 70% respondents said that medicinal plants have increased whereas 30% said that it has decreased

In the forest, 91% respondents said that the collection of thatch has increased whereas 5% respondents remained the same and 5% respondents said that it has declined.

In the Sundarban, 33% respondents said that *golpata* collection has increased whereas 19% said that it has remained the same and 49% respondents said that it has declined.

In the forest, 100% respondents said that honey collection has decreased and in the Sundarban, 43% respondents said that honey collection has increased whereas 57% said that it has declined.

In the Sundarban, 42% respondents said that fish resources have increased whereas 15% said that it has remained the same and 43% said that it has declined. In the forest, 80% respondents said that hunting wildlife has increased whereas 20% said that it has decreased.

4.7 Why increased or decrease the rate of collection

Why increased	Why decreased
<ul style="list-style-type: none"> • People have to earn their livelihood depending on the forest resources • They are earning money through corruption by stealing natural resources. • For poverty due to increase in population. • The collection rate has increased for lack of implementation of laws. • There are no alternative works to do. • The outsiders come here to frequently and collect resources. • The outsiders get permission from the influentials and cut trees at night. • The collection rate of bamboo/canes/<i>golpata</i> has increased. 	<ul style="list-style-type: none"> • The resources of forest have decreased. So the people can just live on that limited resources. So they have managed alternative ways to earn money. • The govt. has taken some steps. After NISHORGO came, the rate of resource collection has decreased • The increase in population and decrease in trees • As the rate of fishes has decreased as the collection rate has also decreased. • Due to different committees & initiatives taken by govt. etc. • But due to the emergency condition, the cutting rate has decreased. • The hunting of wild animals has decreased because the number of wild animals has decreased.

4.8 Resource Collection by Outsiders

In the wetland, the outsiders come for fishing and catching birds seasonally whereas they come to catch turtles sometimes. In the forest, the outsiders come to the forest to catch fish round the year and also for timber cutting and bamboo collection plus they come to collect thatch, honey and wildlife seasonally. However, they sometimes come to catch wildlife.

Table- 16: Calendar of resource collection

Resources	Wetland			Forest			Sundarban		
	RTY	SES	SOT	RTY	SES	SOT	RTY	SES	SOT
Fish		✓		✓				✓	
Timber cutting				✓				✓	
Branches/bamboo				✓				✓	
<i>Golpata</i> /thatch					✓			✓	
Honey collection					✓			✓	
Wildlife						✓			✓
Birds		✓			✓				
Snail/shell								✓	
Turtle/ <i>crab</i>			✓					✓	
Fish fry								✓	

RTY stands for round the year, SES stands for seasonal and SOT stands for sometimes.

In the Sundarban, the outsiders come to fish as well as for collecting timber, bamboo, thatch, honey, snail, turtles and fish fry. It is mentionable that the outsiders come to catch wildlife.

4.8.1 Number of outsiders come in a year for different resources collection

In the wetland, on an average 4637 people come in a year to catch fish followed by fish fry (1088), birds hunting (262) and turtles (50). In the forest, highest 5188 person on an average comes in a year for bamboo collection followed by timber cutting (4474), thatch collection (2973) and fish (2725). In the Sundarban, highest 4186 people come to catch fish fry in a year followed by turtles collection (3071), thatch collection (2705), timber cutting (2685) and bamboo collection (2034).

4.8.2 Problems created by outsider people

Local people are reluctant to see outsider people to come in wetland /forest to collect resource. They think the wildlife resources are faced with numerous problems if outsiders come to collect forest resources. These are as follows:

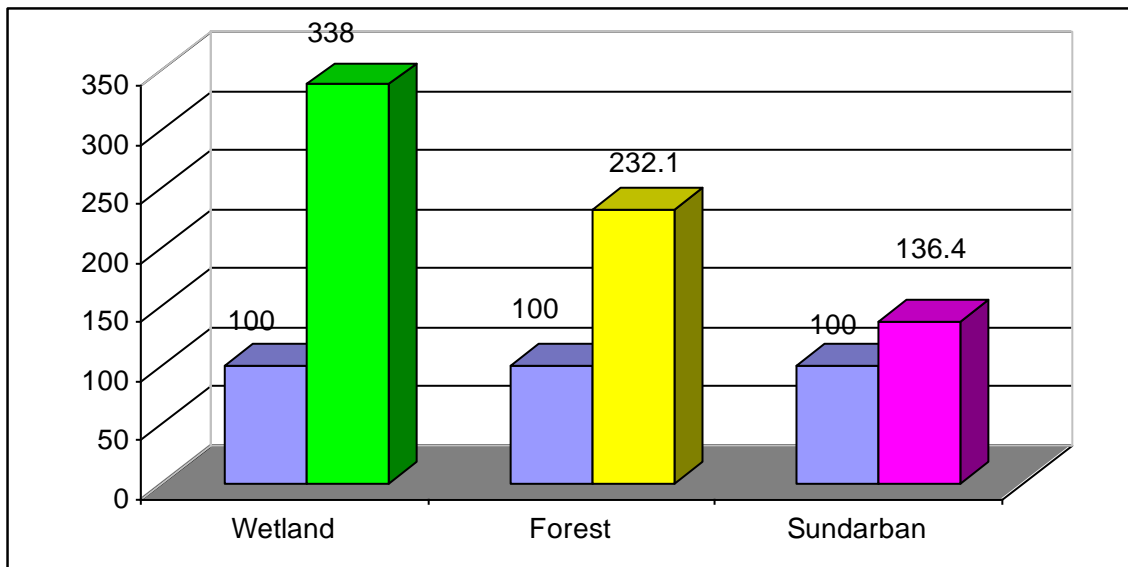
- The local inhabitants are to compete with the outsiders in collecting wildlife resources. As a result they are in constant mental and psychological pressure on their life and livelihood.
- They collect less wildlife resources compared to earlier times.

- The wild resources face extinction as more & more people are on the hunt to collect resources. And this is evident from the current dismal scenario of the wild resources.
- Conflicts with the locals and the outsiders are likely to take place as they are in tremendous battle with each other.

4.9 The extent of rise of people in natural resource gathering

The numbers people are on the rise in collecting wetland resources in the last 10 years. The data revealed that if 100 people gathered wetland resources, then at present on an average 338 people collected resources in the wetland followed by 232 people in the forest and 136 people in the Sundarban. However, on an average, 234 people gather resources in the wild at present.

Graph-1: The extent of rise of people in natural resource gathering



4.10 Tools and Equipments Used For Acquiring Aquatic Resources

The tools and equipments used for acquiring aquatic resources can be categorized into three parts. These are: boat, net and other equipments.

In the first category, boats are divided into varieties: small boat, non-mechanized big boat and mechanized boat. The data revealed that in the wetland 36 respondents used small boat followed by non-mechanized big boat (2) and mechanized big boat.

In the second category, nets are used. Of these gill net, drag net, set bag net, lift net, cast net, push net, other net and current net. The data revealed that highest 11% used current net followed by other net (10), push net (9), cast net (8), lift net (7), set bag net (6), drag net (5) and gill net (4). In the third category, various types of equipments are used. These are: fence and fish trap (12), long line (13), hook and line (14), brush pile (15), katha (17), dewatering (18), extraction through complete destruction (20), cut it off so that it can grow again (21).

4.10.1 Harmful Equipments and Techniques

The respondents cannot tell well about the harmful equipments they use for acquiring fishes. They used different types of gear but they did not know whether it was harmful or not. The data revealed that in case of wetlands 41 respondents said they did not know about it. However, the figures are 77 and 63 respectively for forest and Sundarban. Mention can be made that in total 66 % respondents said that they did not know about whether the equipments used were harmful or not. 23% respondents said that the equipments they used were not harmful.

The FGD and KII information reveals that:

- To collect fish and other aquatic resources people use current net, *kafria* net. In case of fishing the current net is most harmful. When dewatering is done in the bills to catch fish, it destroys the shells, cockles. The local people used guns, *batul*, arrow, trap and nets to prey the birds. Sometimes the fish spawn is also caught.
- Different kinds of nets are used in catching fish. The most harmful is *katha* net. If this net is used once then the development of the wetland decreases for 6 months. Again, giving poison kills fish and then these fish is given to the birds as food, which is very harmful for the birds.
- In case of collecting forest resources chopper, scythe, and seaware used. After cutting trees, a car called "*chader gari*" comes and takes away the trees.
- When people cut one tree they make harm to other trees. The small trees are harmed while cutting the big trees whimsically. That is how, forest has been

destroyed. Same things happen in the case of bamboos. The people use the instruments without following any rule. If they use the instruments properly, it would have not been so dangerous for the forest. Moreover, those who cut trees at night unboundedly, damage other trees. They go to the.

- Some unscrupulous people cut down trees stealthily along with the collaboration of corrupt people. They are quite reluctant to follow any rules and regulations. In this way, unabated cutting down of trees with various concerned agencies have cleared the forest in many areas.
- In collecting honey, people use destructive techniques, which damage the honeycomb. Usually the honeycomb is fired to collect honey. These kill the mother bee along with other male bees. Thus total bee population is always at stake for survival.
- *Jhum* cultivation requires clearing away varied types of small plants, bushes and shoots along with small creatures. These put pressure on the local flora and fauna and sometimes destroy those completely.

4.11 Rules/Regulations to prevent collection of aquatic resources

We asked the respondents whether there were regulations/rules that prevent or restrict accumulation of aquatic resources. In this respect we have got four types of answer.

In the first category, the respondents said that there were no restriction/rules that prevent or restrict accumulation of aquatic resources. Here the figures are 7, and 4 respectively in case of wetland, and forest but sundarban does not require any permission.

In the second category, the respondents said that there were restrictions but they did not affect their fishing. Here the figures are 25, 9 and 2 respectively in case of wetlands, forest and Sundarban. In the third category, the respondents said that there were restrictions/rules but they had to fish maintaining according to those rules. Here the figures are 48, 43 and 98 respectively in case of wetlands, forest and Sundarban. In the fourth category, the respondents said that restrictions/rules prevented them from fishing

altogether. Here the figures are 12, 1 and 0, respectively in case of wetlands, forest and Sundarban.

Table- 17: Rules/regulations to prevent or restrict collection of aquatic resources

Rules/Regulations	Wetland	Forest		Sundanban	
	Aquatic resources	Aquatic resources	Forest Resources	Aquatic resources	Forest Resources
No rules/regulations	7	4	9		
Rules/regulation exist but it doesn't effect collection	25	9	18	2	1
Resource have been collected as per rules/regulations	48	43	61	98	99
Rules/regulation prevent us from collect altogether	12	1	4		
Total	151	351	351	151	151

4.11.1 Rules/Regulations and Practice to Collect Forest Resources

We asked the respondents whether there were regulations/rules that prevent or restrict accumulation of forest resources. In this respect we have got four types of answer. In the first category, the respondents said that there were no restriction/laws that prevent or restrict accumulation of forest resources. Here the figures are 9 and 0 respectively in case of forest and Sundarban.

In the second category, the respondents said that there were rules but they did not affect their collecting forest resources. Here the figures are 18 and 1 respectively in case of forest and Sundarban. In the third category, the respondents said that there were rules/regulations but they had to collect forest resources maintaining those laws. Here the figures are 61 and 99 respectively in case of forest and Sundarban. In the fourth category, the respondents said that rules prevented them from collecting altogether. Here the figures are 4 and 0, respectively in case of forest and Sundarban. Mention can be made here that there is no figure in case of wetlands.

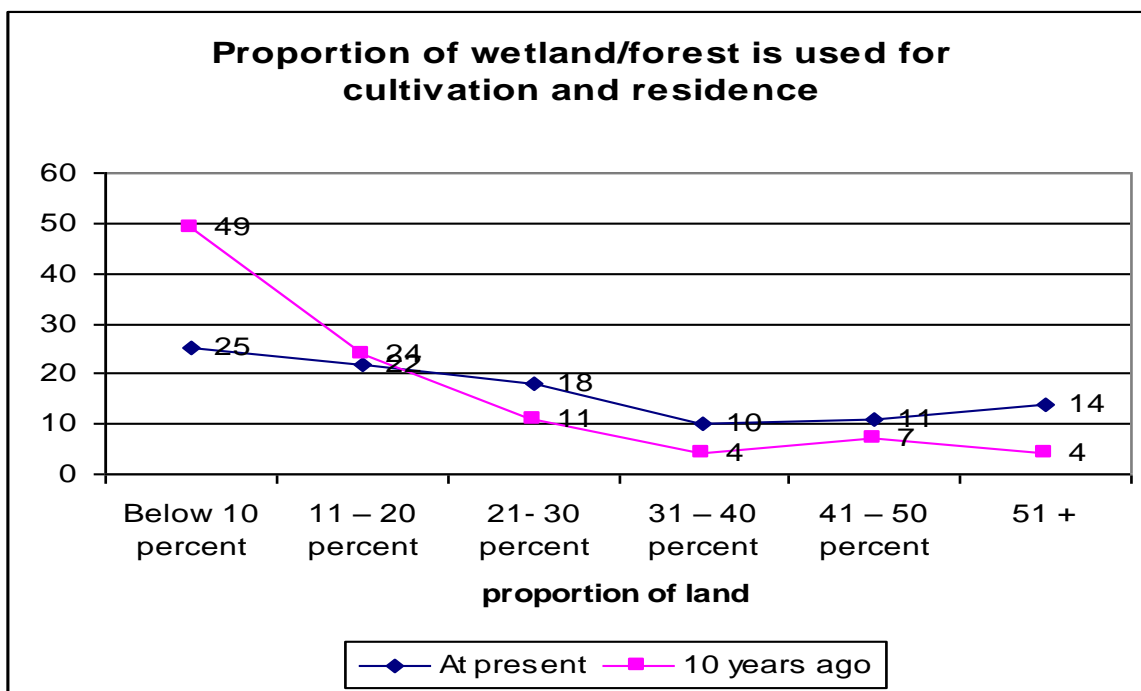
In the *haors of Tangoar and Hakaluki* and the Kangsha malijhi both fisheries department and CBOs are the authority that determines the rules and regulations. Here fisheries department is the government approved body whereas CBOs are local bodies, which are

concerned about the regulations. In the forest, forest department is the sole authority, which maintains law and regulations. In the same vein, forest office is concerned about the rules and laws in the Sundarban.

4.12 Encroachment of PA's By Agriculture and Homestead Use

Over the range of 10 years the encroachment increased rapidly. This is particularly true due to the encroachment by agriculture and homestead use. That is why we asked the respondents to give their opinion about their knowledge about encroachment. We got the following findings.

Graph-2:



The object of the question was to compare the level of encroachment within the range of 10 years. Encroachment rate was quite lower 10 years back. At present 25% respondents said that the encroachment level was below 10% percent while 10 years ago 49% respondents said so. In the same vein at present 10% respondents said that the encroachment level was within the range of 31-40% whereas 4% respondents said so 10 years back. 11% respondents said that 41-50% encroachment takes place today whereas 7% respondents said so. The most striking thing is that at

present encroachment level is 51%+ and is commented by 14% whereas 4% respondents said so 10 years back.

According to the respondents (KII & FGD), the size of *Hakaluki haor* is 18000 ha. 3000 hectares of which is used for cultivation. The size of the *Hail* haor is 5056 ha. and 2000ha is used for cultivation and the rest is wetland. In *Kangsha malijhi* 90% is used for cultivation. In Sundarban, no land is used for cultivation.

4.12.1 Repercussions on the PAs and Biodiversity Due to Farming Activities:

A question was asked to know about the impact on the wetlands/forest and biodiversity due to farming activities. However, we got some important answers in this regard with the following results.

Consequence on land	Consequence on wildlife
<ul style="list-style-type: none"> ▪ Reduction in size ▪ Degradation of ecology ▪ Reduction in soil fertility 	<ul style="list-style-type: none"> ▪ Reduction in habitat for animals & birds ▪ Reduction in fish stock ▪ Reduction in trees ▪ Lack of food for animals

Sundarban found comparative safe area compare to the other areas. The area of wetland decreased due to cultivation is the imperative concern. The use of insecticides is harmful for the fishes.

It is a dangerous propensity that 38% people think encroachment is not harmful for wetland, forest or its biodiversity.

The insecticides used in the cultivation are mixed up with the water flow from hills and the river water along with the rainwater. This harms the fish population a lot. Some opine that problems don't occur because of cultivation but due to habitation although the people living around the forest are becoming more dependent on the forest and the collection rate of forest resources is increasing. We could not accept their position since animals and birds are not getting their foods and permanent place to stay due to population increase and firing for *jhum* cultivation is harmful for animals/birds.

4.12.2 Policy maker's approach towards leasing forest/wetland for agricultural uses.

It is interesting that respondents from govt. level opine that the present management is good. To protect the wetland and forest this people suggest that:

Table- 18 : Policy maker's approach towards leasing forest/wetlands for agricultural uses

No position in favor of promulgation of law (10%)	In favor of promulgation of law (90%)
○ If any policy of govt. to distribute khas land of the forests/wetland for agriculture then govt. can do it. If not any policy then govt. does not give it.	○ In our country, the forest and wetland area is not enough, so no need to disburse forestland for agriculture.

- ▶ Government has to work, which is better for forest and wetland and should not be leased/settle the forestland for agriculture.
- ▶ Fulltime monitoring should be taken and employ honest people.
- ▶ Take initiative to stop *jhum* cultivation and agriculture in the forestland.
- ▶ Give importance of all sectors equally.
- ▶ Form policy by co management.

4.13 Dependency on Natural Resources

We asked the respondents how much they depended on the forest/wetland resources for their livelihood. In reply they said that they were completely and partly dependent. However, some replied that they were not dependant at all.

Table- 19: Dependency level of local people

Dependency level	Wetlands	Forest	Sundarban	All
Completely dependent	40	13	62	31
Partly Dependent	57	72	38	61
Not dependent	1	14	0	8
Base	151	351	151	653

*(All figures in percentage)

In the wetland, 40% respondents said that they were completely dependent for their livelihood on forest/wetlands. The figures are 13% and 62% respectively for forest and

Sundarban. In the wetlands 57% respondents said that they were partly dependent on forest/wetland resources for their livelihood. The figures are 72% and 38% respectively for forest and Sundarban. In the wetlands, 1% respondents said that not dependent at all for livelihood on forest/ wetland resources. The figures are 14% and 0% respectively for forest and Sundarban.

4.13.1 Why dependency increased

Dependency increased for a variety of reasons. Of these population increases, unemployment and poverty are worth mentioning.

Population increase: Exponential rate of population increase has put pressure on the life and livelihood of the people. The result is that they are increasingly dependent on the wildlife resources.

Unemployment: Unemployment is one of the major causes why people have become more dependent on natural resources. Increased population plus lack of other opportunities like education; skill development, etc compel the unemployment youth to use the nearby resources. Consequently they have increasingly become dependent of flora and fauna.

Poverty: Poverty is the pressing problems of the concerned locality. In order to eradicate poverty and to be unemployed they resort to using natural resources. Of these, they take up various odd occupations like honey collection, fishing, timber cutting, catching wild birds and animals etc.

4.14 The proportion of income of respondents family come from PAs

The varied proportion of income of the respondent families comes from protected areas resources. The data revealed that 13 families in the wetlands depend up to 20% whereas the figures are 30 and 3 respectively in the forest and Sundarban.

Table- 20: The proportion of income of respondent's family comes from PAs resources

The proportion of income	Wetlands	Forest	Sundarban	All
Up to 20	13	30	3	20
21-40	15	11	5	11
41-60	15	12	8	12
61-80	12	7	17	10
80+	41	12	68	31
Base	151	351	151	653

**(All figures in percentage)*

The data further revealed that 15 families depended on resources up to 21-40% whereas the figures are 11 and 5 respectively in the forest and Sundarban. Again, 15 families depended on resources up to 41-60% whereas the figures are 12 and 8 respectively in case of forest and Sundarban. 12 families in the wetlands depended on resources up to 61-80% whereas the figures are 7 and 17 respectively in the forest and Sundarban. In the wetlands 41 families depended on 80+% resources whereas the figures are 12 and 68 respectively in case of the forest and Sundarban.

4.15 Affect on livelihood of declining resources

The livelihood of forest dependent people will be affected in the varieties of ways according to the respondents. 36% respondents said that the income would decrease. In the wetlands 36 respondents said that the livelihood would face setbacks. The figures are 19 and 66 respectively in case of forest and Sundarban.

In the same vein, 113% respondents said that poverty would strike frequently in the wetlands. The figures are 9 and 17 respectively in case of forest and Sundarban.

Other opinions were put forward by the respondents, for example, the daily necessities will decrease, the crisis of firewood will be evident, the house making materials will be hard to come by, the unemployment rate will increase and they do not know. However, these are very significant information. Some 12% respondent belief that no impact will be felt on their livelihood.

4.16 Management of Protected Areas

People's participation in the management processes of Protected Areas is delimited within the CBOs in the wetlands and forest. Mention can be made here that there is no CBO in the Sundarban. it is found that in the wetland 3 respondents said that CBOs were in operation in the wetland whereas the figure is 10 in case of Forest.

4.16.1 Management in Wetland:

HAKALUKI: There are several committees in *Hakaluki* Haor wetland, which were formed under the project of MACH. The study team conducted an FGD. It revealed that the committee was not registered till then. It contains 29 members. In the presiding committee there are 9 members.

The work of management committee is to give loans to the poor people and watch over the problems of local people and give solutions. People's awareness has increased. Birds are increasing as bird sanctuary is established. Many trees have been planted. There is also a fish sanctuary for which the number of fishes is increasing. People are participating in the current management. The participation can be increased through courtyard (*uthan*) meetings, road meetings etc. People are benefited from current management. 10 years back there were no such management. People use to catch the local fishes but now it's been restricted.

HAIL HAOR: The NGO involved in the MACH project has aided the local people in many ways. They have given loans to the local people. Because of the current management fish has increased and people are benefited from this management. The use of harmful mechanisms has decreased. If the current management makes people aware about the benefits of fish/bird in their life, it will motivate people to participate spontaneously.

As the result of making seed field, fish has increased. Fees are taken from the outsiders who come here to visit the place. But from students/teachers no fees are taken. During the previous management, the population was lower than now. There was no such poverty as now. Then nobody used to do irrigation to catch fish. So there is a difference between previous and current management.

KANGSHA MALIJHI: There are different management committees under the cooperation of MACH project. There is a committee named "*Taki mara dara basia beel* wetland resources development committee." This was established on 2001. This is registered under social aid dept. The total committee members are 87.

The work of management committee is to give loans to the poor people and watch over the problems of local people and give solutions. The committee work to improve the sanctuaries, to restrict the fishing with harmful mechanisms, they make different decisions and make people aware and create different income generating activates. Because of the

current management People's awareness has increased. Birds are increasing as bird sanctuary is established. Many trees have been planted. There is also a fish sanctuary for which the number of fishes is increasing.

4.16.2 Management in the forest

In the forest area Teknaf game reserve, Chunoti, Modhupur, Lauachhara and Remakelanga, there are management committees under the project of Nishorgo. The role of these committees is to guard and protect the forest started from 2002.

The forest dept mainly manages the forest. There are some other committees who help the forest dept in their activities. Besides, the tribal people always provide sufficient help to them. Currently a sanctuary for the animals/birds has been established, the use of harmful mechanisms has stopped, the hunting of wild animals has also restricted.

4.16.3 How can people's participation be increased in the management?

At present management with the people's participation is low. So the main focus here should be to increase the participation of people in the management system.

- Employment should be created for the people to ensure their participation.
- People participation can be increased through social forestation and through different seminar and committee.
- More awareness is needed here. Leaflets should be distributed here.
- In the current management by arranging a monthly allowance for the workers they can be motivated to participate more.
- By forming committees including the local elite people and creating social forestation people should be made aware.

4.16.4 The role of the different stakeholders in the management

1. Role of local people

- Local people should work together. There should have no conflict.
- People should take spontaneous part on the co management project and also in implementing the laws.
- The local people should take care of the forest so that no body can cut trees.

2. Role of local authority

- The local authority should be stricter.
- Local authority should take different initiatives without any corruption.

- The local authority should provide statutory help.

3. Role of local forest/fisheries authority

- Local fisheries office/forest office should do their responsibilities honestly.
- They should provide statutory support.
- Implement statutory steps and providing support.

4. Role of relevant NGOs

- NGOs can provide supportive roles.
- NGOs should cooperate properly.
- They should help in the co management project.
- They don't have any headache about the forest.

5. Role of local UP

- Local UP and elite people should do their responsibilities. Aware people and make them understood.
- The local UP members and influential people don't have any say about the forest. They just attend meeting, seminars and solve the problems of murder and other crimes. But they don't do anything to protect the forest.

4.16.5 The positive sides of present management

The wetlands and the forest have got some positive impact of the present management. In case of the wetlands the CBOs have made remarkable contribution to the people's participation in the management. This is equally true in case of the forest.

In the wetlands data revealed that highest 48 respondents said that establishment of a new management committee was the positive impact of the present management followed by local people are engaged with management decisions (25), reduction of local influential people (23) are worth mentioning. However, it be noted that 44 respondents said that they did not know about it

In the forest data revealed that highest 40 respondents said that prevention of unregulated resource accumulation was the positive impact of the present management followed by establishment of a new management committee (38), local people are engaged with management decisions (24), prevention of unregulated resources (25), reduction of local influential people (22) are worth mentioning. However, it can be noted that 38 respondents said that they did not know about it.

4.16.6 Fundamental differences between present and the management of 10 years back.

- 10 years back there were no such management. People used to catch the local fishes but now it's been restricted.
- During the previous management, the population was lower than now. There was no such poverty as now. Then nobody used to do irrigation to catch fish.
- Before only natural cultivation was enough to meet up the demand but now population has increased and as a result demand has also increased. Trees are cut unboundedly. As a result the proportion of raining has reduced plus natural calamities like cyclone, *Sidor* happens frequently.

4.16.7 Benefited gain due to current management

Wetland	Forest
The people opined that they were benefited from the present management in a multifarious ways. 41% respondents said that big fishes are found and 37% said that fishes can be caught following the rules and income has increased (21%).	In the forest highest 14% respondents said that the uncontrolled collection of resources have decreased followed by conflict decreased 12%, cutting trees decreased 11% and income increased 8%.

4.17 Traditional practices on wild resources

Over the years the original inhabitants of the wild have resorted to various practices to protect the resources of the forest and wetland. Both natural and man-made forces have continued to take away and destroy the resources from time immemorial. But the local residents of the forest have tried their utmost to keep the wild resources safe for themselves and for their progeny taking various traditional and non-traditional practices. In this chapter we have focused on these issues in brief.

4.17.1 Practices to save forest/wetland resources

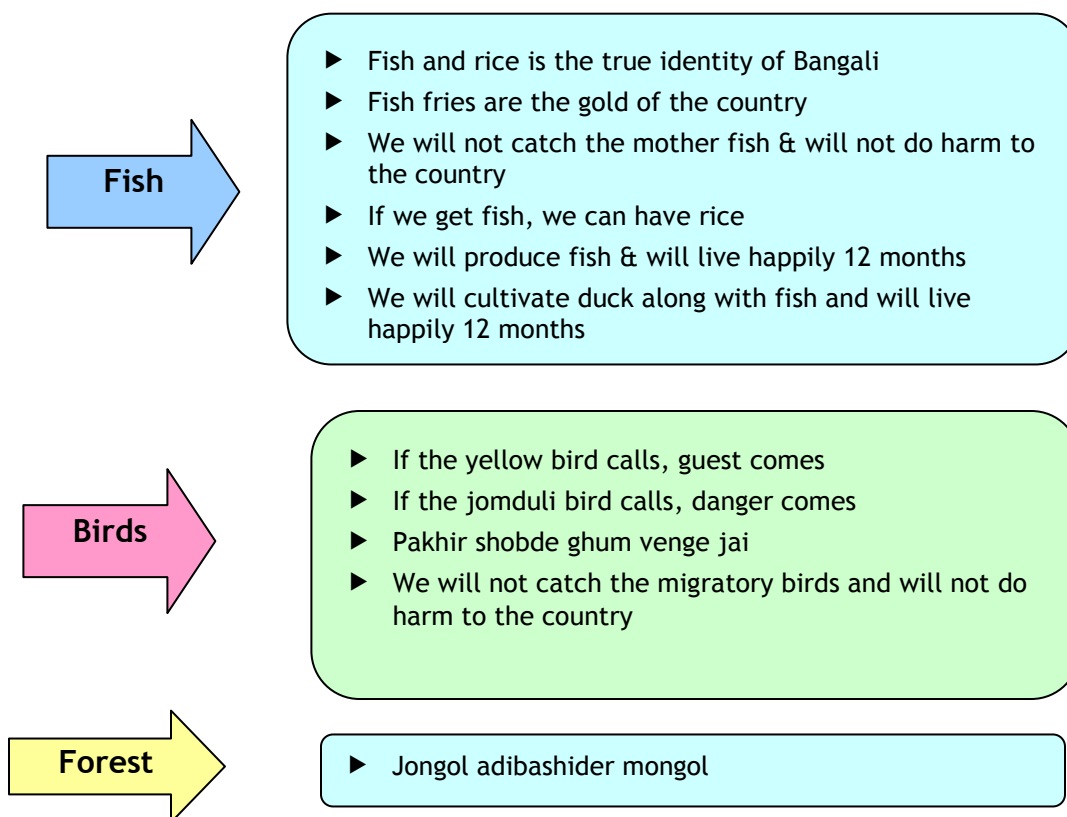
When the respondents were asked about their traditional practices to save the forest/wetland resources it was found that there is no specific practice available in the forest/wetland areas. Though our survey respondents couldn't mention any practices available in their area to save forest/wetland, we got some different responses from the FGD and KII respondents. The forest respondents of FGD and KII mentioned that there are till some practices like the ethnic group of the forests till worships the forest following the rules of their ancestors and so is true in case of wetland. Again in the wetlands there are

some other practices like when first time paddy is been cut, worship is done through sacrificing chicken/goat etc. The forest respondents also mentioned that there are practices like some Muslims do milads and others do some kind of worship for the protection of fruits and the crops produced from jhum cultivation.

4.17.2 Different idioms/phrases used to explain the forest/wetland resources

From the KII respondents of forest some idioms was found to be prevailing like *Boner cheye jongol valo/ Obonir cheye jongol*, The tribal will survive if the forest is protected, *Gach bachle manush bachbe, Jongolei mongol, Mache vate bangali*. The wetland respondents mentioned the prevailing indioms in their area like *Mache vate Bangali and Macher pona desher shona*.

The wetland FGD respondents mentioned some idioms like *Jomi jar langol tar jaal jar jol tar, Jor jar mulluk tar, Macher pona desher shona, Ma mach dhorbo na desher khoti korbo na, Mache vate bangali, Korbo mora macher chash/ Thakbo shukhe baro mash*. The forest FGD respondents mentioned the idioms like *Jongole adibashider mongol, Bon jar jongol tar, Paharer shova gach gachra jonogoler shova bon, Gach bachle manush bachbe*. The respondents were asked to mention different idioms known to them regarding fish, bird, and forest separately. The results are listed separately in the following boxes:



Chapter 5:

Legal Issues

5.1 Knowledge on Legal Issues

It is at first necessary to know about the existing laws regarding forest/wetland resource accumulation and use rather than directly implementing it. The respondents were asked whether they knew about any existing laws regarding forest/wetland resource accumulation and use. Seventy percent of the respondents have argued that they knew something regarding the existing laws and the rest 26 percent refused to say anything about it.

Knowledge regarding the existing laws was high among the respondents of *the Sundarban*. Ninety five percent of the respondents of Sundarban claimed to have known about existing laws regarding forest/wetland resource accumulation and use. Next came *wetlands* where 77 percent of the respondents knew about such laws. However, for the *forest area* under consideration, a significant number, 40 percent of the respondents have reported not to know about any laws regarding these.

The level of awareness is in conformity with FGD and KII information in this regard. The participants of FGD at wetlands mentioned that the majority of the people have known some important laws. Forest respondents mentioned that majority of the people did not know the rules and regulation of the forest. FGD respondents of Sundarban mentioned that majority of the participants have known some important laws. The majority of KII informants have known some laws of wetlands and forest.

Among the respondents who have claimed to know something about the existing laws regarding forest/wetland resource accumulation and use, the extent of their cognizance, were analyzed. Table: 21 below capture the essence in this respect.

A significant proportion, 52 percent of the respondents, seems to know about the probation of 'jail/fine for cutting trees in the forest'. This was noteworthy for the Forest Area respondents. Another 42 percent of the respondents have claimed to know about 'Prohibition of hunting/catching wildlife/fish'.

Table 21: *What laws they knows*

Laws they knows	Wetlands	Forest	Sundarban	All
Jail/fine for cutting trees in the forest		87	48	52
Prohibition of hunting/catch wildlife/fish	35	46	42	42
Should have to take permission for entry into forest		2	74	24
Prohibition of catching small fish	51	3	6	16
Collection of any resource without permission is a punishable crime	5	6	29	13
Prohibition to fishing using harmful gears	26	8	6	12
Prohibition of catching brood fish	32	1	1	9
Prohibition of fishing in the banned period	19	5	2	8
Prohibition of fishing in the sanctuaries	12	0	8	6
Prohibition of illegal fishing	9	1	9	5
Dry branches of trees can be collected		3	1	2
Should have not destroyed the hill		2		1
	117	195	144	456

Also 24 percent of the respondents know about ‘taking permission before entering in the forest’. The Sundarban respondents dominated in knowing this law (74%). Just over 50 percent of the wetland respondents seem to know about ‘Prohibition of catching small fish’, which is 16 percent of the total respondents. Other knowledge regarding the existing laws accounted below 10 percent for the respondents as a whole.

5.2 Sources of getting legal information:

The sources via which people know about these laws can be critical to the project goal. The media habits of the respondents vary across different locations and the extents to which they are exposed to media have an impact on their knowledge level. The following Table: 22 below depict the sources through which the respondents came to know the laws.

On the whole, the prime sources of knowledge regarding these laws were found to be fisheries/forest officer and villagers/elite people with the figure of 44 percent and 23 percent respectively. The respondents of the wetlands seem to know more from CBOs than the others. However, radio/TV and announcement were identified as another critical source of knowledge dissemination with the figure of 17 and 12 percent respectively. Other sources like NGOs, newspaper/magazine, meeting etc. accounted for less than 10 percent.

Table- 22: Sources of knowing law of forest and wetland

Sources	Wetlands	Forest	Sundarban	All
Concern govt. offices	29	32	88	44
Villagers/elite people	19	25	22	23
Radio/TV	26	16	8	17
From CBO	30	9	2	12
Training/NGO/GO activists	13	1	1	4
Billboard	3	3	1	3
Newspaper	3	1	1	2
Meeting	2	1	1	1
Leaflet	0	1	1	1
Video show	1	1	1	1
Folk song/drama	1	1		

It was found from the respondents of FGD that they have known the laws regarding forest/wetlands through different sources like advertisements through radio, TV, and newspaper, communication efforts by the govt officials, forest official, through different committees and organizations like Caritas, Nishorgo officials and some other local organizations.

After analyzing the state of knowledge regarding the existing laws and their sources, we tend to provide how people can be made aware of such laws. It is expected that not all the respondents in these areas have the similar media habit. So the channels through which people can be made aware can be different for different areas.

The most significant source was identified as ‘meeting/public gathering’, which accounted for 55 percent. Next came ‘miking’ and ‘electronic media (Radio/TV)’ which accounted for 30 percent and 13 percent respectively. Other sources include ‘paper/leaflet/poster/signboard’, ‘different activities of respective department’, NGOs, cultural events etc. accounted for less than 10 percent for all wetlands /Sundarban and forest areas.

5.3 Status of implementation of laws

From the respondents of FGD and KII the current state of law implementation in the forest, wetland and Sundarban area was found. The FGD respondents opined that the laws were somewhat implemented because there were many dishonest officials in the forest/fisheries department. The officials make the laws themselves and they themselves break the laws.

The CBOs under the MACH project working in the wetlands are working properly and taking some initiatives against the people doing illegal businesses on forest resources. Some of the forest respondents opined that laws are not implemented properly. Those who even know the laws don't use to follow them because of their poverty.

The results from the KII were more or less similar as the FGD results. They opined that law implementation level is very low. According to the respondents the educated people abide by the laws and the illiterate people don't abide it, as they are unaware about the negative sides. Again, some opined that the influentials of the area don't abide by the laws, as they don't feel it necessary to follow the rules. Some also pointed finger to the dishonesty of the govt. officials who themselves make the laws.

5.4 Suggestions put forward by the respondents as to how laws can be implemented

Implementation of laws is not effective and it should be given more emphasized to protect the resources. The respondents were asked to state ways for proper implementation. 33% of the total respondents opined that the proper implementation of laws is needed for the effective implementation and it scored highest among the Sundarban respondents (70%). 29% of the total respondents opined that making people aware is of high importance and here also the Sundarban respondents expressed their opinion which is the highest (48%).

Some opinions were gathered from FGD/KII respondents regarding the effective implementation of the laws in forest/wetland/Sundarban. The FGD respondents opined that the people should be first made aware of the laws and then to be convinced to follow the laws. The respondents opined that the people should be made aware about the thing that they can be benefited from protecting the forest resources rather collecting them by adopting harmful ways. The KII respondents also focused on the point to make the mass people aware for the effective implementation because if the mass people are made aware about the laws, they can play important roles in protecting the resources by following the rules.

Chapter 6:

Sustainable Management Issues

6.1 Knowledge on Sustainable Management of Forest/Wetland Resources

Sustainable management is major concern to achieve longtime benefit. But the sustainable management of forest/wetland is faced with multifarious threats. In this section we tried to understand the people's knowledge, threats and its consequences. Special focus has been placed on the extent of cognizance on the said issues and suggestions they put forward.

6.2 Threats on Sustainable Management of the Wetland Resources

65.5% of wetland respondent responded that use of harmful gear is threat for wetland sustainable management. Out of them 57% opined that it's a serious problem, 42% opined that its problem. 51.6% respondent responded that excessive resource accumulation is threat to the sustainable management of forest. Out of this, 59 % opined that it's a serious problem, and 38 % opined that its problem.

Table-23: Threats on sustainable management of the wetland resources

Threats					Suggestions
	No Prob.	Problem	Serious Problem	Base	
Use of harmful mechanisms	1	42	57	99	✓ Restrict harmful mechanisms ✓ Proper implementation of law
Excessive resource collection	3	38	59	78	✓ Collection rate of resources should be decreased ✓ Re excavation of canals/ rivers ✓ Prohibit catching young fishes
Filling up of rivers/tributaries	1	38	61	69	✓ Re excavation of rivers/canals
Farming pollution		78	23	40	✓ Stop use of insecticides ✓ Decrease resource collection
Reduction in size of PAs		45	55	38	✓ Re excavation of canals
Irrigation		16	84	19	✓ Stop irrigation in dry season
Embankment/Dam building and flood protection		42	58	12	✓ Making dam/embankments so that wetland is not threatened
Aquatic weed		42	58	12	✓ River/canal should keep clean.
Factory pollution		50	50	2	✓ Refrain from building factories nearby the forest/wetland
Sewerage		100	0	1	✓ Keep environment clean

45.6% of wetland respondent responded that filling up of rivers/tributaries is a threat to the sustainable management. Out of this, 61% opined that it's a serious problem and 38% said that its problem. 26.4% of total wetland respondent responded that farming pollution is a threat to the wetland sustainable management. Out of this 23% opined that its serious problem and 78% opined that its problem. 25.1% of wetland respondent responded that reduction in size of forest/wetland is threat to the sustainable management. Out of this 55% opined that its problem and 45% opined that its problem. Other than these issues the respondents also some other points like irrigation, embankment/dam building and flood protection, Aquatic plants, Factory pollution, Factory pollution & Sewerage as threats to the sustainable management for the wetland.

From the KII, it was found that there are extreme threats like Use of harmful mechanisms, farming pollution, Excessive resource accumulation, Filling up of rivers/tributaries and the respondents suggested some steps to be taken against the threats like The use of harmful mechanisms should be stopped, Farming pollution should be decreased, Excessive resource accumulation should be controlled.

6.3 Threats on Sustainable Management of the Forest

68.9% of forest respondent responded that excessive resource accumulation is a threat to the sustainable management of dependant people and the resources of forest. Out of this, 62% opined that it's a serious problem and 36% opined that it's problem. 64.1% respondent of forest responded that use of harmful mechanisms is a threat to the sustainable management of forest. Out of this 52% opined that its problem and 42% opined that it's a serious problem. 29.6% of respondent responded that reduction in size of forests/wetlands is threat to the sustainable management of forest. Out of this 61% opined that its serious problem and 38% opined that it's problem.

28.4% respondent responded that farming pollution is threat to the sustainable management. Out of this 74% opined that its problem, 13% opined that it's serious problem and rest 13% opined that it's no problem. 15.6% respondent responded that filling up of rivers/tributaries is threat to the forest sustainable management. Out of this 49% opined that its problem and 38% opined that it's serious problem. There are some other issues that the respondents pointed as the threats to the forest sustainable management like

Sewerage, Irrigation, Aquatic plants, Embankment/Dam building and flood protection, and Factory pollution.

Table-24: Threats on sustainable management of the forest

Threats					Suggestions
	No Problem	Problem	Serious Problem	Base	
Excessive resource accumulation	2	36	62	242	✓ Decrease resource Collection
Use of harmful mechanisms	6	52	42	225	✓ Stop harmful mechanisms use ✓ Stop use of insecticides.
Reduction in size of forests	1	38	61	104	✓ Plant more trees ✓ Increase forest size
Farming pollution	13	74	13	100	✓ Stop insecticides ✓ Decrease resource collection
Filling up of rivers/tributaries	13	49	38	55	✓ Re excavation canals ✓ Stop cutting hills
Sewerage	36	57	7	14	✓ Keep the environment clean
Aquatic weed	60	30	10	10	✓ Keep the environment clean
Embankment/Dam building and flood protection	67	22	11	9	✓ Making dam/embankments so that wetland is not threatened
Factory pollution	44	44	11	9	✓ Refrain from building factories nearby the forest/wetland

From the KII results it was found that there are extreme threats like use of harmful mechanisms, reduction in size of forests, farming pollution, excessive resource accumulation, Filling up of rivers/tributaries, irrigation, embankment/dam building and flood protection, aquatic plants, factory pollution, filling up of rivers/tributaries and the respondents suggested to take some steps like use of harmful mechanisms-should be stopped. The area of forest should be increased, the people should be made aware, no use of fire in *jhum* cultivation. All these should be stopped through management committees. The laws should be implemented properly.

6.4 Threats on sustainable management of the Sundarban

85.4% respondent responded that use of harmful mechanisms is the threat to the sustainable management of Sundarban. Out of this 71% opined that its problem and 29% opined that it's serious problem. 68.2% respondent responded that excessive resource accumulation is threat to the sustainable management of Sundarban. Out of this 66%

opined that it's problem and 34% opined that it's serious problem. 64.9% of Sundarban respondent responded that filling up of rivers/tributaries is threat to threat to Sundarban sustainable management. Out of this 58% opined that its serious problem and 42% opined that it's problem. 21.8% respondent responded that embankment/dam building and flood protection is threat to the sustainable management. Out of this 55% opined that its serious problem and 45% opined that it's problem. Other than these issues the respondents also mentioned some other points as threats like reduction in size of forests/wetlands, farming pollution, aquatic plants, sewerage, irrigation, and factory pollution.

Table- 25 Threats on sustainable management of the Sundarban

Threats	No Problem	Problem	Serious Problem	Base	Suggestions
Use of harmful mechanisms		71	29	129	✓ Stop use of harmful mechanisms ✓ Proper implementation law
Excessive resource collection		66	34	103	✓ Decrease resource collection
Filling up of rivers/tributaries		42	58	98	✓ Re excavation rivers/canals
Embankment/dam building and flood protection		45	55	33	✓ Making dam/embankments so that Sundarban is not threatened
Reduction in size of forests/wetlands		77	23	22	✓ Increase forest size
Aquatic weed	14	71	14	7	✓ Keep the environment clean
Sewerage	20	80	0	5	✓ Keep the environment clean

From the KII results it was found that there are extreme threats like use of harmful mechanisms, reduction in size of forests/wetlands, excessive resource accumulation, filling up of rivers/tributaries, sewerage, aquatic plants and the initiatives to be taken are like Use of harmful mechanism should be stopped, the law should be properly implemented, proper care should be taken so that the rivers cant be silted, aquatic plants should be protected, to protect the forest in cooperation with the local people.

Our respondents were asked to indicate some threats to the sustainable management of the resources. Among the respondents who opined that use of harmful mechanism is the main threat to the sustainable management suggested that the use of harmful mechanism

should be restricted, use of insecticides should be stopped and the laws should be implemented properly, the collection rate of resources should be decreased for the sustainable management, collection rate of resources should be decreased, more trees should be planted, there should have sanitary toilet and the toilet should be kept clean and employment should be created for the local people, irrigation should be stopped, the rivers/canals should be re excavated, mills/factories should not be established in the nearby wetland and the forest and more awareness should be created among the people and educate the people about this sustainable management.

6.5 Overall Suggestions regarding sustainability of forests/wetlands

The respondents gave some suggestions that should be adopted for the sustainability of forest/wetland as following:

- The protector should not become the destroyer: Highest 24% of the respondent suggested regarding sustainability of forests/wetlands that the protector should not become the destroyer.
- Afforestation and reforestation: 20% of the respondents suggested that Forestation is necessary for the sustainability of forest/wetlands.

Some other suggestions are found that are listed below:

- ▶ Stop the use of harmful mechanisms
- ▶ Alternative income generation activities
- ▶ Protection through the mass people
- ▶ Stop the corruption of govt officials
- ▶ To employ honest officials
- ▶ Long term planning & implementation
- ▶ To awaken people
- ▶ To increase the capability of forest officials
- ▶ Proper implementation of laws
- ▶ To introduce co management
- ▶ To establish tourism center
- ▶ Training
- ▶ To rehabilitate the hilly people
- ▶ Stop irrigation
- ▶ To establish sanctuary

The respondents of KII suggested that the forest/wetland should be protected first and then initiatives should be taken to develop the forest/wetland. There should have proper

management committees and different development activities for the proper protection of the specified area. Some indicated to remove the corruption from the govt officials. Others suggested to ensure the participation of local people in the management of resources and to properly implement the laws. The respondents also suggested alternative work arrangement for the fishermen.

The respondents of forest suggested that the people's awareness is of prior importance for the sustainability of the forest/wetland. Some indicated that different plots are been established by destroying the forest and this practice should be stopped by now. Others suggested to give emphasize on the social forestation. The wetland respondents suggested to dig the river, making sanctuaries, restrictions on catching fish on specific periods will help to bring long-term development to the local people

Attitude on Biodiversity Conservation and Protection of Forests/Wetlands

7.1 Attitude towards of local people on biodiversity conservation

People attitude and perception is very important to biodiversity conservation and as well as the protection of forests/wetlands resources. Without positive attitude of all stakeholders, the long time sustainability of forest/wetlands is quite impossible. Moreover, positive attitude is more important to establish social movement on the issue. Taking these in to consideration, it is necessary to know the attitude of the people regarding these burning issues. These issues have been highlighted in the chapter.

We asked our respondents some issues on what their attitude towards the biodiversity conservation could be understood. On every issue they gave full support. 74% of all respondents supported the issue that “the current state of PAs is largely the result of natural disasters”, 87% supported that “the current state of PAs is the result of humanity’s actions”, 89% supported that “there will be an increase in natural calamities if the PAs cannot be protected”, 88% supported that “it is extremely important for the government & local people to adopt coordinated management strategies to protect the PAs”, 88% supported that “PAs need to be marked off as “Protected Area” to ensure its protection”, 90% supported that “Knowledge and mechanisms for protecting PAs need to be dispersed to the general population”, 90% supported that “It would be difficult to protect PAs without spreading awareness”,

88% supported that “Deterioration of the PAs has negative consequences on the livelihood of the local dependant population”, 83% supported that “As the PAs have been legitimized as farming areas, protection of PAs must be marked as the most important legal area”, 84% supported that “There is no alternative to improving farm-related knowledge and skill of the people in protecting PAs”, 86% supported that ‘A tourism center in the PAs would improve PAs conditions”, 89% supported that “Increasing tourism in PAs would increase incomes of the local population”, 80% supported that ‘It would be effective to disperse awareness through local cultural traditions/rituals”, 90% supported that “Increase in population has increased dependency on PAs by a large amount”,

Table- 26: Attitude towards of local people on biodiversity conservation

Issues	W	F	S	All
	Spt	Spt	Spt	Spt
The current state of the PAs is largely the result of natural disasters.	65	66	100	74
The current state of wetlands is the result of man made cause	80	86	96	87
If the PAs cannot be protected, natural calamity will be threatened	82	87	99	89
It is extremely important for the government & local people to adopt coordinated management strategies to protect the wetlands.	86	85	97	88
PAs need to be marked off as “Protected Area” to ensure protection.	86	85	97	88
Knowledge and mechanisms for protecting PAs need to be dispersed to the general population.	87	87	98	90
It would be difficult to protect PAs without spreading awareness	88	89	92	90
Deterioration of the PAs has negative consequences on the livelihood of the local dependant population.	91	85	92	88
As the PAs have been legitimized as farming areas, protection of wetlands must be marked as the most important legal area.	84	79	92	83
There is no alternative to improving farm-related knowledge and skill of the people in protecting PAs.	81	82	91	84
A tourism center in the PAs would improve wetland conditions	87	80	100	86
Increasing tourism in PAs would increase incomes of the local people.	89	84	99	89
It would be effective to disperse awareness through local cultural traditions/rituals.	72	78	97	80
Increase in population has increased dependency on PAs by a large amount.	88	88	96	90
A fall in PAs resources will have the worst negative consequences on the poorest of the poor of the local community.	91	89	100	92
The poorest of the poor are deprived of the benefits of PAs resources	85	80	98	86
Establishment of local job centers would reduce dependency of local population on PAs resources.	88	89	94	89
Several measures need to be undertaken to sustain PAs resources: disaster rehabilitation centers, bar on certain hours, ban on use of harmful equipments/tools etc.	89	89	100	91
Without reducing the influence of prominent/notorious people, no initiative will be effective - awareness will not translate to results	91	89	93	90
Without PAs resources, the local dependant community will suffer tremendously.	90	91	92	91

* W= wetland, F=forest, S= Sundarban, SPT= Support

92% supported that “A fall in PAs resources will have the worst negative consequences on the poorest of the poor of the local community”, 86% supported that “The poorest of the poor are deprived of the benefits of PAs resources”, 89% supported that “Establishment of local job centers would reduce dependency of local population on PAs resources”, 91% supported that “Several measures need to be undertaken to sustain PAs resources: disaster rehabilitation centers, bar on certain hours, ban on use of harmful equipments/tools etc”, 90% supported that “Without reducing the influence of prominent/notorious people, no

initiative will be effective - awareness will not translate to results”, 91% supported that “Without PAs resources, the local dependant community will suffer tremendously”.

7.2 Attitude of Potential Tourists on Issues Related to Conservation

Some issues were presented to our respondents to understand their attitude towards the biodiversity conservation and eco-tourism. The respondents agreed to all the issues. 65 percent agreed with the issue that “the current state of the wetland/forest is largely the result of natural disasters”, 97 percent agreed with the issue “The current state of wetland/forest is the result of humanity’s actions, 98percent agreed to “There will be an increase in natural calamities if the wetland/forest cannot be protected”, 97 percent agreed with the issue It is extremely important for the government & local people to adopt strategies to protect the wetland/forest, 95 percent agreed to the issue “Wetland/forest need to be marked off as “Protected Area” to ensure its protection”, 96 percent agreed that the “Knowledge and mechanisms for protecting wetland/forest need to be dispersed to the general population”, another 96 percent agreed that “It would be difficult to protect wetland/forest without spreading awareness”.

Some 95 percent agreed that “Deterioration of the wetland/forest has negative consequences on the livelihood of the local dependant people”, 84percent agreed that “As the wetlands have been legitimized as farming areas, protection of wetlands/forest must be marked as the most important legal area”, 91 percent agreed to the issue that “There is no alternative to improving farm-related knowledge and skill of the people in protecting wetlands/forest”, 91 percent agreed to the issue that “A tourism center in the wetlands/forest would improve wetland conditions”, 93 percent agreed that “Increasing tourism in wetlands would increase incomes of the local people”, 92percent agreed that “A fall in wetland resources will have the worst negative consequences on the poorest of the poor of the local community”, 87 percent agreed that “The poorest of the poor are deprived of the benefits of wetland resources”, 92percent agreed to the issue “Establishment of local job centers would reduce dependency of local population on wetland resources”, 94percent agreed that “Several measures need to be undertaken to sustain wetland resources: sanctuaries, Ban period, Ban harmful gear/techniques etc”.

Table- 27: Attitude of Potential Tourists on Issues Related to Conservation

Issues	Agree
The current state of the wetland/forest is largely the result of natural disasters	65
The current state of wetland/forest is the result of humanity's actions.	97
There will be an increase in natural calamities if the wetland/forest cannot be protected	98
It is extremely important for the government & local people to adopt strategies to protect PAs	97
Wetland/forest need to be marked off as "Protected Area" to ensure its protection	95
Knowledge and mechanisms for protecting wetland/forest need to be dispersed to the people	96
It would be difficult to protect wetland/forest without spreading awareness	96
Deterioration of the wetland/forest has negative consequences on the livelihood of people.	95
As the wetlands have been legitimized as farming areas, protection of wetlands/forest must be marked as the most important legal area.	84
There is no alternative to improving farm-related knowledge and skill of the people in PAs	91
A tourism center in the wetlands/forest would improve PAs conditions	91
Increasing tourism in wetlands would increase incomes of the local people	93
It would be effective to disperse awareness through local cultural traditions/rituals.	88
Increase in population has increased dependency on PAs by a large amount.	93
A fall in PAs resources will have the worst negative consequences on the poor.	92
The poorest of the poor are deprived of the benefits of PAs resources.	87
Employment opportunity would reduce dependency of local population on PAs resources.	92
Several measures need to be undertaken to sustain wetland resources: sanctuaries, Ban period, Ban harmful gear/techniques etc.	94
Without reducing the influence of prominent/notorious people, no initiative will be effective - awareness will not translate to results.	95
Without PAs resource the local dependant community will suffer deeply.	96
Tourism and biodiversity can support one another.	93

95 percent agreed that "Without reducing the influence of prominent/notorious people, no initiative will be effective - awareness will not translate to results", 96percent agreed that "Without wetland resource the local dependant community will suffer deeply", and lastly 93percent supported the issue "Tourism and biodiversity can support one another".

7.3 Perception of people regarding ensuring sustainability and management

When the respondent of wetland, forest and Sundarban were asked about the importance of the issues in terms of sustainability, all the issues including to aware people, communication, general management of the wetland, Protection of fish, bird and animal habitat, Legal support, Influence in policy level skill building scored either highest score (75% +) or high score (50-74%) to be treated as of prior importance.

Table-28: Peoples perception regarding ensuring sustainability and management

Issues	Wetland		Forest		Sundarban	
	level of significance	Role of MGT	level of significance	Role of MGT	level of significance	Role of MGT
Awareness increase of local people	Highest	Not bad	Highest	Bad	High	Not bad
Communication to different dept	High	Bad	High	Bad	High	Not bad
Overall mgt	High	Bad	High	Bad	High	Not bad
Reintroduce wildlife	High	Bad	High	Bad	High	Not bad
Legal Support	High	Bad	High	Bad	High	Not bad
Influence policy level	High	Bad	High	Bad	High	Bad
Increase capability of mgt	High	Bad	High	Bad	High	Bad

Highest = 75%+, High = (50-74)%

In case of the role of current management in ensuring sustainability of wetland the respondents opined that in every case the role of management is very bad except in building people's awareness the role is not very bad. The situation is worst in the forest areas. The respondents claimed that the role of management in their areas is very bad. The Sundarban situation is comparatively better because in most cases the respondents opined the role of management to be not bad except in the cases of Influence policy level and Increase capability of mgt they claimed the role of management is very bad.

The wetland respondents of FGD opined that is to protect the wetland should be the prior importance of all and then comes the certainty of employment for all. Improving the communication system, to dig the river, making sanctuaries, restrictions on catching fish on specific periods will help to bring long-term development to the local people. According to them the current management is somewhat successful in their attempts and brought some benefits to the local people. The forest and Sundarban respondents of FGD opined to ensure the participation of the local people. The Sundarban respondents suggested arranging some more committees and banning the illegal resource collection.

7.4 Perception of Potential Tourists on Eco-Tourism

Several international standard measures were presented in front of the respondents to evaluate their views on them. Nine four percent of the respondents seem to give *natural and scenic beauty* and *habitat protection of forest animals and birds* the height priority with both 94 percent response.

Table- 29: Perception on Eco-tourism

Issues	LI	MI	HI
Prioritizing natural and scenic beauty		5	94
Prioritizing habitat protection of forest animals and birds		5	94
Prioritizing protection of forest/wetland that have not been used as tourist spots yet	3	10	87
Prioritizing culture and traditions of local residents	4	10	85
Prioritizing assets protection of eco-tourism <i>Parjatan</i> centers	7	11	78
Prioritizing land management of eco-tourism <i>Parjatan</i> centers	8	16	67

* LI= less importance, MI= Moderate importance, HI= Highest important

Giving Priority to protect the areas that have not been used as tourist spots yet and Prioritizing culture and traditions of local residents came under debate with 87 percent and 85 percent high response respectively. The issues of *land management* and *asset protection* were seen as moderately important with 16 and 11 percent responses. This somewhat depicts the attitudes of the potential tourists of our country. There are scopes for improvement, through better and proper communication with the broad group of stakeholders.

7.4 Treating as ‘Protected Area’ for biodiversity conservation and eco tourism

Regarding the attitude of the respondents about biodiversity conservation and eco-tourism, they were asked weather certain forests/wetlands should be marked as ‘Protected Areas’? The answers, however, were very critical. Eighty eight percent of the respondents as a whole opted for marking the places as ‘Protected Areas’ and the rest opted for the opposite. In order to promote eco-tourism, it is very important to sustainable manage the resources of these areas and also to conserve the biodiversity. By marking such areas as PAs would serve both these purpose. This conveys the knowledge insufficiency among the target respondents regarding biodiversity conservation and eco-tourism.

7.5 Attitude to Establish 'Protected Areas'

Forty seven percent of the respondents argued that, the areas should be marked as PAs for producing and ensuring the natural habitat of wildlife. Also, another 30 percent have argued that, this should be done in order to stop the destruction of the areas. However some extraneous opinions, though insignificant, like *for the benefit of the government*, to ensure *entry restrictions in the PAs* came under consideration.

ECO-Tourism and Development

8.1 Concept Regarding Eco-Tourism

When the respondents were asked about their concept regarding eco-tourism, different issues came into discussion. In simpler words, eco-tourism can be defined as *Responsible travel to natural areas that conserves the environment and improves the well being of local people*. The responses given by the target audience were somewhat similar. Eleven percent of the respondents have stated that, places covered with forest, wildlife and natural beauty are eco-tourism sites. Both *protection and uncontrolled movement of wildlife* and *biodiversity conservation* came under consideration with 7 percent response. Other responses includes opportunity to visit biodiversity, environmental balance etc. with insignificant responses. Nevertheless, the respondents left the important concept of well being of local habitants alone.

It was noteworthy to mention that, 40%- a significant percent of the respondents have reported to have no knowledge about eco-tourism and also 19 percent have a vague or inconsistence concept about eco-tourism. In light of such circumstances, we can conclude that, there exists a huge gap in the knowledge of the potential respondents regarding the concept of eco-tourism. So in order to sustainable manage tourism and resource consumption, grater advocacy regarding eco-tourism is needed for the potential tourists.

8.2 Source of Knowledge of eco-tourism

Varying sources contributed to the state of knowledge of the respondents regarding eco-tourism. Among all, print media played the major roll with were TV was the next. Fifteen percent of the respondents have stated print media as the source of knowledge regarding eco-tourism and 13 percent stated it was TV. Other sources include relative/neighbor/friends, books, traveling etc. with less than 10 percent response. It was interesting to note that, though TV seems to provide more knowledge regarding eco-tourism than any another sources stated above, print media accounted the height among all.

8.3 Scope of Eco-Tourism in Bangladesh

When the respondents were asked about whether there is scope for improvement of eco-tourism in Bangladesh, the answer was positive. On the whole, 89 percent of the respondents have stated positively and the rest opted for negative response.



8.4 Obstructions to Develop Eco-Tourism in Bangladesh

A very wide range of issues came across while analyzing the obstructions to develop eco-tourism in our country. The respondents saw lack of government initiative as the major obstacles.

Major Obstacles	Minor Obstacles
<ul style="list-style-type: none"> • Lack of govt. initiatives. • Lack of awareness of people • Inefficiency of govt. official • Poverty/unemployment 	<ul style="list-style-type: none"> • Corruption • Lack of communication, security, weakness of laws, accommodation system for tourist • Non cooperation of local people • Political influence • Increase population • Terrorism • Not enough environmental activities • We are not united

Also government inefficiency, lack of awareness was treated in bold voices. However several major issues were given less importance by the respondents. Issues like corruption, lack of communication, security, improper law practices, political influences etc. were given less importance. So we can say that, though the tourists have some knowledge regarding the obstacles to eco-tourism, it is not sufficient. There are ways for improvement in their level of knowledge regarding obstacles to eco-tourism.

While considering the suggestions, here also diverse opinions came from the potential respondents.

- ▶ *Increase awareness of people and publicity:* This is one of the major and important suggestions that came from the respondents significantly.

- ▶ *Govt. initiative, policy formulation*: The respondents seem to indicate that, greater government intervention can remove these obstacles in a greater extent.
- ▶ *NGO initiative, private entrepreneurship initiative*: Also if the private and international support is present, eco-tourism can be developed in a more intensive way.
- ▶ *Proper management*: Proper management of the areas and tourism system will obviously remove the barriers for eco-tourism development.
- ▶ *Proper law implementation*: In our country, there exist several laws, which can bring benefit in eco-tourism though in implicit terms. However proper implementation of such laws is necessary. The respondents seem to give emphasize on this issue very much.
- ▶ *Protection and development of forest and wetland*: If tourists were to visit the PAs, there should exist forest and wetland to see of. If we do not protect these areas, tourism will never develop. However the respondents have discussed the issue of protection and development of forest/wetland, it was addressed in lighter terms.
- ▶ *Wildlife protection*: Also the issue of wildlife protection is a prime factor. Tourism facility should be developed under strict wildlife protection.
- ▶ *People participation of the stakeholders*: A greater participation of all the level of the stakeholders would remove the barriers to increase eco-tourism.
- ▶ *Infrastructure development*: Good infrastructure development will induce and promote eco-tourism in greater aspects.
- ▶ *Ensure security*: Tourism is a global phenomenon. So only by ensuring proper security to both national and international tourists will promote eco-tourism in wider phases. However the respondents addressed these issues less significantly.

Similar questions like the things that should be focused to develop forest/wetland areas were addressed the respondents. However regardless of some variations, the answers were somewhat similar. One interesting response came which can be focused to improve the situation of eco tourism, which is

- ▶ *Arrange Festive/Fair*: *By arranging festivals/fairs, new incentives can be created for the outsets and it can add a dimension in the process of eco-tourism.*

8.5 Ways for Achieving of development of Eco-Tourism

Carrying this level of understanding, the potential ways for developing were discussed among the respondents. Thirty four percent of the respondents stated that, government initiative should be taken to improve on eco-tourism. Also according to 21 percent of the respondents, eco-tourism in Bangladesh can be improved through making people more *aware* about eco-tourism and through protection of wildlife, creating forestation and sanctuaries and decreased resource collection. Also the issue of security and collaboration of the different stakeholders came under consideration. However, there came some irrelevant issues like follow the foreign country, infrastructure development, stop corruption, data collection of wildlife etc. This indicated that there exists some wrong perception regarding eco-tourism among the respondents.

8.6 Tourism Practices

For accessing the tourism habit of the potential respondents, the behavior of the potential tourists was analyzed. As a whole, it was found that, 99 percent of the respondents have visited any tourist spots they know about.

8.6.1 Places Visited by the Respondents

Among the respondents who have visited any of the tourist spots, it was analyzed that which places were visited most often and which were not. The most visited spots were identified as the places where more than 30 percent of the respondents have visited and least visited spots were identified as the spots where up to 10 percent of the respondents have visited. The moderately visited places were defined as the places that were visited by 10 to 30 percent of the respondents.

<i>Most visited sport (more than 30percent responses)</i>	<i>Moderately Visited (10-30 percent responses)</i>	<i>Least visited sport (up to 10percent responses)</i>
Cox's Bazaar, National Zoo, National Museum, Sylhet, Botanical Garden, Sundarban, Faiz Lake, Lalbagh Fort, Patenga, Madhobkundu	Saint Martin, Ahsan Manjil, Rangamati/Kaptai, Teknaf, Himchori, Sitakundu, Moinamati, National Park, Bandarban, Satgombuj Masjid, Inani, Bolodha Garden, Mahastangarh, Kuakata	Madhupur, Lauwachra, Khagrachori, Gojni, Ramu, Chimbuk, Moheshkhali, Jailing, Chunati, Paharpur, Ramsagar/ Kantajir Mandir, Boga Lake, Faishakhali, Tanguar Haur, Hakaluki Haur, Satchori, Khadimnagar, Birishiri, Shalom Bihar, Mujibnagar

8.7 Few aesthetic aspects of natural resources

When the respondents were asked about some aspect of the natural beauty of their respective area they mentioned the things as ranked below:

Table- 30: Aesthetic aspects of natural resources

Issues	Rank
The natural beauty is very captivating	1 st
There are many animals and birds	2 nd
The area is surrounded by trees & green	3 rd
The migratory birds come during the winter	4 th
There are hills fountains	5 th

73% respondents opined that the natural beauty is very captivating, 55% of the respondents responded that there are many animals, 42% responded that trees & green surround the area, 41% respondents responded that the migratory birds come during the winter, 37% responded that there are different species of birds, 33% responded that there are hills. Highest 66% of the wetland respondents think that the natural beauty of their area is very captivating and 65% respondents think that the migratory birds coming to their wetland are worthy to see. 77% of the forest respondents opined that the natural beauty is very captivating and hills over there are very beautiful. About 97% respondents of Sundarban opined the different kinds of animals to be the most attractive thing of Sundarban.

- ▶ Hygienic place
- ▶ Fishes
- ▶ Rivers/lake/Haor
- ▶ Kaptai bridge/Electricity center
- ▶ Water lily/Lotus
- ▶ There is the largest mangrove forest

The FGD respondents of forest mentioned that the trees, wildlife, large forest, hills and birds are the most captivating aspects of their area. But they also indicated that the animals and trees of their area are decreasing. The wetland respondents mentioned the water lily, Migratory birds coming during winter, the swimming of ducks, the sight of catching fish all are very beautiful. The Sundarban respondents pointed *Shundori* trees, rivers, Tigers, Deer, Big birds, Elegators, *Golpata*, sea, Monkeys to be the attractive things.

8.7.1 State three important features of forests/wetlands that people to visit

65% respondents opined that the features that entice people to visit their area are Animals/birds, Sanctuary, Observation Center, Eco-park, Mini zoo, 34% opined that Different species of trees, 33% opined that people are attracted to the hills, 27% opined that they are attracted to the migratory birds, 21% opined that Rivers/lake/sea/Haor entice the people more to visit their area. Others opined that Deep forest, Tribal & their culture, Fountain, Kaptai electricity center, Hanging Bridge attract the people most.

Wetland	Forest	Sundarban
<ul style="list-style-type: none"> ▶ Migratory birds ▶ Animals/birds, Sanctuary, Observation Center, Eco-park, Mini zoo. ▶ Rivers/lake/sea/Haor 	<ul style="list-style-type: none"> ▶ Animals/birds, Sanctuary, Observation Center, Eco-park, Mini zoo. ▶ Different species of trees ▶ Hills 	<ul style="list-style-type: none"> ▶ Animals/birds, Sanctuary, Observation Center, Eco-park, Mini zoo. ▶ Different species of trees ▶ Rivers/lake/sea/Haor

8.7.2 The reasons why the tourists come

The respondents gave a number of reasons why the tourists come to the forest and wetland. Of these 81% respondents responded that people come to these places to see the natural beauty, 63% opined that they come to see the birds, 54% opined that they come to see the wild animals, 35% opined that they come to see the sea/rivers/forest/canals, other 35% opined that they come to see the hills. Others opined that people come to prey birds, to see the fountains, to hunt the wild animals, to catch fish, Kaptai lake/electricity production center, and Water lily/Lotus.

8.8 How will this forest/wetland be benefited if the number of visitors increases?

The respondents were asked to opine on the fact that if more visitors come then what will be the good or bad sides on the forest/wetland. Their responses are listed below:

Benefits	Damages
<p>Major benefit</p> <ul style="list-style-type: none"> ▶ The forest/ wetland will be developed, The fountains will be reconstructed, There will be arrangement to climb the 	<ul style="list-style-type: none"> ▶ The area will be polluted more ▶ The animals/birds will not be able to wander unboundedly ▶ It will occur loss to the fruits of the

<p>hills</p> <ul style="list-style-type: none"> ▶ The income of Govt will increase ▶ The area people will be economically benefited and the dependency on forest/wetland will decrease ▶ The transportation system will be developed ▶ The area will be well known to others <p>Minor</p> <ul style="list-style-type: none"> ▶ The people will be motivated to the development of forest/wetland ▶ The Govt will pay importance to forest/wetland 	<p>forest</p> <ul style="list-style-type: none"> ▶ Problem can arise to the habitation of local people ▶ The animals will be lost because of hunting <p>Comments:</p> <p>In this results some irrelevant point came out which never match to the subject matter like if more visitors come the fruits of the forest will lose. It shows the lack of knowledge and unawareness of the people about tourism.</p> <p>The result shows the regarding the matter of what kind of damages could be occurred due to increased visitors.</p>
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20% respondents opined that if number of tourists increase then the forest/ wetland will be developed, the fountains would be reconstructed; there will be arrangement to climb the hills, 12% opined that the income of Govt will increase, 11% opined that the area people will be economically benefited and the dependency on forest/wetland will decrease. Others opined that the beauty of the forest/wetland will increase, the transportation system will be developed, the area will be well known to others, the forest/wetland area demand will increase, the cutting of trees will be stopped etc.

The respondents of KII opined that if more visitors use to come good relationship with outside people will create a link for communication to outer world for the area people, there will be an economic improvement, employment will increase & transportation system would be developed. The negative side can be that the people coming over here can damage the forest or wetland.

From the FGDs respondents it was found that in their opinion there would be some good sides and some bad sides. In the good sides the place will be more known to other people and local people will be able to earn money from different works to attract tourists and providing them facilities, Govt will take proper care of the area, the local peoples business will be benefited, and income generating activities will increase. On the other hand the negative sides may be the area will be polluted; the influence of dishonest people will be increased, the people's normal life can be interrupted, as there is no match between the

living style of tribal and normal inhabitants. So if outside people go there it can't bring any good to the tribal.

8.9 The impacts of more visitors coming to the forest:

Positive impacts	Negative impacts
<p>Major impacts:</p> <ul style="list-style-type: none"> ▶ The sources of income in the area will increase, employment will increase & the people will be benefited through business ▶ The area will be well-known to others which will help to increase the social status ▶ There will be an overall development in the area which will have great impact on the living of area people ▶ There will be development in the transportation system which will have great impact on the earnings of area people <p>Minor impact:</p> <ul style="list-style-type: none"> ▶ The environment will be developed ▶ The electric system will be developed ▶ The living standard will increase ▶ The education system will develop 	<p>Major negative impact</p> <ul style="list-style-type: none"> ▶ The authority will eradicate the local people from there current habitat ▶ The normal living of local people will be hampered ▶ Loss will occur to forest/wetland which will have negative impact on the living of local people <p>Minor negative impact</p> <ul style="list-style-type: none"> ▶ The number of dishonest people will increase ▶ The environment will be polluted ▶ There will be no employment/Problem will arise in case of alternative employment ▶ Different diseases can arise ▶ Drugs will be sold in the area

90% respondents think that if greater number of people come to visit their area The sources of income in the area will increase/employment will increase/The people will be benefited through business, 17% opined that The area will be well-known/well-reputed which will help to increase the social status, 13% opined that There will be an overall development in the area which will have great impact on the living of area people. Respondents pointed some other issues like There will be development in the transportation system which will have great impact on the earnings of area people, In the eco-tourism center people will be able to be involved in different works like-as security guard/ protector, The environment will be developed, The electric system will be developed, The living standard will increase, & The education system will develop.

32% respondents opined that if greater number of people comes to visit their area The authority will eradicate the local people from there current habitat, 26% opined that The normal living of local people will be hampered, 10% opined that Loss will occur to forest/wetland which will have negative impact on the living of local people. The other issues that was pointed are the number of dishonest people will increase, the environment will be polluted, There will be no employment/Problem will arise in case of alternative employment. The respondents of KII mentioned that if more people come then the local people will have more ways to earn their livelihood, the area will be developed, more stores, hotels will be established, there will be social & economic development the transportation system will be developed.

8.10 The way-out to entice more tourists to the respective area:

Respondents opined that to entice more visitors the transportation system should be developed, 25% opined that Different attractive spots/places to be arranged (Park, hanging bridge over the lake, forest, sanctuary, arrange boats in the river, build bridges, reconstruct the fountains), 21% opined that Infrastructure development (Arrangement for sufficient facilities, Establish rest houses, build trails) is needed, 19% opined that The beauty of forest/wetland should be increased 13% opined that Arrangement for security is needed. Other pointed issues are More communication should be made through the medias, the wild animals/birds to be protected and create co operative environment, The environment of the area should be kept clean, tourism center should be established etc.

Major Suggestions:

- ▶ The transportation system will be developed
- ▶ Different attractive spots/places to be arranged (Park, forest, sanctuary etc)
- ▶ Infrastructure development
- ▶ The beauty of forest/wetland
- ▶ Arrangement for security

Minor Suggestions:

- ▶ More communication should be made through the medias
- ▶ To protect the wild animals/birds and create co operative environment
- ▶ The govt should take more initiatives
- ▶ Proper implementation of laws
- ▶ Stop cutting hills
- ▶ Different types of festive and fair should be arranged

The respondents of KII opined that to entice more tourists to come to their respective areas the security system should be more organized, there should have sufficient arrangement of rest house, hotels, motels, the roads should be reconstructed, the transportation system should be developed. The respondents of wetlands suggested establishing different water rides, swimming rides, speed boat to entertain the tourists. The Sundarban respondents suggested establishing a tourism center and giving electric connection to their area.

8.11 Leisurely Pastime of the Respondents

When the respondents were asked to tell that what they usually do in their leisure time they named for the following things as their favorite pastimes:

Major pastimes	Minor pastimes (Less than 5%)
<ul style="list-style-type: none"> ▶ Use to gossip (56%) ▶ Use to watch T.V. (18%) ▶ Go to relative's house/Travel (13%) ▶ Listen to radio (10%) 	<ul style="list-style-type: none"> ▶ Use to sleep ▶ Use to play ▶ Religious work (Pray, Worship) ▶ Reading books ▶ Use to work on handicraft (Sewing) ▶ Use to read newspaper

56% respondent responded that they use to gossip in their free times, 18% responded that they use to watch TV. Others responded that they use to Go to relative's house/Travel, Listen to radio, Use to sleep, Use to play, Religious work (Pray, Worship) etc. From the study it's clear that the habit of reading newspaper is not very popular in the respective areas.

We found from another query that 56% respondents responded that TV is their favorite media, 29% responded that radio is their favorite media. Others named Singing program (Folk song, *Jari* song), Drama/*Jatra*, Reading books as their favorite media.

This section appraises the knowledge attitude and practices of the potential tourists regarding eco-tourism. In so doing, various issues regarding the subject matter were discussed with the respondents.

8.12 Eco-Tourism: Improving the Forests/Wetland Areas

Under what circumstances the PAs will benefit from eco-tourism is a matter of inquiry. The respondents pose their views on this in varying terms. However the comments were very narrow in relation. Twenty nine percent of the respondents stated that the *PAs would be developed*. Further 19 percent and 11 percent stated that it will *increase government's income* and will economically benefit the surrounding people of the PAs respectively. However the conservation of biodiversity and prioritizing culture and traditions of local residents were left alone. It seems that the respondents cannot perceive the true benefit from eco-tourism.

8.12.1 Adverse Affects of Eco-Tourism

Eco-tourism can bring many benefits to the areas under consideration. However a proper managed and sustainable tourism can only bring the true benefit from it. Nonetheless 53 percent of the respondents have stated that there will no losses in the forest/wetland if tourism is increased. Another 22 percent of the respondents have stated that the pollution of such area will increase. Disturbance in the wild habitat and pressure on natural resource came as a response, however insignificantly, with 5 and 3 percent respectively. It was interesting to note that, the culture and living hood of the local respondents and land management issues were left undiscussed.

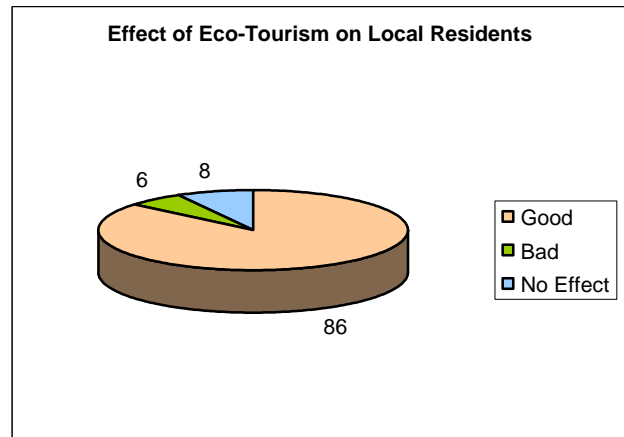
Table-31: *Aadverse affects of eco-tourism*

Adverse affects	Responses (%)
NO loss	53
The area will be polluted more	22
The animals/birds will not be able to wander unboundedly	5
It will occur loss of resources	3
Uncontrolled collection of resources	1

Base- 320

8.13 Benefits of Local Residents as a Consequence of Eco-Tourism Centers

It is expected that, the local habituate and living hood of the surroundings are subject to get affected through echo-tourism. Eighty six percent of the respondents think that, eco-tourism will have good effect in the local residents and 8 percent thinks that it will have no effect. The rest thinks that eco-tourism will bring bad effect to the local residents.



Most of the respondents seem to convey the message that, eco-tourism will economically benefit the local residents. Eighty five percent of the respondents stated that, eco-tourism will increase income/ employment of the local residents and 13 percent thinks that it will increase the living standards of the surroundings. Some insignificant answer like increase in education, rise of government's income also came from the respondents. However it appears that the respondents can only see the economical benefit of eco-tourism. The concept of resource management and biodiversity is left alone in such cases.

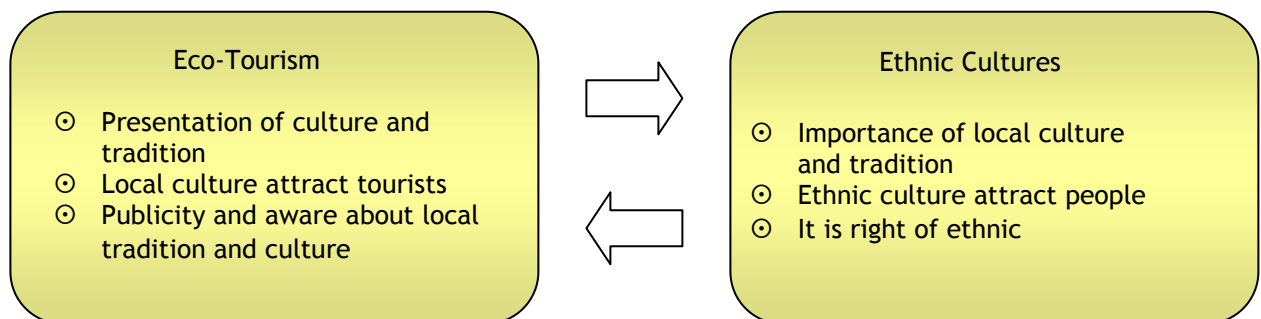
8.13.1 Harmful aspects of Eco-Tourism to the Local Residents

Seventy two percent of the respondents stated that eco-tourism will hamper the living of local people and another 17 percent associated loss of forest/wetland with negative impact of living hood. Some wrong concepts like, problem will arise in case of *alternative employment*, the authority will *eradicate the local people* from there current habitat came with 11 and 6 percent response. Though relative insignificant, the pollution issue had came. However the pressure in the local resources, land from tourism, disturbance in the culture and traditions of local residents can also be seen as a negative affect of eco-tourism.

8.14 Role of Culture & Tradition of Local Community in Improving Eco-Tourism

While conducting FGDs with students of different universities, emphasize on the culture and tradition of the local habitants was given. In our country there are different religious and traditional cultures in different places. If these cultures are sustained these will captivate tourists and at the same time our own culture will be protected. Especially the ethnic cultures will play an important role. A nation can be recognized through its culture. People from outside countries come here to see how we celebrate 16th December, *pohela boishakh*. They get entertainment from these things. Many tourists come to see how the *garos* celebrate their events. So culture has a great role in the development of tourism in a country. Also the traditional handicrafts are an especial attraction to eco tourism.

The survey respondents somewhat agreed to these issues. Twenty four percent of the respondents have stated that, presentation of culture and tradition can improve eco-tourism and also another 9 percent stated about awareness of local culture will induce tourism in the PAs. However some important issues like, cultural events, local handicrafts were left alone by the respondents.



8.14.1 Reasons for Respecting the Culture Ethnic people living Around Eco-Tourism Centers

Though ethnic cultures can attract eco-tourism it should be kept under mind that, the protection of this traditional culture is important. If this traditional culture is not protected, the increasing tourists will eventually destroy the local habitants and the origin of the ethnicity will be lost. Forty five percent of the

95 percent of the respondents believe that, improvement of eco-tourism would increase income generation opportunities of local people

respondents seem to realize the importance of the conservation of the culture and tradition and only 7 percent have stated that it should be preserved as it attracts tourists. Other issues like 'it is the right of ethnic group' to have their culture and tradition preserved came lightly with only 6 percent responses. So it is clear that, why we should protect the local culture is hard to perceive by the potential tourists. There are scopes for improvement in the attitudes of the potential tourists regarding ethnic culture.

If the situation and intensity of eco-tourism increases, more and more people will be exposed to the diverse culture of Bangladesh. In so doing, more and more interaction with varying culture will take place. As a result, both the cultures will be enriched and influenced from one another.

However in response of the question how eco-tourism will increase the income generation opportunities of local people, the respondents could not provide any satisfactory outcomes. The mentionable outcomes were through increase in tourism activity, there would some demand of the locally produced goods, guides, and accommodation facilities, which will benefit the local people economically.

8.15 Favorite Pastime of the Respondents

It is important to know the general characteristics of the target respondents as a whole. Their favorite pastime includes chatting with peer groups, watching television, lessening to the radio/songs, playing, newspaper/ books and even sleeping. So there exist various channels through which the potential tourists can be addressed for enriching their knowledge regarding eco-tourism.

8.16 Medias that the Respondents are exposed with

On average, it was found that, TV was the favorite media with 61 percent response and book and newspaper came next with 36 percent response. Further 23 percent of the respondent's favorite entertainment/pastime was playing. Other favorite Medias include radio and the World Wide Web with 20 and 19 percent respectively. The respondents also addressed musical shows and Pala/Jatra. It can be seen that, there are several channels through which people can be addressed. The soundness of the communication strategy will be achieved if the right knowledge is send through the right channels.

Table- 32: Medias that the Respondents are exposed with

Media	Total (%)
Television	61
Reading books/newspapers	36
Playing	23
Radio	20
Browsing	19
Music shows	15
Play / Jatra	12
Base	320

CHAPTER: 9

Critical Analysis of KAP

9.1 Importance of Proper Communication with Stakeholders

The overall knowledge, practice and attitude of people towards forest/wetlands, its resources is not positive, which can touch the project goals. So, raising awareness/knowledge, social movement in practice, and positive attitude is very much concern and that's why effective communication can play a vital role in this arena. The following chart can help to plan a strategic communication mechanism:

Issues	Gap in Knowledge	Message for Communication	Ways of Communication	
			Local level	National level/ Policy level
<ul style="list-style-type: none"> ✓ Changes of bio-diversity of wetland and forest ✓ Causes & Effect of changes 	<ul style="list-style-type: none"> ✓ Mass people do not have adequate knowledge on the causes and its consequences, specially man-made causes ✓ Mass people are not aware of the massive negative impact of the resources declining 	<ul style="list-style-type: none"> ✓ Increase knowledge on bio-diversity of mass people ✓ Awaken and sensitize them on the consequences bio-diversity degradation ✓ Increase and sensitize mass people on the negative impact of resource declining 	<ul style="list-style-type: none"> ✓ Meeting, ✓ Day observation ✓ Billboard ✓ Poster ✓ Electronic media ✓ Print media ✓ Public gathering ✓ Video show 	<ul style="list-style-type: none"> ✓ Workshop/ Seminar, ✓ initiatives to publicity
<ul style="list-style-type: none"> ✓ Impact of encroachment of forest and wetland for agriculture and habitat 	<ul style="list-style-type: none"> ✓ The people are not knowledgeable, conscious and sensitized about the effects of the use of agricultural land and how it can influence their livelihood. 	<ul style="list-style-type: none"> ✓ Awaken, sensitize & motivate to stop encroachment ✓ Voice raising for creating social movement in favor of eco friendly agri. practice ✓ Proper implementation 	<ul style="list-style-type: none"> ✓ Public gathering, meeting, ✓ poster, billboard 	<ul style="list-style-type: none"> ✓ Workshop/ seminar ✓ provide information ✓ lobbying ✓ Influence

		of policy & plan.		
<ul style="list-style-type: none"> ✓ Knowledge on laws and regulation ✓ Knowledge on harmful tools/techniques use 	<ul style="list-style-type: none"> ✓ People do not have adequate knowledge on laws about forest/wetland as well as resources collection. 	<ul style="list-style-type: none"> ✓ Awaken people 	<ul style="list-style-type: none"> ✓ Electronic media ✓ booklet ✓ Video Show 	<ul style="list-style-type: none"> ✓ Proper initiatives to inform and aware laws

Issues	Gap in Practice	Message for Communication	Ways of Communication	
			Local Level	National Level/ Policy Level
<ul style="list-style-type: none"> ✓ Over collection of resources. 	<ul style="list-style-type: none"> ✓ People cannot perceive the adverse affects on PAs for resource reduction and consequences on their living hood and biodiversity 	<ul style="list-style-type: none"> ✓ To sensitize people about the all-out negative effects of over acquisition ✓ To refrain them from excess collection of resources ✓ To start a social movement regarding managed resource collection ✓ Increase the participation of people in resource conservation ✓ To take steps regarding forest conservation policy and its right implementation 	<ul style="list-style-type: none"> ✓ Dialogue ✓ Small group discussion ✓ Motivation 	<ul style="list-style-type: none"> ✓ Experience sharing, ✓ Influence ✓ lobbying
<ul style="list-style-type: none"> ✓ People participation in Management and development process 	<ul style="list-style-type: none"> ✓ Less participation of people in the management. 	<ul style="list-style-type: none"> ✓ To awaken people regarding the positive effects ✓ To make way for greater participation of people ✓ To give share of benefits to the people ✓ To provide skill attached with the management ✓ To sensitize people on afforestation ✓ To ensure the role & responsibilities of the govt officials 	<ul style="list-style-type: none"> ✓ Meeting ✓ Motivate ✓ lobbying to organize ✓ practicing co-mgt ✓ training 	<ul style="list-style-type: none"> ✓ Workshop/seminar ✓ Provide information ✓ influence ✓ lobbying
Practice of laws	✓ weakness of implementatio	✓ Encourage people,	✓ Meeting	✓ Provide

	n mechanism corruption ✓ dependency over the resources neglected laws	administration & concern agencies. ✓ Involving NGO, UP and local elites persons	✓ motivate ✓ Follow up monitoring	information ✓ lobbying
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Issues	Gap in Attitude	Message for Communication	Local level	National Level/ Policy Level
✓ Attitude to protect forest/wetland	✓ Reluctant behavior towards law as poor implementation process	✓ The harmful aspects of forest/wetland destruction should be emphasized	✓ Co-mgt. practice ✓ training	✓ experience sharing
✓ Attitude to follow laws and regulation	✓ As the surrounding people are directly dependent on the natural resources of forest/wetlands, the desirability of obeying the law is very shallow.	✓ The beneficial aspects of laws should be preached ✓ Greater exposure to alternative income generation	✓ Public gathering ✓ sensitizing ✓ Rapport Building ✓ poster ✓ billboard	✓ Influence to implementation of laws ✓ lobbying

Issues	Gap in Knowledge	Message for Communication	Ways of Communication	
			Potential tourists	National level/ Policy level
Knowledge on eco-tourism	✓ Majority of people do not have adequate knowledge on eco-tourism ✓ Mixed views on eco-tourism are present ✓ It appears that people have half-hearted knowledge	✓ Greater publicity on eco-tourism ✓ Awareness building on the negative effects of tourism on nature, culture and local tradition ✓ More exposure to the multi-dimensionality of eco-tourism.	✓ Electronic media (home and abroad) ✓ Print media, ✓ Journals and ✓ Website	✓ Workshop ✓ seminar ✓ provide information ✓ lobbying
✓ Eco-tourism practice	✓ Most of the respondents are narrowly focused towards traveling	✓ Diversity should be created for exploring new places	✓ Electronic media (home and abroad) ✓ Print media, ✓ Website	✓ Influence ✓ lobbying for policy on eco tourism
✓ Attitude to develop eco-tourism	✓ Poor knowledge leads to poor attitude.	✓ The authenticity of eco-tourism should be accentuated.	✓ Electronic media (home and abroad) ✓ Website	✓ Workshop ✓ seminar

Chapter 10

Recommendations and Conclusion

10.1 Recommendations

- Increase knowledge of the general people, awaken and sensitize them on the causes and consequences on the biodiversity changes of wetland/forest.
- Increase and sensitize people on the negative impact of wild resource declining.
- Awaken and sensitize the stakeholders to stop encroachment of forest and wetlands. And motivate local people to stop encroachment.
- Generate social movement in favor of good and eco-friendly agricultural practices.
- Increased advocacy/influence on forming policy to stop encroachment.
- Awaken people on the knowledge on laws and regulation and on the destructive tools/techniques use of forest resource collection.
- Greater advocacy on eco-tourism and sustainable tourism as the concept of eco-tourism is far away from them to perceive.
- Awareness building on the negative effects of tourism on nature, culture and local tradition.
- More exposure to the multi-dimensionality of eco-tourism.
- To sensitize people about the all-out negative effects of over acquisition of resources.
- To refrain them from excess collection of resources.
- To start a social movement regarding well-managed resource collection.
- Increase the participation of people in resource conservation.
- To take steps regarding forest conservation policy and its right implementation.
- To awaken people regarding the positive effects of having forest/wetlands and to make ways for greater participation of people.
- To provide skill to the stakeholders attached with the management of forest/wetlands.
- To ensure the role and responsibilities of the government officials.
- Pro-active role of local encourage to local administration and concern agencies to implement and follow the laws.

- Involving NGO, UP and local elite persons.
- Encourage people to stop destructive tools/techniques.
- The harmful aspects of forest/wetland destruction should be emphasized.
- Greater exposure to alternative income generation

10.2 Conclusion:

The USAID's incumbent project- IPAC is a novel venture to sustain and protect the natural resources of Bangladesh. The KAP study undertaken against this direction will go a long way for proper understanding and implementation of the project and the revealed information can certainly be of high importance in managing and making comparison between the situation at the start-up and the ending of the project.

The deteriorating wildlife and eco-system coupled with the poor management, want of awareness of the people, poor performance on the part of the government and non-governmental officials, policy makers, civil society members, CBOs, law-enforcing agencies, and other concerned big fishes have contributed significantly to the macabre picture of the wildlife scenario of the country.

Albeit things have been changing for the better due to the increased role of the media, governmental and non-governmental bodies and private sector intervention, still a long way to go for attaining desired goals. Particularly, mass people need to be sensitized and awakened on a number of crucial issues including legal issues, environmental and forest resource management, significance of the sustenance of forest resources, ecosystem etc.

Eco-tourism is a big step towards conserving and promoting the forest resources with the support of various concerned bodies. But the fact is that necessary groundwork has not yet been done and the people though understand the importance of eco-tourism, they are far away from playing a leading role in this respect, which is crucial for the sustenance of eco-tourism.

It is expected that the possible interventions would be undertaken based on the revelations of the study so that eco-tourism is flourished and wildlife resources are well managed under the auspices of the IPAC. In this way USAID's commitment to the sustenance and conservation of wildlife resources of the country will be maintained.

Annex- 1

1.0 RESPONDENT PROFILE

1.1 General Profile

The following table presents a detail analysis of respondent's demographic profile by different types of PAs, Age, Sex, Education, Religion and Family size. Eleven PA site of IPAC was chosen for selecting the target audience of this study. For the wetland area under consideration, the mean age of the respondents was just below 38 year. For forest and Sundarban area, the mean are was just over 41 year and 36 year respectively. It should be noted that, the sex composition of the respondents were highly skewed for the male respondents. On the whole, 96 percent of the respondents were male and the rest were female. However in the Sundarban area, no female respondents were taken. For Wetland and Forest area 99 and 94 percent of the respondents were male respectively.

Table- 33: Age, Sex, Education, and religious information of respondents

	Wetland	Forest	Sundarban	All
Age of respondent (in years)				
Upto 25 yrs	20	9	18	13
26 - 35 yrs	23	35	34	32
36 - 45 yrs	34	31	26	30
46 - 55 yrs	15	13	20	14
56 + yrs	7	13	4	10
Mean Age (year)	37.9	41.3	36.3	39.3
Sex: Male	99	94	100	96
Female	1	6	0	4
Education				
Class 1-5	29	28	45	31
Class 6-10	14	15	20	16
HSC level	1	4	2	3
Graduate	1	1	0	
Masters	0		0	
Illiterate	28	28	20	26
Can sign only	21	21	7	18
No formal education	3	4	0	3
Religion				
Islam	100	62	98	79

Hinduism	0	12	2	7
Buddhist	0	17	0	9
Christian	0	7	0	4
Average Family size	6.8	5.9	5.5	6
Base	151	351	151	653

(All figure in %)

For the deliberation of the level of education of the respondents, 44 percent of the respondents as a whole were found to be illiterate and /or can sign only. For both forest and wetland area, 49 percent of the respondents were found to be illiterate and /or can sign only. However in the Sundarban area, the percentage was relatively lower, only 27 percent of the respondents were illiterate and /or can sign only. Further in the wetland area, 29 percent of the respondents had finished their primary education. The numbers were 28 percent and 45 percent for forest and Sundarban respectively. Also the numbers of respondents above primary education were 16 percent and 20 percent for wetland and forest area respectively. For Sundarban area, this number accounted for 22 percent.

If we look at the composition of religion of the respondents, we would found that, significant percent of the respondents were Muslims as a whole. Only nine percent of the respondents were Buddhists and 7 percent were Hindu. The rest were Christian. It was surprising to notice that, all the respondents in the wetland area were Muslims. Sundarban represented similarly with 98 percent Muslims and 2 percent Hindus. However in the forest area, there were moderate mixer of religion of the respondents. Only 62 percent of the respondents were Muslims and 17 percent were Buddhists. Hindus and Christians accounted for 12 percent and 7 percent respectively.

Finally the demographic profile presents the average family size of the respondents, which was found to be 6 as a whole, which is very close to national figure. However in the wetland area, the average family size of the respondents was 6.8 percent and Sundarban was 5.5 percent. The average family size in the forest area was just below 6 percent.

The data shows that 9% respondents are from different ethnic group who are living in forest area e.g. garo, khasia, marma, chakma, orang, tripura, and barman.

1.2 Professional Profile

The above table provides the occupational profile of the respondents as a whole. There was very less occupational diversity across the PAs. It was found that, 29 percent of the respondents had *farming/agriculture* as their primary occupation. The next most common profession was fishing which accounted for 28 percent as a whole. However most of the respondents have a secondary occupation and among all, farming/agriculture accounted for 15 percent, the most significant along with others. Also both *day labor* and *lumberjack* accounted for 10 percent as a secondary occupation. As mentioned earlier, there was less job diversity; most of the respondents living around the PAs are involved in similar kind of activities. No body is interested to take Livestock Farmer as profession in the study area.

Table- 34: Primary and secondary occupation of local level respondents

Occupation	Primary Occupation	Secondary Occupation
Day Labor (agri)	10	10
Day Labor (non-agri)	11	9
Farmer/Agriculture	29	15
Aquaculture	2	
Livestock Farmer		2
Fishing	28	14
Lumberjack	2	10
<i>Golpata</i> /Thatch collector	1	1
Fish business	4	1
Timber business	2	1
Others business	3	4
Job	3	1
Rickshaw/Van driver	3	2
Mechanic/Driver	1	1
Carpenter	1	1
Crafts maker		1

**Base - 653(All figure in %)*